

# 1. Necessary Data Imports

In [1]:

```
import pandas as pd
import numpy as np
import seaborn as sns
from matplotlib import pyplot as plt
from sklearn import preprocessing
from sklearn.preprocessing import LabelEncoder
from sklearn.preprocessing import StandardScaler

from skmultiflow.data import HyperplaneGenerator
from sklearn import metrics
import scipy.stats as stats
from scipy.stats import norm

import random
from numpy.random import seed
from numpy.random import randn
from scipy.stats import shapiro
from scipy.stats import normaltest
from scipy.stats import anderson

import tensorflow
import tensorflow.keras.backend as K
import tensorflow.keras.layers as layers

import warnings
warnings.filterwarnings('ignore')
```

# 2. Dataset

In [2]:

```
data=pd.read_csv("elec.csv")
```

In [3]:

```
data
```

Out[3]:

	date	day	period	nswprice	nswdemand	vicprice	vicdemand	transfer	class
0	0.0000	2	0.000000	0.056443	0.439155	0.003467	0.422915	0.414912	UP
1	0.0000	2	0.021277	0.051699	0.415055	0.003467	0.422915	0.414912	UP
2	0.0000	2	0.042553	0.051489	0.385004	0.003467	0.422915	0.414912	UP
3	0.0000	2	0.063830	0.045485	0.314639	0.003467	0.422915	0.414912	UP
4	0.0000	2	0.085106	0.042482	0.251116	0.003467	0.422915	0.414912	DOWN
...	...	...	...	...	...	...	...	...	...
45307	0.9158	7	0.914894	0.044224	0.340672	0.003033	0.255049	0.405263	DOWN
45308	0.9158	7	0.936170	0.044884	0.355549	0.003072	0.241326	0.420614	DOWN
45309	0.9158	7	0.957447	0.043593	0.340970	0.002983	0.247799	0.362281	DOWN

	date	day	period	nswprice	nswdemand	vicprice	vicdemand	transfer	class
<b>45310</b>	0.9158	7	0.978723	0.066651	0.329366	0.004630	0.345417	0.206579	UP
<b>45311</b>	0.9158	7	1.000000	0.050679	0.288753	0.003542	0.355256	0.231140	DOWN

45312 rows × 9 columns

```
In [4]: del data['date']
```

```
In [5]: def feature_rank(data,label_col):
    from sklearn.model_selection import train_test_split
    from sklearn.feature_selection import mutual_info_classif

    X_train,X_test,y_train,y_test=train_test_split(data.drop(labels=[label_col], axis=1), data[label_col], random_state=0)

    mutual_info = mutual_info_classif(X_train, y_train)
    mutual_info = pd.Series(mutual_info)
    mutual_info.index = X_train.columns
    mutual_info.sort_values(ascending=False,inplace=True)

    return mutual_info
```

```
In [6]: rank_list=feature_rank(data,'class')
```

```
In [7]: rank_list
```

```
Out[7]: nswprice      0.205121
        vicprice      0.080606
        period         0.068144
        nswdemand      0.065161
        vicdemand      0.030717
        transfer        0.008973
        day            0.002452
        dtype: float64
```

```
In [8]: #del data['date']
```

```
In [9]: data.head()
```

```
Out[9]:   day  period  nswprice  nswdemand  vicprice  vicdemand  transfer  class
          0     2  0.000000  0.056443  0.439155  0.003467  0.422915  0.414912  UP
          1     2  0.021277  0.051699  0.415055  0.003467  0.422915  0.414912  UP
          2     2  0.042553  0.051489  0.385004  0.003467  0.422915  0.414912  UP
          3     2  0.063830  0.045485  0.314639  0.003467  0.422915  0.414912  UP
```

```
day period nswprice nswdemand vicprice vicdemand transfer class
4 2 0.085106 0.042482 0.251116 0.003467 0.422915 0.414912 DOWN
```

In [10]: `data['class'].value_counts()`

Out[10]: DOWN 26075  
UP 19237  
Name: class, dtype: int64

### 3. Data Preprocessing

1. Apply one-hot encoding to object types
2. Apply Minmax normalization to numeric columns
3. Keep the class column as it is
4. Initial 70% data is used for training ( training and validation for AE)
5. Next 20 % data is used as a validation set to compute thresholds
6. Next 10 % data is used as a test stream initially without drift and then after introducing drift

```
In [11]: def normalize_encode_split(data,label_col,pos_val,neg_val):
    # Apply Label Encoding

    for col in data.columns:
        if ((data[col].dtype=='object')and (col!=label_col)):
            data = pd.get_dummies(data, columns=[col])

    # Apply Minmax Normalization
    for col in data.columns:
        if (((data[col].dtype=='float64')or(data[col].dtype=='int64')) and (col!=label_col)):
            data[col] = np.round((data[col] - data[col].min()) / (data[col].max() - data[col].min()), 2)

    # Split into training , test (validation set 1) and stream ( drifted data stream)
    train=data[0:int(len(data)*0.70)]
    test=data[int((0.70*len(data))):int((0.90*len(data)))]

    stream=data[int((0.90*len(data))):len(data)]

    train_positives = train[train[label_col] == pos_val]
    train_negatives = train[train[label_col] == neg_val]

    X_positive=train_positives.drop([label_col],axis=1)
    X_negative=train_negatives.drop([label_col],axis=1)
    return train, test, X_positive,X_negative , stream
```

In [12]: `data.head()`

Out[12]: day period nswprice nswdemand vicprice vicdemand transfer class

0	2	0.000000	0.056443	0.439155	0.003467	0.422915	0.414912	UP
---	---	----------	----------	----------	----------	----------	----------	----

	day	period	nswprice	nswdemand	vicprice	vicdemand	transfer	class
1	2	0.021277	0.051699	0.415055	0.003467	0.422915	0.414912	UP
2	2	0.042553	0.051489	0.385004	0.003467	0.422915	0.414912	UP
3	2	0.063830	0.045485	0.314639	0.003467	0.422915	0.414912	UP
4	2	0.085106	0.042482	0.251116	0.003467	0.422915	0.414912	DOWN

In [13]: `train, test, X_positive,X_negative , stream =normalize_encode_split(data,'class','UP')`

In [14]: `data.head()`

	day	period	nswprice	nswdemand	vicprice	vicdemand	transfer	class
0	0.167	0.000	0.056	0.439	0.003	0.423	0.415	UP
1	0.167	0.021	0.052	0.415	0.003	0.423	0.415	UP
2	0.167	0.043	0.051	0.385	0.003	0.423	0.415	UP
3	0.167	0.064	0.045	0.315	0.003	0.423	0.415	UP
4	0.167	0.085	0.042	0.251	0.003	0.423	0.415	DOWN

In [15]: `train['class'].value_counts()`

Out[15]: DOWN 18323  
UP 13395  
Name: class, dtype: int64

In [16]: `data`

	day	period	nswprice	nswdemand	vicprice	vicdemand	transfer	class
0	0.167	0.000	0.056	0.439	0.003	0.423	0.415	UP
1	0.167	0.021	0.052	0.415	0.003	0.423	0.415	UP
2	0.167	0.043	0.051	0.385	0.003	0.423	0.415	UP
3	0.167	0.064	0.045	0.315	0.003	0.423	0.415	UP
4	0.167	0.085	0.042	0.251	0.003	0.423	0.415	DOWN
...	...	...	...	...	...	...	...	...
45307	1.000	0.915	0.044	0.341	0.003	0.255	0.405	DOWN
45308	1.000	0.936	0.045	0.356	0.003	0.241	0.421	DOWN
45309	1.000	0.957	0.044	0.341	0.003	0.248	0.362	DOWN
45310	1.000	0.979	0.067	0.329	0.005	0.345	0.207	UP
45311	1.000	1.000	0.051	0.289	0.004	0.355	0.231	DOWN

45312 rows × 8 columns

```
In [17]: test['class'].value_counts()
```

```
Out[17]: DOWN    5267  
UP      3795  
Name: class, dtype: int64
```

```
In [18]: train['class'].value_counts()
```

```
Out[18]: DOWN    18323  
UP      13395  
Name: class, dtype: int64
```

```
In [19]: stream['class'].value_counts()
```

```
Out[19]: DOWN    2485  
UP      2047  
Name: class, dtype: int64
```

## 4. Training of Autoencoders

Adjust the layers manullay for each dataset based on dimensions

```
In [20]: def autoencoder (train,epochs,val_set):  
  
    input_layer = tensorflow.keras.Input(shape=train.shape[1:]) # Input Layer  
    encoded = layers.Dense(6, activation='relu')(input_layer) # Code Layer 1  
    encoded=layers.Dense(2,activation='relu')(encoded) # Bottleneck  
    decoded=layers.Dense(6,activation='relu')(encoded)# Decode Layer 1  
    decoded = layers.Dense(train.shape[1], activation='sigmoid')(decoded) # Output Layer  
  
    autoencoder = tensorflow.keras.Model(input_layer, decoded)  
  
    autoencoder.compile(optimizer='adam', loss='mse') # Train autoencoder  
    history=autoencoder.fit(train,train,  
                           epochs=epochs,  
                           batch_size=32,  
                           shuffle=True,  
                           validation_data=(val_set, val_set)).history  
    return autoencoder , history
```

```
In [21]: def train_encoders(X_Positive,X_Negative, epochs):  
  
    X_Positive_train=X_Positive[0:int(len(X_Positive)*0.90)]  
    X_Positive_test=X_Positive[int((0.90*len(X_Positive))):len(X_Positive)-1]  
  
    X_Negative_train=X_Negative[0:int(len(X_Negative)*0.90)]  
    X_Negative_test=X_Negative[int((0.90*len(X_Negative))):len(X_Negative)-1]  
  
    print("Training Autoencoder on Positive Examples ")  
    encoder_pos_class, history_positive_class=autoencoder(X_Positive_train,epochs,X_E  
    print("Training Autoencoder on Negative Examples ")  
    encoder_neg_class,history_negative_class=autoencoder(X_Negative_train,epochs,X_N  
  
    return encoder_pos_class, history_positive_class ,encoder_neg_class,history_nega
```

```
In [22]: encoder_pos_class, history_positive_class ,encoder_neg_class,history_negative_class=
```

```
Training Autoencoder on Positive Examples  
Epoch 1/100  
377/377 [=====] - 3s 7ms/step - loss: 0.0745 - val_loss: 0.0  
442  
Epoch 2/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0298 - val_loss: 0.0  
410  
Epoch 3/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0259 - val_loss: 0.0  
359  
Epoch 4/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0203 - val_loss: 0.0  
322  
Epoch 5/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0174 - val_loss: 0.0  
310  
Epoch 6/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0160 - val_loss: 0.0  
305  
Epoch 7/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0156 - val_loss: 0.0  
301  
Epoch 8/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0154 - val_loss: 0.0  
303  
Epoch 9/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0152 - val_loss: 0.0  
291  
Epoch 10/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0149 - val_loss: 0.0  
297  
Epoch 11/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0150 - val_loss: 0.0  
293  
Epoch 12/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0146 - val_loss: 0.0  
292  
Epoch 13/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0149 - val_loss: 0.0  
287  
Epoch 14/100
```

```
377/377 [=====] - 1s 2ms/step - loss: 0.0148 - val_loss: 0.0  
284  
Epoch 15/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0149 - val_loss: 0.0  
289  
Epoch 16/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0146 - val_loss: 0.0  
291  
Epoch 17/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0145 - val_loss: 0.0  
295  
Epoch 18/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0145 - val_loss: 0.0  
290  
Epoch 19/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0147 - val_loss: 0.0  
287  
Epoch 20/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0146 - val_loss: 0.0  
285  
Epoch 21/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0147 - val_loss: 0.0  
286  
Epoch 22/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0146 - val_loss: 0.0  
280  
Epoch 23/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0145 - val_loss: 0.0  
288  
Epoch 24/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0148 - val_loss: 0.0  
289  
Epoch 25/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0145 - val_loss: 0.0  
289  
Epoch 26/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0148 - val_loss: 0.0  
284  
Epoch 27/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0147 - val_loss: 0.0  
286  
Epoch 28/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0145 - val_loss: 0.0  
290  
Epoch 29/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0146 - val_loss: 0.0  
284  
Epoch 30/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0147 - val_loss: 0.0  
286  
Epoch 31/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0148 - val_loss: 0.0  
290  
Epoch 32/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0147 - val_loss: 0.0  
289  
Epoch 33/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0145 - val_loss: 0.0  
287  
Epoch 34/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0145 - val_loss: 0.0  
293
```

```
Epoch 35/100
377/377 [=====] - 1s 2ms/step - loss: 0.0147 - val_loss: 0.0
289
Epoch 36/100
377/377 [=====] - 1s 2ms/step - loss: 0.0148 - val_loss: 0.0
283
Epoch 37/100
377/377 [=====] - 1s 2ms/step - loss: 0.0145 - val_loss: 0.0
290
Epoch 38/100
377/377 [=====] - 1s 2ms/step - loss: 0.0147 - val_loss: 0.0
283
Epoch 39/100
377/377 [=====] - 1s 3ms/step - loss: 0.0149 - val_loss: 0.0
291
Epoch 40/100
377/377 [=====] - 1s 3ms/step - loss: 0.0147 - val_loss: 0.0
287
Epoch 41/100
377/377 [=====] - 1s 2ms/step - loss: 0.0146 - val_loss: 0.0
287
Epoch 42/100
377/377 [=====] - 1s 3ms/step - loss: 0.0148 - val_loss: 0.0
292
Epoch 43/100
377/377 [=====] - 1s 3ms/step - loss: 0.0146 - val_loss: 0.0
283
Epoch 44/100
377/377 [=====] - 1s 2ms/step - loss: 0.0145 - val_loss: 0.0
291
Epoch 45/100
377/377 [=====] - 1s 3ms/step - loss: 0.0147 - val_loss: 0.0
281
Epoch 46/100
377/377 [=====] - 1s 3ms/step - loss: 0.0147 - val_loss: 0.0
286
Epoch 47/100
377/377 [=====] - 1s 3ms/step - loss: 0.0144 - val_loss: 0.0
295
Epoch 48/100
377/377 [=====] - 1s 3ms/step - loss: 0.0147 - val_loss: 0.0
282
Epoch 49/100
377/377 [=====] - 1s 3ms/step - loss: 0.0148 - val_loss: 0.0
285
Epoch 50/100
377/377 [=====] - 1s 3ms/step - loss: 0.0145 - val_loss: 0.0
286
Epoch 51/100
377/377 [=====] - 1s 2ms/step - loss: 0.0147 - val_loss: 0.0
287
Epoch 52/100
377/377 [=====] - 1s 2ms/step - loss: 0.0146 - val_loss: 0.0
285
Epoch 53/100
377/377 [=====] - 1s 3ms/step - loss: 0.0147 - val_loss: 0.0
284
Epoch 54/100
377/377 [=====] - 1s 3ms/step - loss: 0.0145 - val_loss: 0.0
291
Epoch 55/100
377/377 [=====] - 1s 3ms/step - loss: 0.0145 - val_loss: 0.0
```

285  
Epoch 56/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0147 - val\_loss: 0.0  
285  
Epoch 57/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0147 - val\_loss: 0.0  
289  
Epoch 58/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0148 - val\_loss: 0.0  
288  
Epoch 59/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0145 - val\_loss: 0.0  
292  
Epoch 60/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0147 - val\_loss: 0.0  
293  
Epoch 61/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0146 - val\_loss: 0.0  
286  
Epoch 62/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0147 - val\_loss: 0.0  
284  
Epoch 63/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0146 - val\_loss: 0.0  
285  
Epoch 64/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0147 - val\_loss: 0.0  
287  
Epoch 65/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0147 - val\_loss: 0.0  
290  
Epoch 66/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0146 - val\_loss: 0.0  
285  
Epoch 67/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0145 - val\_loss: 0.0  
288  
Epoch 68/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0144 - val\_loss: 0.0  
288  
Epoch 69/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0147 - val\_loss: 0.0  
285  
Epoch 70/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0145 - val\_loss: 0.0  
287  
Epoch 71/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0147 - val\_loss: 0.0  
287  
Epoch 72/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0148 - val\_loss: 0.0  
290  
Epoch 73/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0147 - val\_loss: 0.0  
287  
Epoch 74/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0148 - val\_loss: 0.0  
286  
Epoch 75/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0145 - val\_loss: 0.0  
287  
Epoch 76/100

```
377/377 [=====] - 1s 2ms/step - loss: 0.0146 - val_loss: 0.0  
291  
Epoch 77/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0146 - val_loss: 0.0  
289  
Epoch 78/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0145 - val_loss: 0.0  
289  
Epoch 79/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0144 - val_loss: 0.0  
285  
Epoch 80/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0146 - val_loss: 0.0  
286  
Epoch 81/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0147 - val_loss: 0.0  
287  
Epoch 82/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0147 - val_loss: 0.0  
282  
Epoch 83/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0146 - val_loss: 0.0  
285  
Epoch 84/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0148 - val_loss: 0.0  
288  
Epoch 85/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0145 - val_loss: 0.0  
285  
Epoch 86/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0149 - val_loss: 0.0  
286  
Epoch 87/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0145 - val_loss: 0.0  
284  
Epoch 88/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0145 - val_loss: 0.0  
287  
Epoch 89/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0145 - val_loss: 0.0  
288  
Epoch 90/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0145 - val_loss: 0.0  
290  
Epoch 91/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0146 - val_loss: 0.0  
291  
Epoch 92/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0148 - val_loss: 0.0  
292  
Epoch 93/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0148 - val_loss: 0.0  
288  
Epoch 94/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0146 - val_loss: 0.0  
289  
Epoch 95/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0146 - val_loss: 0.0  
290  
Epoch 96/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0147 - val_loss: 0.0  
281
```

```
Epoch 97/100
377/377 [=====] - 1s 2ms/step - loss: 0.0146 - val_loss: 0.0
287
Epoch 98/100
377/377 [=====] - 1s 2ms/step - loss: 0.0144 - val_loss: 0.0
286
Epoch 99/100
377/377 [=====] - 1s 2ms/step - loss: 0.0146 - val_loss: 0.0
288
Epoch 100/100
377/377 [=====] - 1s 3ms/step - loss: 0.0144 - val_loss: 0.0
287
Training Autoencoder on Negative Examples
Epoch 1/100
516/516 [=====] - 2s 3ms/step - loss: 0.0695 - val_loss: 0.0
501
Epoch 2/100
516/516 [=====] - 1s 3ms/step - loss: 0.0307 - val_loss: 0.0
301
Epoch 3/100
516/516 [=====] - 1s 3ms/step - loss: 0.0139 - val_loss: 0.0
228
Epoch 4/100
516/516 [=====] - 1s 3ms/step - loss: 0.0085 - val_loss: 0.0
203
Epoch 5/100
516/516 [=====] - 1s 2ms/step - loss: 0.0070 - val_loss: 0.0
197
Epoch 6/100
516/516 [=====] - 1s 3ms/step - loss: 0.0066 - val_loss: 0.0
195
Epoch 7/100
516/516 [=====] - 1s 3ms/step - loss: 0.0064 - val_loss: 0.0
203
Epoch 8/100
516/516 [=====] - 1s 3ms/step - loss: 0.0064 - val_loss: 0.0
198
Epoch 9/100
516/516 [=====] - 1s 3ms/step - loss: 0.0063 - val_loss: 0.0
200
Epoch 10/100
516/516 [=====] - 1s 3ms/step - loss: 0.0062 - val_loss: 0.0
194
Epoch 11/100
516/516 [=====] - 1s 3ms/step - loss: 0.0061 - val_loss: 0.0
190
Epoch 12/100
516/516 [=====] - 1s 3ms/step - loss: 0.0060 - val_loss: 0.0
195
Epoch 13/100
516/516 [=====] - 1s 3ms/step - loss: 0.0060 - val_loss: 0.0
188
Epoch 14/100
516/516 [=====] - 1s 2ms/step - loss: 0.0061 - val_loss: 0.0
197
Epoch 15/100
516/516 [=====] - 1s 3ms/step - loss: 0.0061 - val_loss: 0.0
195
Epoch 16/100
516/516 [=====] - 1s 3ms/step - loss: 0.0060 - val_loss: 0.0
195
Epoch 17/100
```

```
516/516 [=====] - 1s 3ms/step - loss: 0.0060 - val_loss: 0.0  
201  
Epoch 18/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0059 - val_loss: 0.0  
193  
Epoch 19/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0060 - val_loss: 0.0  
191  
Epoch 20/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0061 - val_loss: 0.0  
196  
Epoch 21/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0060 - val_loss: 0.0  
195  
Epoch 22/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0060 - val_loss: 0.0  
192  
Epoch 23/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0060 - val_loss: 0.0  
198  
Epoch 24/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0059 - val_loss: 0.0  
187  
Epoch 25/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0060 - val_loss: 0.0  
187  
Epoch 26/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0060 - val_loss: 0.0  
175  
Epoch 27/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0059 - val_loss: 0.0  
184  
Epoch 28/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0058 - val_loss: 0.0  
181  
Epoch 29/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0059 - val_loss: 0.0  
181  
Epoch 30/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0059 - val_loss: 0.0  
181  
Epoch 31/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0058 - val_loss: 0.0  
179  
Epoch 32/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0059 - val_loss: 0.0  
179  
Epoch 33/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0059 - val_loss: 0.0  
175  
Epoch 34/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0058 - val_loss: 0.0  
174  
Epoch 35/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0058 - val_loss: 0.0  
162  
Epoch 36/100  
516/516 [=====] - 1s 2ms/step - loss: 0.0057 - val_loss: 0.0  
179  
Epoch 37/100  
516/516 [=====] - 1s 2ms/step - loss: 0.0058 - val_loss: 0.0  
177
```

```
Epoch 38/100
516/516 [=====] - 1s 2ms/step - loss: 0.0057 - val_loss: 0.0
169
Epoch 39/100
516/516 [=====] - 1s 3ms/step - loss: 0.0057 - val_loss: 0.0
171
Epoch 40/100
516/516 [=====] - 1s 2ms/step - loss: 0.0057 - val_loss: 0.0
171
Epoch 41/100
516/516 [=====] - 1s 2ms/step - loss: 0.0057 - val_loss: 0.0
174
Epoch 42/100
516/516 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0
164
Epoch 43/100
516/516 [=====] - 1s 2ms/step - loss: 0.0057 - val_loss: 0.0
164
Epoch 44/100
516/516 [=====] - 1s 2ms/step - loss: 0.0057 - val_loss: 0.0
172
Epoch 45/100
516/516 [=====] - 1s 2ms/step - loss: 0.0056 - val_loss: 0.0
159
Epoch 46/100
516/516 [=====] - 1s 2ms/step - loss: 0.0056 - val_loss: 0.0
164
Epoch 47/100
516/516 [=====] - 1s 2ms/step - loss: 0.0057 - val_loss: 0.0
164
Epoch 48/100
516/516 [=====] - 1s 2ms/step - loss: 0.0056 - val_loss: 0.0
161
Epoch 49/100
516/516 [=====] - 1s 2ms/step - loss: 0.0057 - val_loss: 0.0
167
Epoch 50/100
516/516 [=====] - 1s 2ms/step - loss: 0.0056 - val_loss: 0.0
161
Epoch 51/100
516/516 [=====] - 1s 2ms/step - loss: 0.0056 - val_loss: 0.0
167
Epoch 52/100
516/516 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0
161
Epoch 53/100
516/516 [=====] - 1s 2ms/step - loss: 0.0057 - val_loss: 0.0
169
Epoch 54/100
516/516 [=====] - 1s 3ms/step - loss: 0.0057 - val_loss: 0.0
163
Epoch 55/100
516/516 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0
162
Epoch 56/100
516/516 [=====] - 1s 2ms/step - loss: 0.0055 - val_loss: 0.0
161
Epoch 57/100
516/516 [=====] - 1s 2ms/step - loss: 0.0056 - val_loss: 0.0
167
Epoch 58/100
516/516 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0
```

```
164
Epoch 59/100
516/516 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0
168
Epoch 60/100
516/516 [=====] - 1s 3ms/step - loss: 0.0057 - val_loss: 0.0
172
Epoch 61/100
516/516 [=====] - 1s 2ms/step - loss: 0.0056 - val_loss: 0.0
163
Epoch 62/100
516/516 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0
164
Epoch 63/100
516/516 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0
165
Epoch 64/100
516/516 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0
156
Epoch 65/100
516/516 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0
173
Epoch 66/100
516/516 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0
163
Epoch 67/100
516/516 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0
168
Epoch 68/100
516/516 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0
163
Epoch 69/100
516/516 [=====] - 1s 2ms/step - loss: 0.0056 - val_loss: 0.0
167
Epoch 70/100
516/516 [=====] - 1s 2ms/step - loss: 0.0057 - val_loss: 0.0
161
Epoch 71/100
516/516 [=====] - 1s 2ms/step - loss: 0.0057 - val_loss: 0.0
167
Epoch 72/100
516/516 [=====] - 1s 2ms/step - loss: 0.0056 - val_loss: 0.0
175
Epoch 73/100
516/516 [=====] - 1s 2ms/step - loss: 0.0056 - val_loss: 0.0
166
Epoch 74/100
516/516 [=====] - 1s 2ms/step - loss: 0.0057 - val_loss: 0.0
164
Epoch 75/100
516/516 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0
164
Epoch 76/100
516/516 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0
166
Epoch 77/100
516/516 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0
167
Epoch 78/100
516/516 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0
169
Epoch 79/100
```

```
516/516 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0  
160  
Epoch 80/100  
516/516 [=====] - 1s 2ms/step - loss: 0.0056 - val_loss: 0.0  
171  
Epoch 81/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0  
161  
Epoch 82/100  
516/516 [=====] - 1s 2ms/step - loss: 0.0056 - val_loss: 0.0  
169  
Epoch 83/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0  
169  
Epoch 84/100  
516/516 [=====] - 1s 2ms/step - loss: 0.0056 - val_loss: 0.0  
165  
Epoch 85/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0  
170  
Epoch 86/100  
516/516 [=====] - 1s 2ms/step - loss: 0.0056 - val_loss: 0.0  
159  
Epoch 87/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0  
160  
Epoch 88/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0  
167  
Epoch 89/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0057 - val_loss: 0.0  
161  
Epoch 90/100  
516/516 [=====] - 1s 2ms/step - loss: 0.0056 - val_loss: 0.0  
158  
Epoch 91/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0  
172  
Epoch 92/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0057 - val_loss: 0.0  
163  
Epoch 93/100  
516/516 [=====] - 1s 2ms/step - loss: 0.0056 - val_loss: 0.0  
161  
Epoch 94/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0057 - val_loss: 0.0  
160  
Epoch 95/100  
516/516 [=====] - 1s 2ms/step - loss: 0.0056 - val_loss: 0.0  
170  
Epoch 96/100  
516/516 [=====] - 1s 2ms/step - loss: 0.0056 - val_loss: 0.0  
163  
Epoch 97/100  
516/516 [=====] - 1s 2ms/step - loss: 0.0056 - val_loss: 0.0  
156  
Epoch 98/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0  
165  
Epoch 99/100  
516/516 [=====] - 1s 2ms/step - loss: 0.0055 - val_loss: 0.0  
160
```

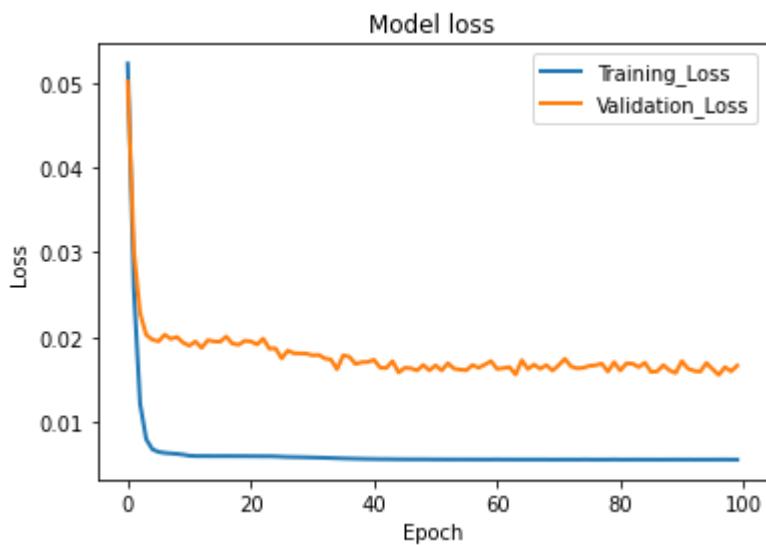
```
Epoch 100/100
516/516 [=====] - 1s 2ms/step - loss: 0.0056 - val_loss: 0.0
167
```

In [23]:

```
#Plot the model loss(train/test) for give number of epochs
def plot_loss(history):
    plt.plot(history['loss'], linewidth=2, label='Training_Loss')
    plt.plot(history['val_loss'], linewidth=2, label='Validation_Loss')
    plt.legend(loc='upper right')
    plt.title('Model loss')
    plt.ylabel('Loss')
    plt.xlabel('Epoch')
    #plt.ylim(ymin=0.70,ymax=1)
    plt.show()
```

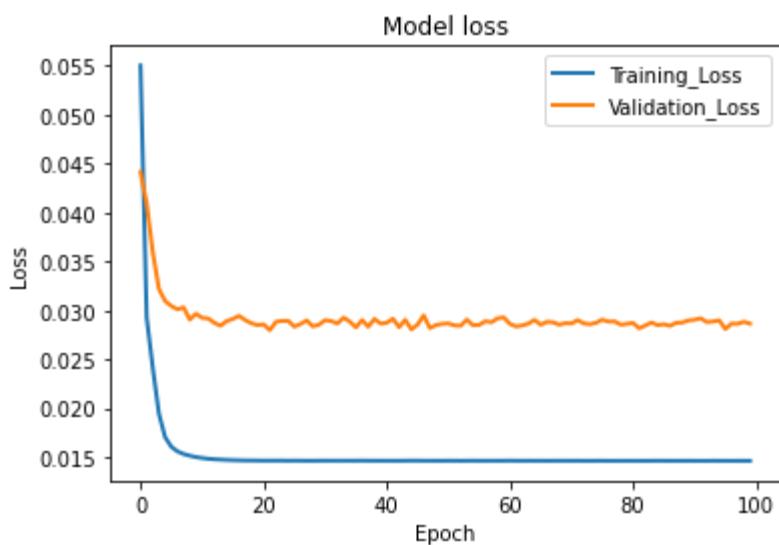
In [24]:

```
plot_loss(history_negative_class)
```



In [25]:

```
plot_loss(history_positive_class)
```



## 5 Threshold Computation & Plotting

This function computes the reconstruction error for each instance in test set

In [26]:

```
def mse_predictions(test, encoder):

    test=np.array(test)
    predictions=[]
    for i in range(0, test.shape[0]):
        ROW = np.array([test[i]])
        pred= encoder.predict(ROW)
        mse = np.mean(np.power(test[i] - pred, 2))
        predictions.append(mse)

    return predictions
```

In [27]:

```
def plot_results(predictions):
    df=pd.DataFrame(predictions,columns=['MSE'])

    df['MSE']=df['MSE'].round(6)

    mean=np.round(np.mean(df['MSE']),10)
    max=np.round(np.max(df['MSE']),10)
    min=np.round(np.min(df['MSE']),10)
    var=np.round(np.var(df['MSE']),10)
    med=np.round(np.median(df['MSE']),10)

    f, axes = plt.subplots(1, 2, figsize=(16,4))
    f.suptitle('Boxplots and Distribution plot for Reconstruction Error')

    sns.boxplot(x=df['MSE'], data=df, ax=axes[0])

    sns.distplot(x=df['MSE'], ax=axes[1])
    print('mean={},median={},max={},min={},variance={}'.format(mean,med,max,min,var))

    fig, ax = plt.subplots(figsize=(16,5))
    ax.set_title('MSE plot ')
    plt.plot(df['MSE'], '.', label="MSE")

    plt.legend()
    plt.show()
```

Adjust Manually based on name of class column

In [28]:

```
test_pos_class=test[test['class']=='UP']
test_neg_class=test[test['class']=='DOWN']
```

In [29]:

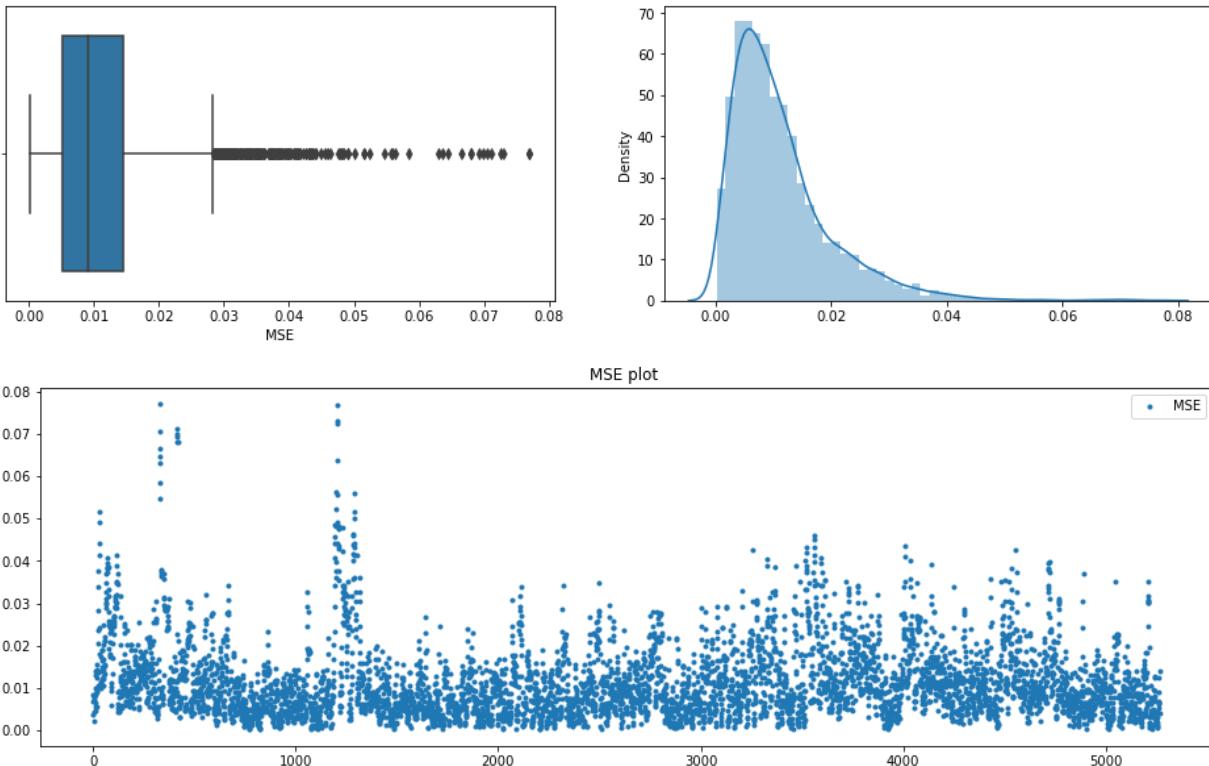
```
del test_pos_class['class']
del test_neg_class['class']
```

## 5. A) Negative Class Data

```
In [30]: predictions_neg=mse_predictions(test_neg_class,encoder_neg_class)
```

```
In [31]: plot_results(predictions_neg)
```

mean=0.0113257448, median=0.009095 , max=0.076956, min=0.000197, variance=7.87227e-05  
Boxplots and Distribution plot for Reconstruction Error



```
In [32]: def make_batches(test_data):
    data=np.array(test_data)
    batch_size=32
    batches={}
    count=0
    for index in range(0,data.shape[0],batch_size):
        batches[count]=data[index:min(index+batch_size,data.shape[0]),:]
        count+=1
    return batches
    #print(batch.shape)
```

```
In [33]: batches_neg=make_batches(test_neg_class)
```

Functions to test normality of batch loss values

In [34]:

```
# Anderson-Darling Test
def Anderson_Darling(data):
    result = anderson(data)
    print('Statistic: %.3f' % result.statistic)
    p = 0
    for i in range(len(result.critical_values)):
        sl, cv = result.significance_level[i], result.critical_values[i]
        if result.statistic < result.critical_values[i]:
            print('%.3f: %.3f, data looks normal (fail to reject H0)' % (sl, cv))
        else:
            print('%.3f: %.3f, data does not look normal (reject H0)' % (sl, cv))
```

In [35]:

```
# D'Agostino and Pearson's Test
def D_Agostino(data):
    stat, p = normaltest(data)
    print('Statistics=% .3f, p=% .3f' % (stat, p))
    # interpret
    alpha = 0.05
    if p > alpha:
        print('Sample looks Gaussian (fail to reject H0)')
    else:
        print('Sample does not look Gaussian (reject H0)')
```

In [36]:

```
# Shapiro-Wilk Test
def Shapiro_Wilk(data):
    stat, p = shapiro(data)
    print('Statistics=% .3f, p=% .10f' % (stat, p))
    # interpret
    alpha = 0.05
    if p > alpha:
        print('Sample looks Gaussian (fail to reject H0)')
    else:
        print('Sample does not look Gaussian (reject H0)')
```

In [37]:

```
# This function computes reconstruction error for each instance as well as average
def compute_instance_loss_batch_loss(batch,batch_size,encoder):
    mse_list=[]
    mse_sum=0
    for i in range(0,batch.shape[0]):
        ROW = np.array([batch[i]])
        pred= encoder.predict(ROW)
        mse = np.round(np.mean(np.power(batch[i] - pred, 2)),5)
        mse_list.append(mse)
        mse_sum+=mse
    avg_mse=mse_sum/batch_size
    return mse_list,avg_mse
```

In [38]:

```
# This function computes recon.error of all the batches . Checks each batch for normality
def check_all_batch_normality(batches,encoder,batch_size):
    batch_avg_mse=[]
    batch_mse_values={}
    for b in batches:
        print("\n *****")
        print('Batch: {}'.format(b))
        mse_list,average_mse=compute_instance_loss_batch_loss(batches[b],batch_size,encoder)
        plot_results(mse_list)

        #print("\nShapiro_Wilk Test")
        #Shapiro_Wilk(mse_list)
        # print("D_Agostino Test")
        #D_Agostino(mse_list)
        print("\nAnderson_Darling Test")
        Anderson_Darling(mse_list)
        batch_avg_mse.append(average_mse)
        batch_mse_values[b]=mse_list
    return batch_avg_mse,batch_mse_values
```

In [39]:

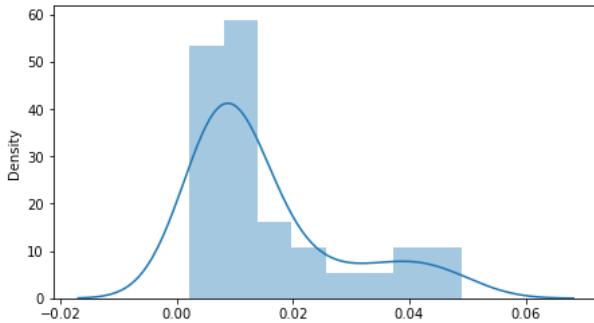
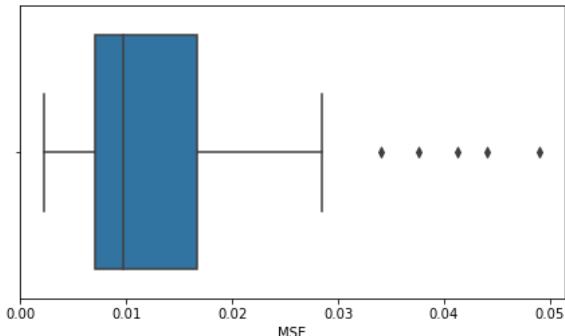
```
batch_avg_mse_neg_en_neg,batch_mse_values_neg_en_neg=check_all_batch_normality(batches)
```

```
*****
```

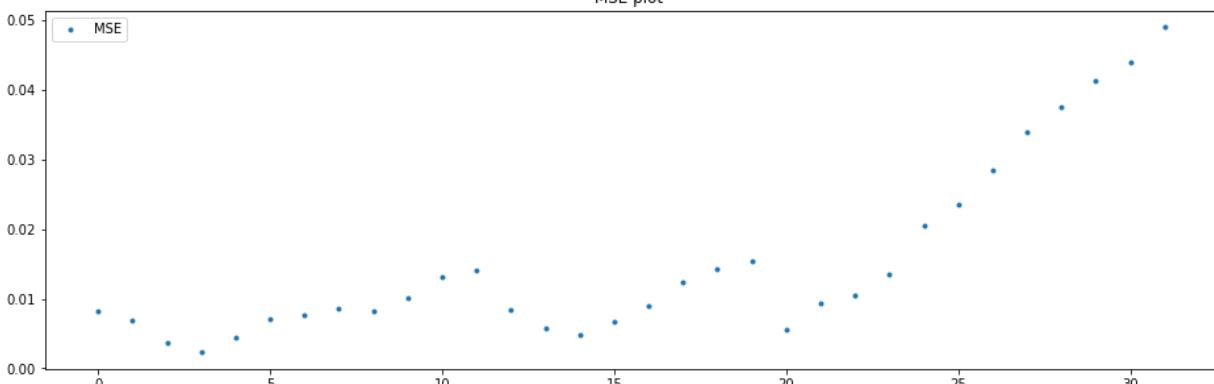
```
Batch: 0
```

```
mean=0.015259375, median=0.009685 , max=0.04902, min=0.00227, variance=0.0001587489
```

Boxplots and Distribution plot for Reconstruction Error



MSE plot



**Anderson\_Darling Test**

Statistic: 2.696

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

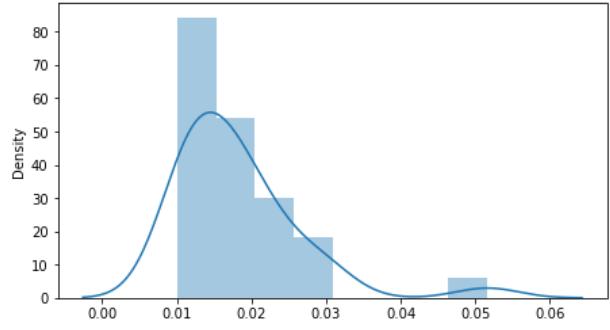
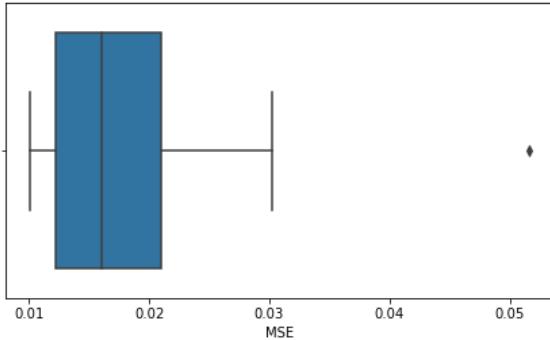
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

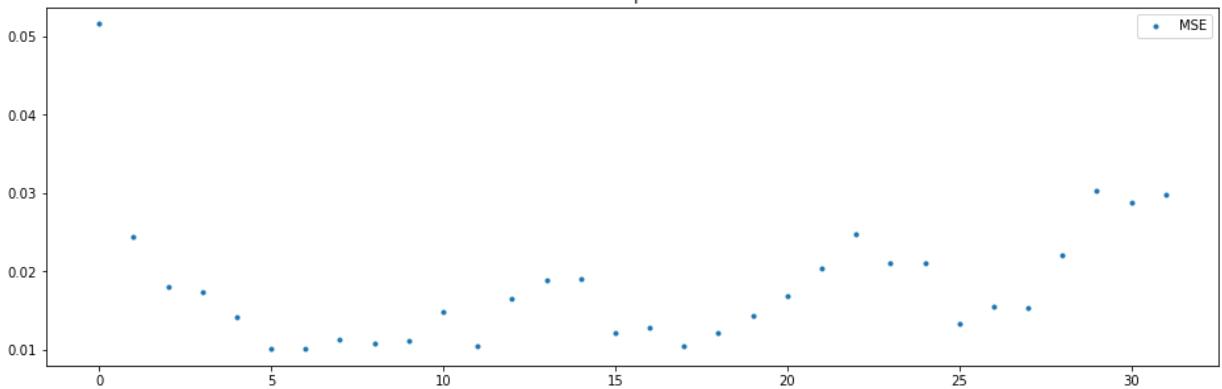
Batch: 1

mean=0.0181325, median=0.016 , max=0.05161, min=0.01009, variance=6.92172e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 1.507

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

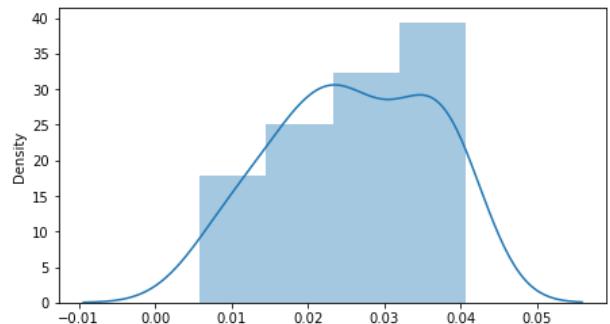
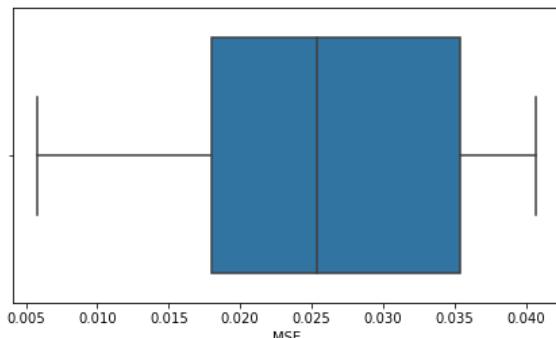
1.000: 0.992, data does not look normal (reject H0)

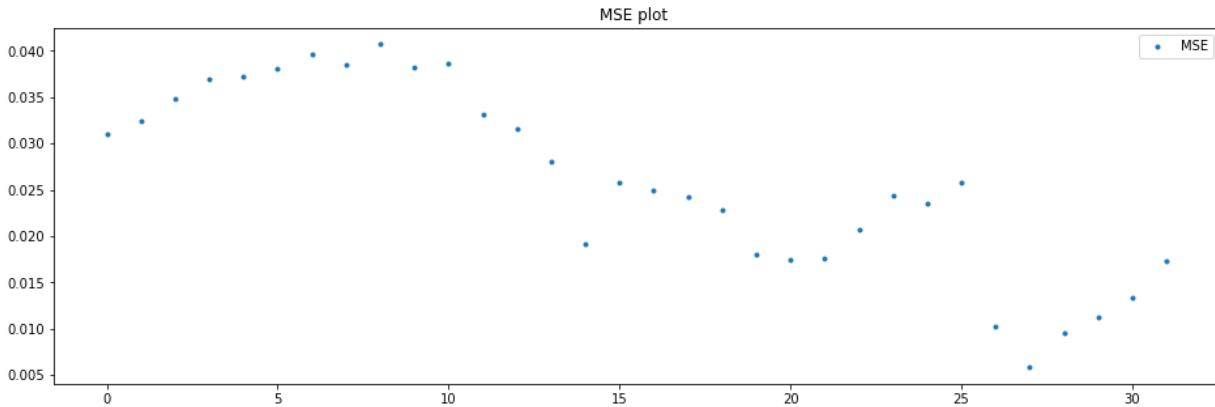
\*\*\*\*\*

Batch: 2

mean=0.0259678125, median=0.025345 , max=0.04071, min=0.00581, variance=9.93586e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.496

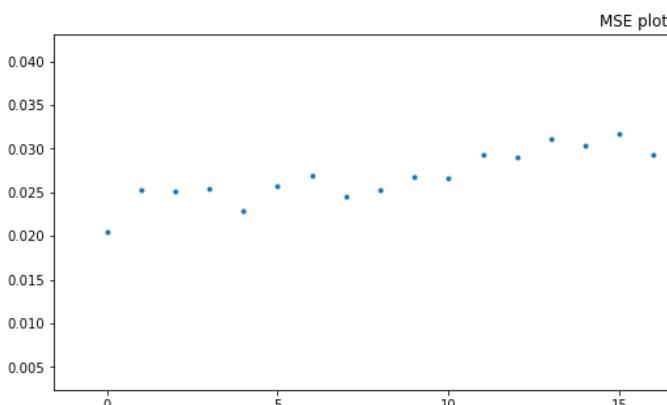
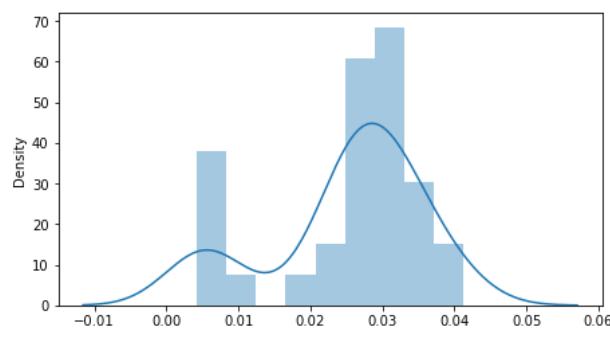
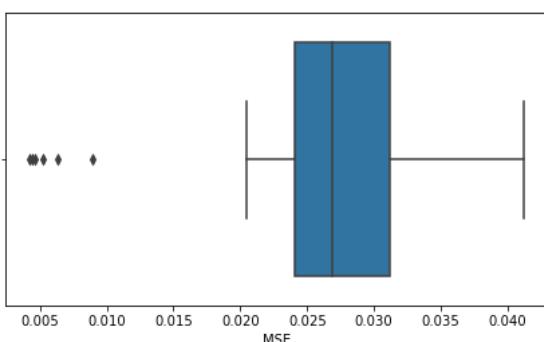
15.000: 0.523, data looks normal (fail to reject H0)  
 10.000: 0.596, data looks normal (fail to reject H0)  
 5.000: 0.715, data looks normal (fail to reject H0)  
 2.500: 0.834, data looks normal (fail to reject H0)  
 1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 3

mean=0.0250640625, median=0.026855 , max=0.04122, min=0.00424, variance=0.000107915

Boxplots and Distribution plot for Reconstruction Error



Anderson\_Darling Test

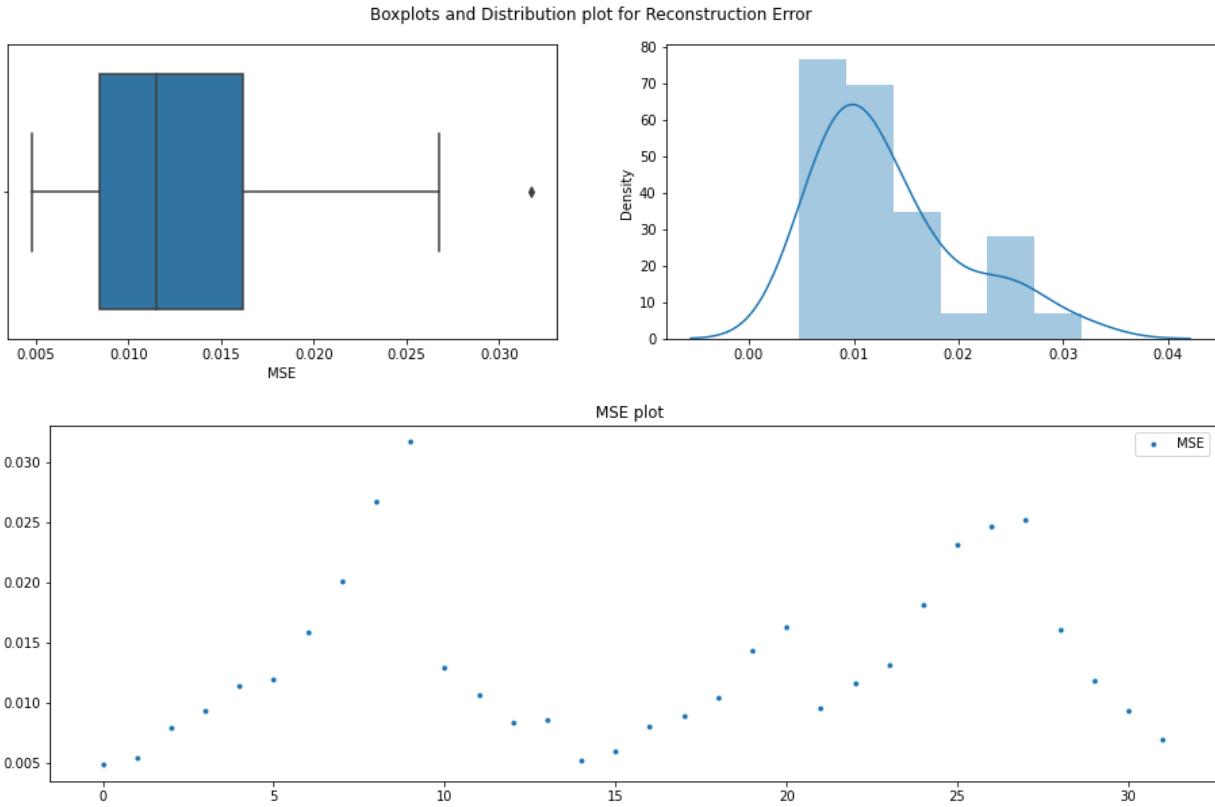
Statistic: 1.802

15.000: 0.523, data does not look normal (reject H0)  
 10.000: 0.596, data does not look normal (reject H0)  
 5.000: 0.715, data does not look normal (reject H0)  
 2.500: 0.834, data does not look normal (reject H0)  
 1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 4

mean=0.0132696875, median=0.01148 , max=0.03173, min=0.00481, variance=4.60687e-05



#### Anderson\_Darling Test

Statistic: 1.175

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

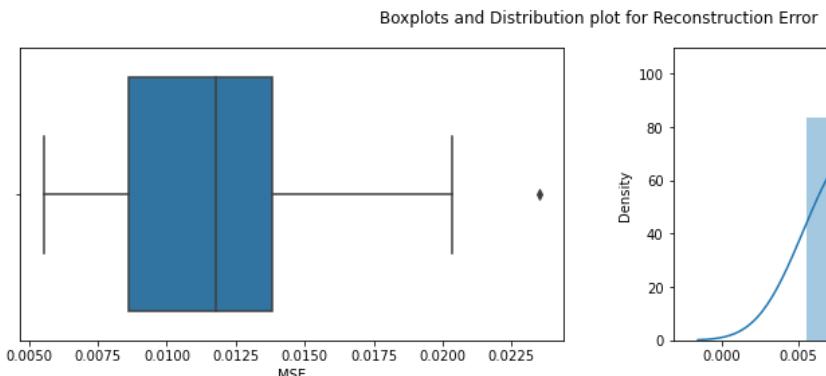
2.500: 0.834, data does not look normal (reject H0)

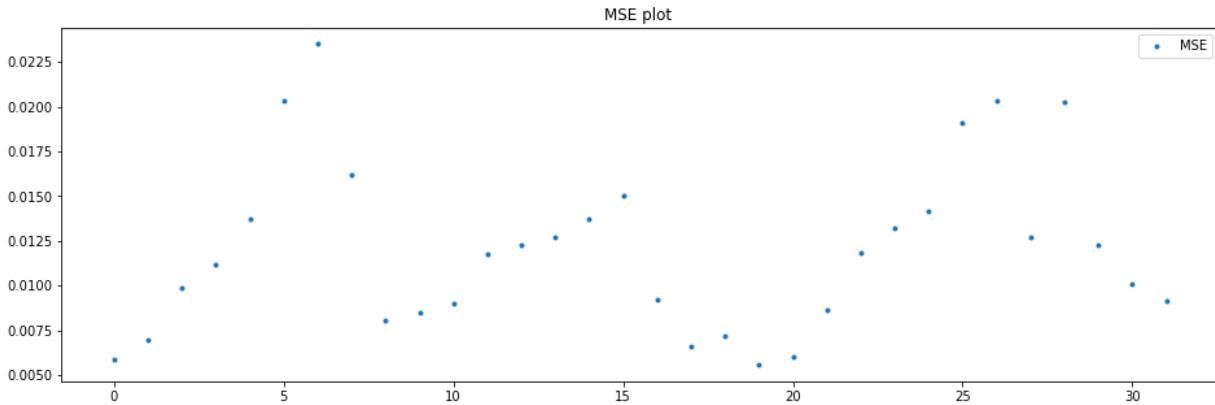
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 5

mean=0.01202875, median=0.011785 , max=0.02351, min=0.00555, variance=2.1706e-05





## Anderson\_Darling Test

Statistic: 0.666

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

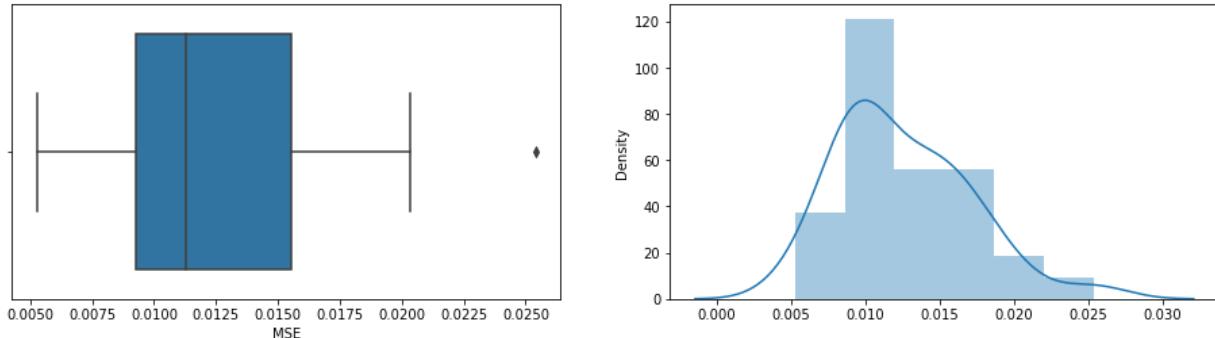
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

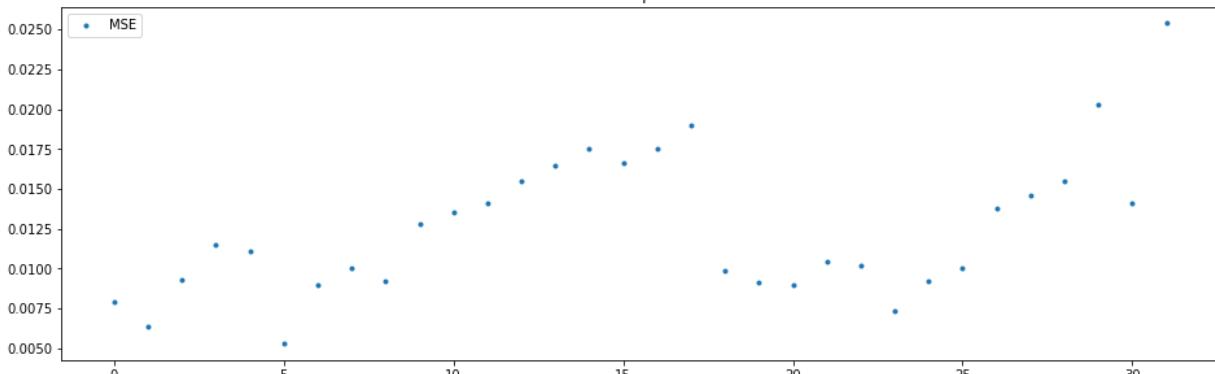
Batch: 6

mean=0.0125625, median=0.0113 , max=0.0254, min=0.00528, variance=1.93295e-05

Boxplots and Distribution plot for Reconstruction Error



## MSE plot



## Anderson\_Darling Test

Statistic: 0.590

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

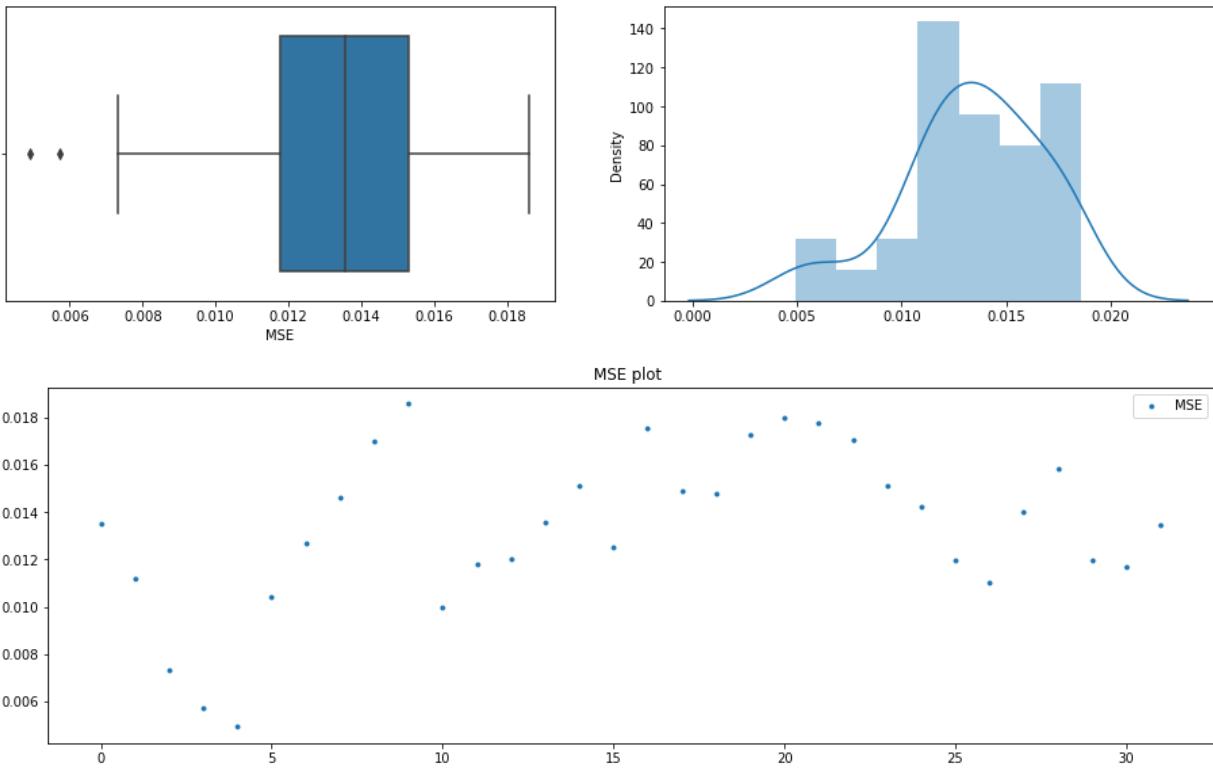
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 7

mean=0.013369375, median=0.01354 , max=0.01859, min=0.00492, variance=1.11179e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson\_Darling Test**

Statistic: 0.435

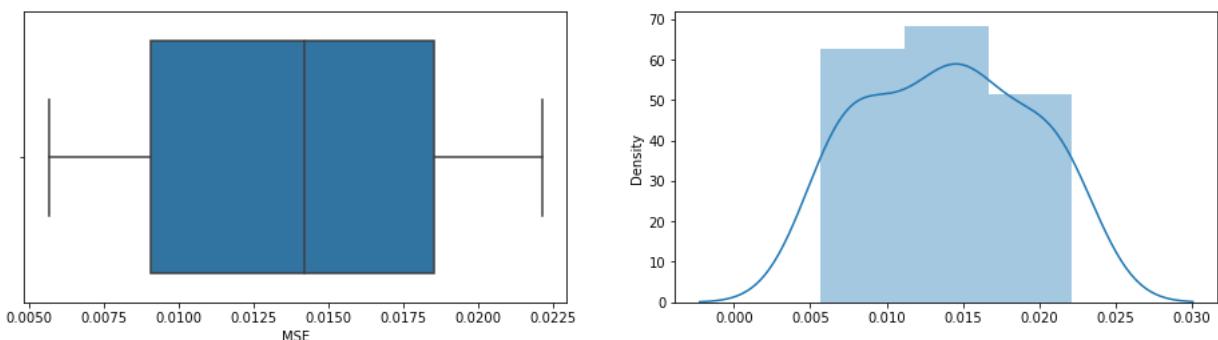
15.000: 0.523, data looks normal (fail to reject H<sub>0</sub>)  
 10.000: 0.596, data looks normal (fail to reject H<sub>0</sub>)  
 5.000: 0.715, data looks normal (fail to reject H<sub>0</sub>)  
 2.500: 0.834, data looks normal (fail to reject H<sub>0</sub>)  
 1.000: 0.992, data looks normal (fail to reject H<sub>0</sub>)

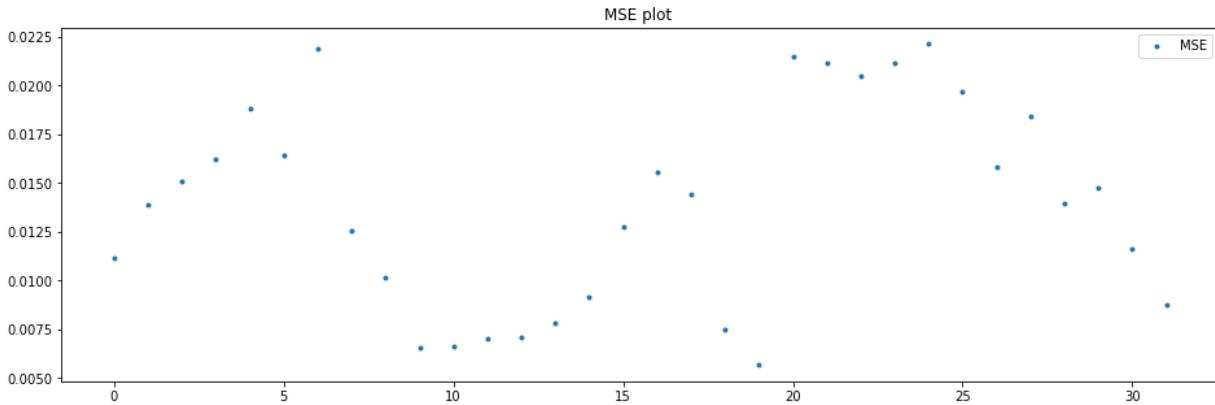
\*\*\*\*\*

Batch: 8

mean=0.0139390625, median=0.014225 , max=0.02214, min=0.00567, variance=2.69273e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.533

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

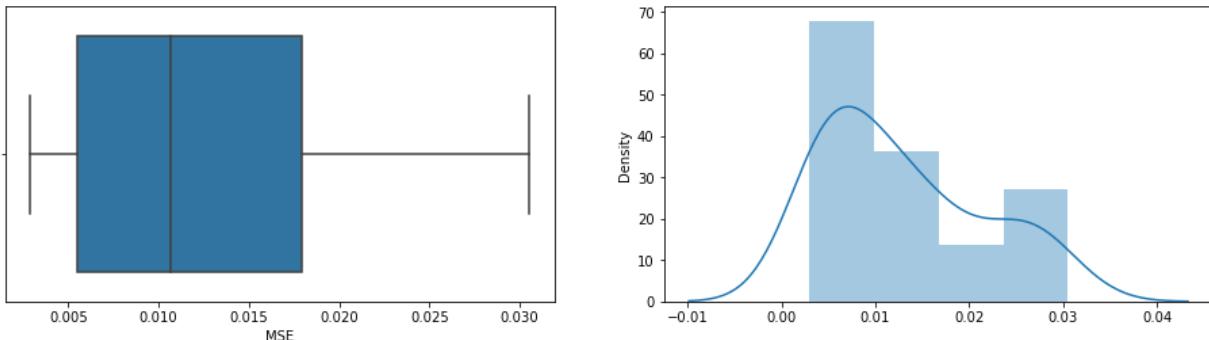
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

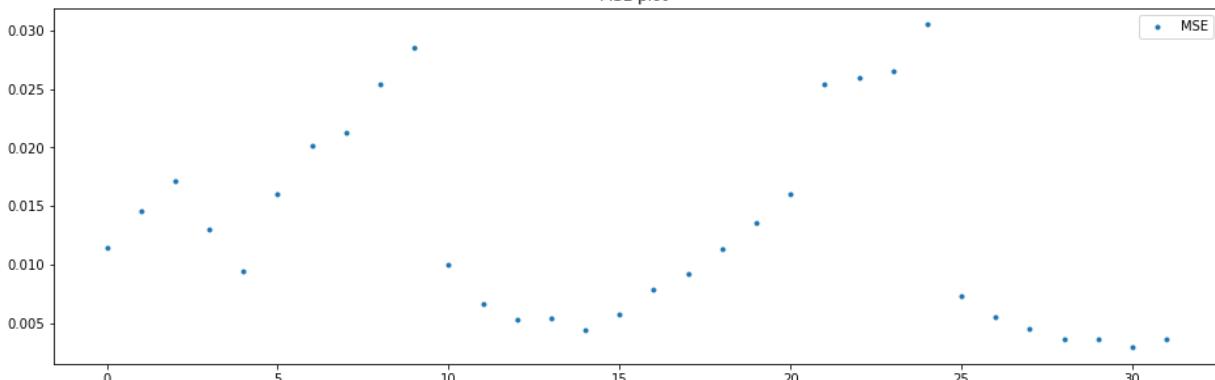
Batch: 9

mean=0.0128740625, median=0.01066 , max=0.03053, min=0.00289, variance=7.0187e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 1.142

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

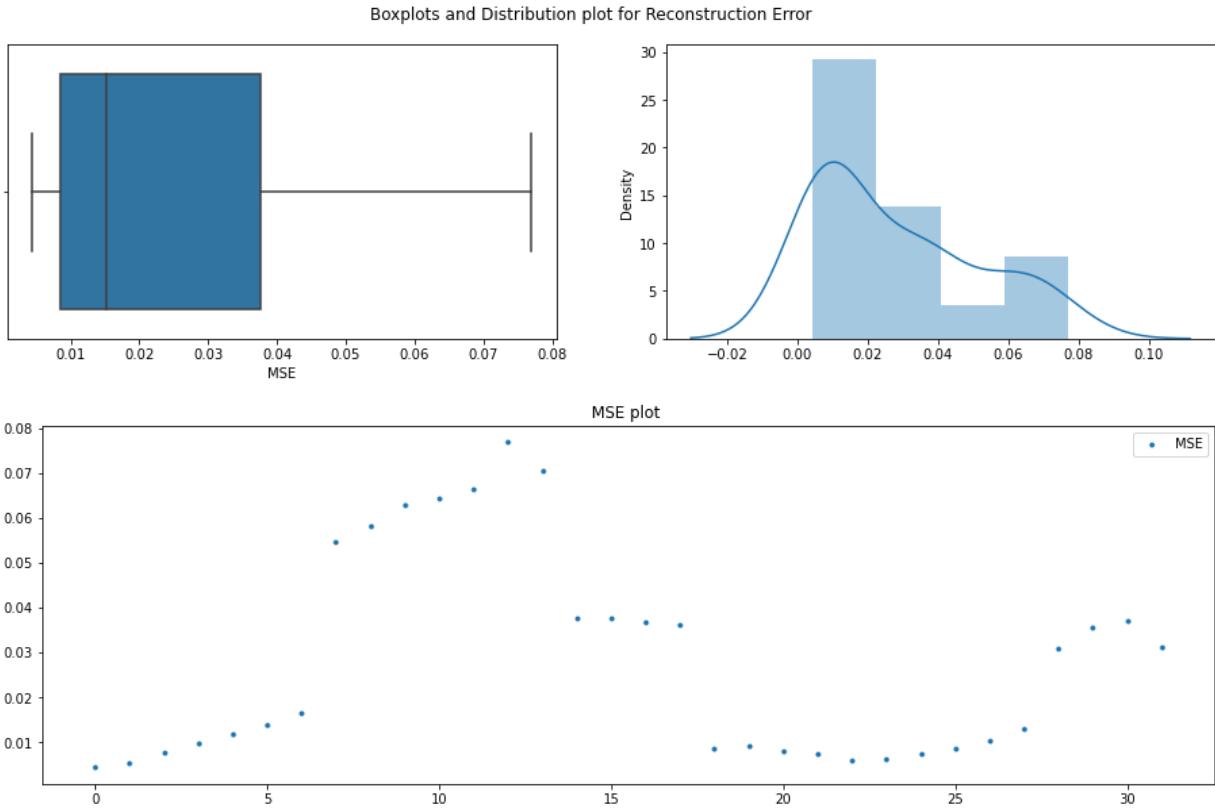
2.500: 0.834, data does not look normal (reject H0)

1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 10

mean=0.02792875, median=0.01528 , max=0.07696, min=0.00441, variance=0.0005185834



**Anderson\_Darling Test**

Statistic: 1.973

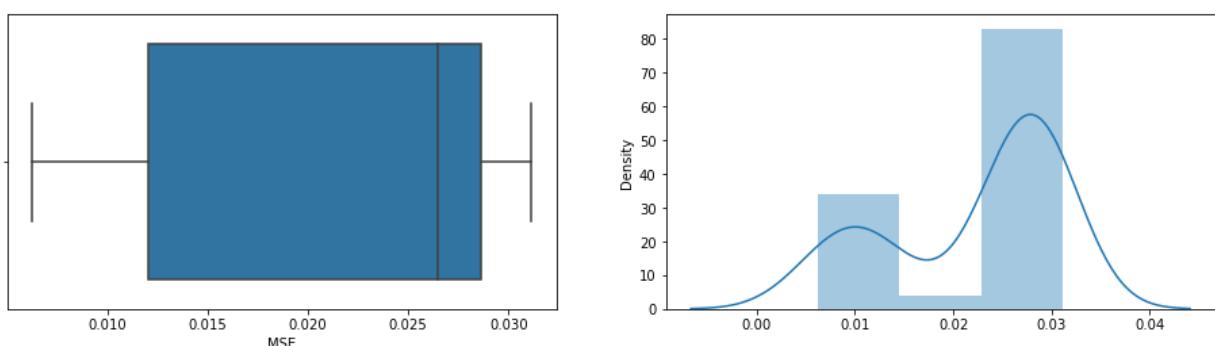
15.000: 0.523, data does not look normal (reject H<sub>0</sub>)  
 10.000: 0.596, data does not look normal (reject H<sub>0</sub>)  
 5.000: 0.715, data does not look normal (reject H<sub>0</sub>)  
 2.500: 0.834, data does not look normal (reject H<sub>0</sub>)  
 1.000: 0.992, data does not look normal (reject H<sub>0</sub>)

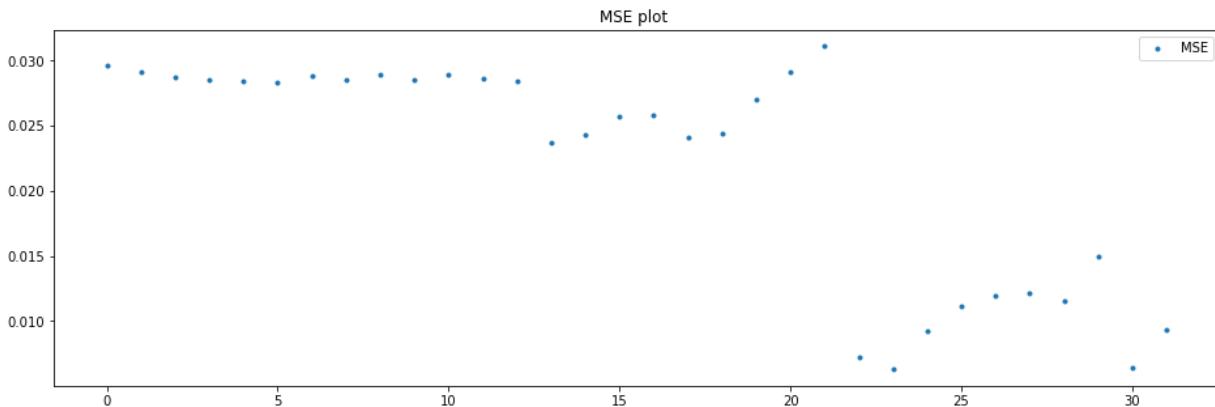
\*\*\*\*\*

Batch: 11

mean=0.022158125, median=0.026435 , max=0.03112, min=0.00627, variance=7.21521e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 3.173

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

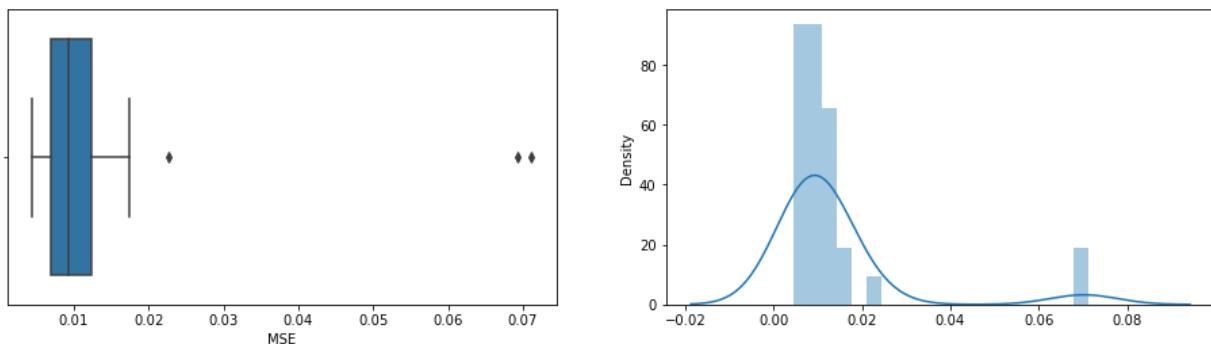
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

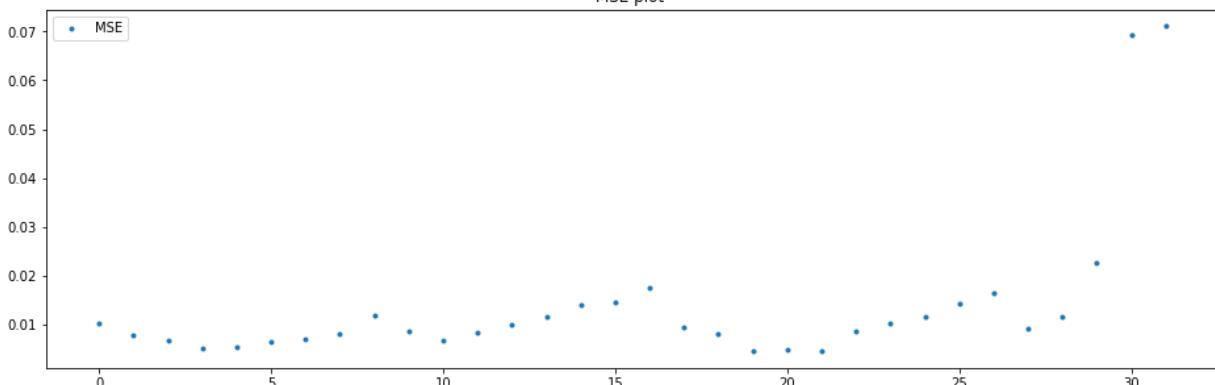
Batch: 12

mean=0.0136, median=0.009185 , max=0.0711, min=0.00442, variance=0.0002296599

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 5.861

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

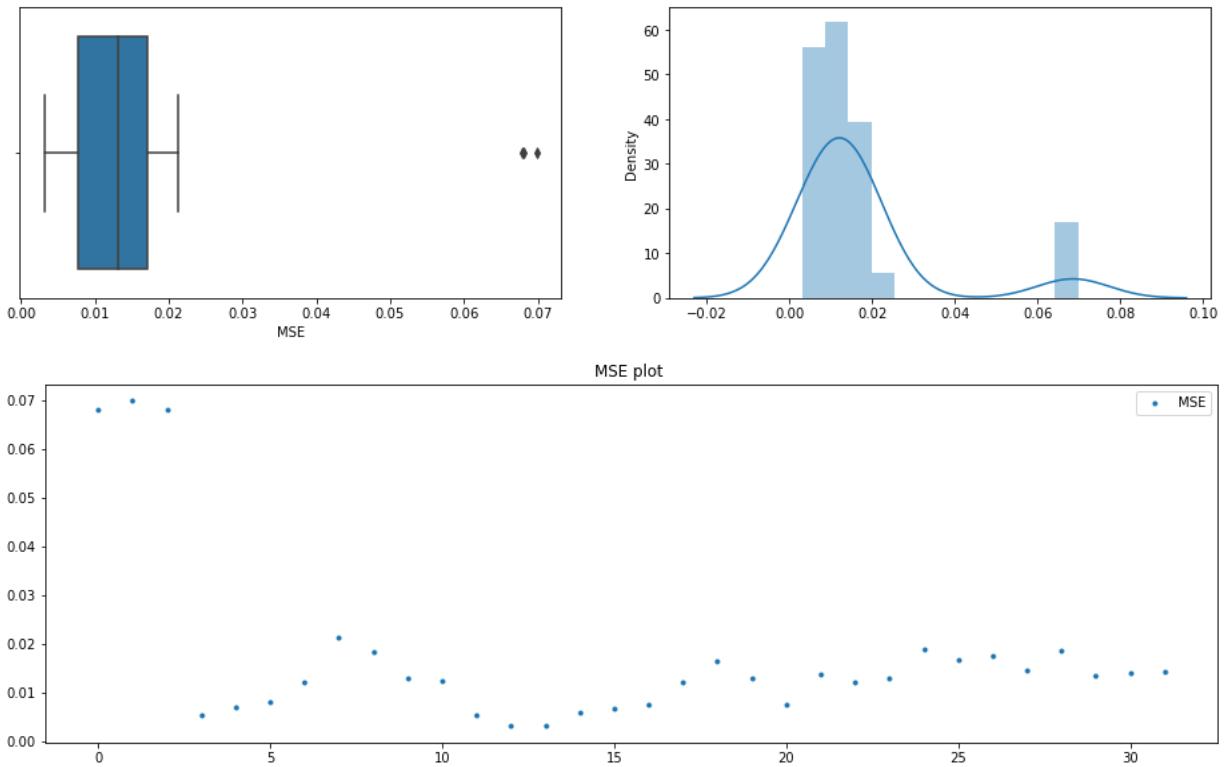
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 13

mean=0.0172625, median=0.01304 , max=0.06985, min=0.00316, variance=0.0002946668

Boxplots and Distribution plot for Reconstruction Error



## Anderson\_Darling Test

Statistic: 4.976

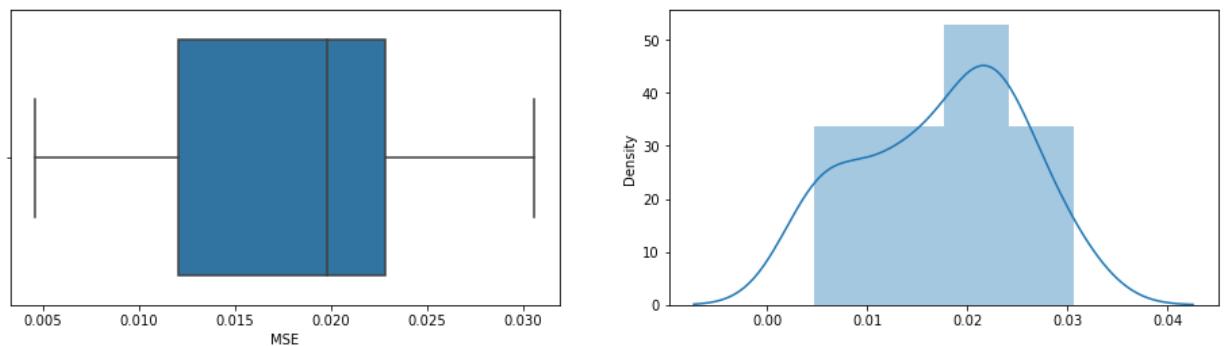
15.000: 0.523, data does not look normal (reject H<sub>0</sub>)  
 10.000: 0.596, data does not look normal (reject H<sub>0</sub>)  
 5.000: 0.715, data does not look normal (reject H<sub>0</sub>)  
 2.500: 0.834, data does not look normal (reject H<sub>0</sub>)  
 1.000: 0.992, data does not look normal (reject H<sub>0</sub>)

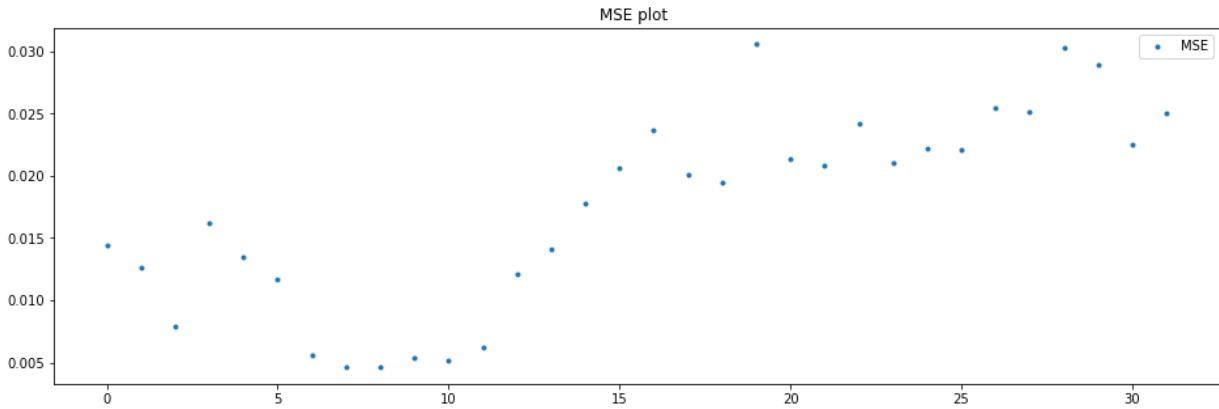
\*\*\*\*\*

Batch: 14

mean=0.01735375, median=0.01978 , max=0.03057, min=0.0046, variance=6.14533e-05

Boxplots and Distribution plot for Reconstruction Error





## Anderson\_Darling Test

Statistic: 0.645

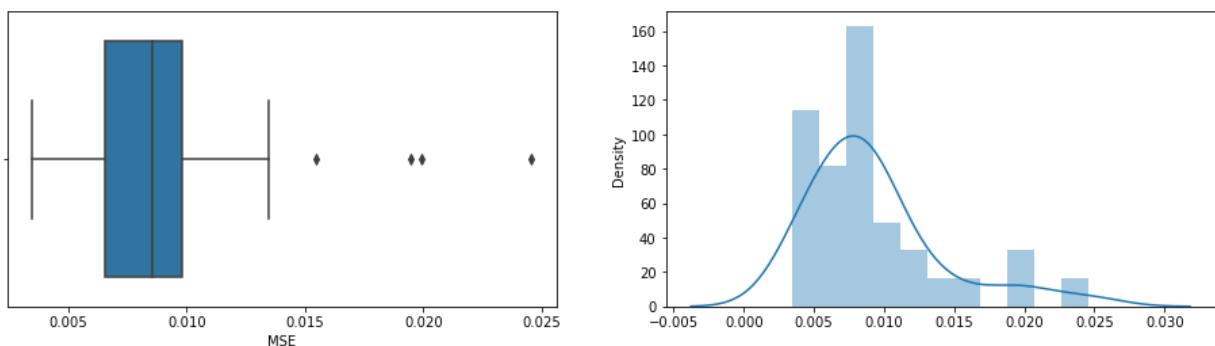
15.000: 0.523, data does not look normal (reject H0)  
 10.000: 0.596, data does not look normal (reject H0)  
 5.000: 0.715, data looks normal (fail to reject H0)  
 2.500: 0.834, data looks normal (fail to reject H0)  
 1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

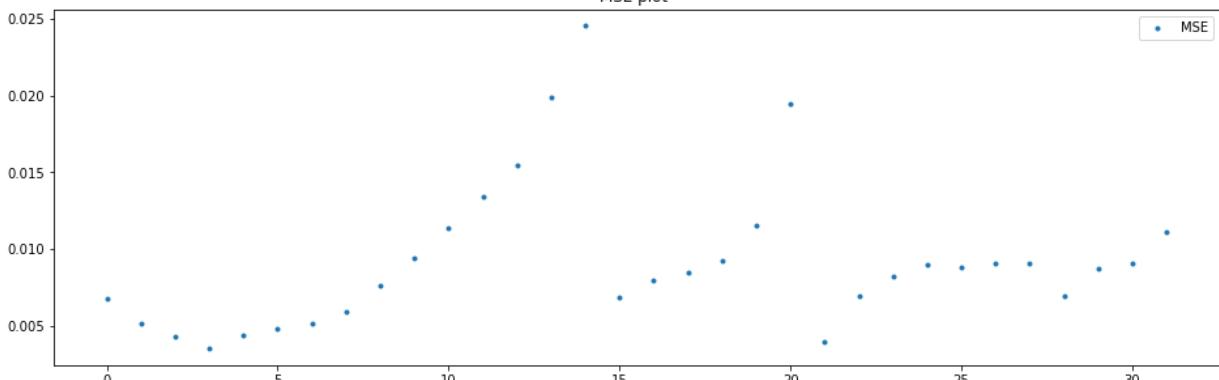
Batch: 15

mean=0.0092471875, median=0.00856 , max=0.02455, min=0.00348, variance=2.26719e-05

Boxplots and Distribution plot for Reconstruction Error



## MSE plot



## Anderson\_Darling Test

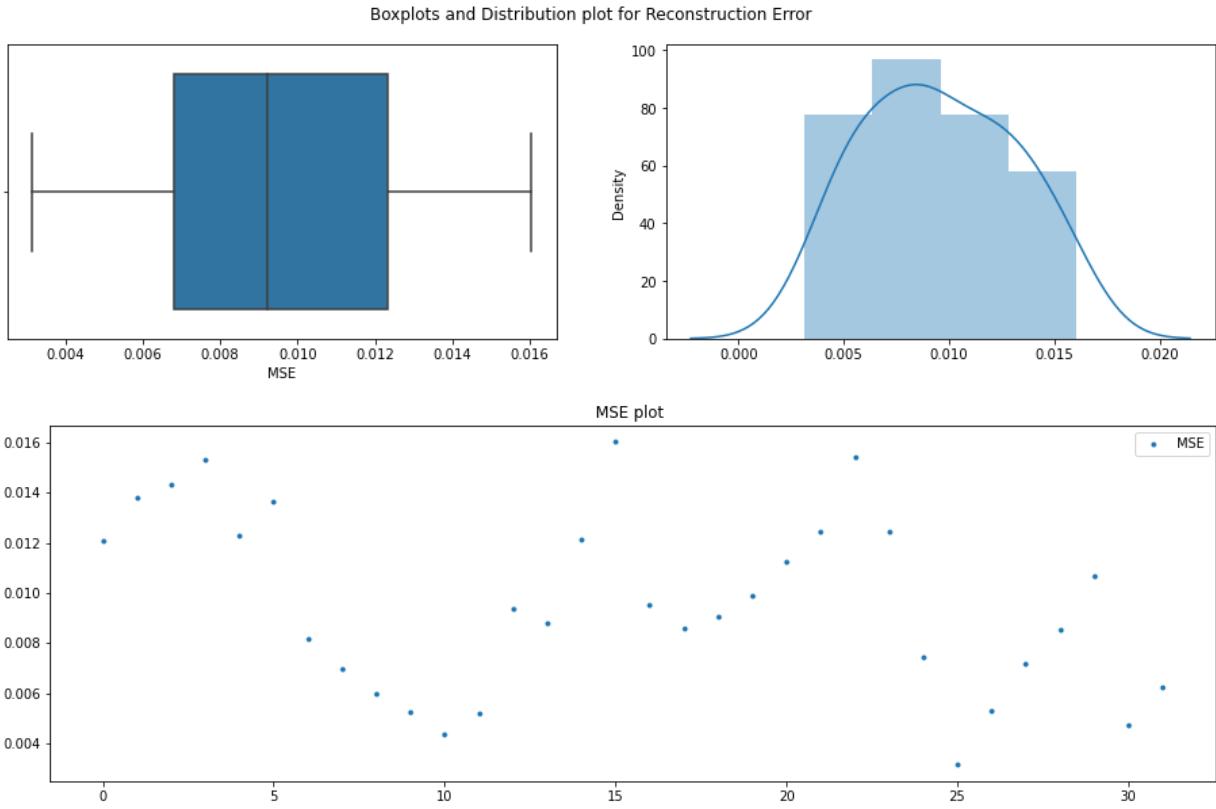
Statistic: 1.652

15.000: 0.523, data does not look normal (reject H0)  
 10.000: 0.596, data does not look normal (reject H0)  
 5.000: 0.715, data does not look normal (reject H0)  
 2.500: 0.834, data does not look normal (reject H0)  
 1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 16

mean=0.0095484375, median=0.009215 , max=0.01603, min=0.00314, variance=1.25422e-05



#### Anderson\_Darling Test

Statistic: 0.308

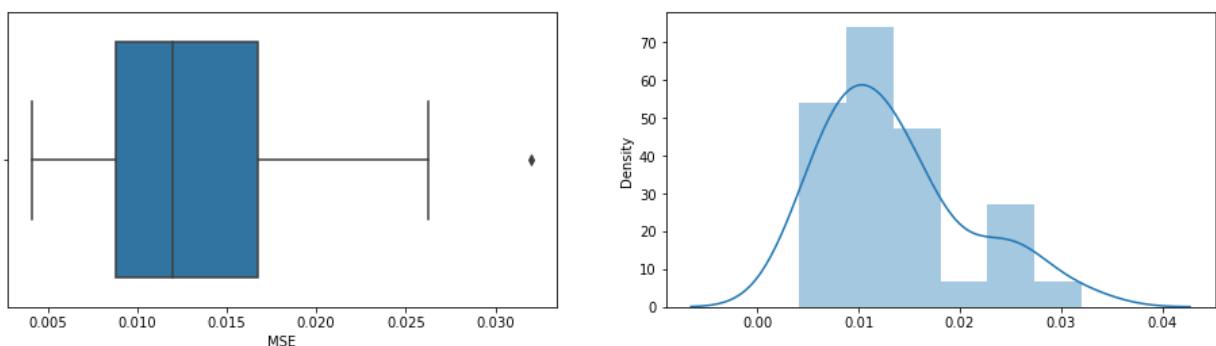
15.000: 0.523, data looks normal (fail to reject H0)  
 10.000: 0.596, data looks normal (fail to reject H0)  
 5.000: 0.715, data looks normal (fail to reject H0)  
 2.500: 0.834, data looks normal (fail to reject H0)  
 1.000: 0.992, data looks normal (fail to reject H0)

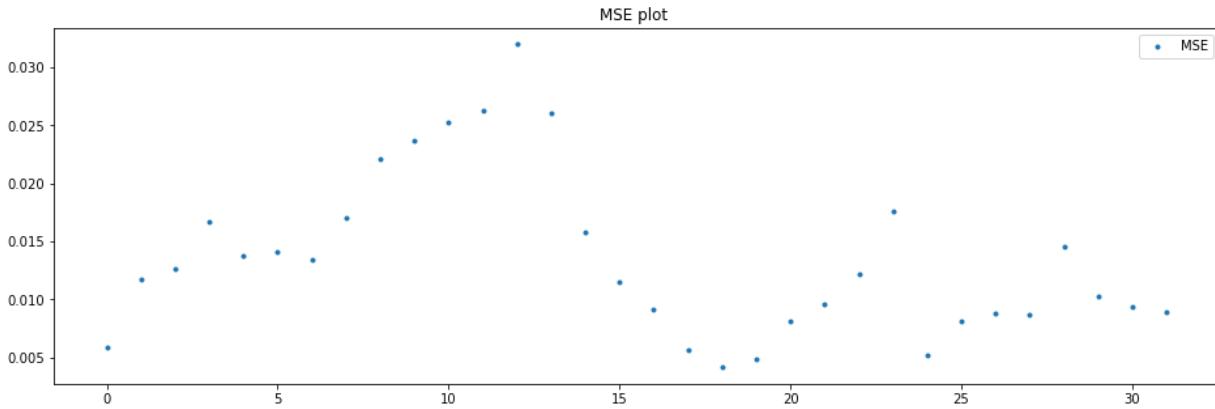
\*\*\*\*\*

Batch: 17

mean=0.0135409375, median=0.01201 , max=0.032, min=0.00414, variance=4.9189e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.959

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

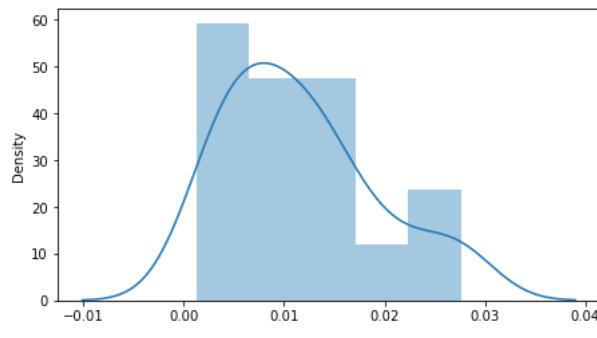
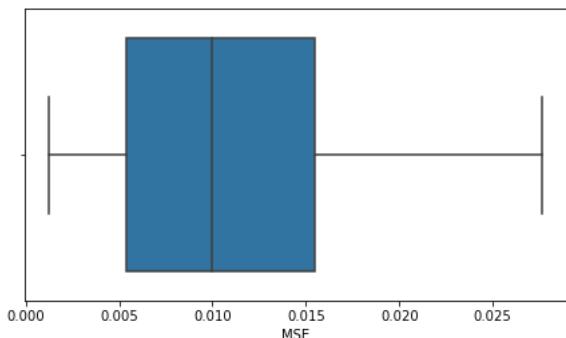
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

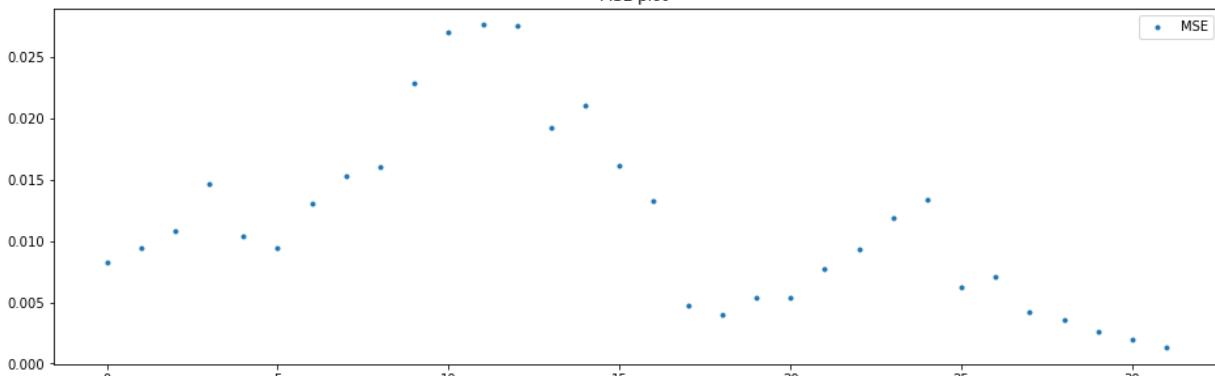
Batch: 18

mean=0.0116059375, median=0.009945 , max=0.02766, min=0.00128, variance=5.52795e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.684

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

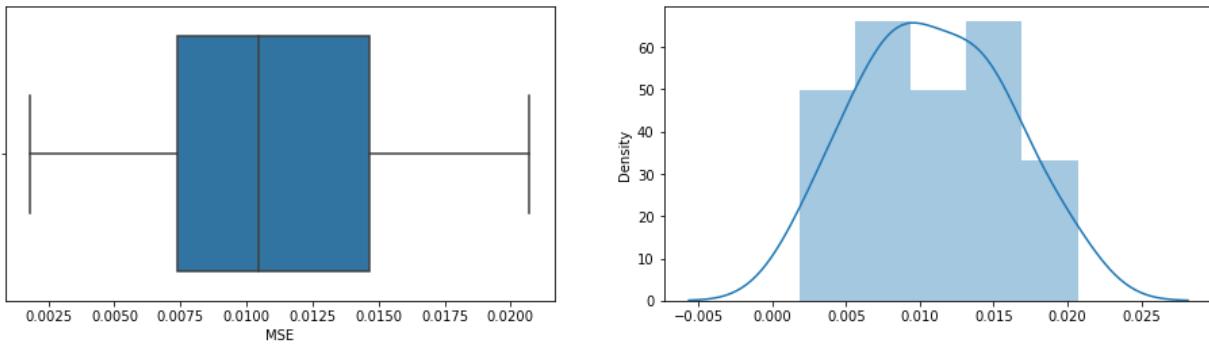
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

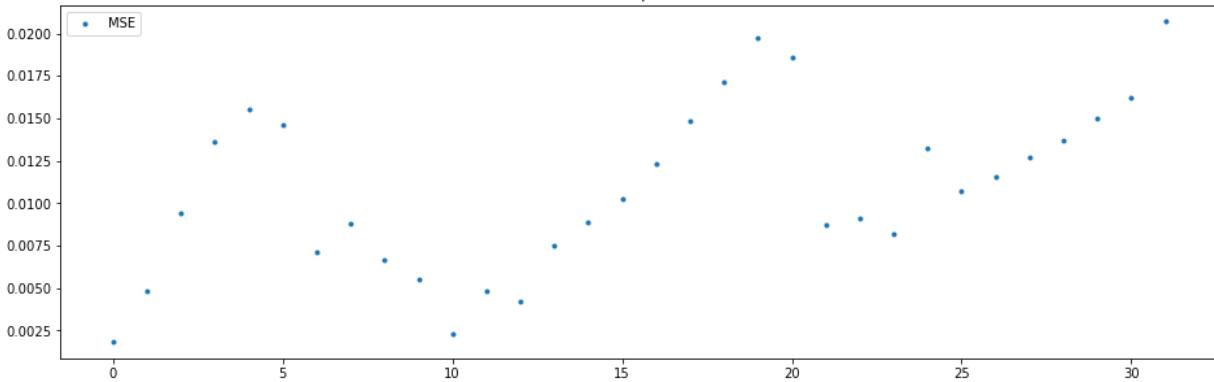
Batch: 19

mean=0.0108846875, median=0.01046 , max=0.0207, min=0.00181, variance=2.39939e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson\_Darling Test**

Statistic: 0.165

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

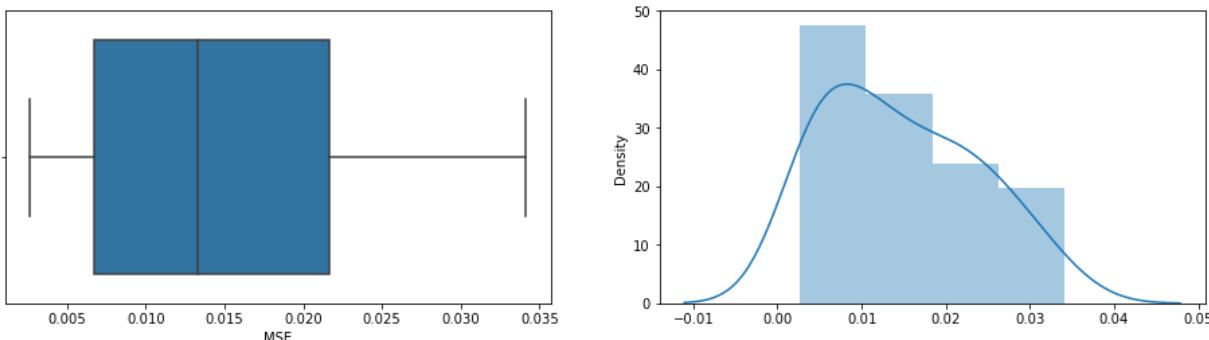
1.000: 0.992, data looks normal (fail to reject H0)

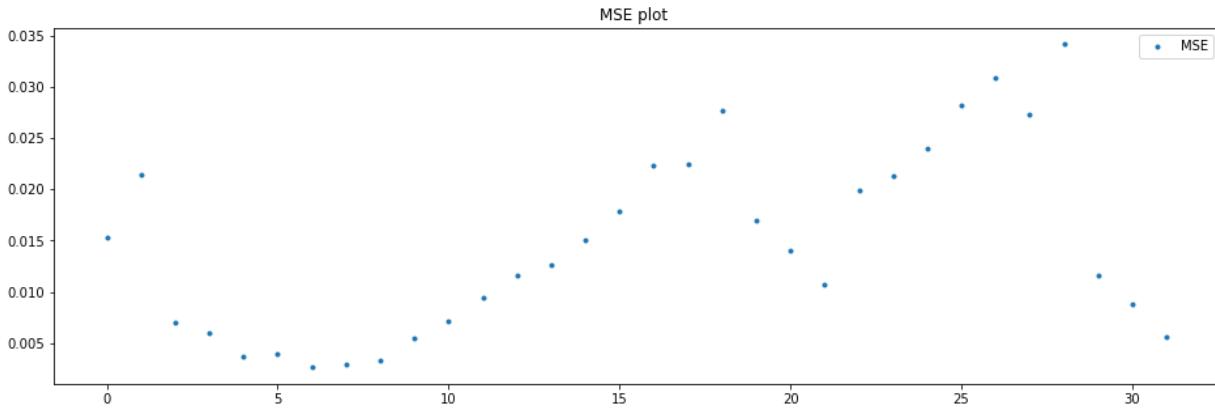
\*\*\*\*\*

Batch: 20

mean=0.014729375, median=0.01332 , max=0.03413, min=0.00263, variance=8.09035e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.554

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

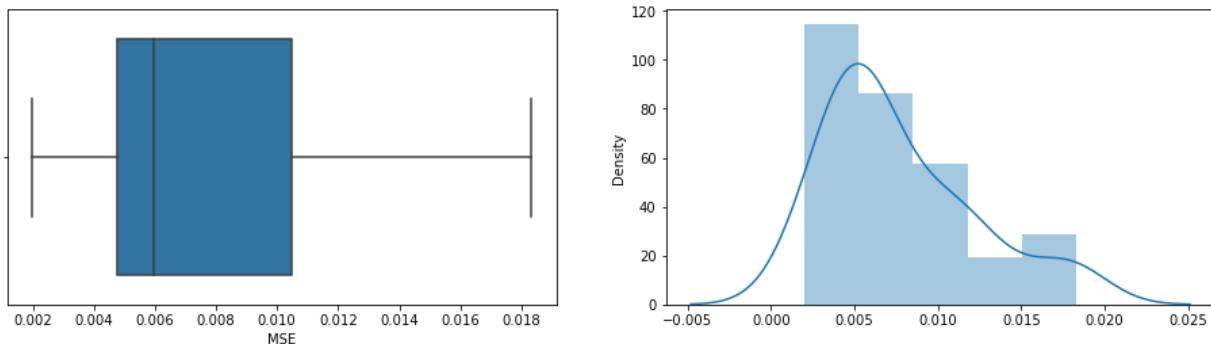
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

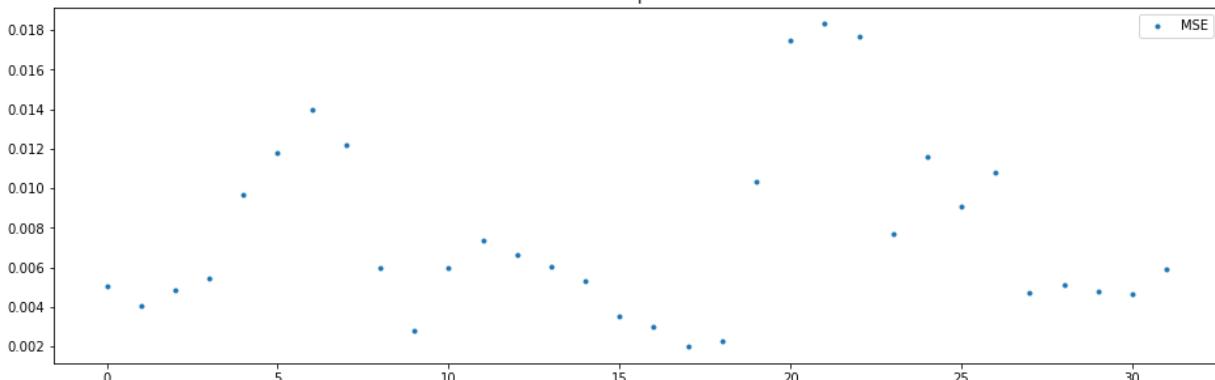
Batch: 21

mean=0.00769375, median=0.00598 , max=0.01832, min=0.00198, variance=1.97554e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 1.306

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

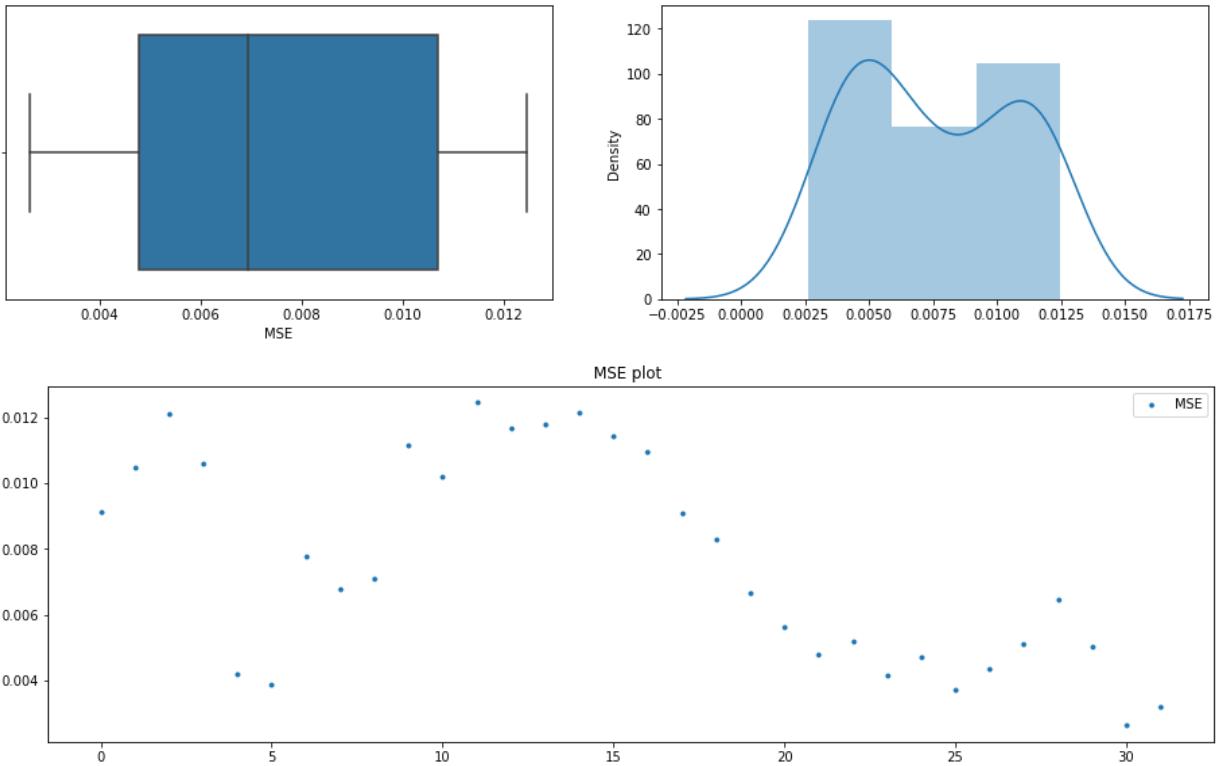
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 22

mean=0.00759375, median=0.00693 , max=0.01246, min=0.00263, variance=9.8509e-06

Boxplots and Distribution plot for Reconstruction Error



## Anderson\_Darling Test

Statistic: 0.993

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

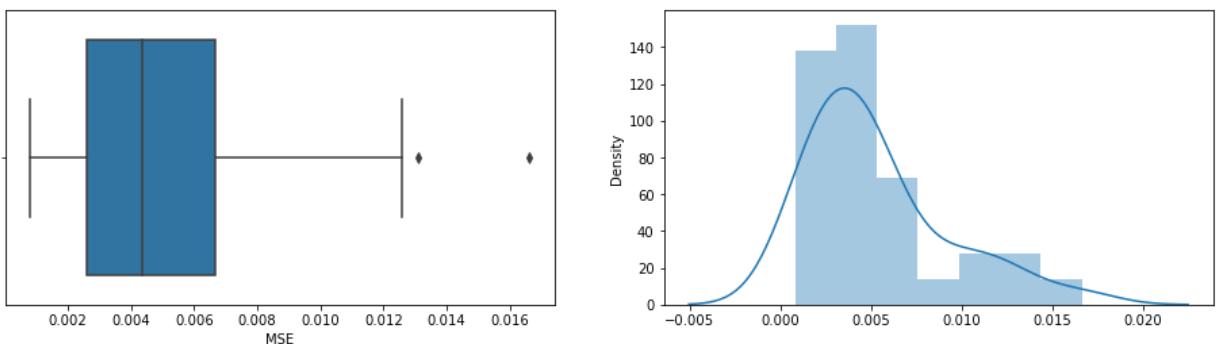
1.000: 0.992, data does not look normal (reject H0)

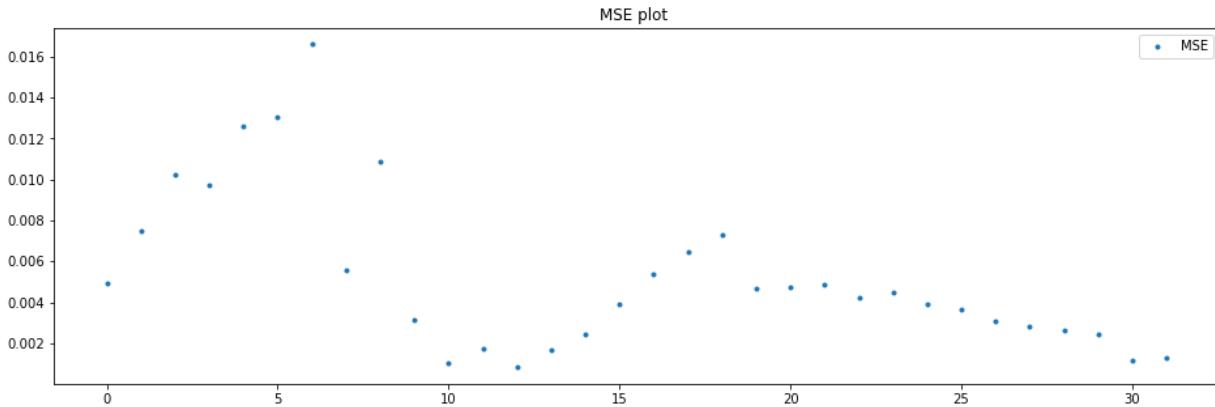
\*\*\*\*\*

Batch: 23

mean=0.0052846875, median=0.004375 , max=0.01661, min=0.00081, variance=1.4778e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 1.372

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

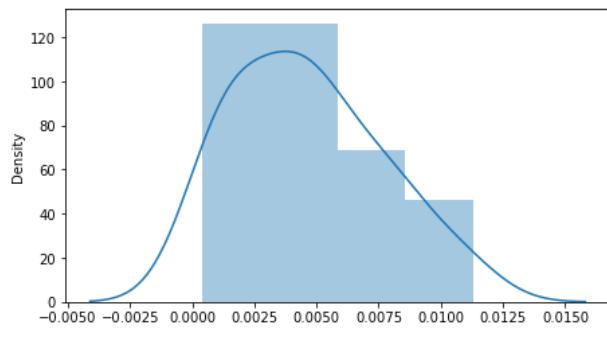
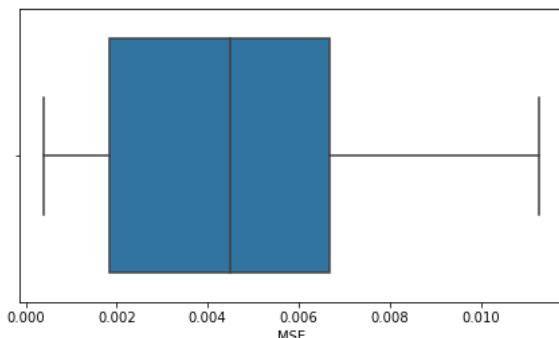
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

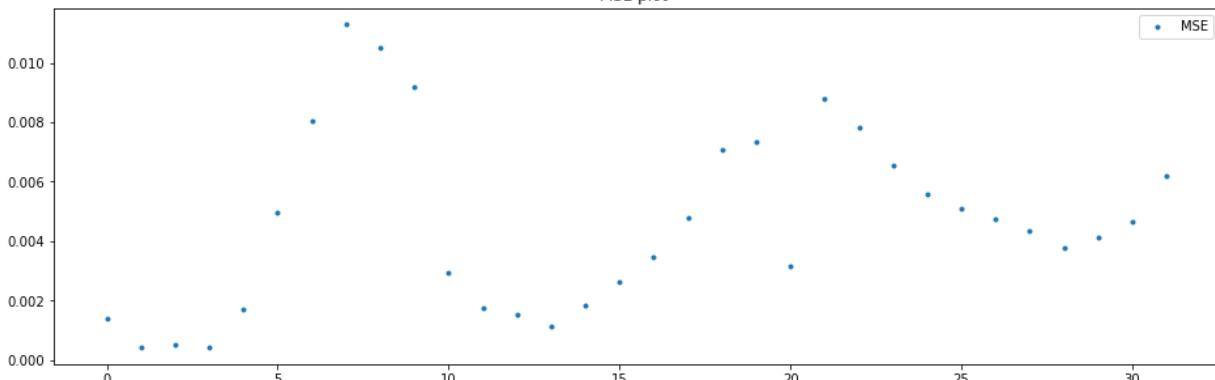
Batch: 24

mean=0.0046203125, median=0.0045 , max=0.01129, min=0.00041, variance=8.7796e-06

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.373

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

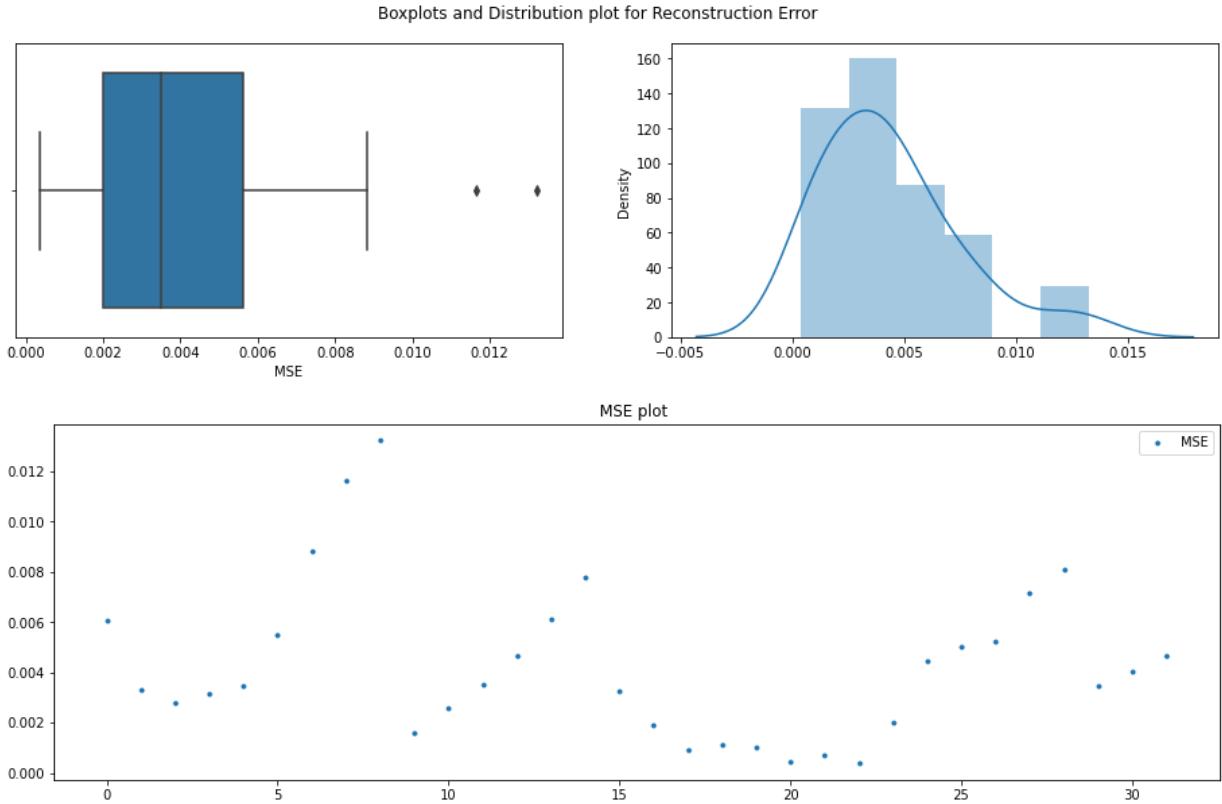
2.500: 0.834, data looks normal (fail to reject H0)

1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 25

mean=0.0043225, median=0.00349 , max=0.01323, min=0.00038, variance=9.4466e-06



#### Anderson\_Darling Test

Statistic: 0.722

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

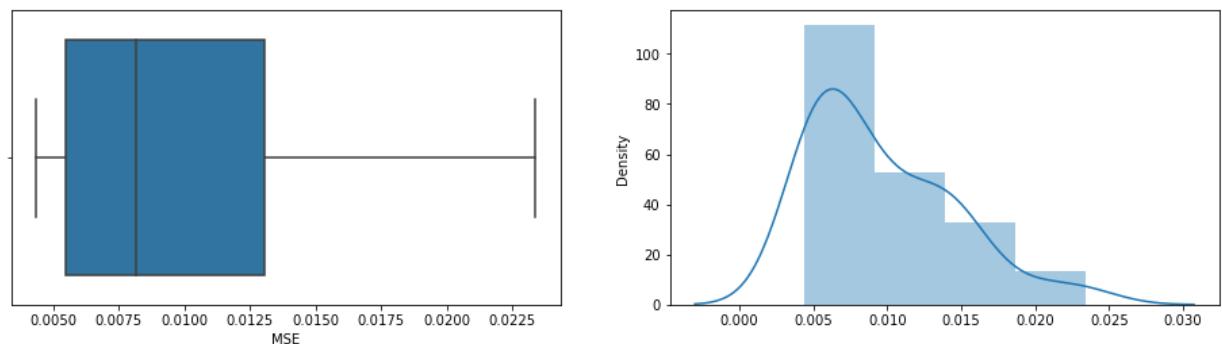
1.000: 0.992, data looks normal (fail to reject H0)

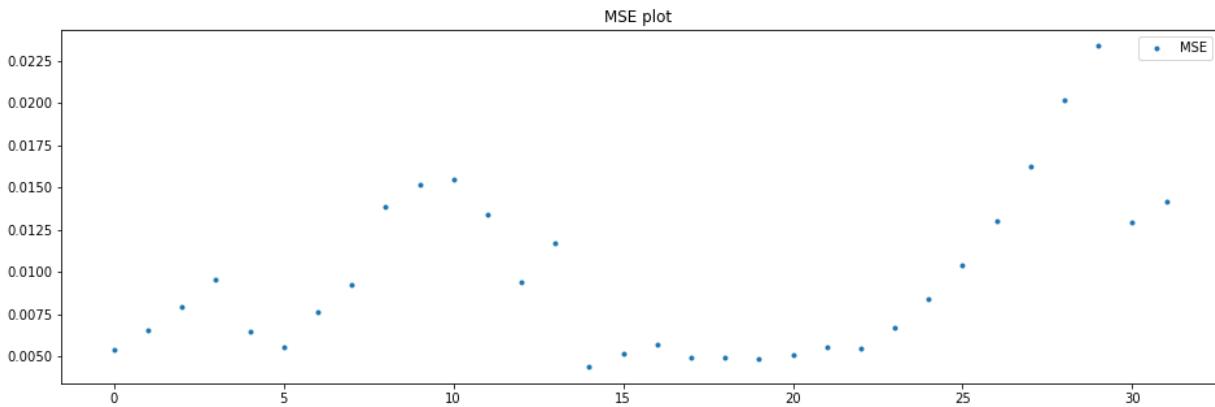
\*\*\*\*\*

Batch: 26

mean=0.0096425, median=0.00818 , max=0.02338, min=0.00435, variance=2.32997e-05

Boxplots and Distribution plot for Reconstruction Error





**Anderson\_Darling Test**

Statistic: 1.252

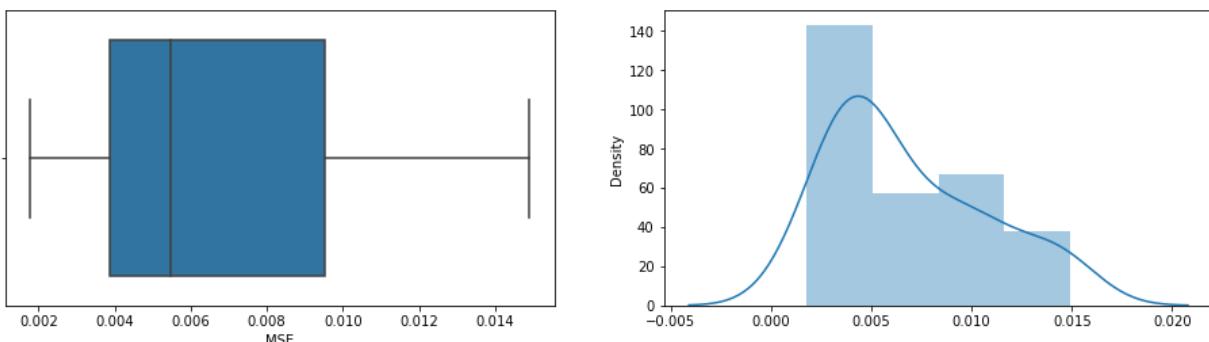
15.000: 0.523, data does not look normal (reject H0)  
 10.000: 0.596, data does not look normal (reject H0)  
 5.000: 0.715, data does not look normal (reject H0)  
 2.500: 0.834, data does not look normal (reject H0)  
 1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

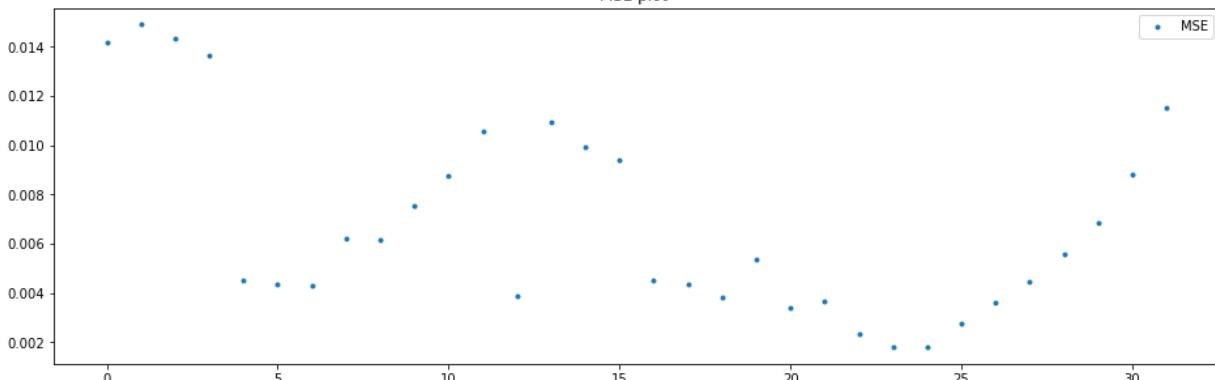
Batch: 27

mean=0.0068203125, median=0.00548 , max=0.0149, min=0.00178, variance=1.4897e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



**Anderson\_Darling Test**

Statistic: 1.149

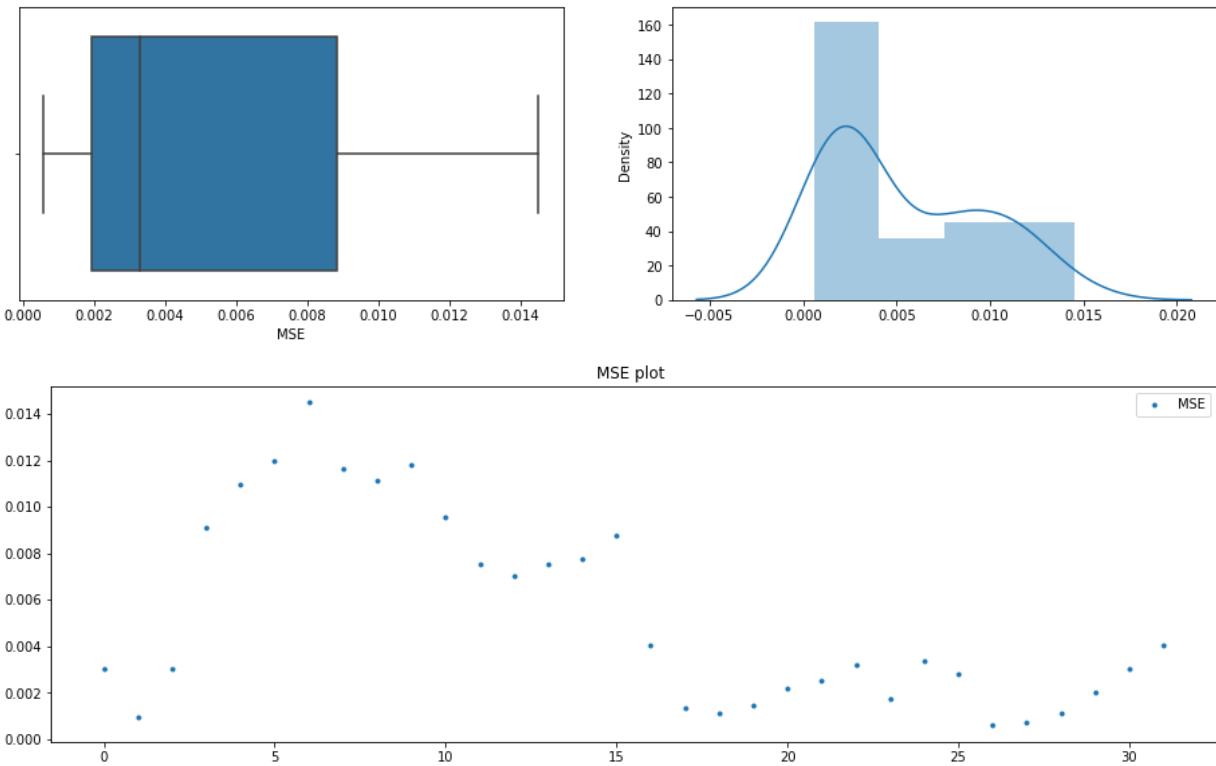
15.000: 0.523, data does not look normal (reject H0)  
 10.000: 0.596, data does not look normal (reject H0)  
 5.000: 0.715, data does not look normal (reject H0)  
 2.500: 0.834, data does not look normal (reject H0)  
 1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 28

mean=0.0053646875, median=0.003285 , max=0.01449, min=0.00059, variance=1.69838e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson\_Darling Test**

Statistic: 1.528

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

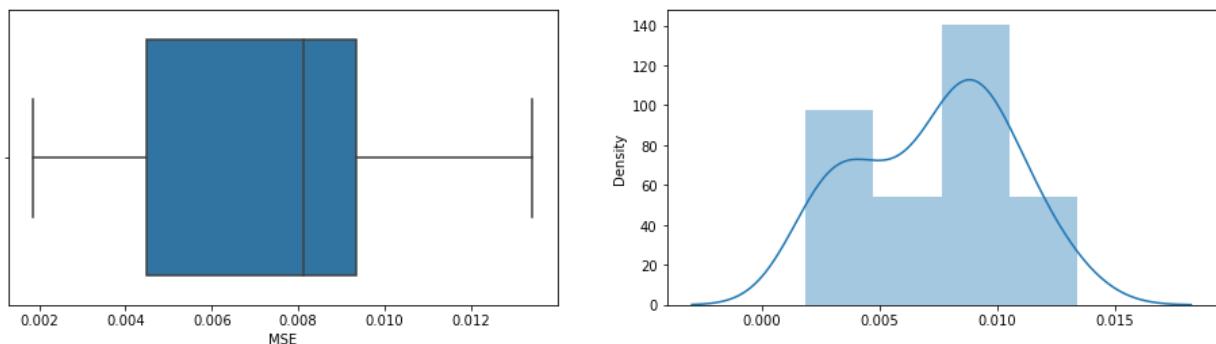
1.000: 0.992, data does not look normal (reject H0)

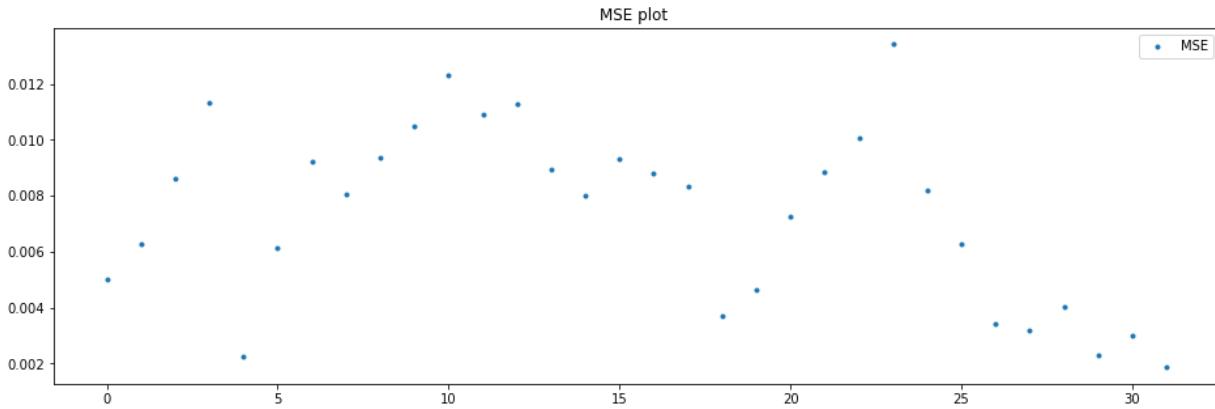
\*\*\*\*\*

Batch: 29

mean=0.007343125, median=0.008135 , max=0.01342, min=0.00186, variance=9.9875e-06

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.529

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

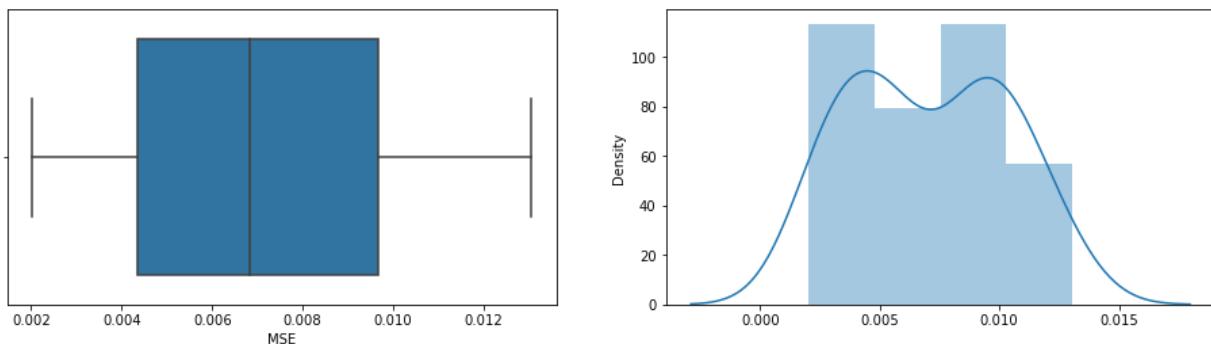
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

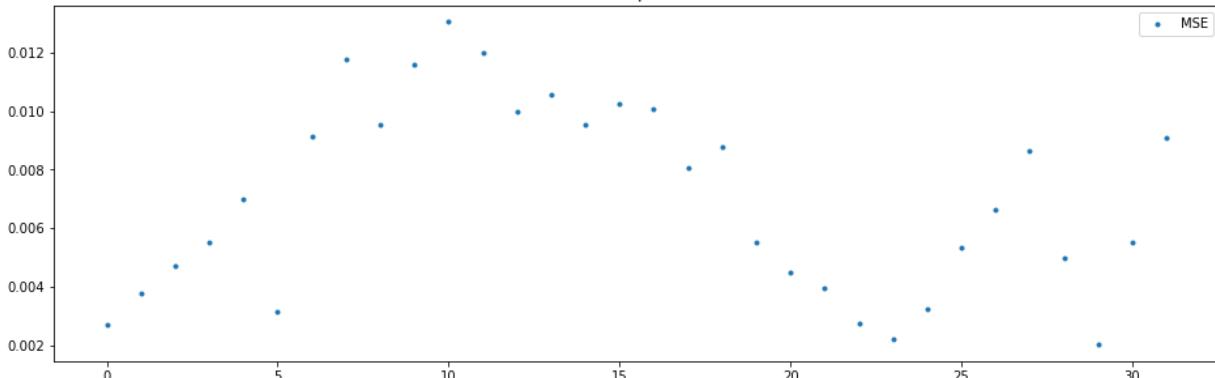
Batch: 30

mean=0.007050625, median=0.006815 , max=0.01305, min=0.00202, variance=1.04219e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.637

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

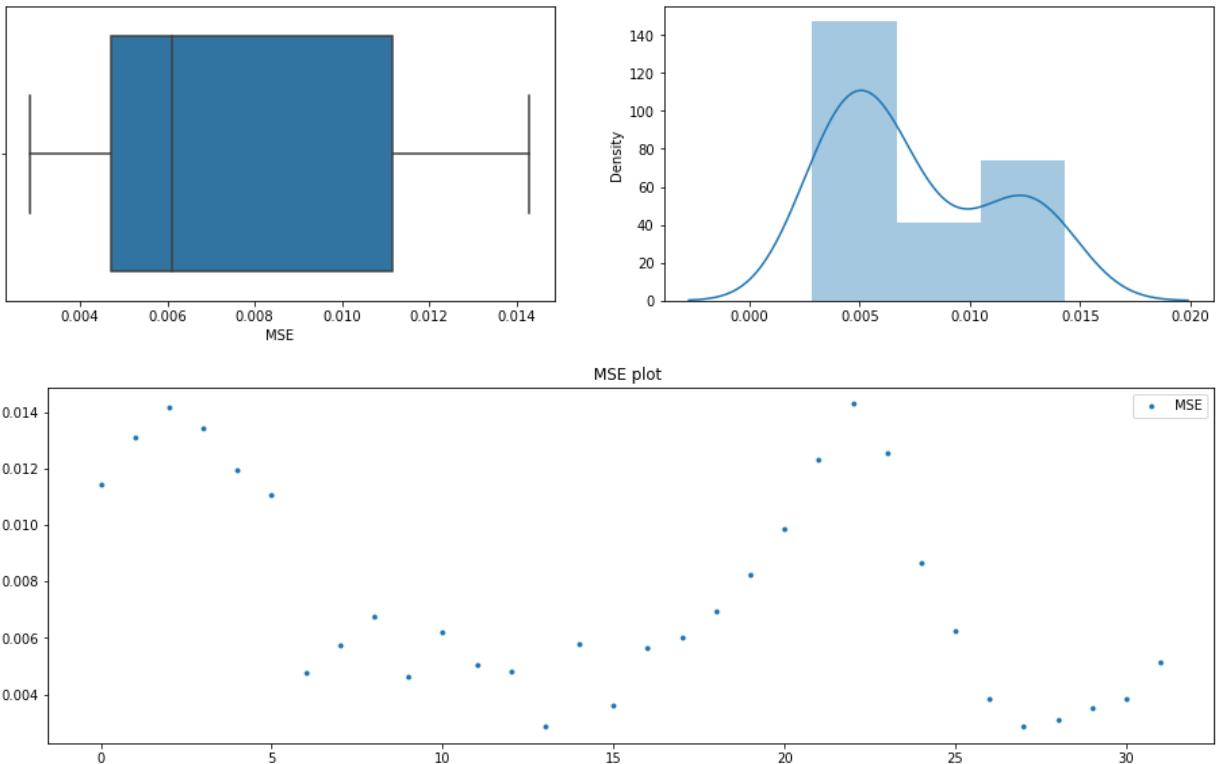
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 31

mean=0.0074503125, median=0.0061 , max=0.01429, min=0.00285, variance=1.35013e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson\_Darling Test**

Statistic: 1.312

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

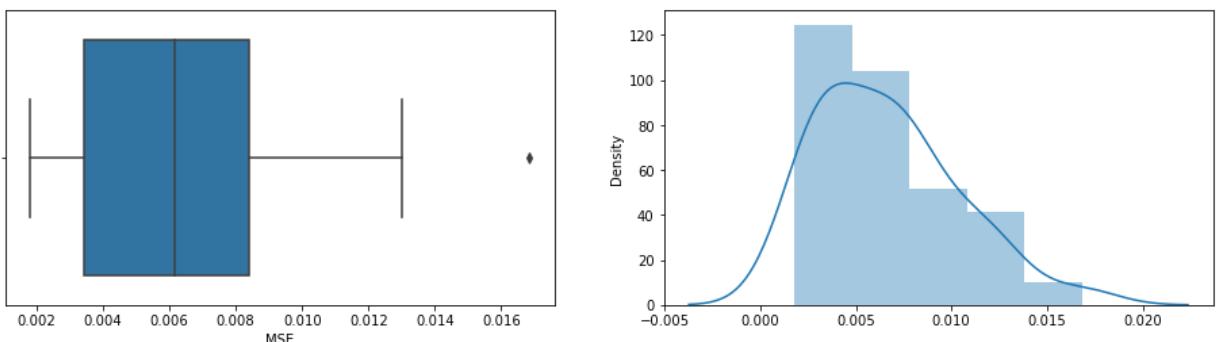
1.000: 0.992, data does not look normal (reject H0)

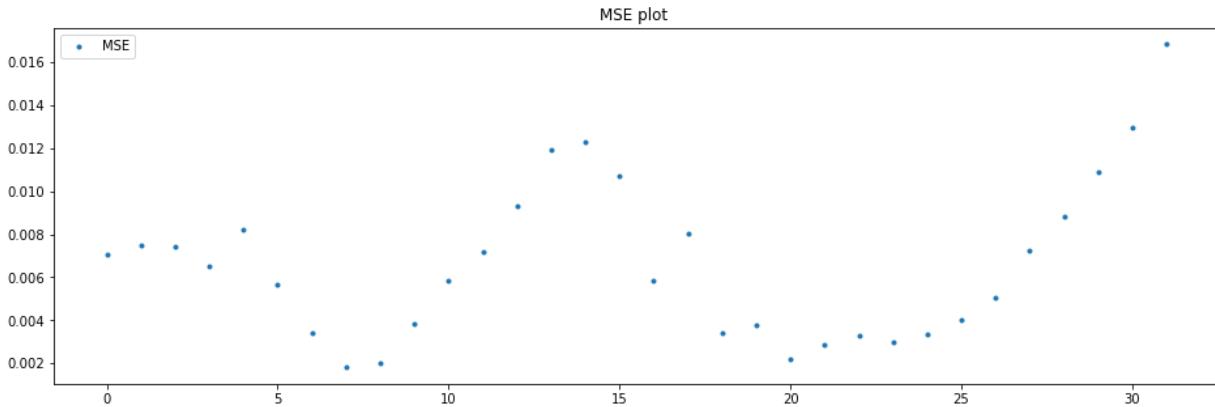
\*\*\*\*\*

Batch: 32

mean=0.0066315625, median=0.00616 , max=0.01684, min=0.0018, variance=1.31607e-05

Boxplots and Distribution plot for Reconstruction Error





**Anderson\_Darling Test**

Statistic: 0.625

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

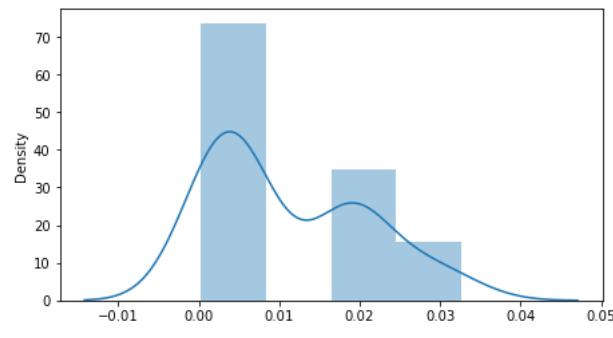
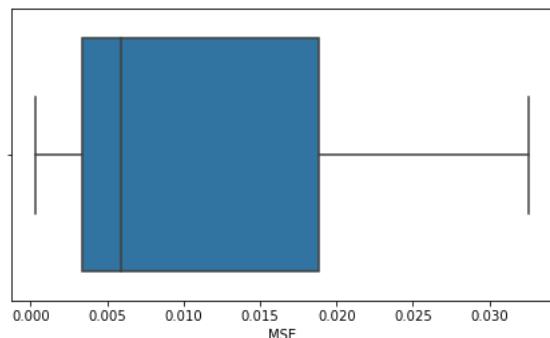
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

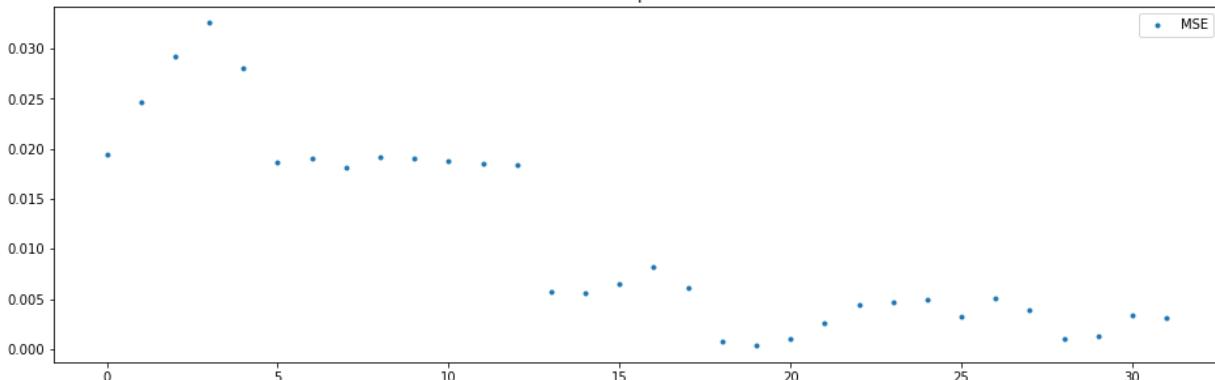
Batch: 33

mean=0.0111075, median=0.00594 , max=0.03257, min=0.00032, variance=9.06147e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



**Anderson\_Darling Test**

Statistic: 1.983

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

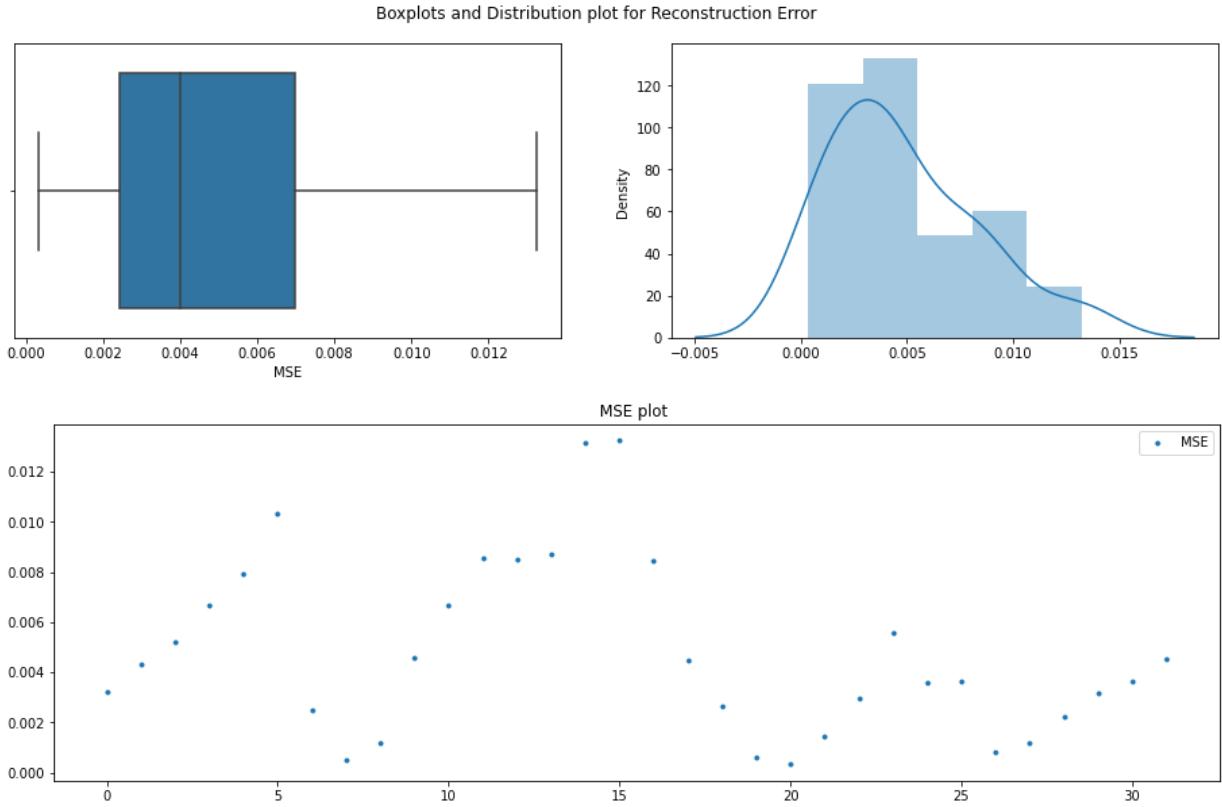
2.500: 0.834, data does not look normal (reject H0)

1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 34

mean=0.0048325, median=0.004005 , max=0.01324, min=0.00033, variance=1.19843e-05



#### Anderson\_Darling Test

Statistic: 0.756

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

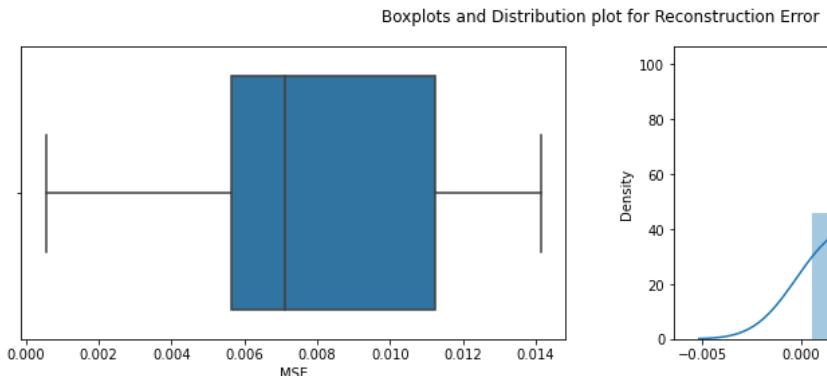
2.500: 0.834, data looks normal (fail to reject H0)

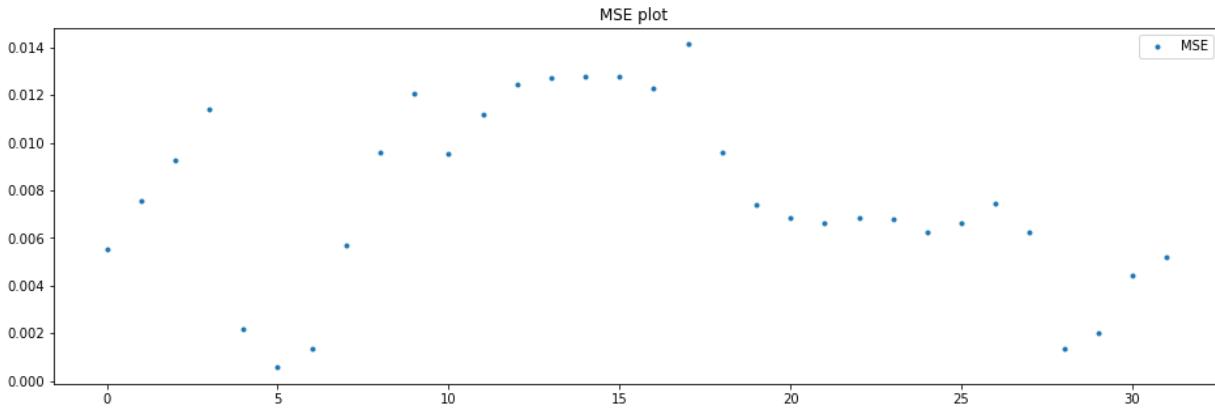
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 35

mean=0.0077075, median=0.00712 , max=0.01413, min=0.00056, variance=1.40334e-05





**Anderson\_Darling Test**

Statistic: 0.529

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

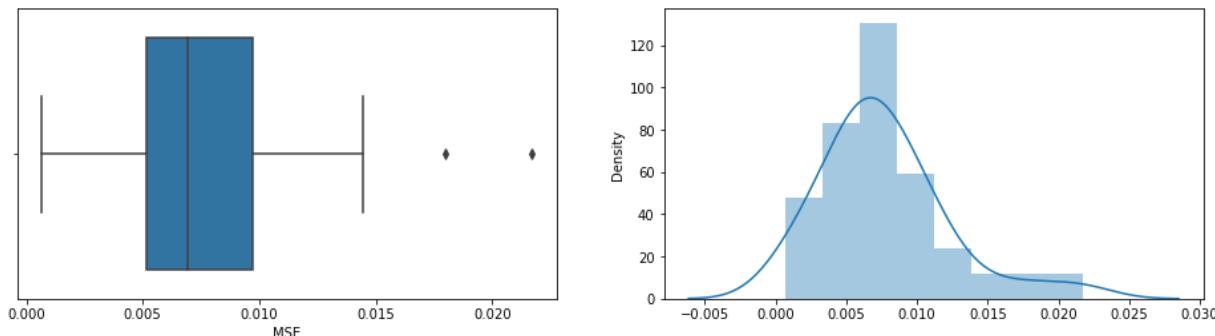
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

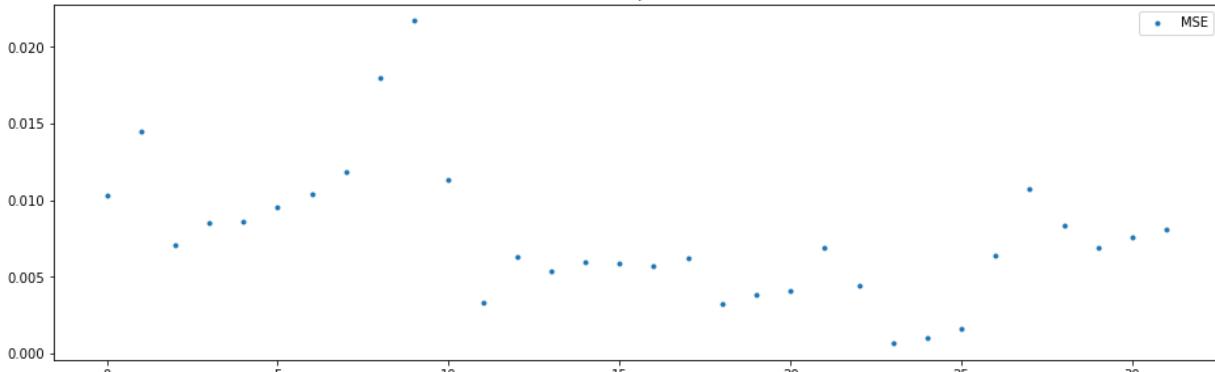
Batch: 36

mean=0.0076509375, median=0.00691 , max=0.0217, min=0.00066, variance=1.99008e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



**Anderson\_Darling Test**

Statistic: 0.696

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

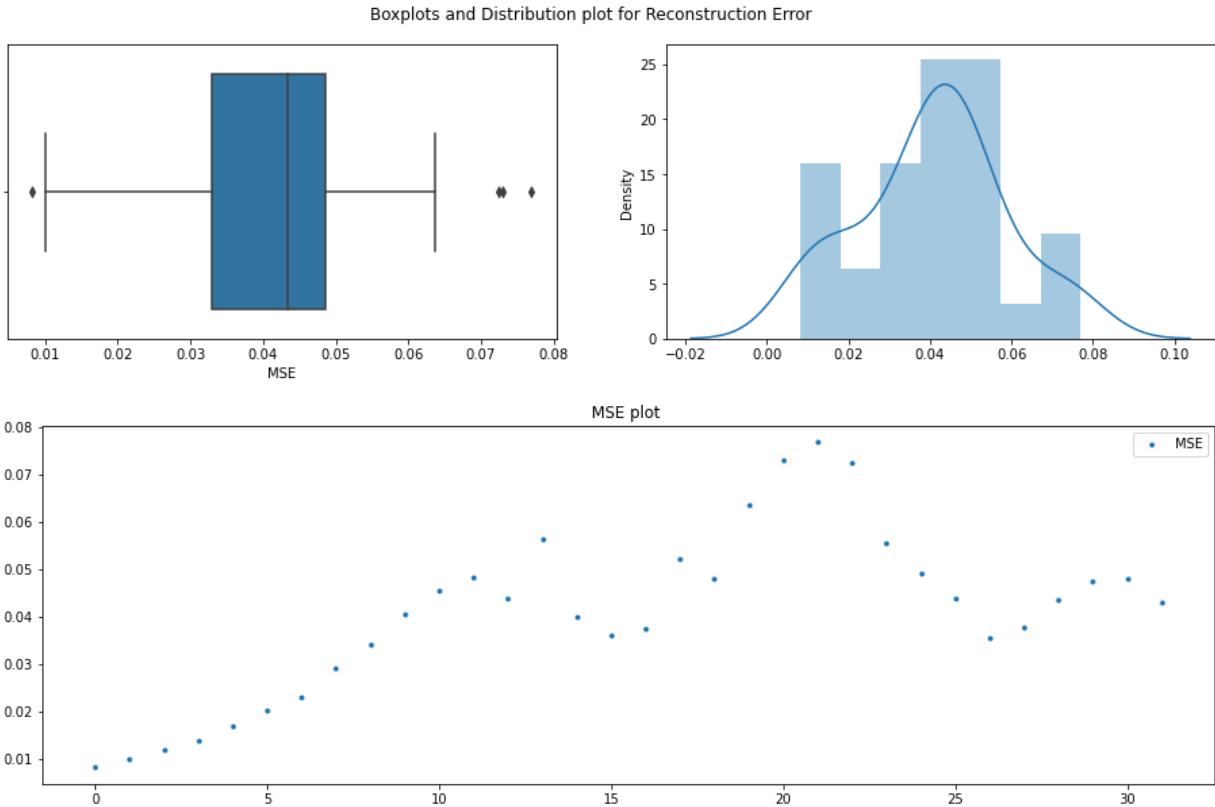
2.500: 0.834, data looks normal (fail to reject H0)

1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 37

mean=0.04084625, median=0.04332 , max=0.07691, min=0.00822, variance=0.0003099761



Anderson\_Darling Test

Statistic: 0.454

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

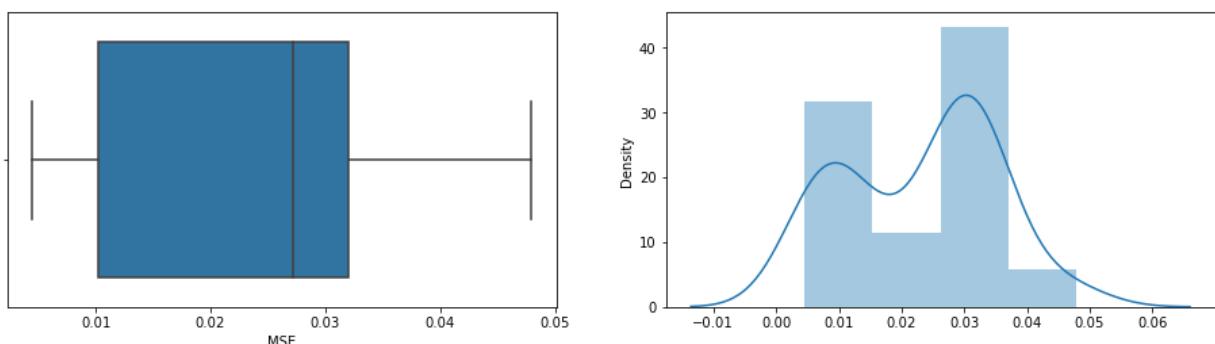
1.000: 0.992, data looks normal (fail to reject H0)

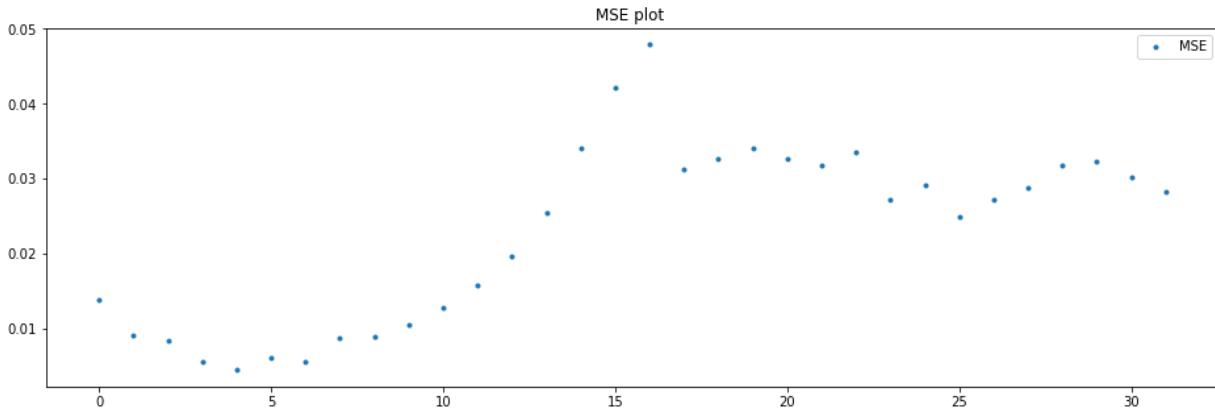
\*\*\*\*\*

Batch: 38

mean=0.0229740625, median=0.027215 , max=0.04791, min=0.00447, variance=0.0001403455

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 1.217

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

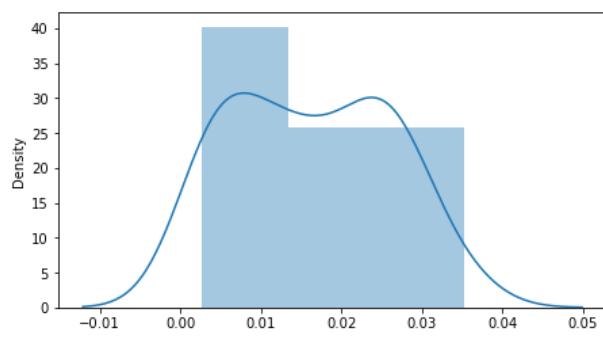
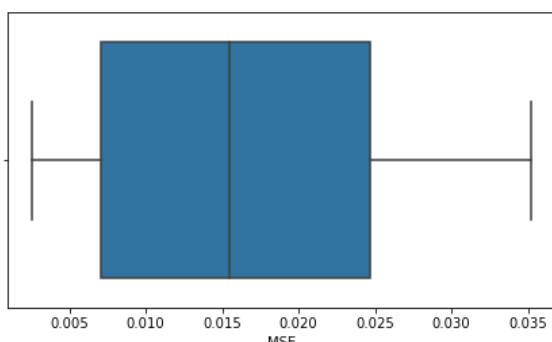
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

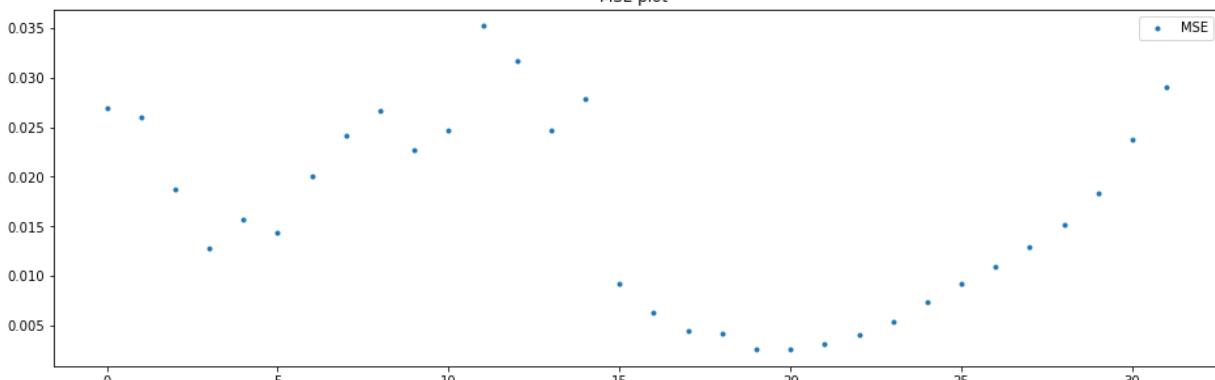
Batch: 39

mean=0.0162759375, median=0.015435 , max=0.03521, min=0.00257, variance=9.29242e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.641

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

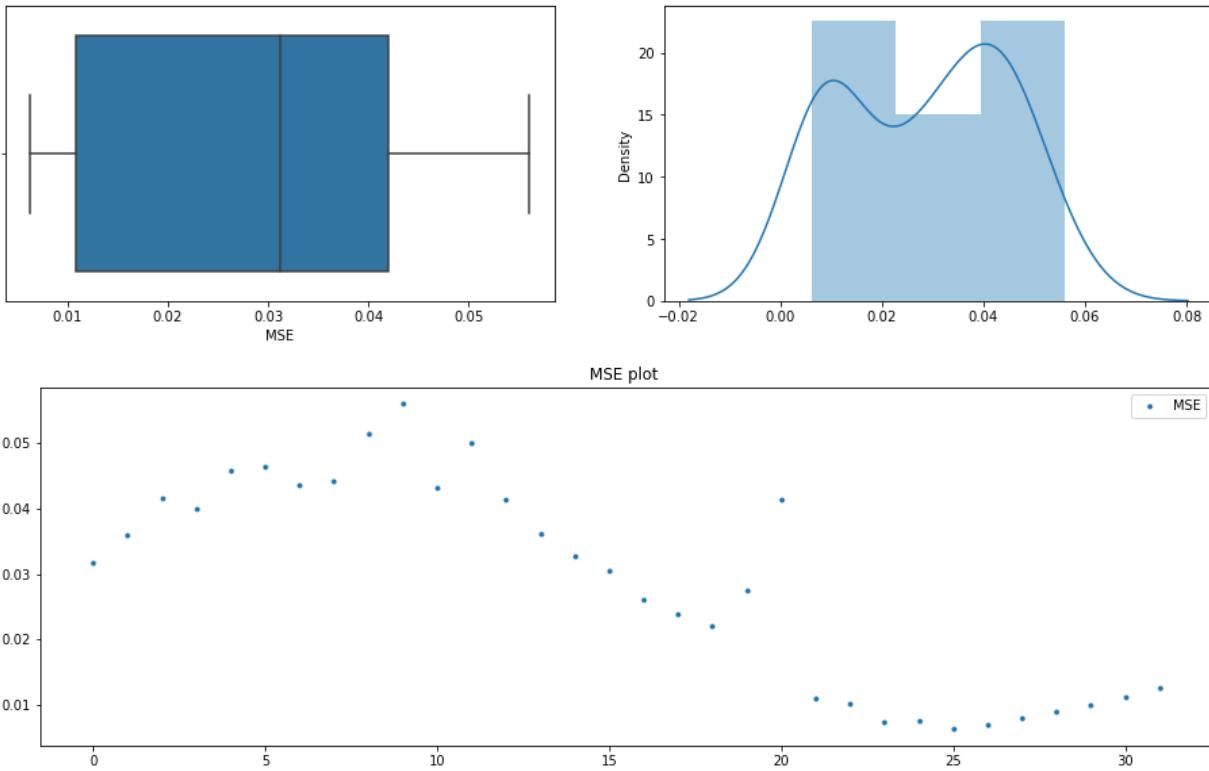
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 40

mean=0.0284715625, median=0.03114 , max=0.05601, min=0.00627, variance=0.0002532104

Boxplots and Distribution plot for Reconstruction Error



## Anderson\_Darling Test

Statistic: 1.151

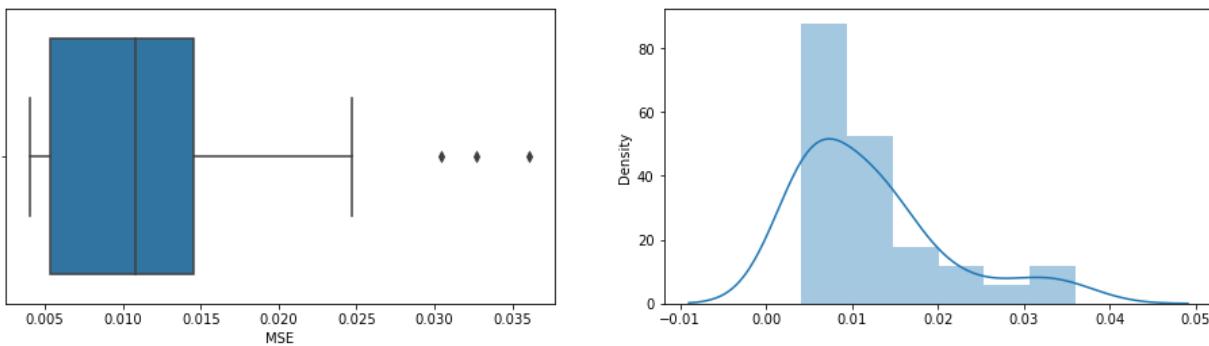
15.000: 0.523, data does not look normal (reject H0)  
 10.000: 0.596, data does not look normal (reject H0)  
 5.000: 0.715, data does not look normal (reject H0)  
 2.500: 0.834, data does not look normal (reject H0)  
 1.000: 0.992, data does not look normal (reject H0)

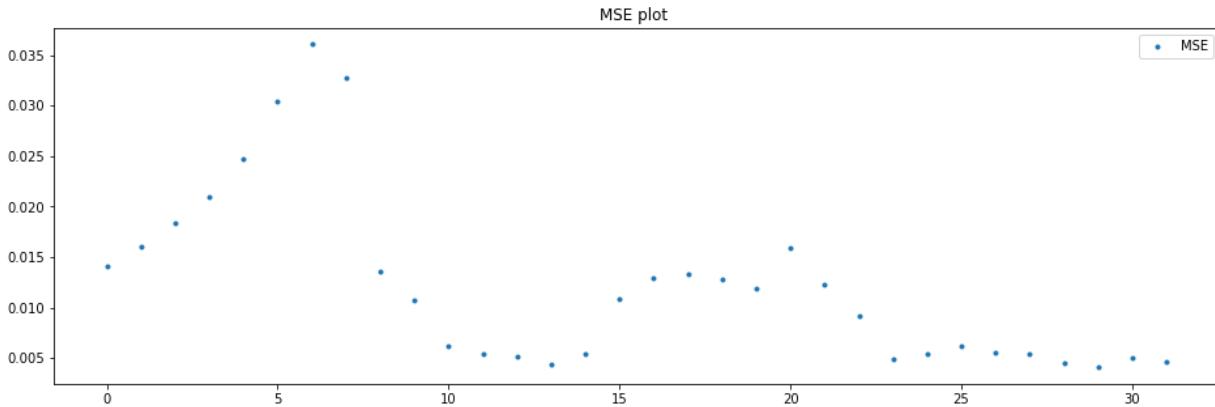
\*\*\*\*\*

Batch: 41

mean=0.0121484375, median=0.010785 , max=0.03608, min=0.00405, variance=7.32706e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 1.901

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

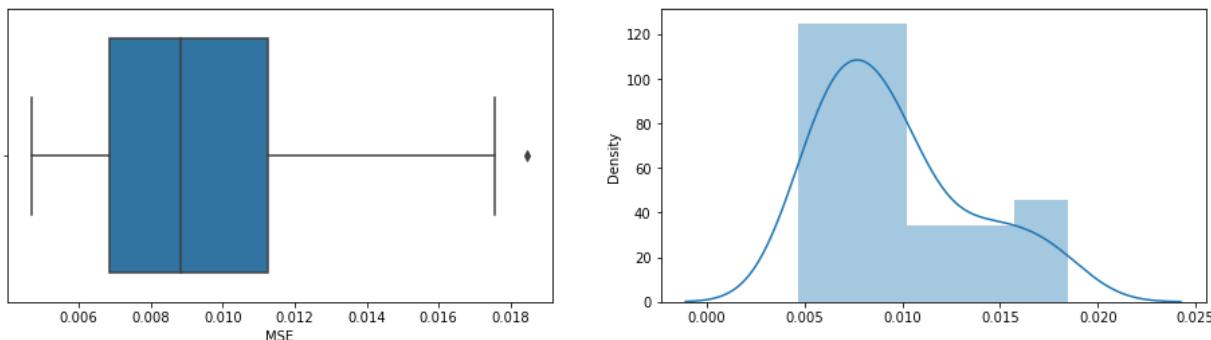
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

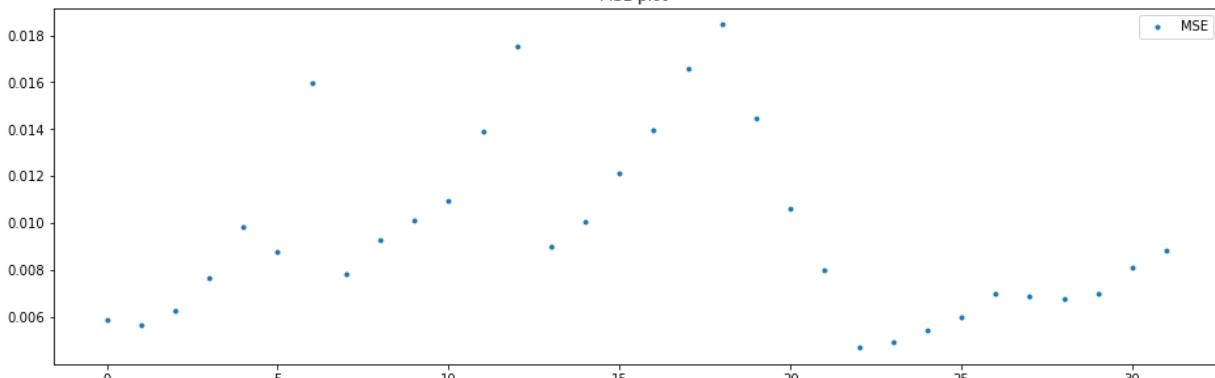
Batch: 42

mean=0.009646875, median=0.008815 , max=0.01846, min=0.00469, variance=1.43855e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.998

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

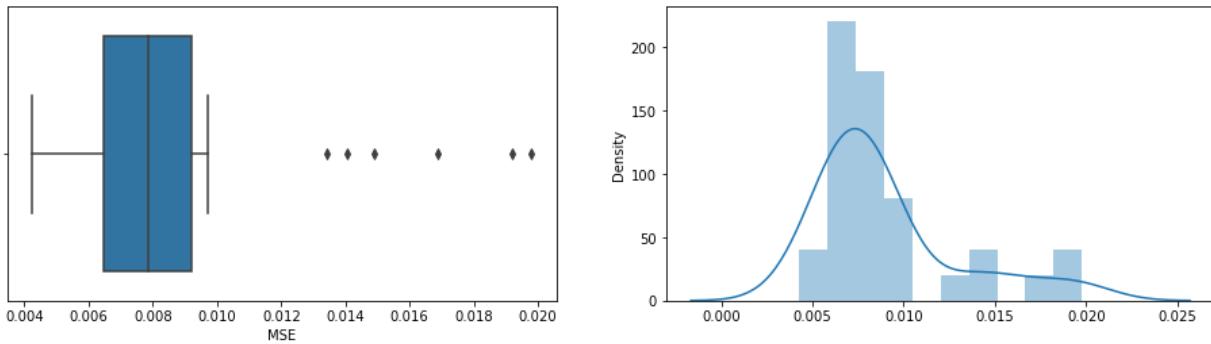
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

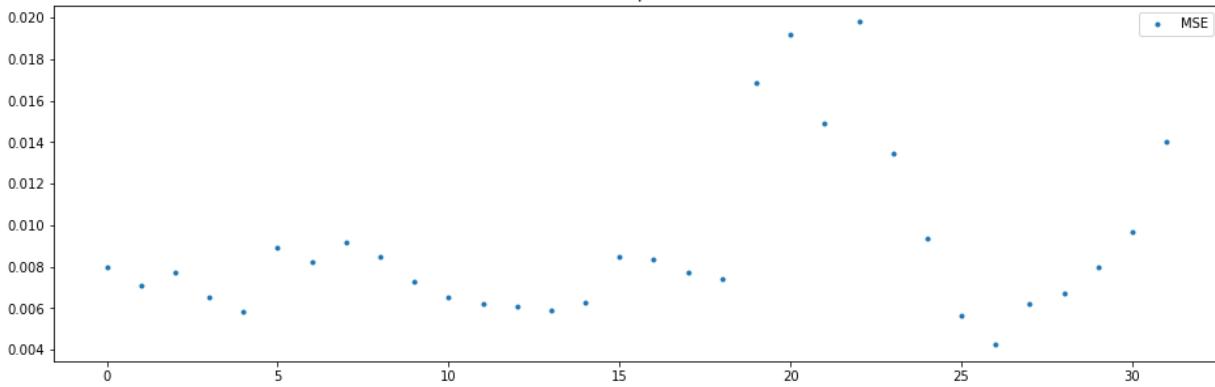
Batch: 43

mean=0.009013125, median=0.00786 , max=0.01979, min=0.00424, variance=1.50135e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson\_Darling Test**

Statistic: 2.664

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

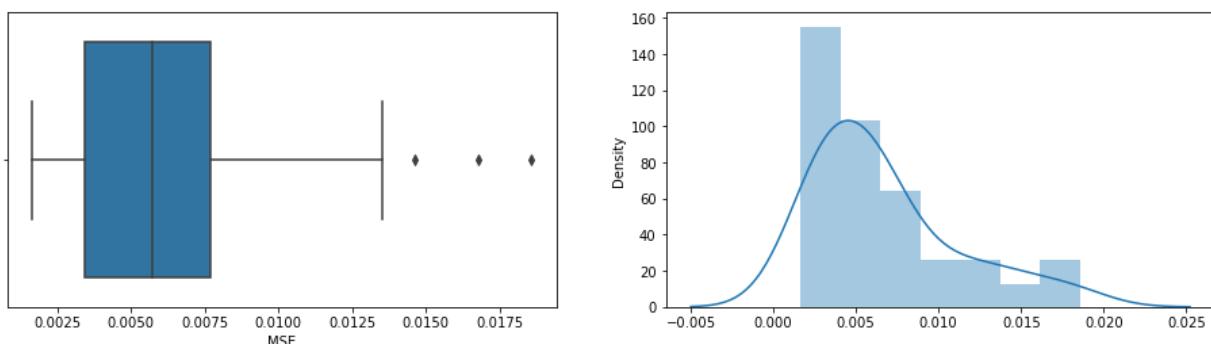
1.000: 0.992, data does not look normal (reject H0)

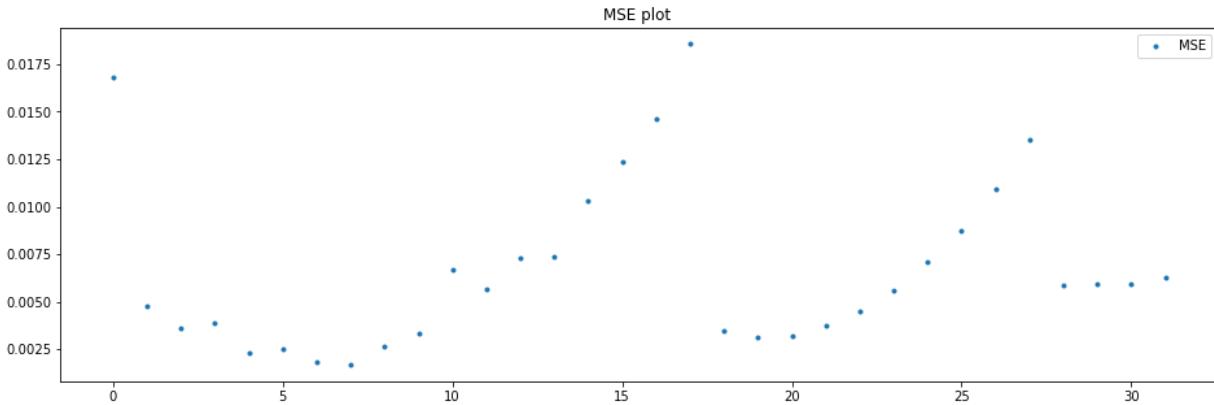
\*\*\*\*\*

Batch: 44

mean=0.0066840625, median=0.005735 , max=0.01857, min=0.00165, variance=1.90189e-05

Boxplots and Distribution plot for Reconstruction Error





**Anderson\_Darling Test**

Statistic: 1.451

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

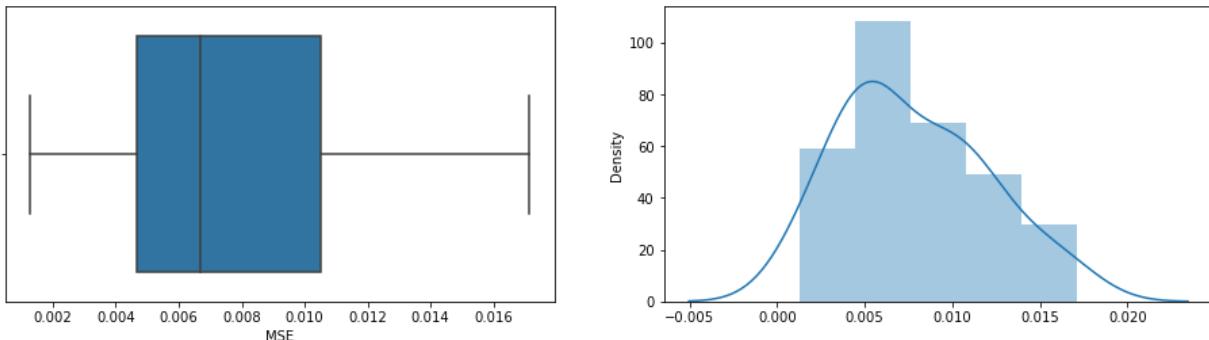
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

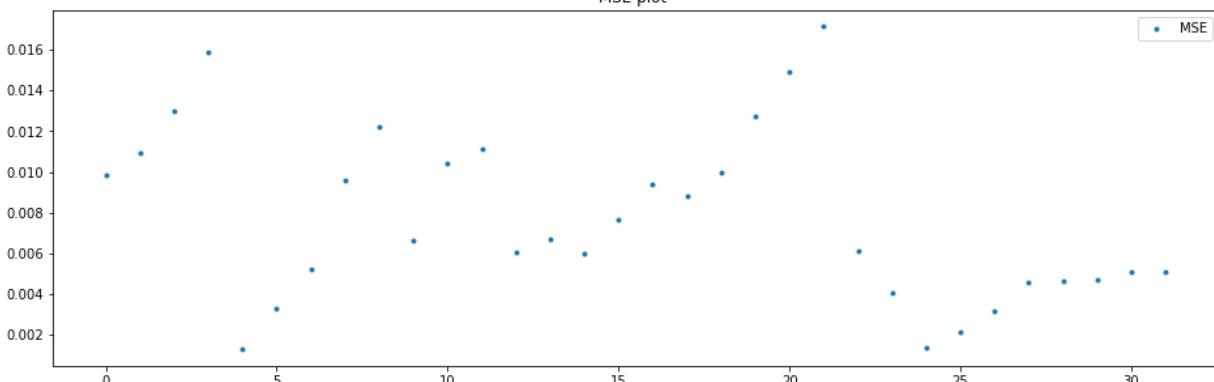
Batch: 45

mean=0.007800625, median=0.006675 , max=0.01713, min=0.00128, variance=1.72294e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



**Anderson\_Darling Test**

Statistic: 0.422

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

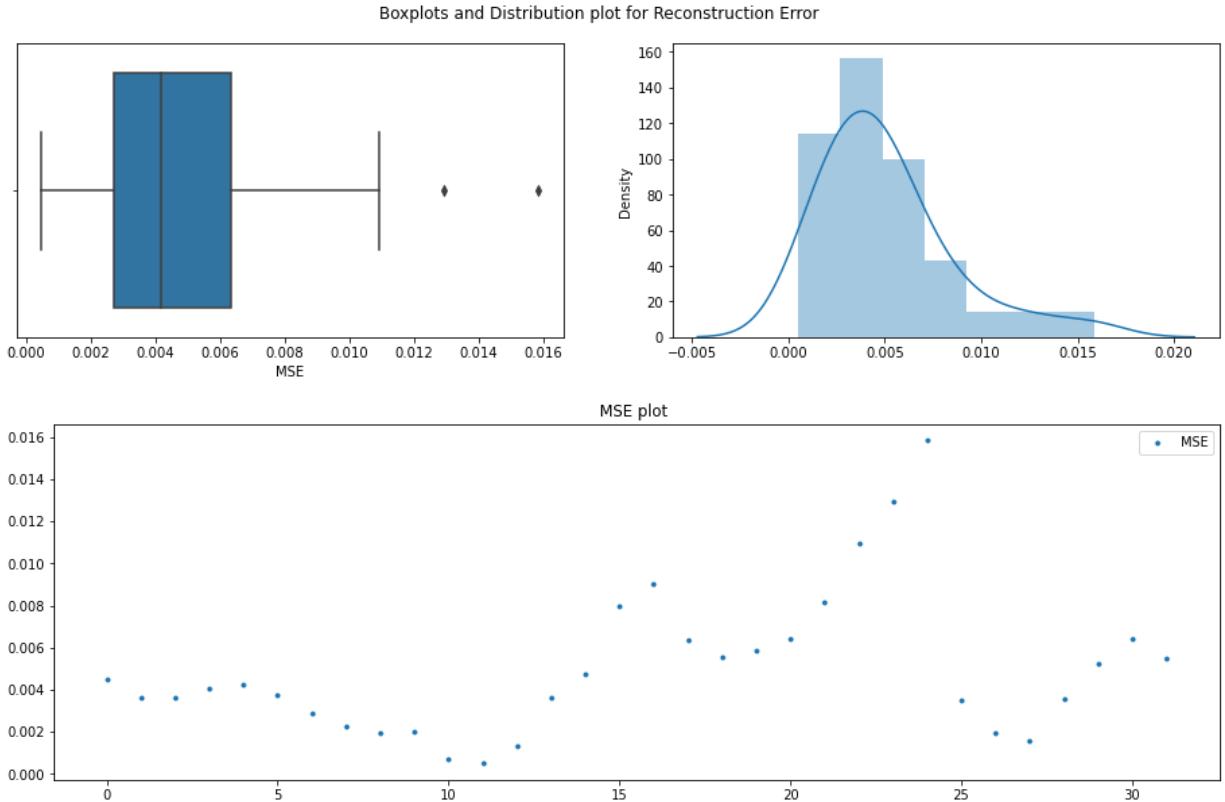
2.500: 0.834, data looks normal (fail to reject H0)

1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 46

mean=0.005018125, median=0.00417 , max=0.01584, min=0.00049, variance=1.16957e-05



#### Anderson\_Darling Test

Statistic: 1.036

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

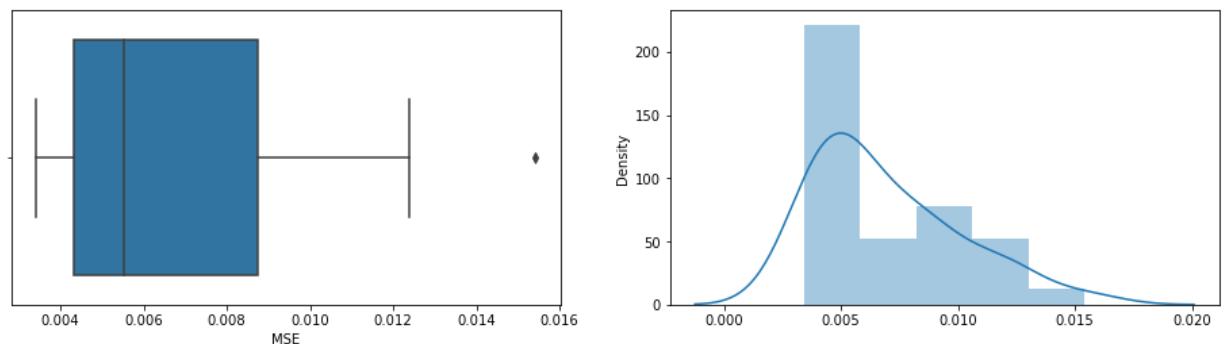
1.000: 0.992, data does not look normal (reject H0)

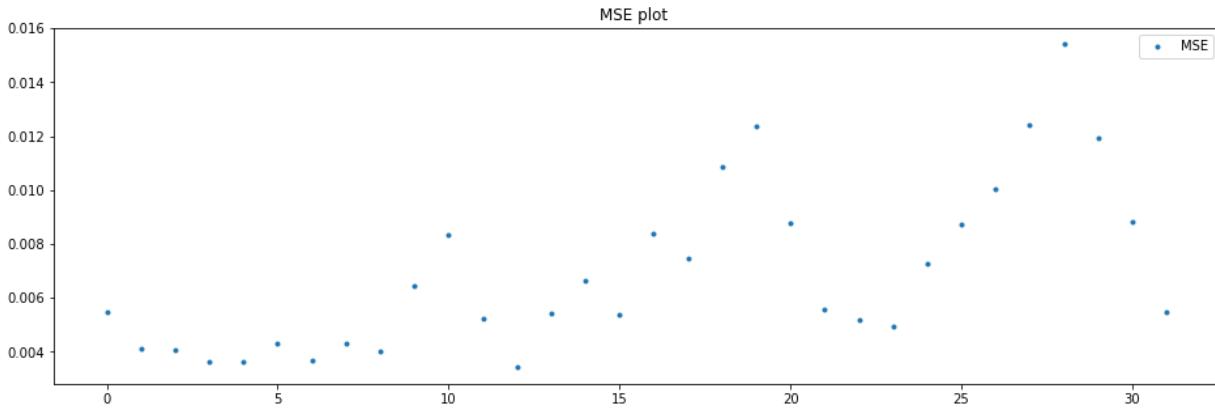
\*\*\*\*\*

Batch: 47

mean=0.0069334375, median=0.00553 , max=0.01541, min=0.00342, variance=9.3821e-06

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 1.153

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

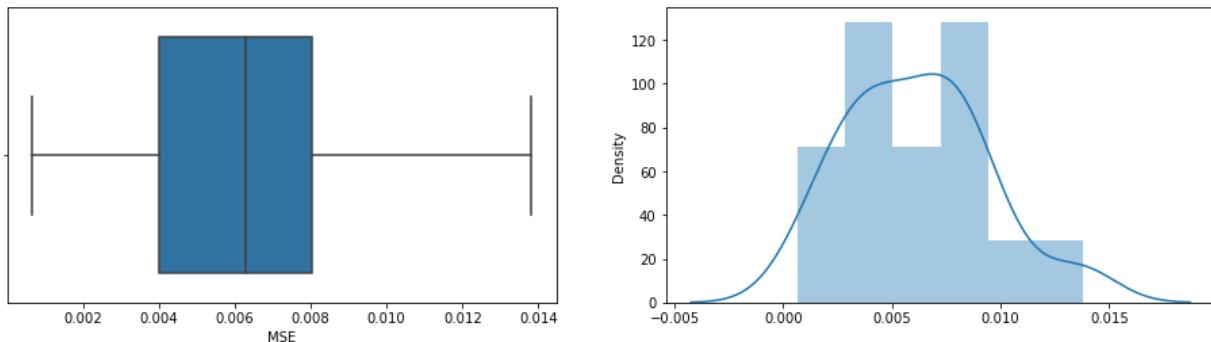
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

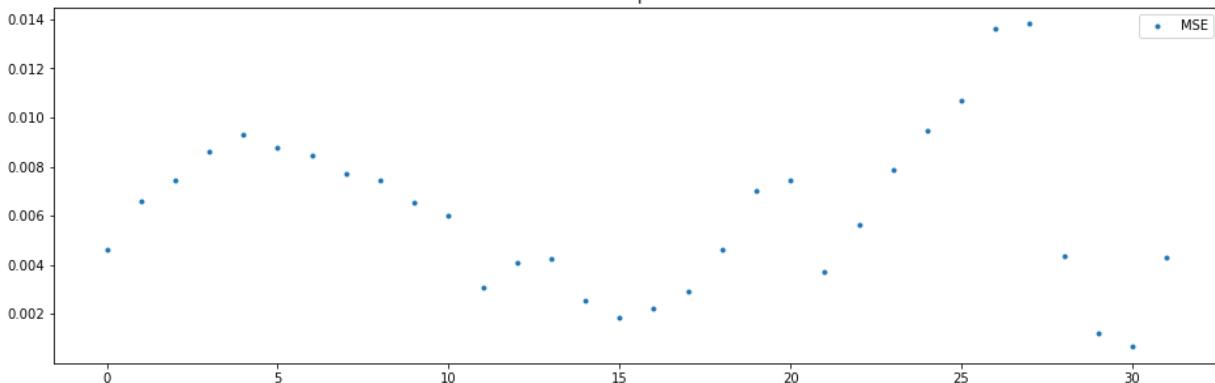
Batch: 48

mean=0.0061534375, median=0.006285 , max=0.01381, min=0.00066, variance=1.03971e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.310

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

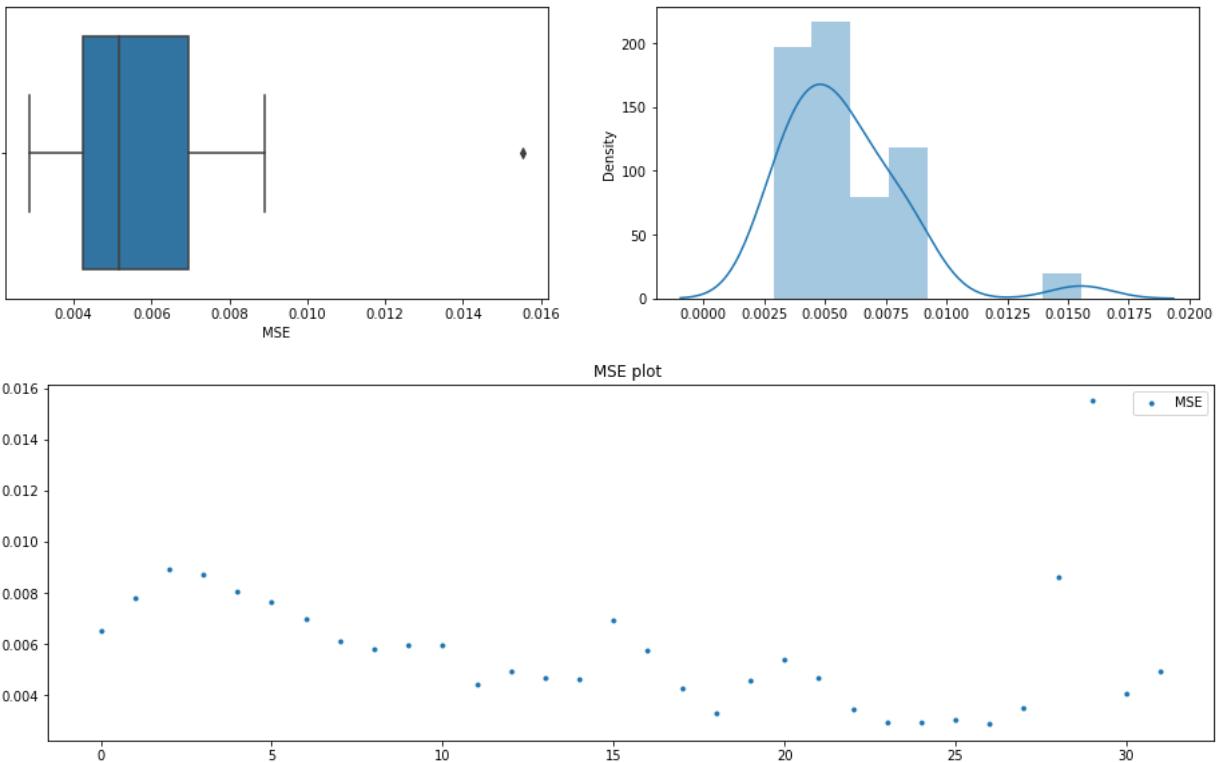
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 49

mean=0.005754375, median=0.005165 , max=0.01553, min=0.00287, variance=6.2698e-06

Boxplots and Distribution plot for Reconstruction Error

**Anderson\_Darling Test**

Statistic: 0.953

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

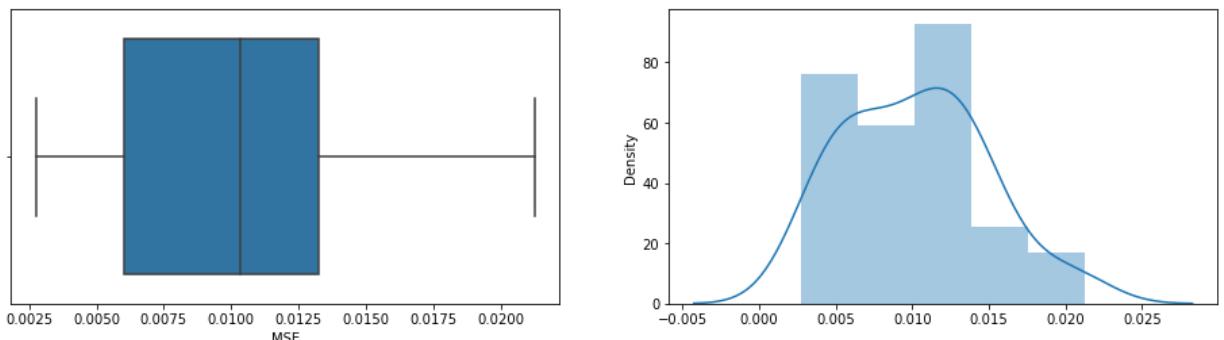
1.000: 0.992, data looks normal (fail to reject H0)

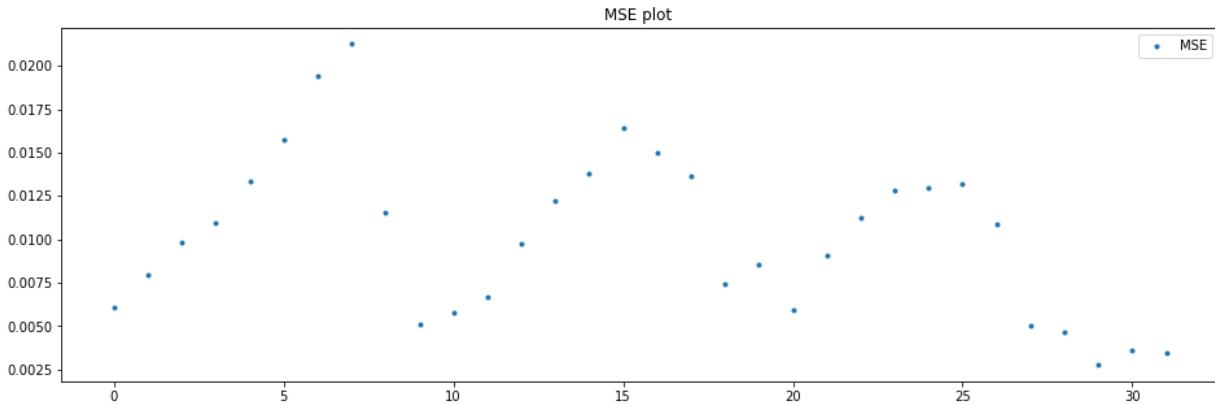
\*\*\*\*\*

Batch: 50

mean=0.01019125, median=0.010345 , max=0.02126, min=0.00275, variance=2.12194e-05

Boxplots and Distribution plot for Reconstruction Error





**Anderson\_Darling Test**

Statistic: 0.271

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

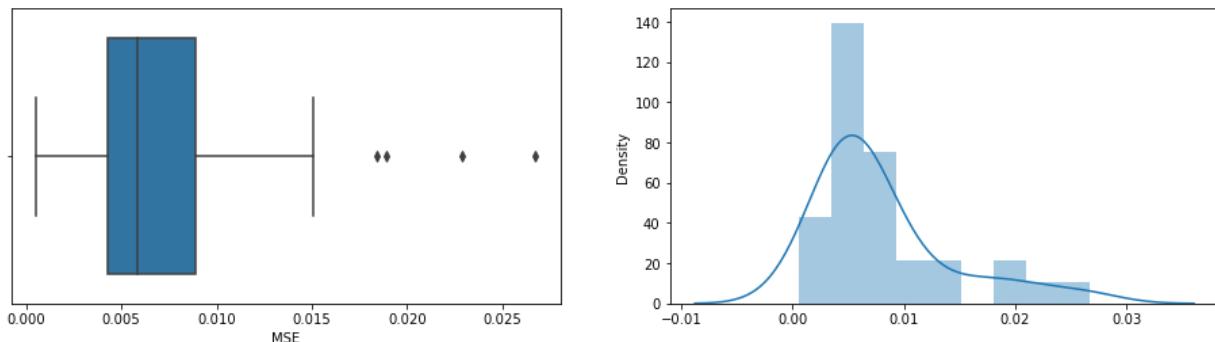
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

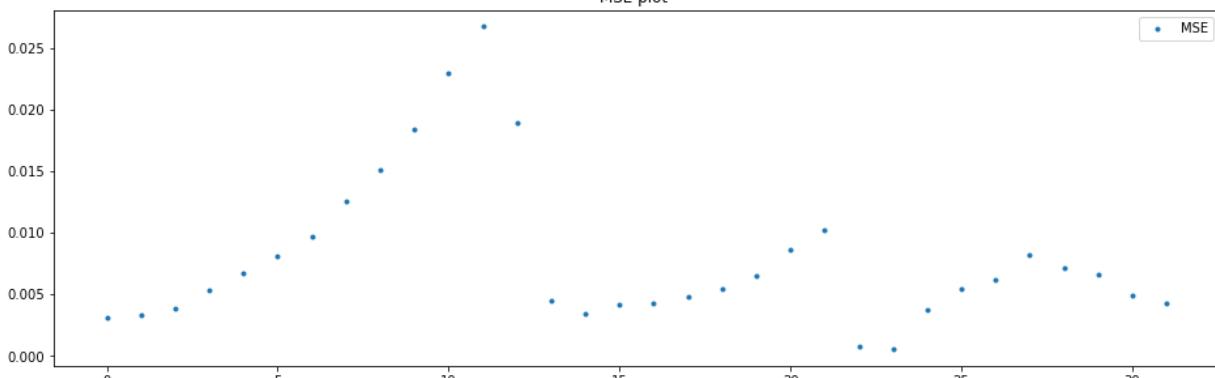
Batch: 51

mean=0.007955, median=0.00586 , max=0.02673, min=0.00052, variance=3.72961e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



**Anderson\_Darling Test**

Statistic: 2.255

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

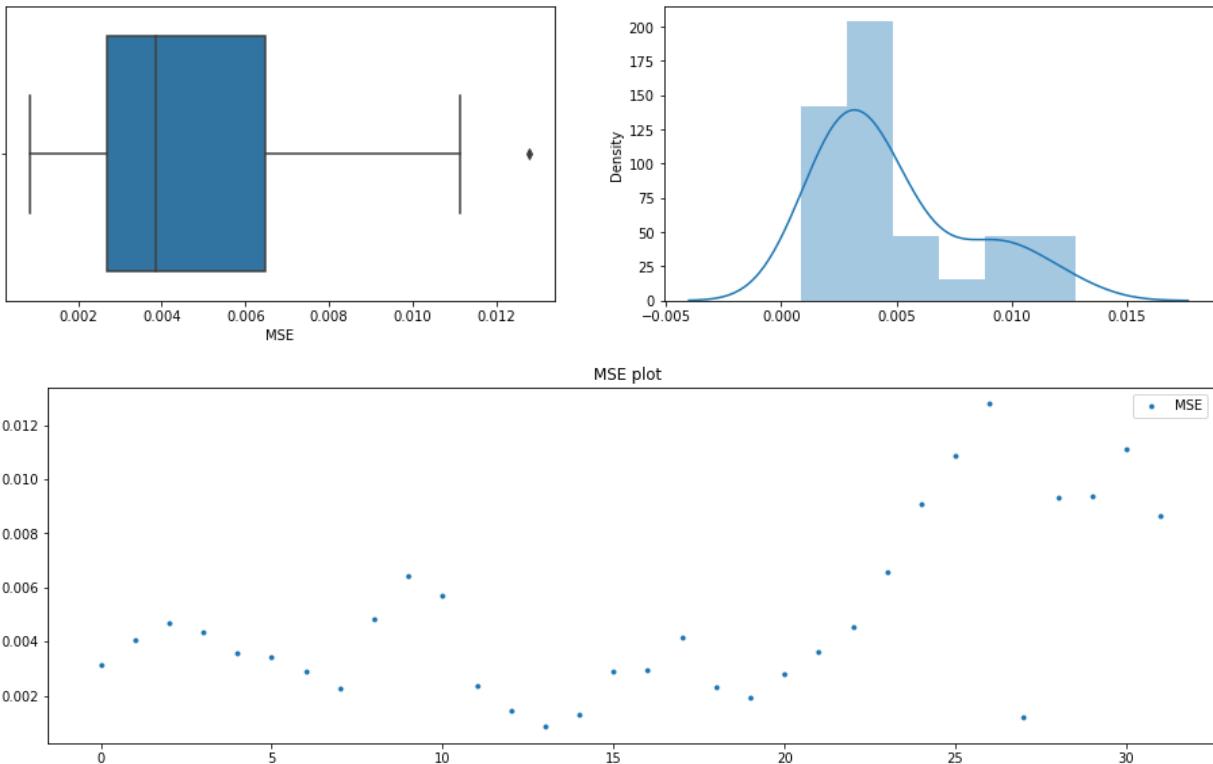
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 52

mean=0.004861875, median=0.00384 , max=0.01279, min=0.00085, variance=1.01423e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson\_Darling Test**

Statistic: 1.393

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

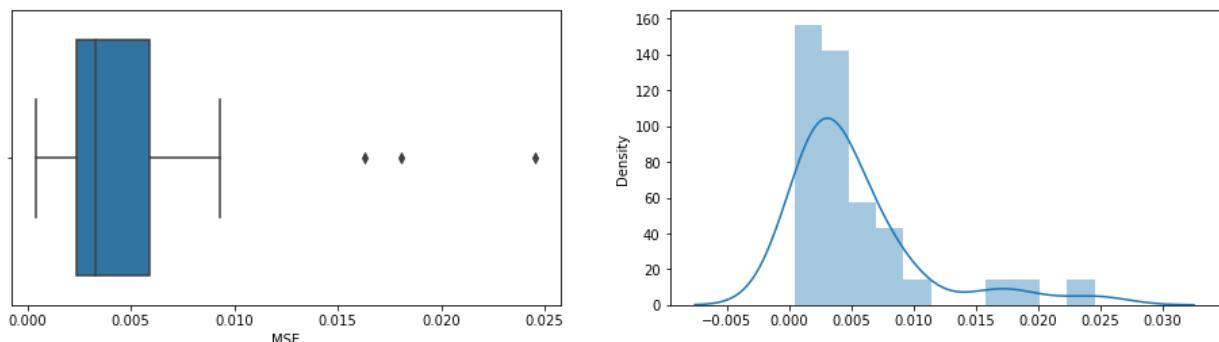
1.000: 0.992, data does not look normal (reject H0)

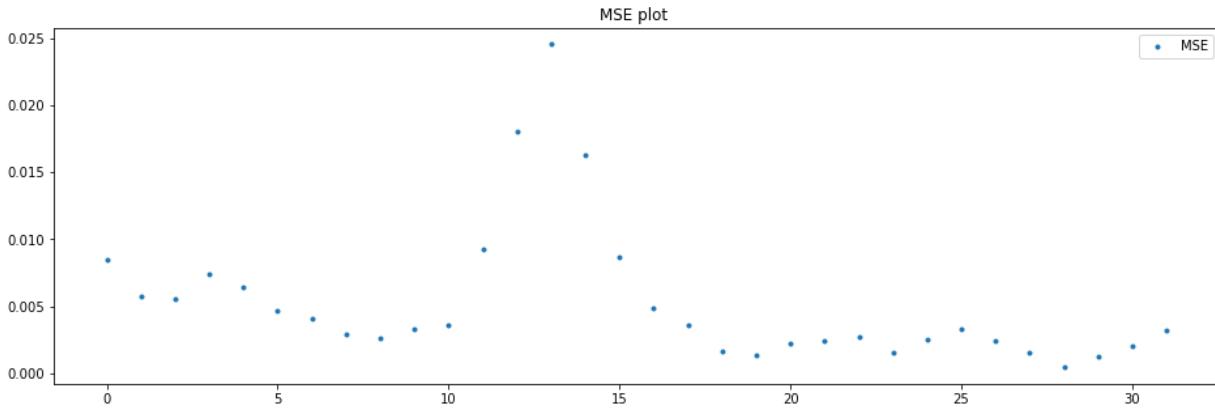
\*\*\*\*\*

Batch: 53

mean=0.00527,median=0.00327 ,max=0.02455,min=0.00042,variance=2.75312e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 3.111

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

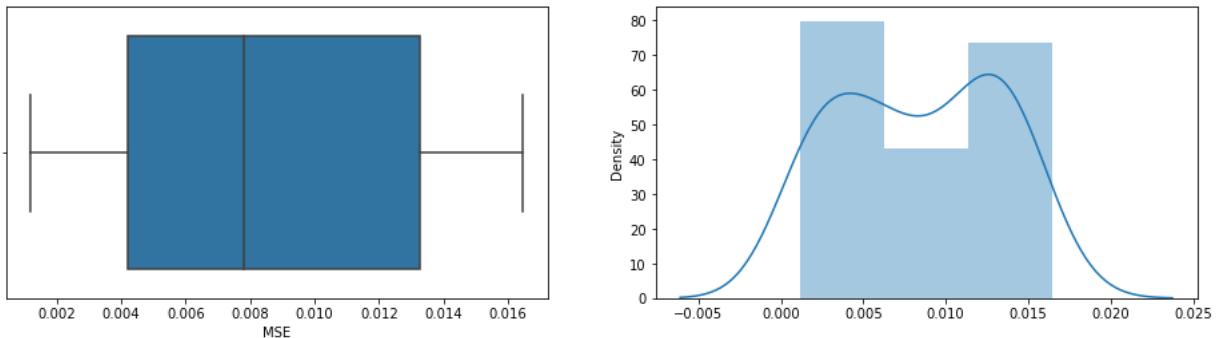
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

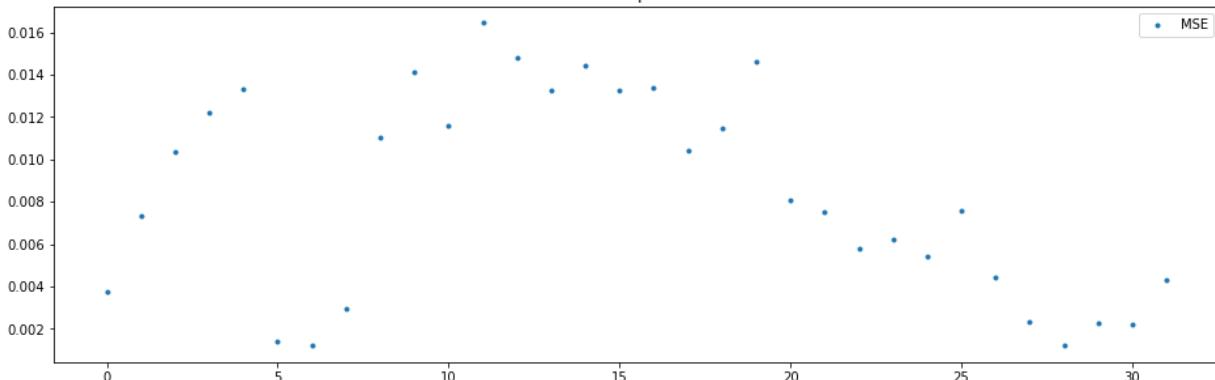
Batch: 54

mean=0.008398125, median=0.007815 , max=0.01645, min=0.00119, variance=2.28967e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.806

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

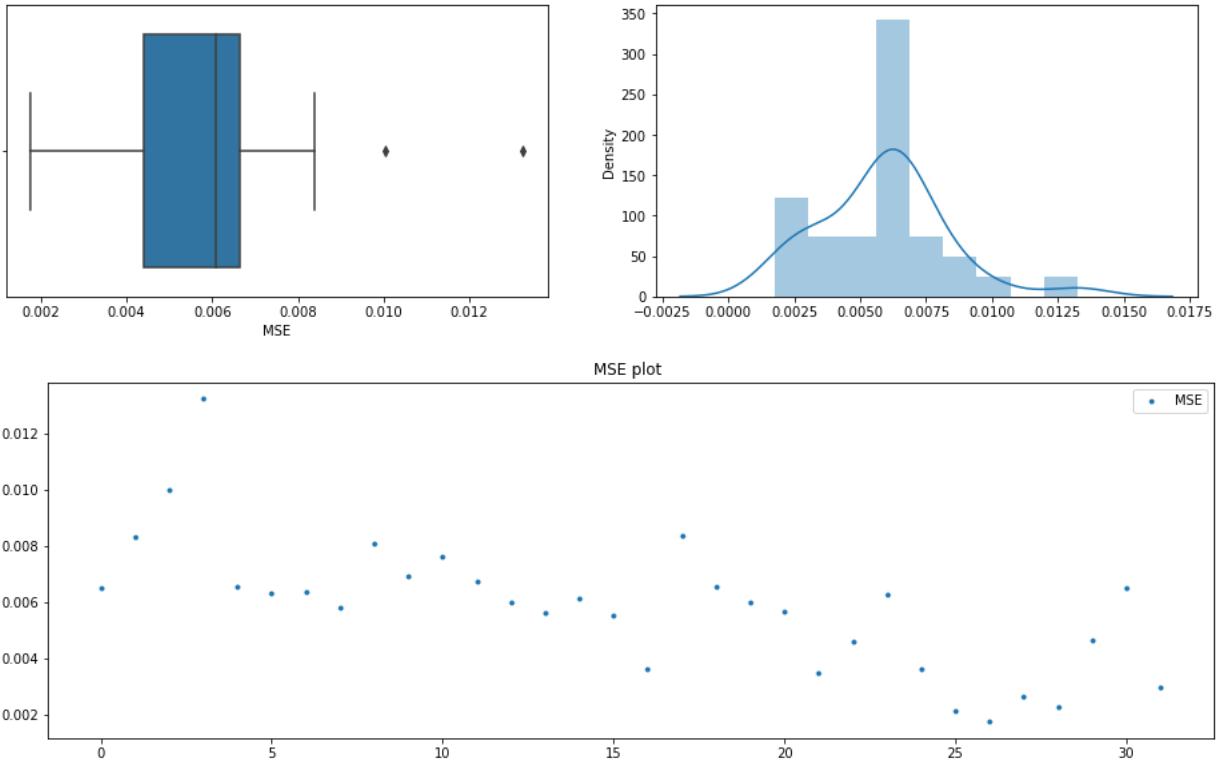
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 55

mean=0.00585875, median=0.00609 , max=0.01325, min=0.00176, variance=5.558e-06

Boxplots and Distribution plot for Reconstruction Error



## Anderson\_Darling Test

Statistic: 0.682

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

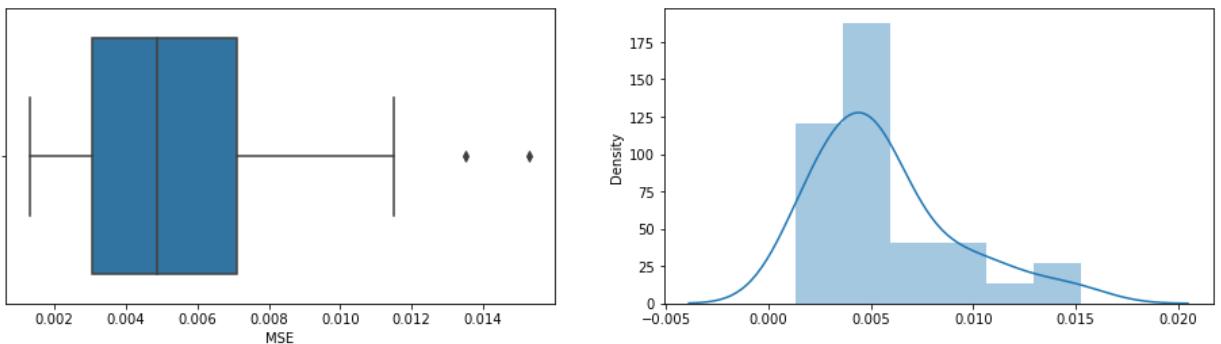
1.000: 0.992, data looks normal (fail to reject H0)

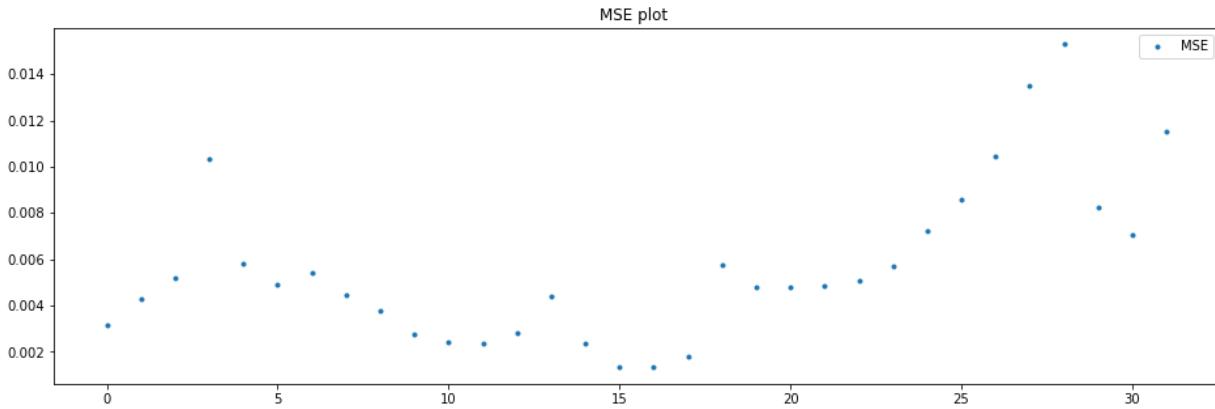
\*\*\*\*\*

Batch: 56

mean=0.0056775, median=0.00488 , max=0.01529, min=0.00132, variance=1.16194e-05

Boxplots and Distribution plot for Reconstruction Error





**Anderson\_Darling Test**

Statistic: 1.129

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

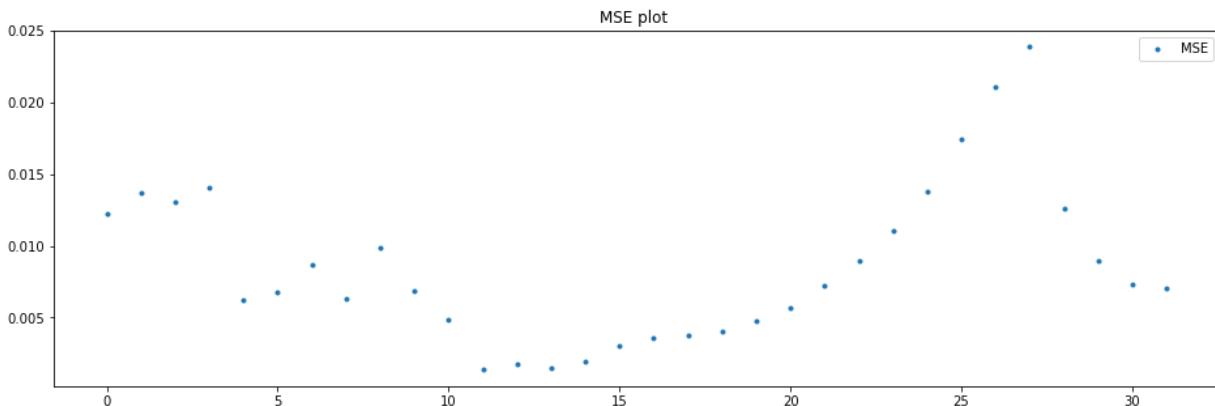
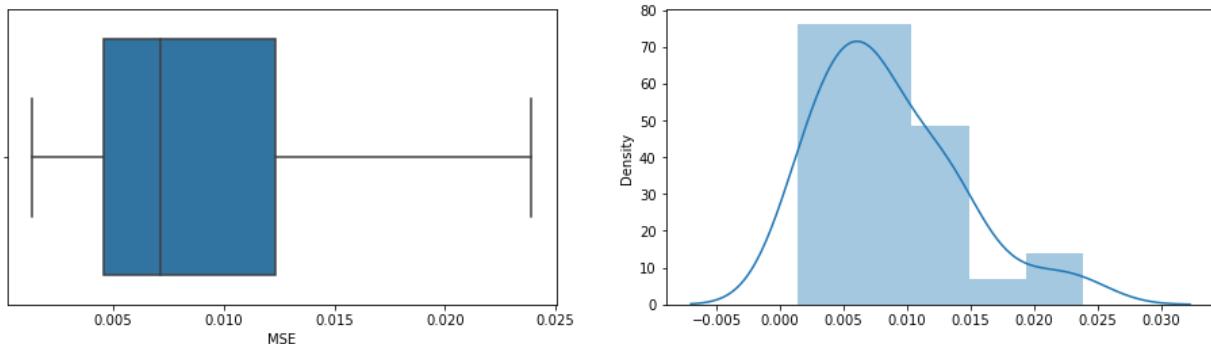
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 57

mean=0.00854, median=0.00712 , max=0.02389, min=0.00135, variance=3.00939e-05

Boxplots and Distribution plot for Reconstruction Error



**Anderson\_Darling Test**

Statistic: 0.666

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

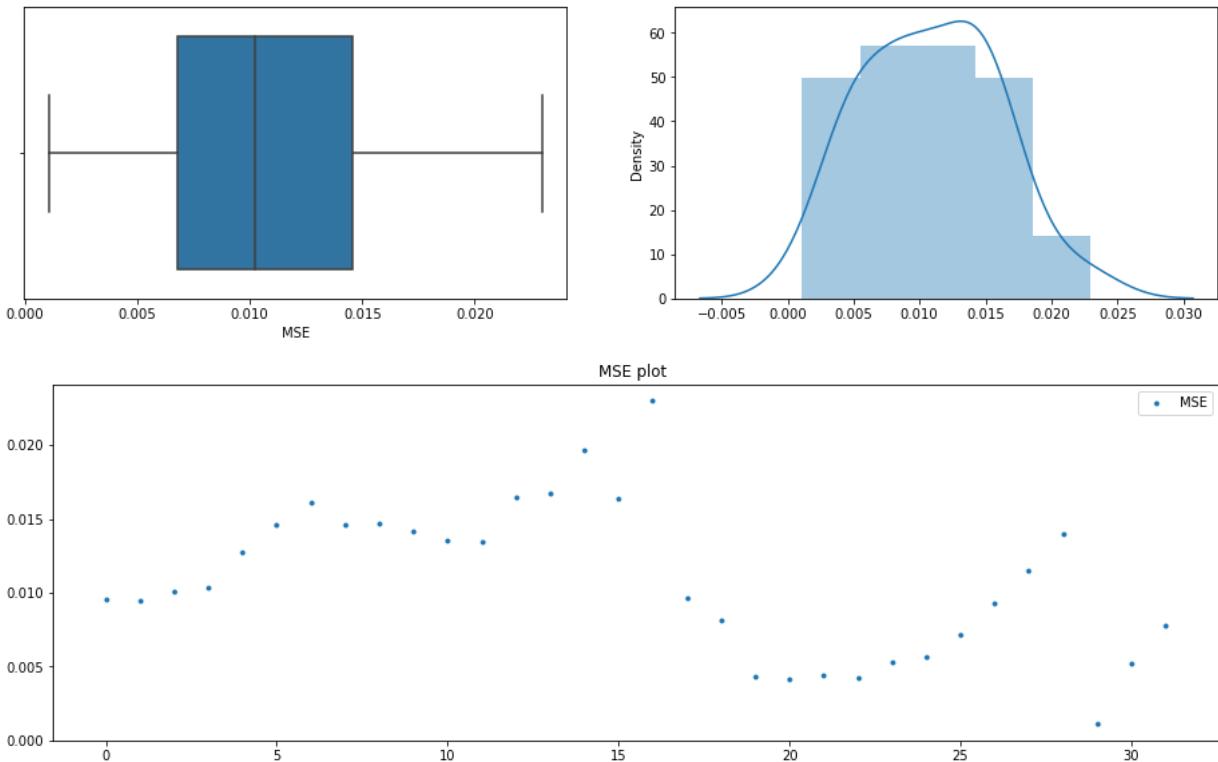
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 58

mean=0.01085, median=0.01023 , max=0.02299, min=0.00109, variance=2.57995e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson\_Darling Test**

Statistic: 0.345

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

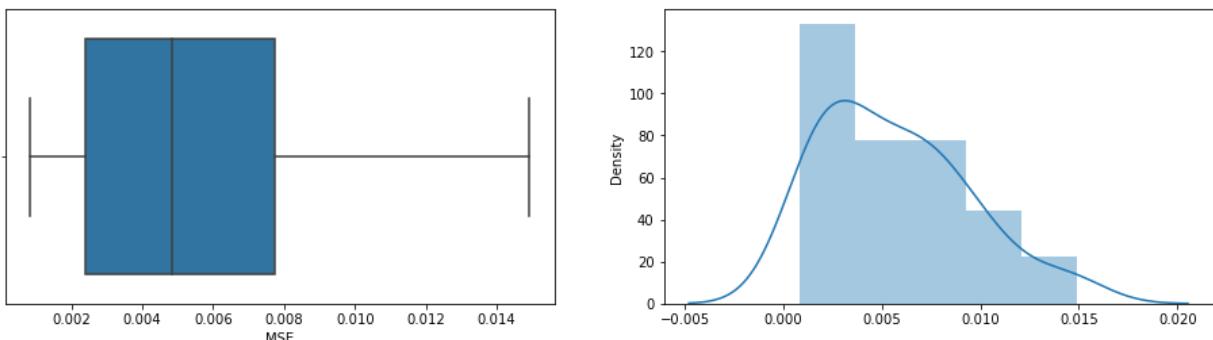
1.000: 0.992, data looks normal (fail to reject H0)

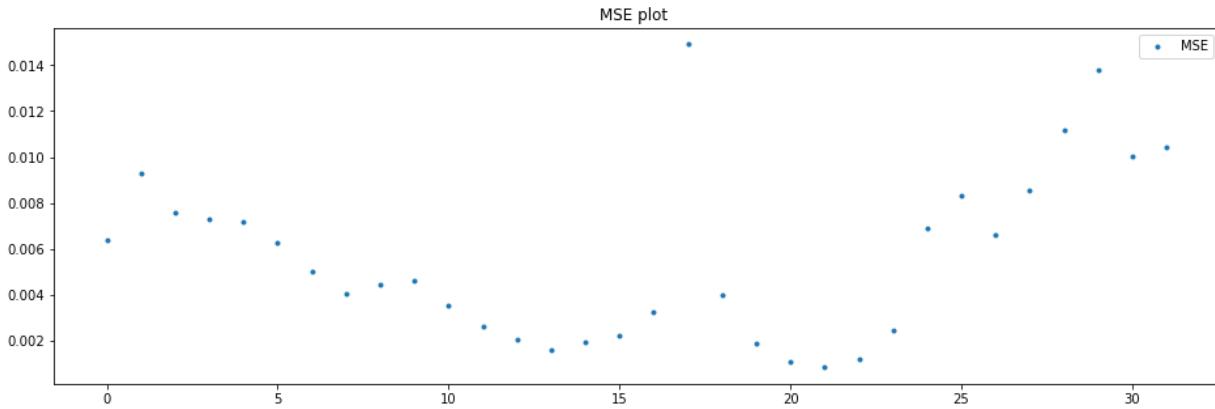
\*\*\*\*\*

Batch: 59

mean=0.0056746875, median=0.004835 , max=0.01491, min=0.00084, variance=1.3616e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.593

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

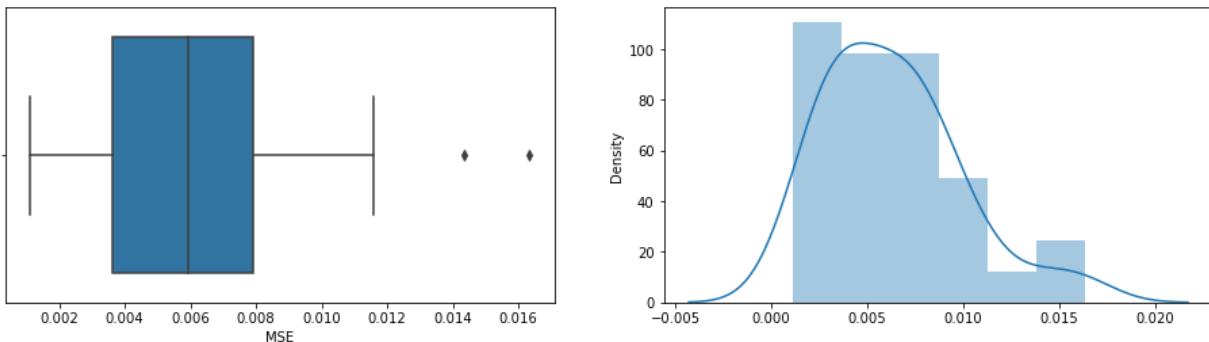
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

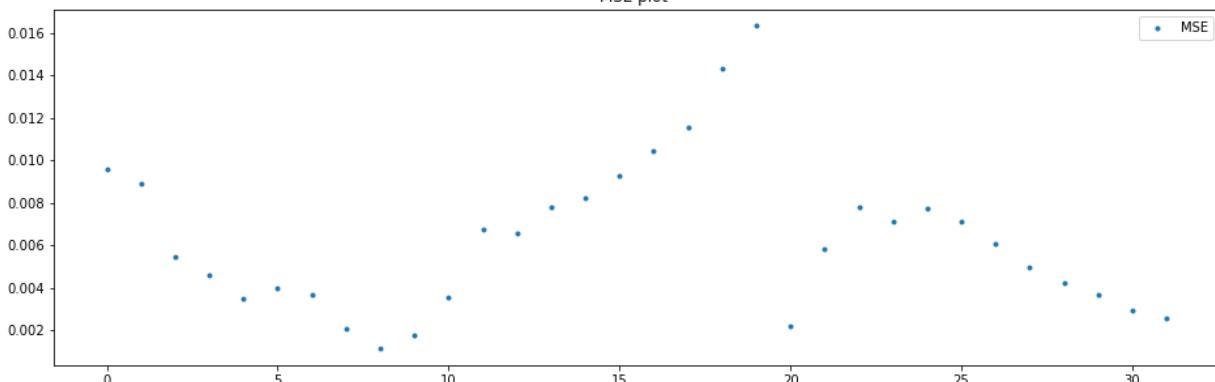
Batch: 60

mean=0.0062965625, median=0.00595 , max=0.01633, min=0.00111, variance=1.25402e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.494

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

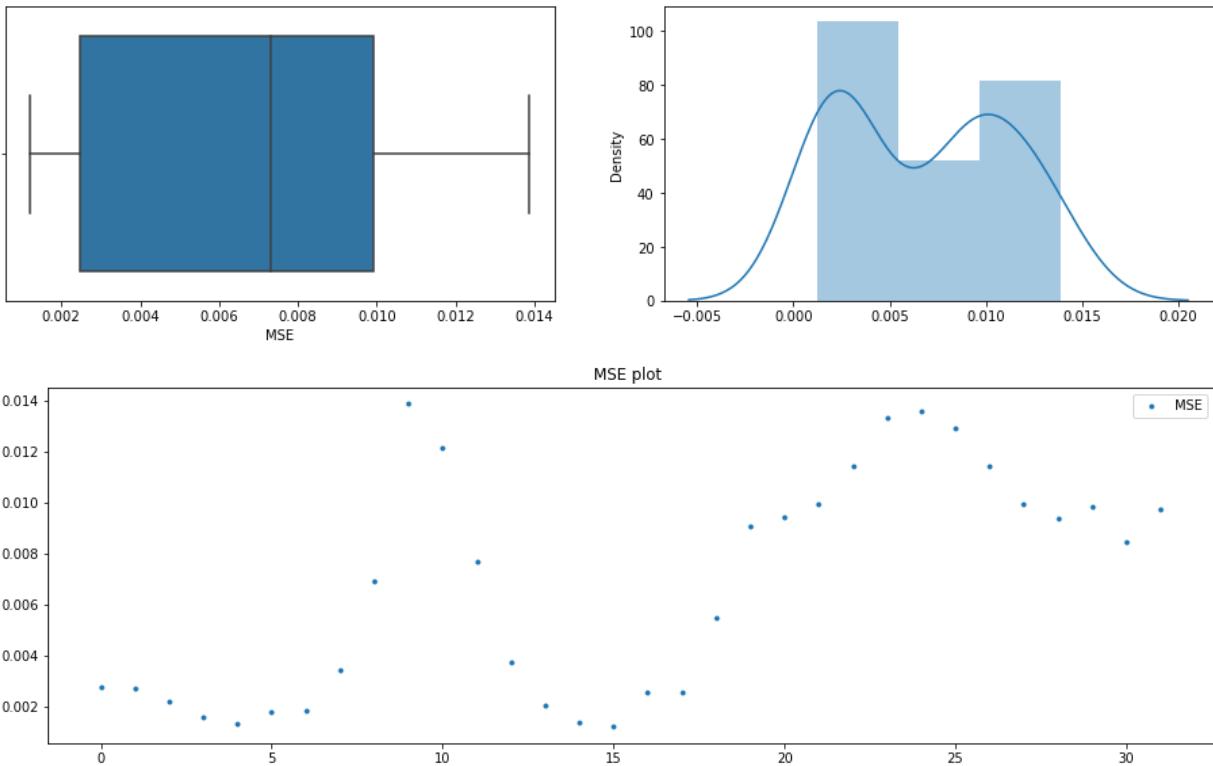
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 61

mean=0.0067428125, median=0.007315 , max=0.01386, min=0.00121, variance=1.90175e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson\_Darling Test**

Statistic: 1.423

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

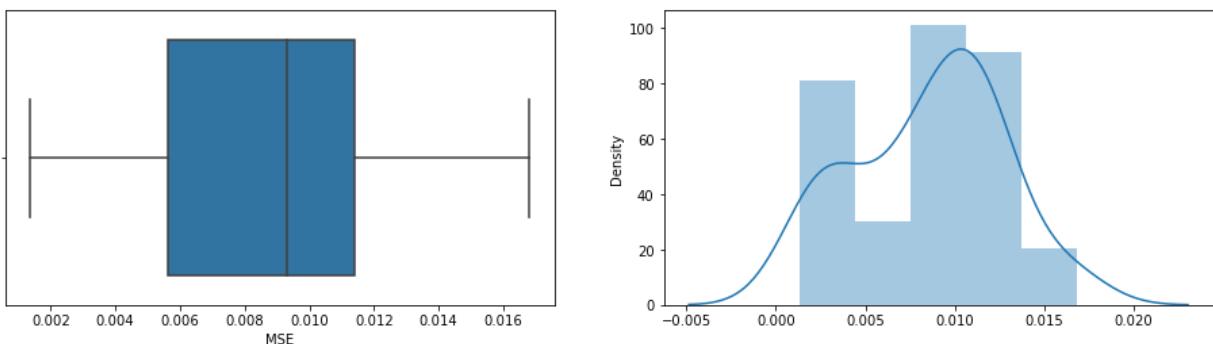
1.000: 0.992, data does not look normal (reject H0)

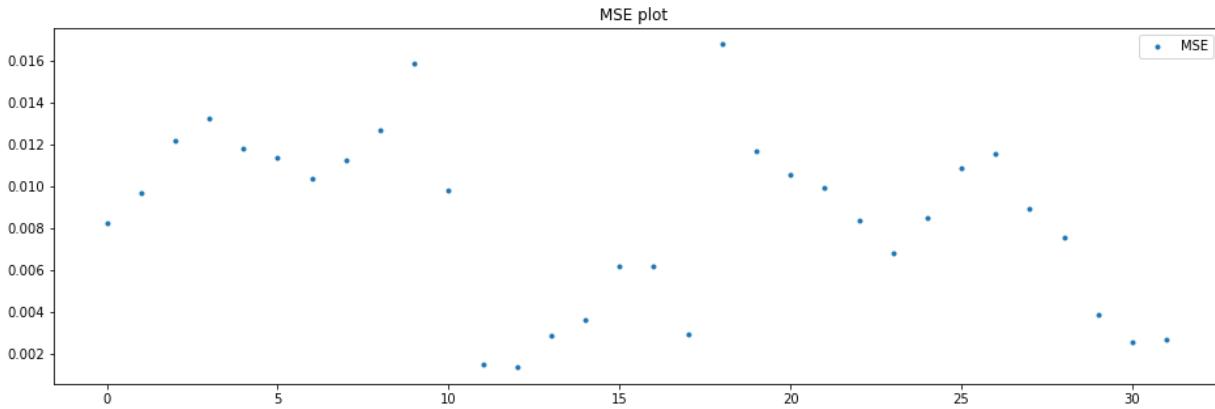
\*\*\*\*\*

Batch: 62

mean=0.00851,median=0.00932 ,max=0.0168,min=0.00136,variance=1.66232e-05

Boxplots and Distribution plot for Reconstruction Error





**Anderson\_Darling Test**

Statistic: 0.581

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

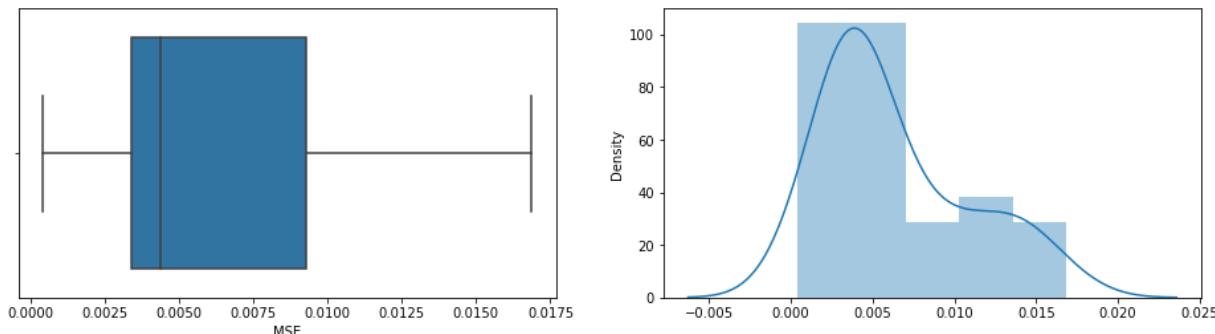
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

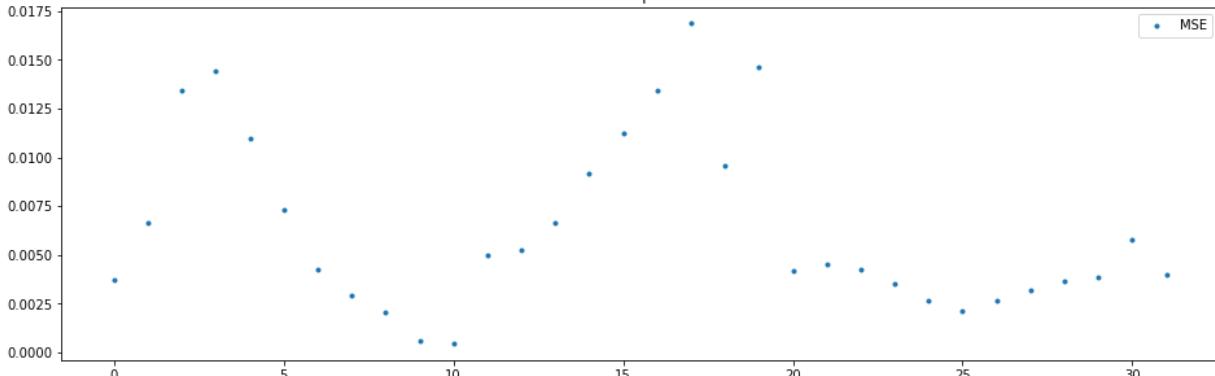
Batch: 63

mean=0.006336875, median=0.00438 , max=0.01687, min=0.00043, variance=1.93257e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



**Anderson\_Darling Test**

Statistic: 1.525

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

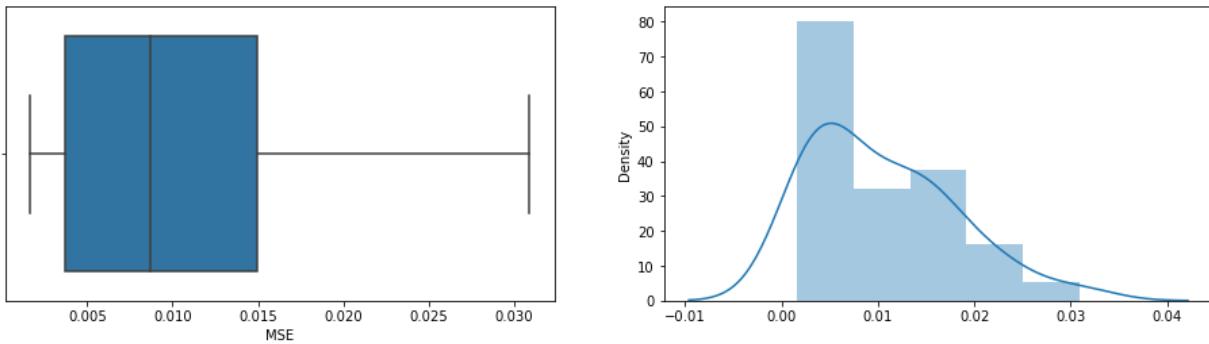
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

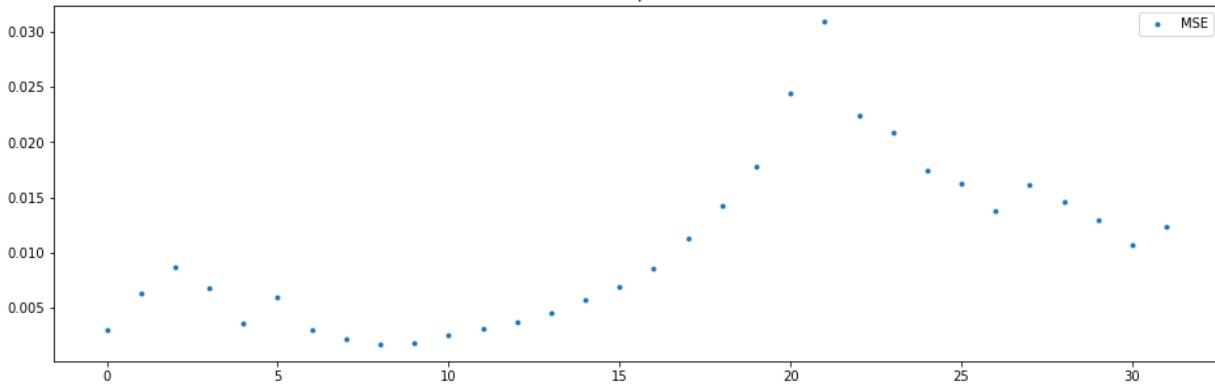
Batch: 64

mean=0.01044875, median=0.00867 , max=0.03088, min=0.00166, variance=5.47192e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson\_Darling Test**

Statistic: 0.779

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

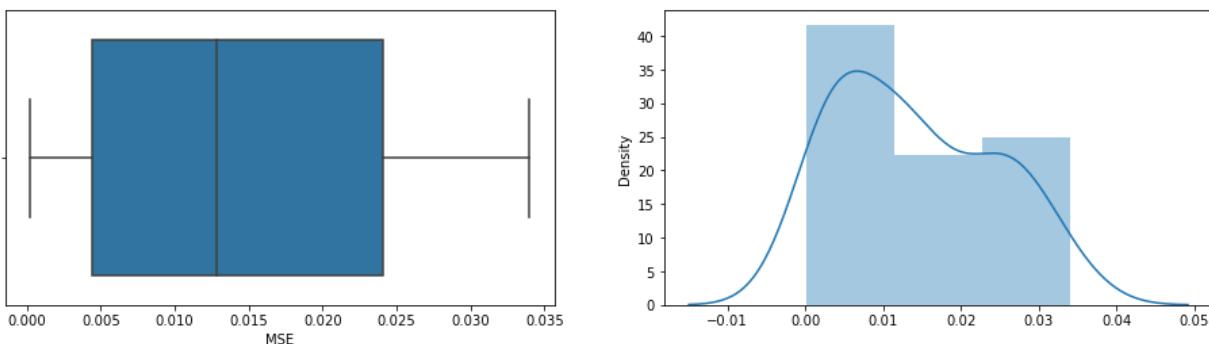
1.000: 0.992, data looks normal (fail to reject H0)

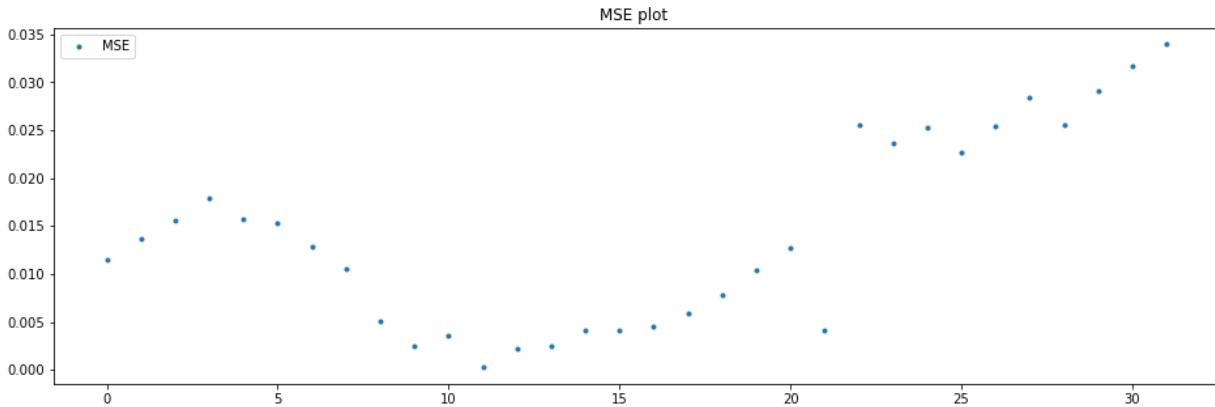
\*\*\*\*\*

Batch: 65

mean=0.0141865625, median=0.012815 , max=0.03397, min=0.00023, variance=9.89664e-05

Boxplots and Distribution plot for Reconstruction Error





**Anderson\_Darling Test**

Statistic: 0.886

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

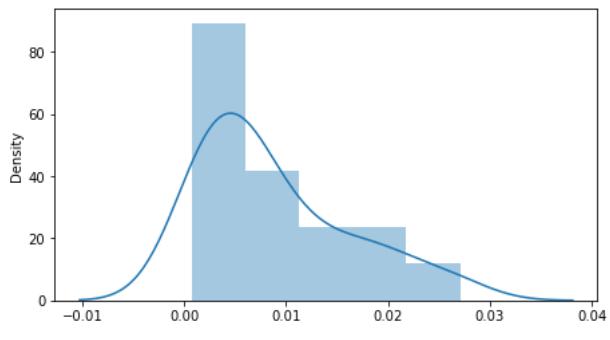
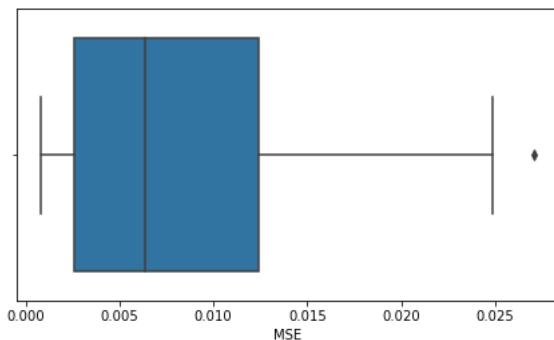
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

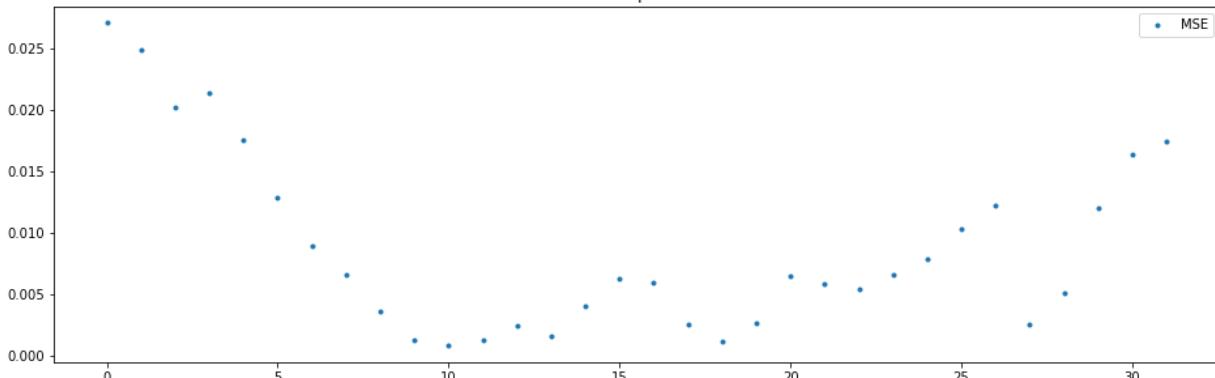
Batch: 66

mean=0.008789375, median=0.0064 , max=0.02707, min=0.00081, variance=5.27105e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



**Anderson\_Darling Test**

Statistic: 1.383

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

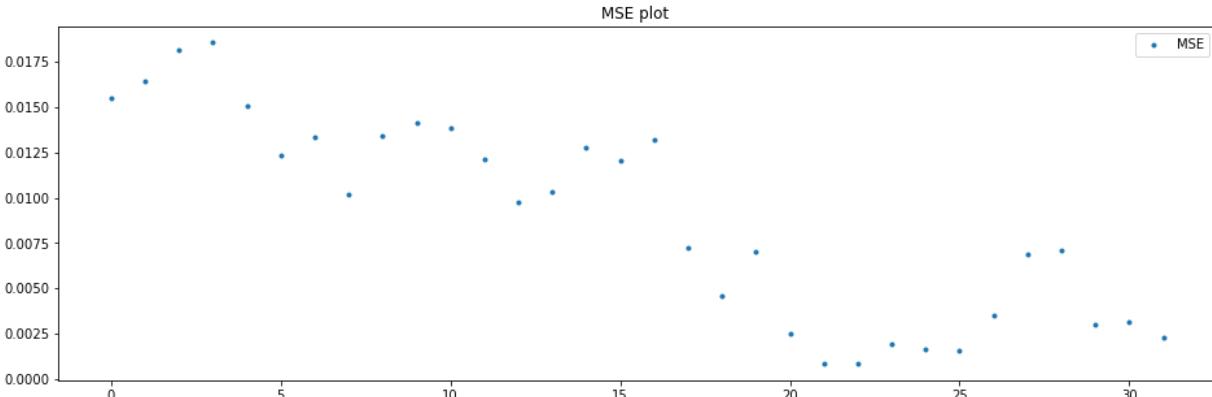
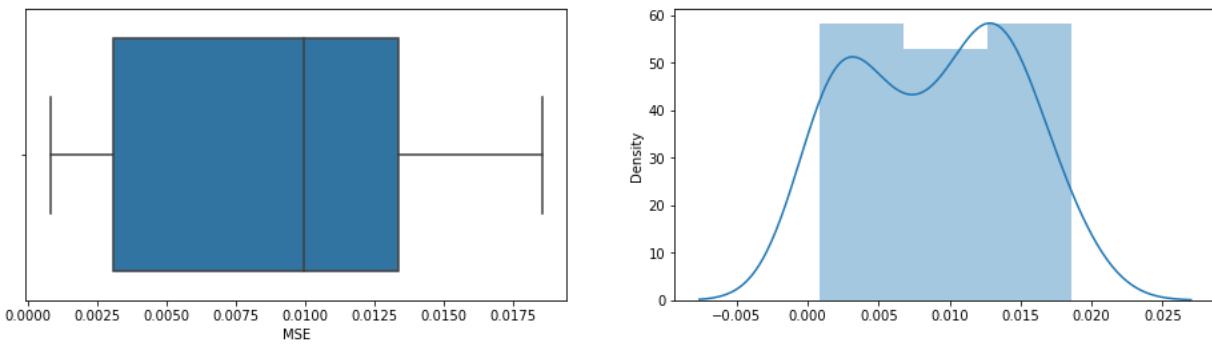
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 67

mean=0.0089128125, median=0.009975 , max=0.01856, min=0.00082, variance=3.06201e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson\_Darling Test**

Statistic: 0.871

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

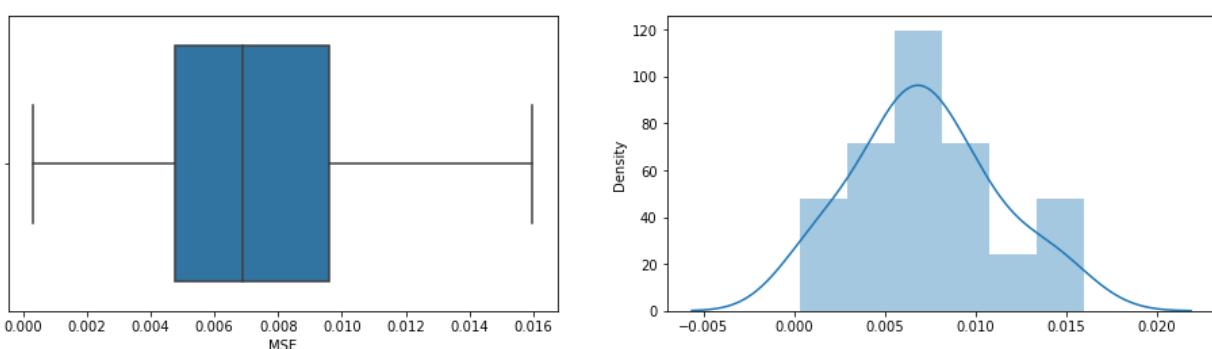
1.000: 0.992, data looks normal (fail to reject H0)

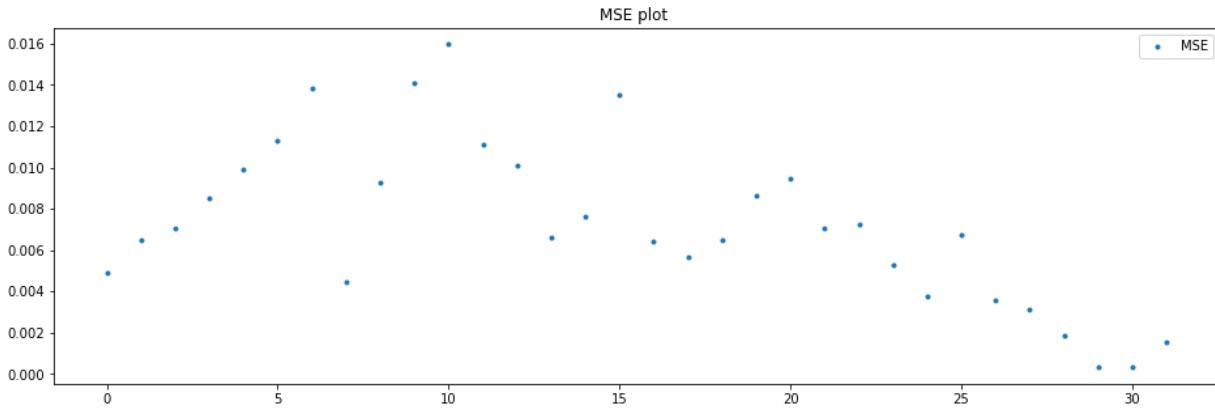
\*\*\*\*\*

Batch: 68

mean=0.0072590625, median=0.006885 , max=0.01597, min=0.00031, variance=1.51768e-05

Boxplots and Distribution plot for Reconstruction Error





**Anderson\_Darling Test**

Statistic: 0.229

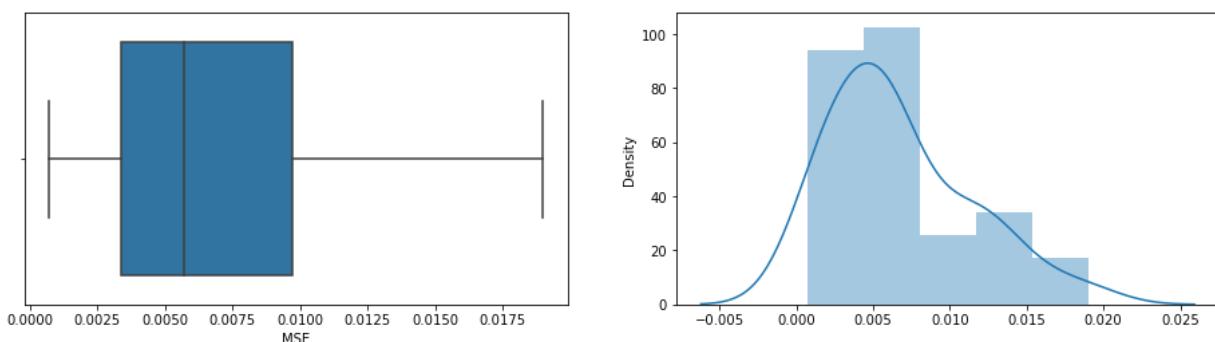
15.000: 0.523, data looks normal (fail to reject H<sub>0</sub>)  
 10.000: 0.596, data looks normal (fail to reject H<sub>0</sub>)  
 5.000: 0.715, data looks normal (fail to reject H<sub>0</sub>)  
 2.500: 0.834, data looks normal (fail to reject H<sub>0</sub>)  
 1.000: 0.992, data looks normal (fail to reject H<sub>0</sub>)

\*\*\*\*\*

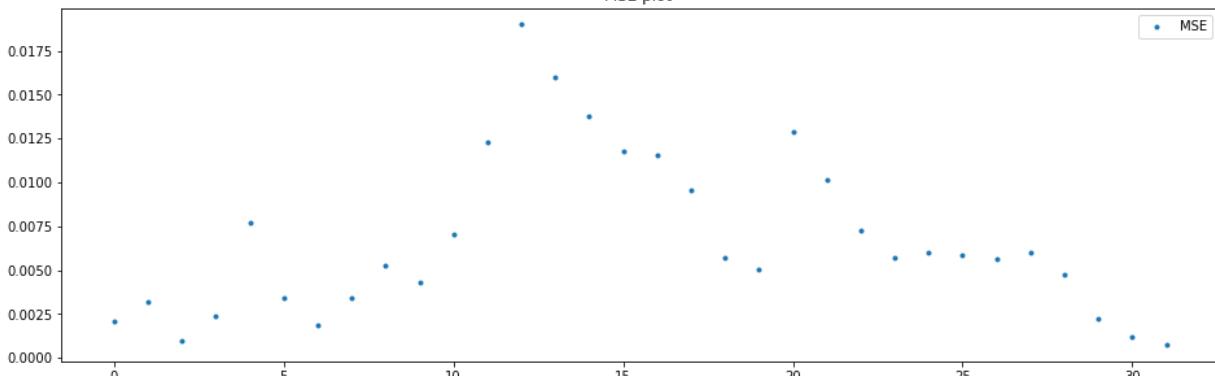
Batch: 69

mean=0.0067065625, median=0.005705 , max=0.01899, min=0.00072, variance=2.07177e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



**Anderson\_Darling Test**

Statistic: 0.847

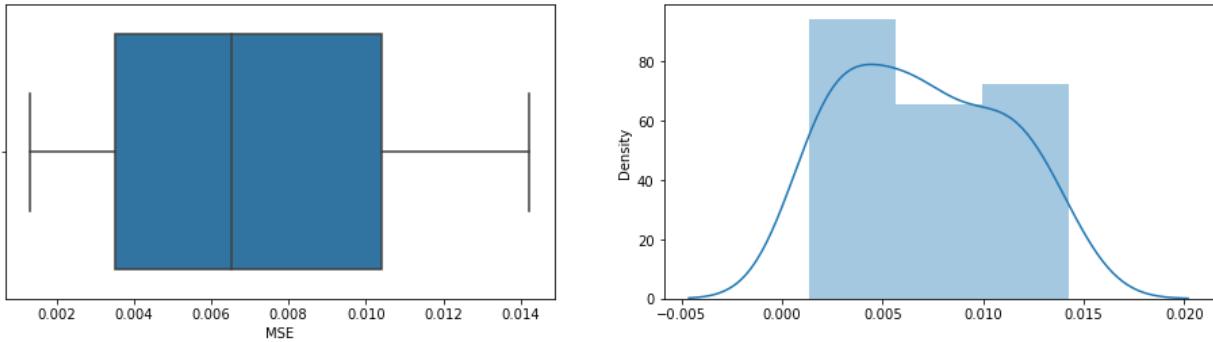
15.000: 0.523, data does not look normal (reject H<sub>0</sub>)  
 10.000: 0.596, data does not look normal (reject H<sub>0</sub>)  
 5.000: 0.715, data does not look normal (reject H<sub>0</sub>)  
 2.500: 0.834, data does not look normal (reject H<sub>0</sub>)  
 1.000: 0.992, data looks normal (fail to reject H<sub>0</sub>)

\*\*\*\*\*

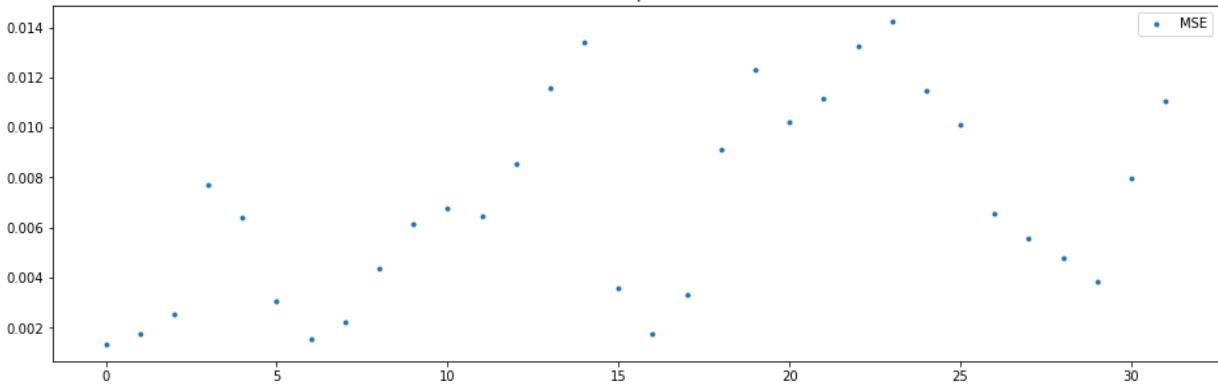
Batch: 70

mean=0.0070075, median=0.00652 , max=0.01422, min=0.00132, variance=1.52577e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson\_Darling Test**

Statistic: 0.514

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

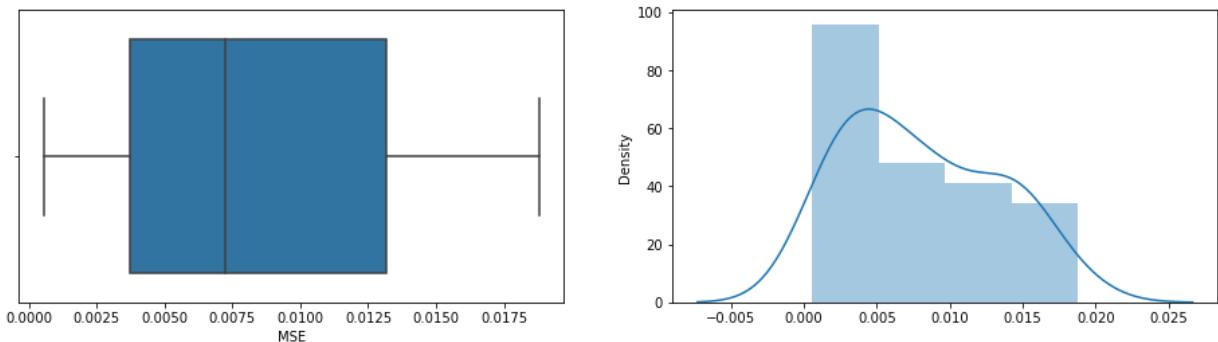
1.000: 0.992, data looks normal (fail to reject H0)

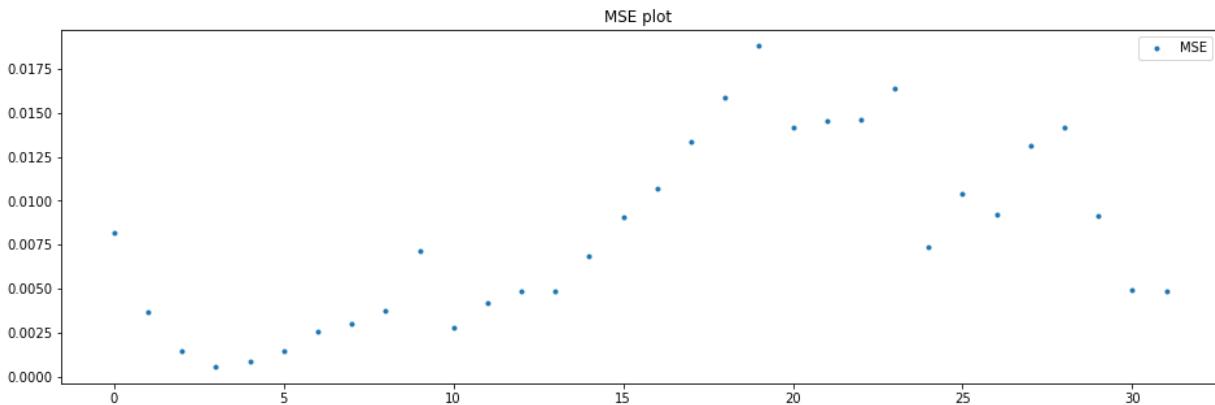
\*\*\*\*\*

Batch: 71

mean=0.0080265625, median=0.00725 , max=0.01879, min=0.00054, variance=2.6539e-05

Boxplots and Distribution plot for Reconstruction Error





**Anderson\_Darling Test**

Statistic: 0.662

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

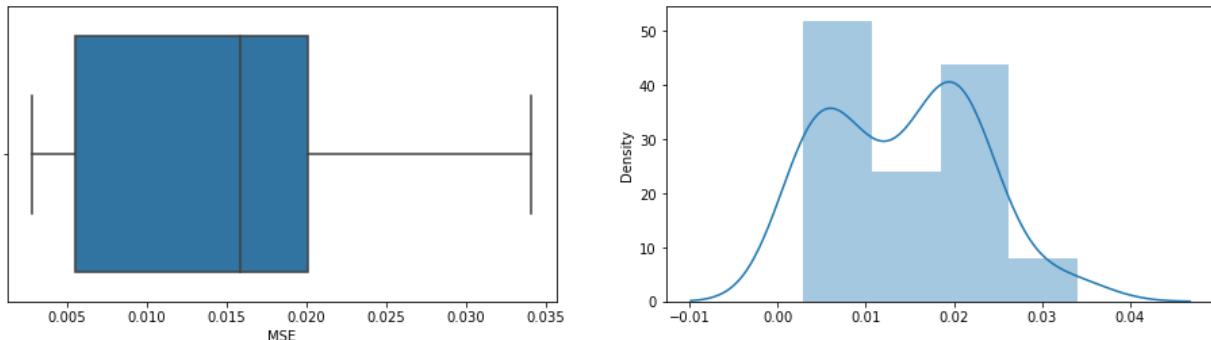
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

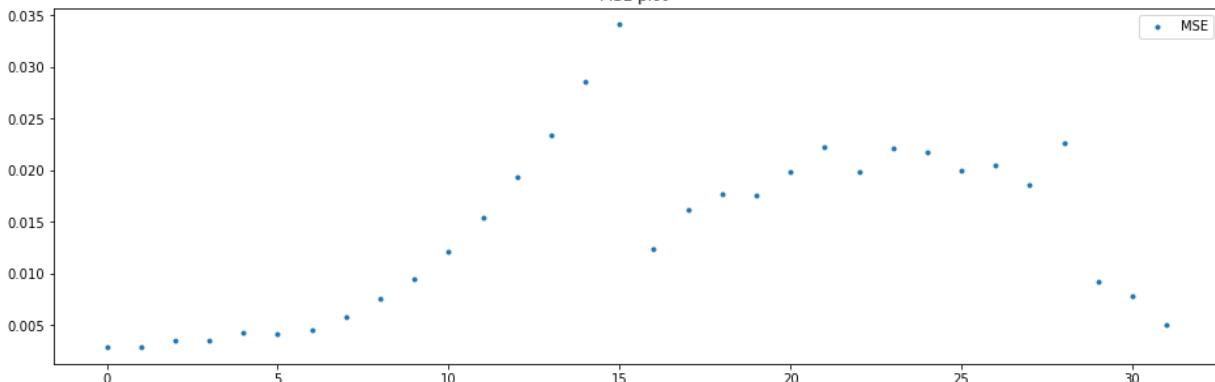
Batch: 72

mean=0.0142234375, median=0.015845 , max=0.03411, min=0.00283, variance=6.9529e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



**Anderson\_Darling Test**

Statistic: 0.859

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

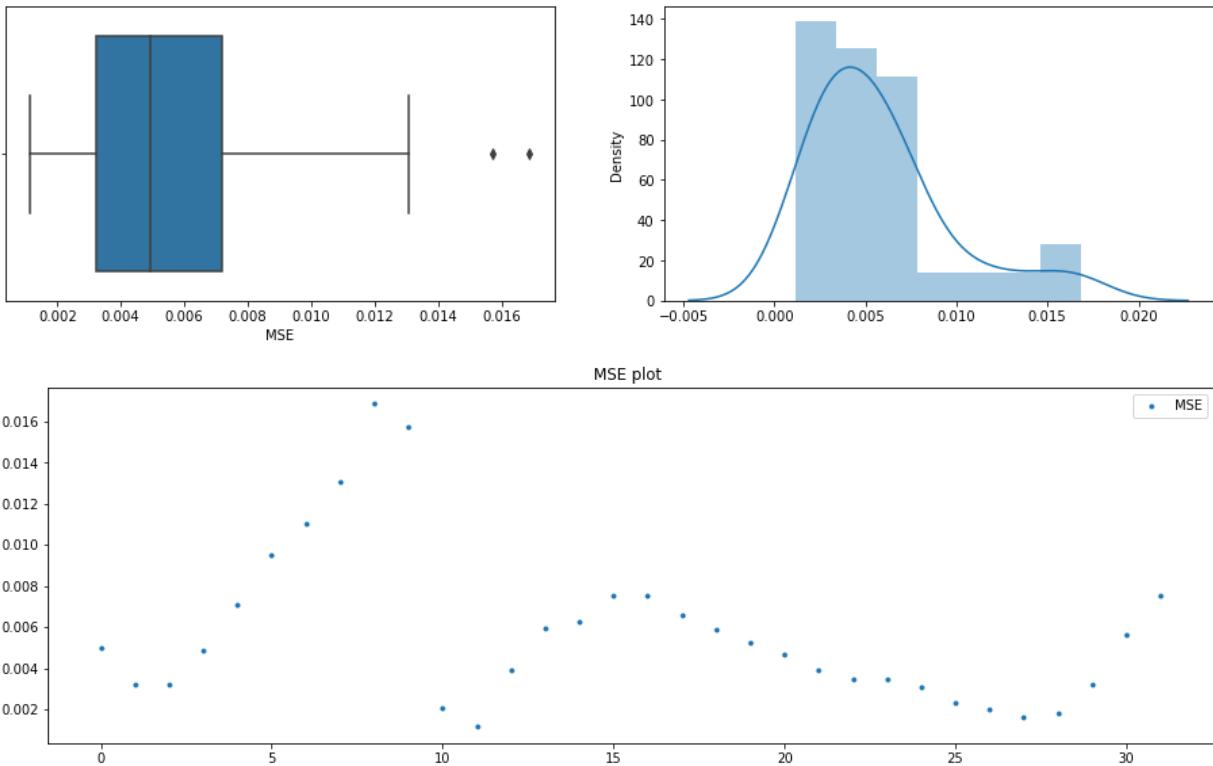
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 73

mean=0.005754375, median=0.00492 , max=0.01687, min=0.00114, variance=1.47133e-05

Boxplots and Distribution plot for Reconstruction Error



## Anderson\_Darling Test

Statistic: 1.384

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

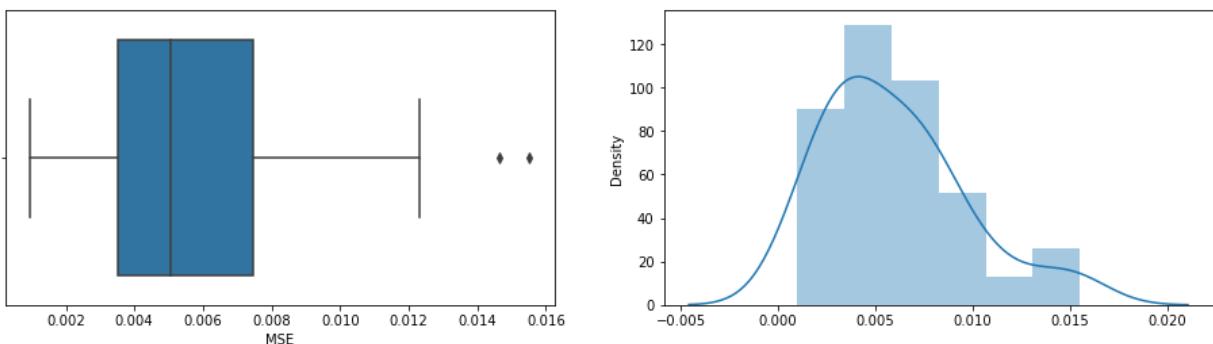
1.000: 0.992, data does not look normal (reject H0)

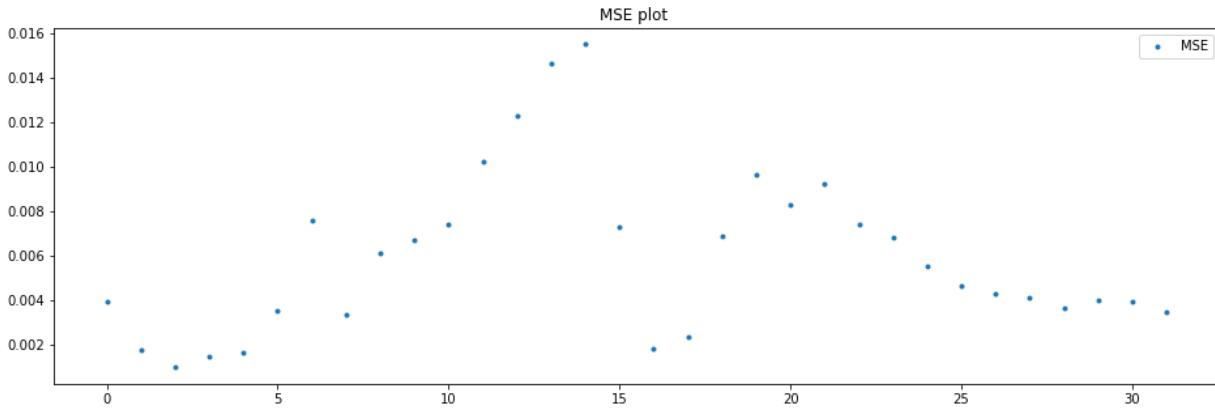
\*\*\*\*\*

Batch: 74

mean=0.0059509375, median=0.005065 , max=0.01551, min=0.00096, variance=1.31938e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.741

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

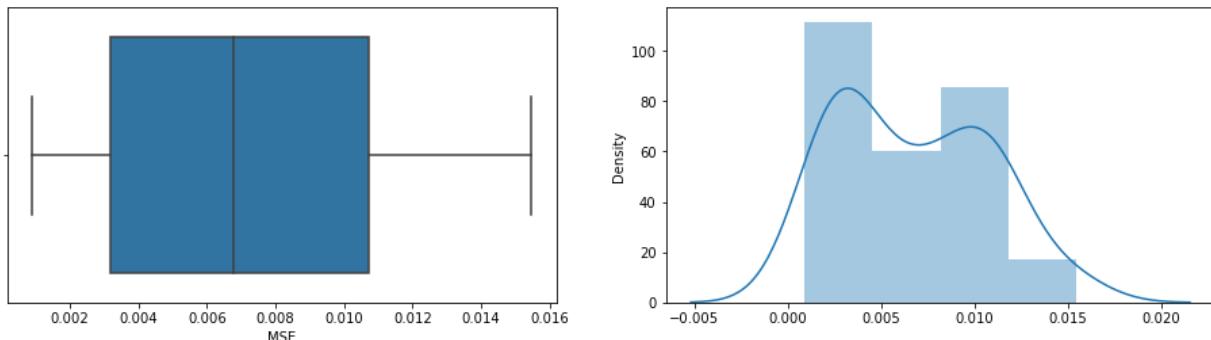
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

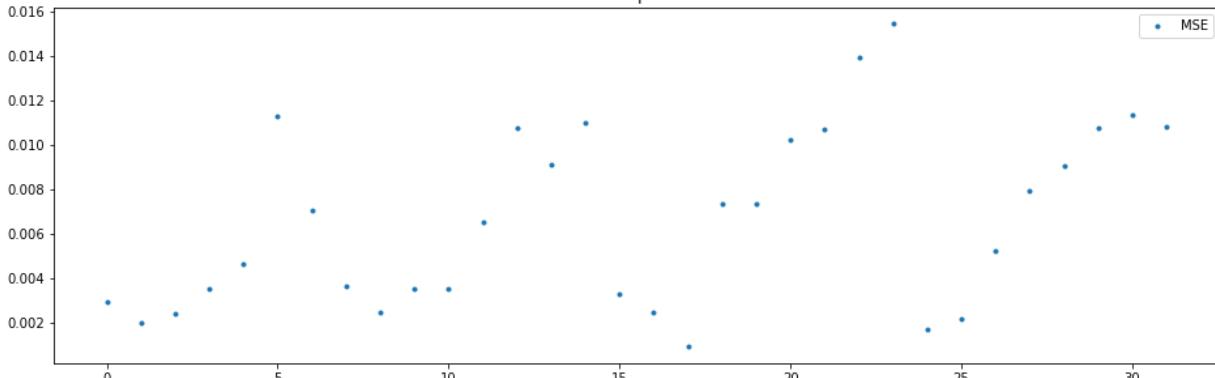
Batch: 75

mean=0.00671625, median=0.006785 , max=0.01546, min=0.0009, variance=1.60136e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.969

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

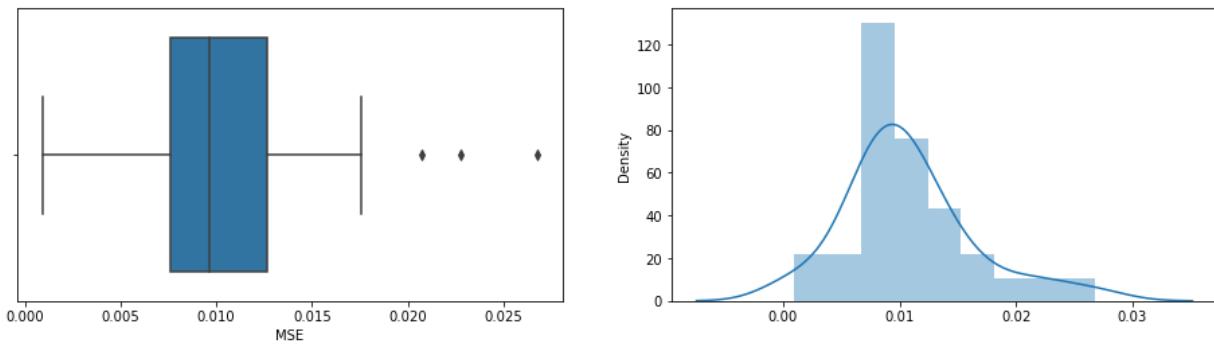
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

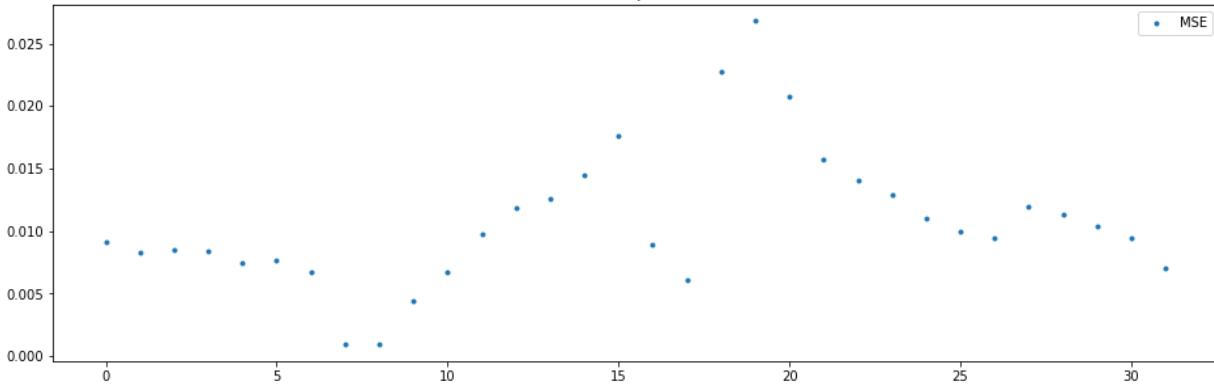
Batch: 76

mean=0.0107528125, median=0.009625 , max=0.0268, min=0.00091, variance=2.99058e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



## Anderson\_Darling Test

Statistic: 0.874

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

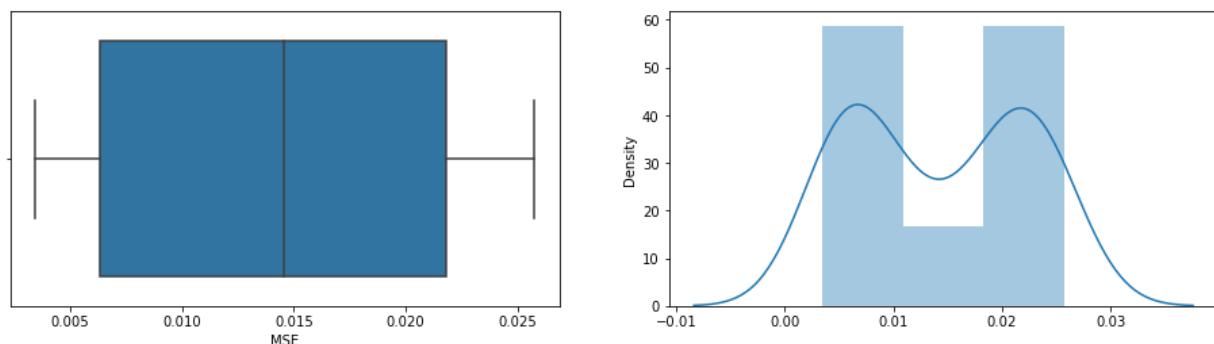
1.000: 0.992, data looks normal (fail to reject H0)

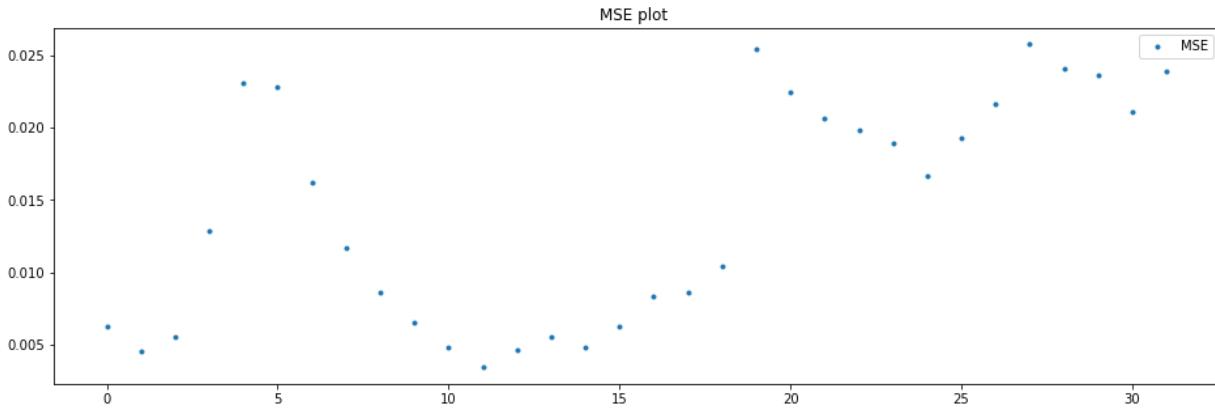
\*\*\*\*\*

Batch: 77

mean=0.014329375, median=0.01455 , max=0.02576, min=0.00343, variance=6.00478e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 1.480

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

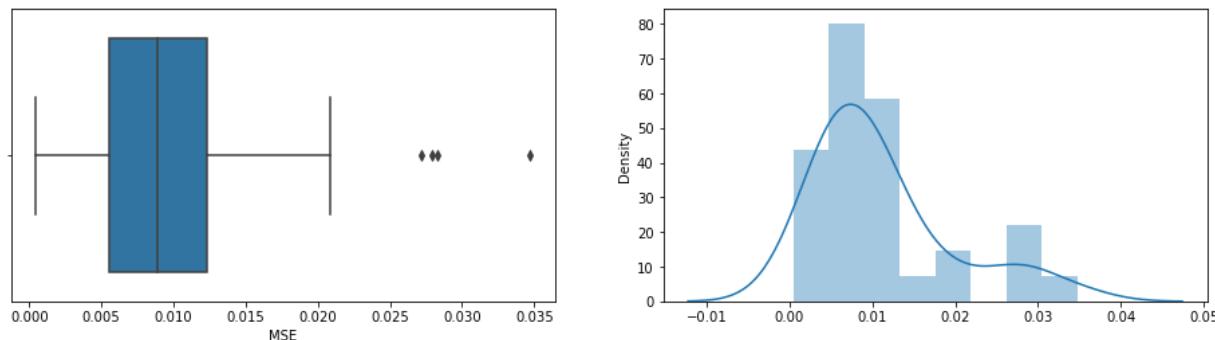
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

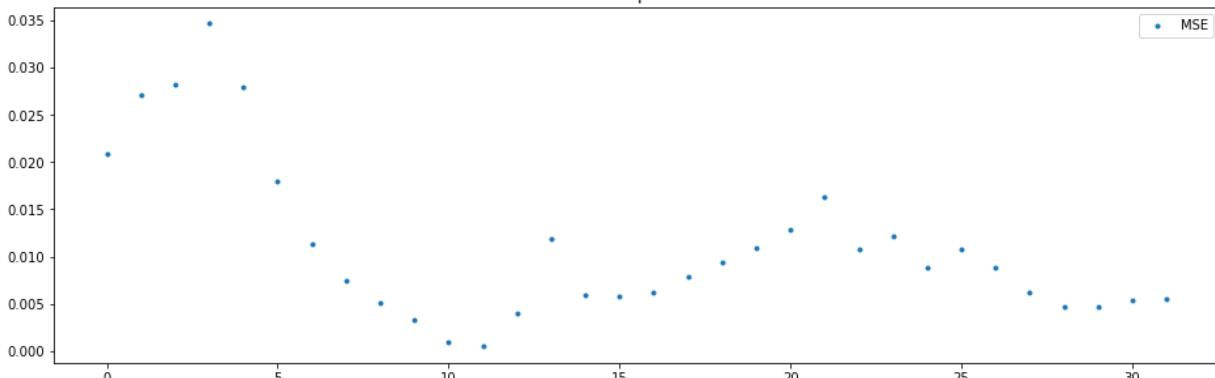
Batch: 78

mean=0.011063125, median=0.00889 , max=0.0347, min=0.00045, variance=6.93554e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 1.778

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

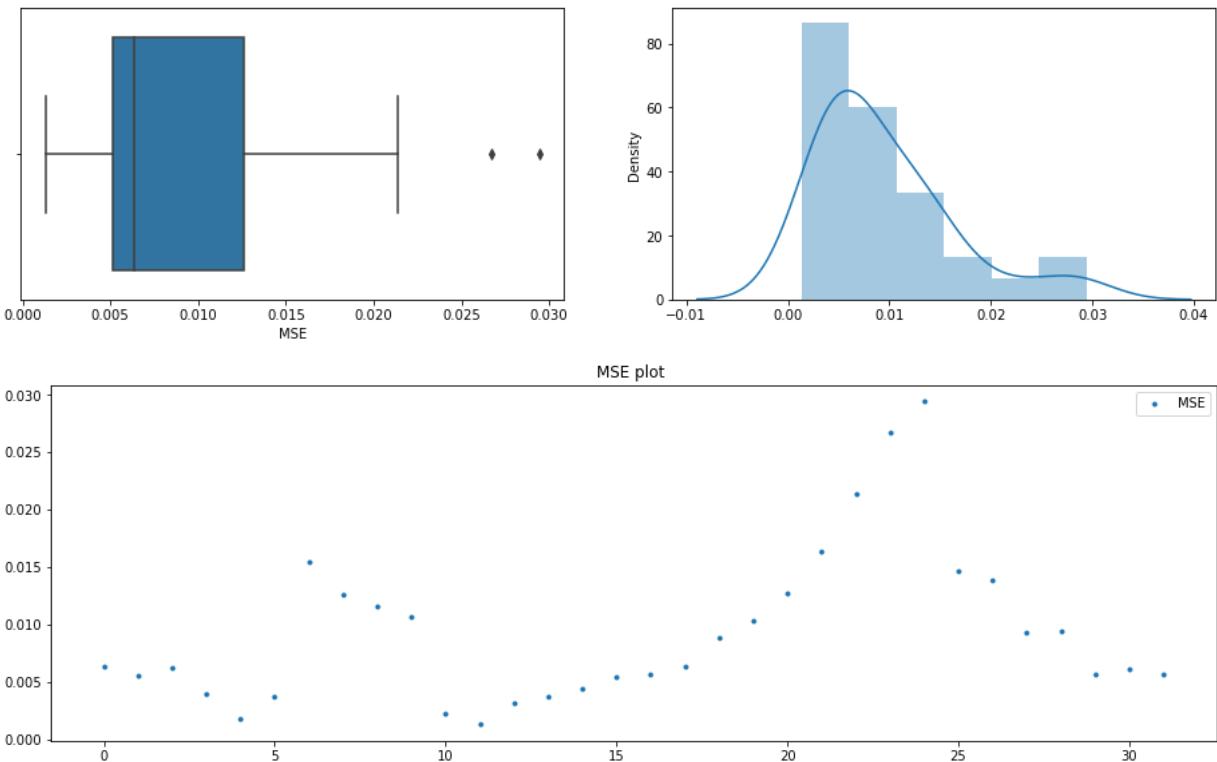
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 79

mean=0.009410625, median=0.006395 , max=0.02943, min=0.00131, variance=4.52844e-05

Boxplots and Distribution plot for Reconstruction Error



## Anderson\_Darling Test

Statistic: 1.325

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

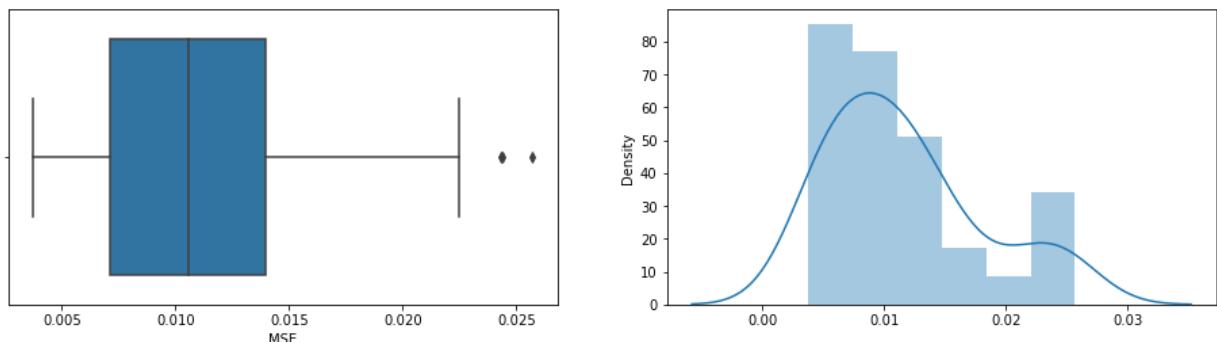
1.000: 0.992, data does not look normal (reject H0)

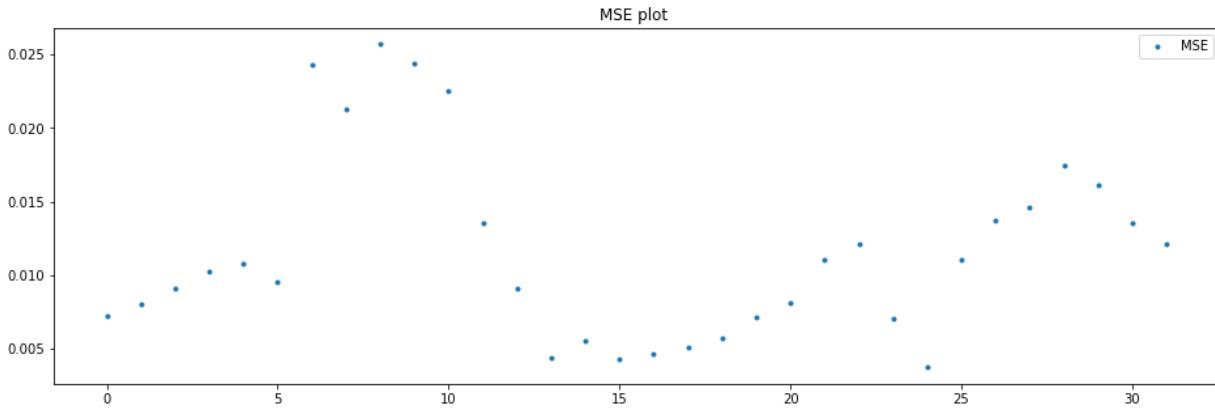
\*\*\*\*\*

Batch: 80

mean=0.0116675, median=0.010545 , max=0.02569, min=0.00373, variance=3.88928e-05

Boxplots and Distribution plot for Reconstruction Error





**Anderson\_Darling Test**

Statistic: 0.976

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

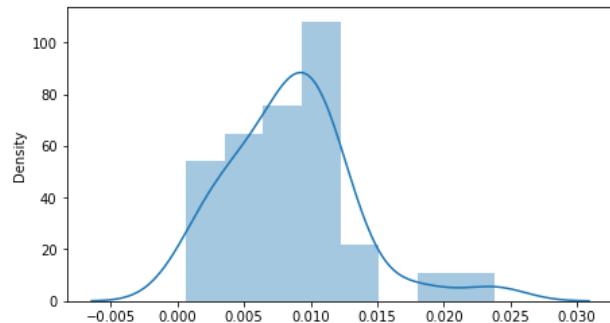
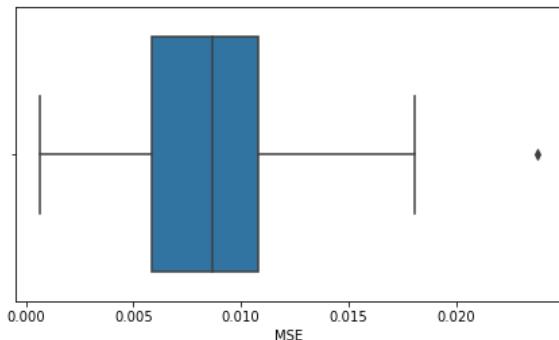
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

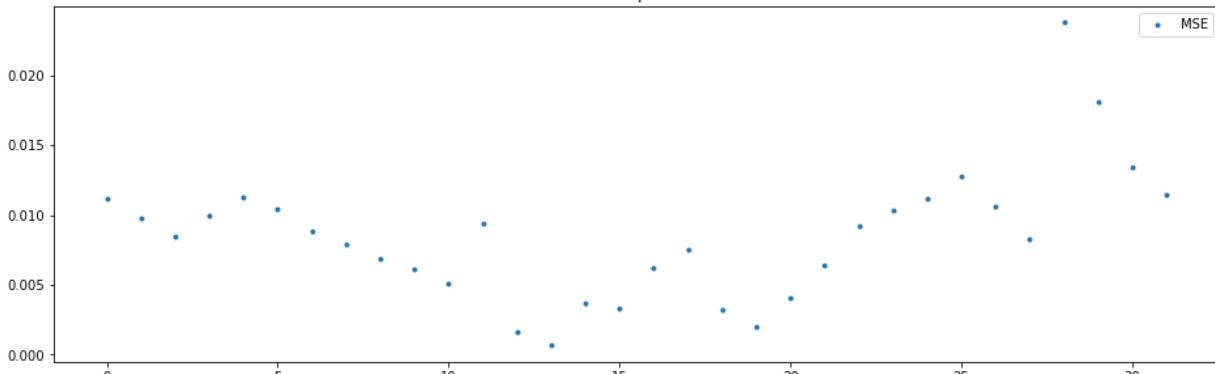
Batch: 81

mean=0.008543125, median=0.00865 , max=0.02379, min=0.00066, variance=2.17151e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



**Anderson\_Darling Test**

Statistic: 0.538

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

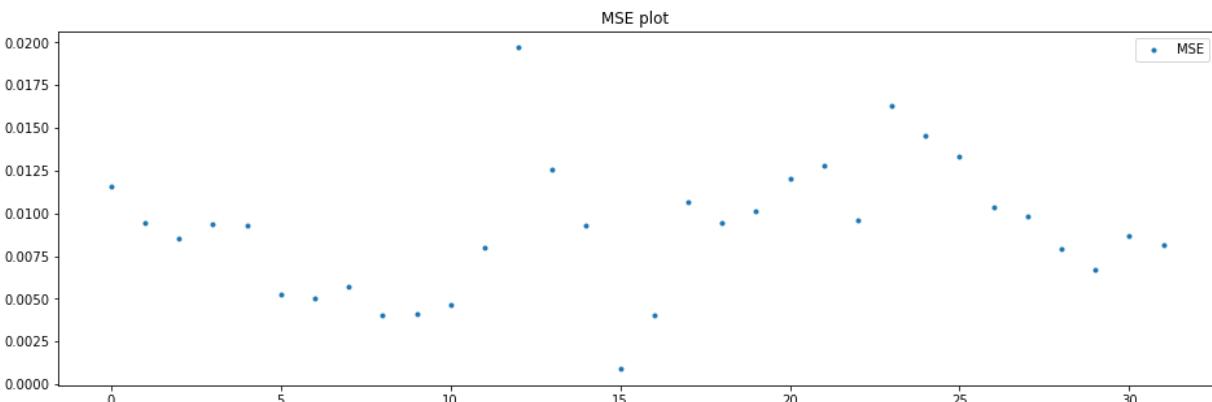
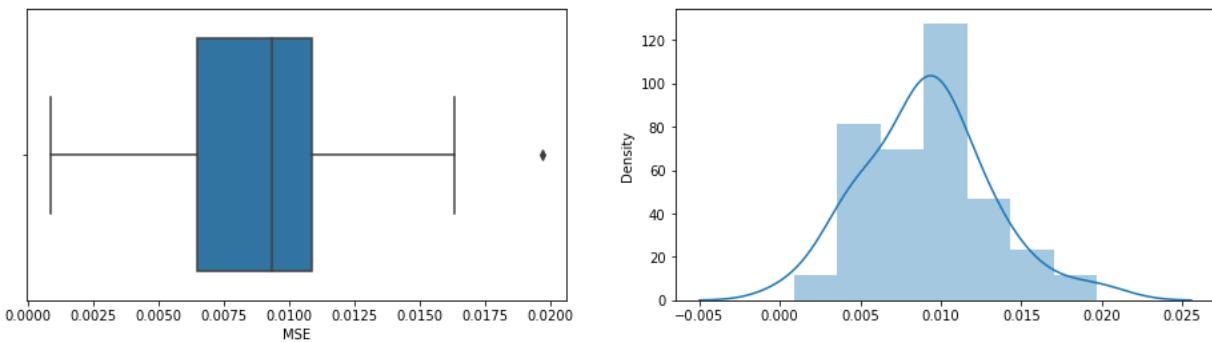
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 82

mean=0.00912375, median=0.00933 , max=0.0197, min=0.00088, variance=1.48376e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson\_Darling Test**

Statistic: 0.362

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

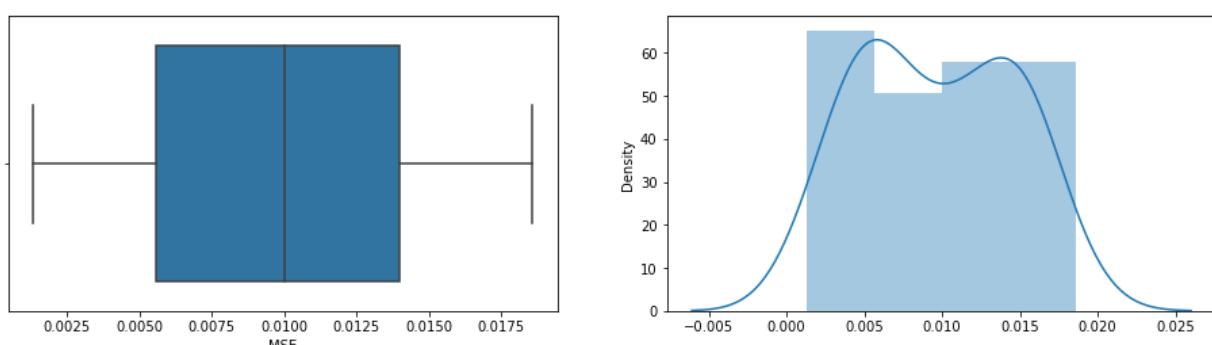
1.000: 0.992, data looks normal (fail to reject H0)

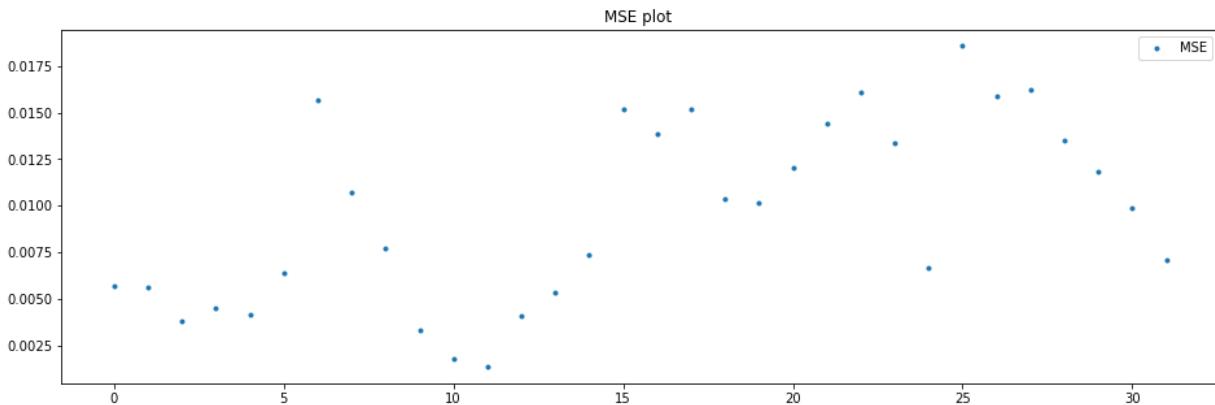
\*\*\*\*\*

Batch: 83

mean=0.0096165625, median=0.010025 , max=0.01858, min=0.00133, variance=2.3703e-05

Boxplots and Distribution plot for Reconstruction Error



**Anderson\_Darling Test**

Statistic: 0.640

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

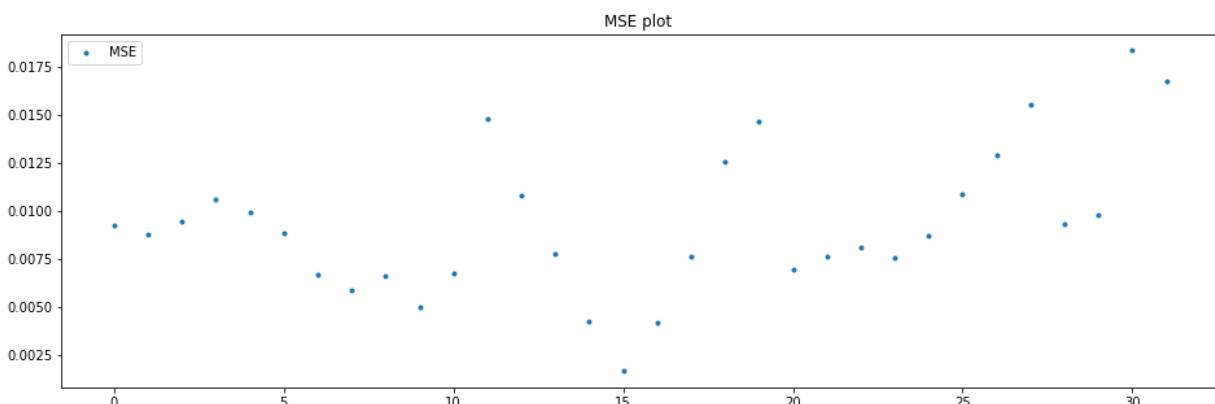
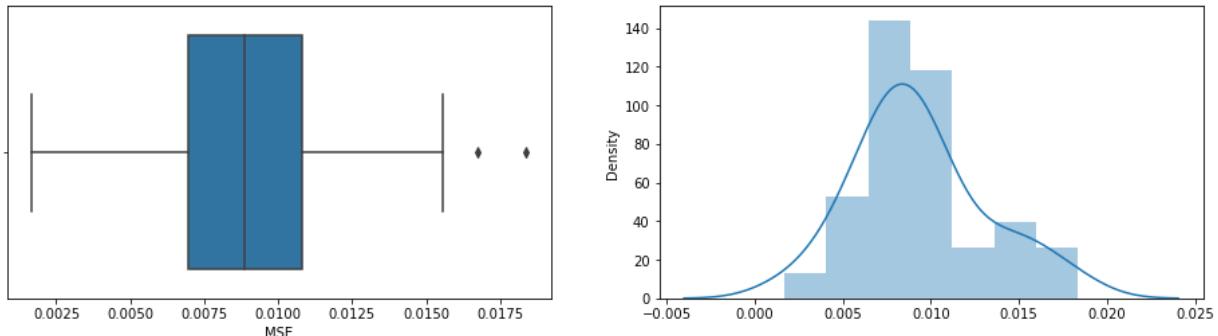
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 84

mean=0.0093440625, median=0.00884 , max=0.01837, min=0.00167, variance=1.39004e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson\_Darling Test**

Statistic: 0.528

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

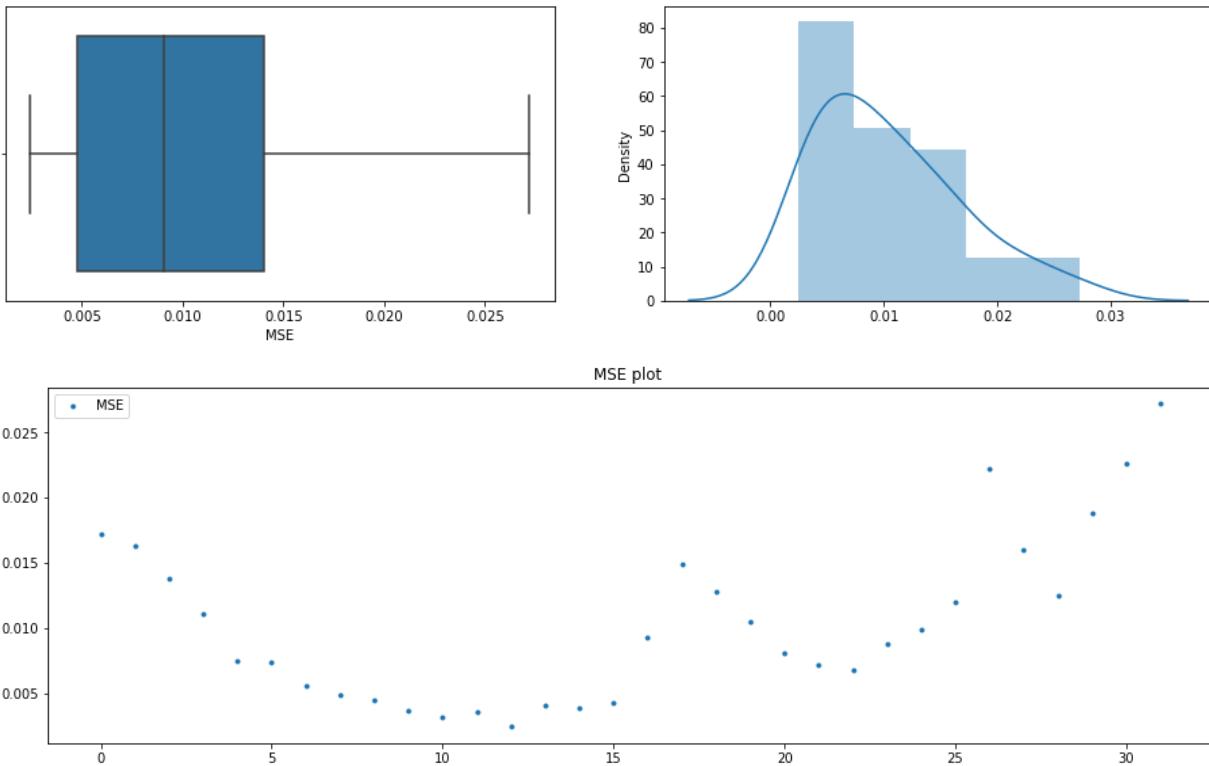
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 85

mean=0.0104071875, median=0.009055 , max=0.0272, min=0.00244, variance=3.9617e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson\_Darling Test**

Statistic: 0.739

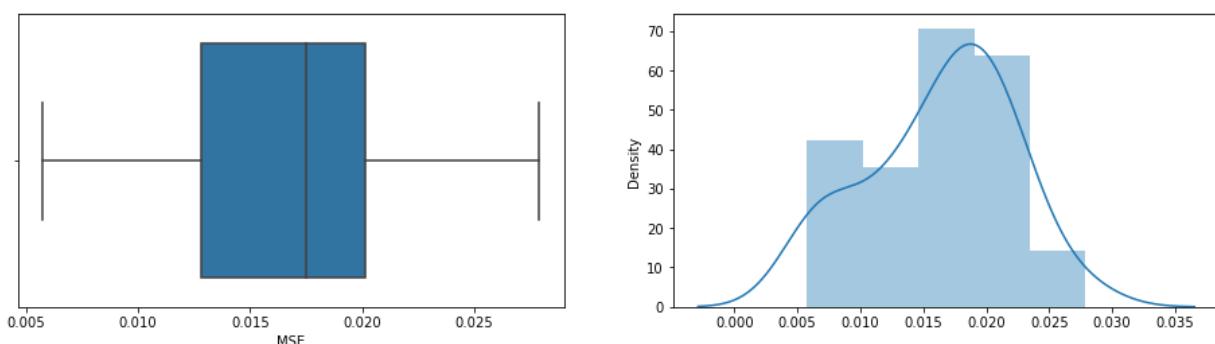
```
15.000: 0.523, data does not look normal (reject H0)
10.000: 0.596, data does not look normal (reject H0)
5.000: 0.715, data does not look normal (reject H0)
2.500: 0.834, data looks normal (fail to reject H0)
1.000: 0.992, data looks normal (fail to reject H0)
```

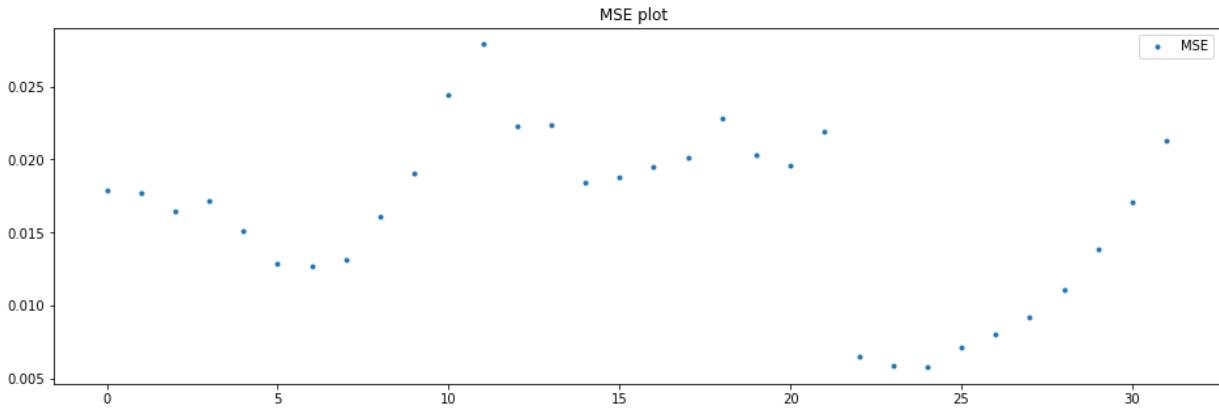
\*\*\*\*\*

Batch: 86

mean=0.0163375, median=0.01747 , max=0.02789, min=0.00577, variance=3.23225e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.488

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

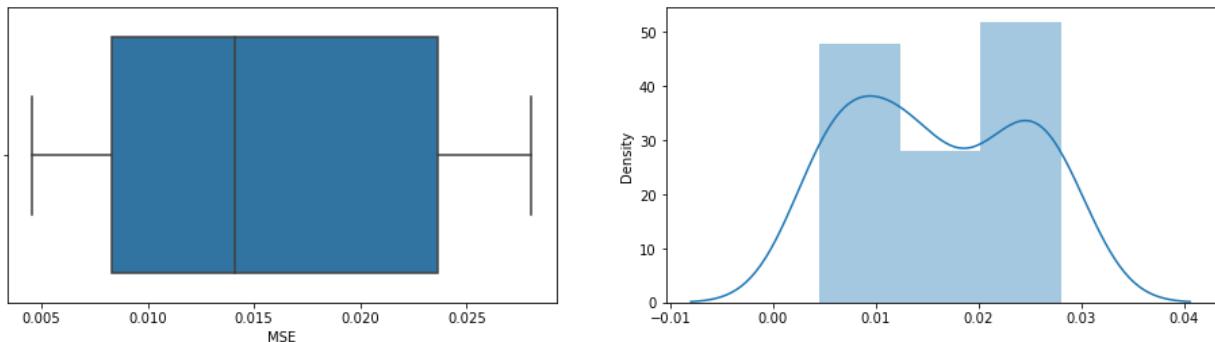
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

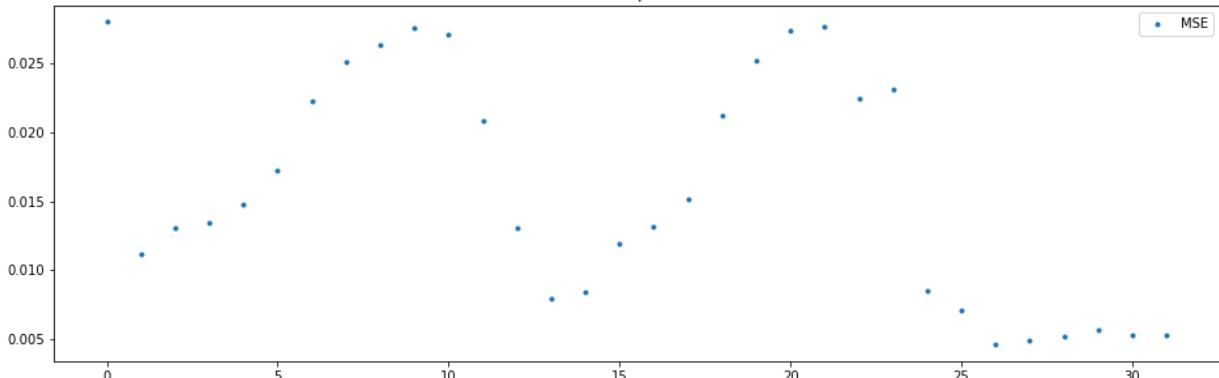
Batch: 87

mean=0.015948125, median=0.01412 , max=0.02803, min=0.00457, variance=6.77934e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 1.021

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

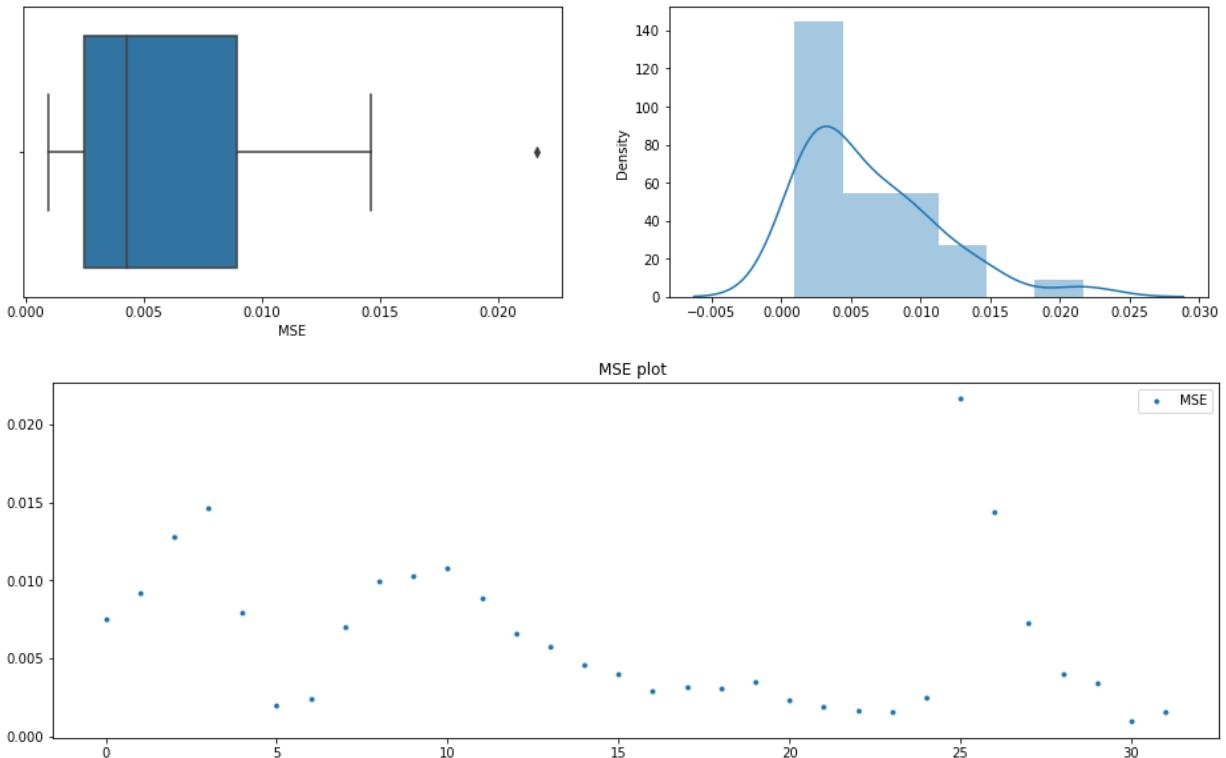
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 88

mean=0.006255, median=0.004305 , max=0.02164, min=0.00095, variance=2.25181e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson\_Darling Test**

Statistic: 1.226

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

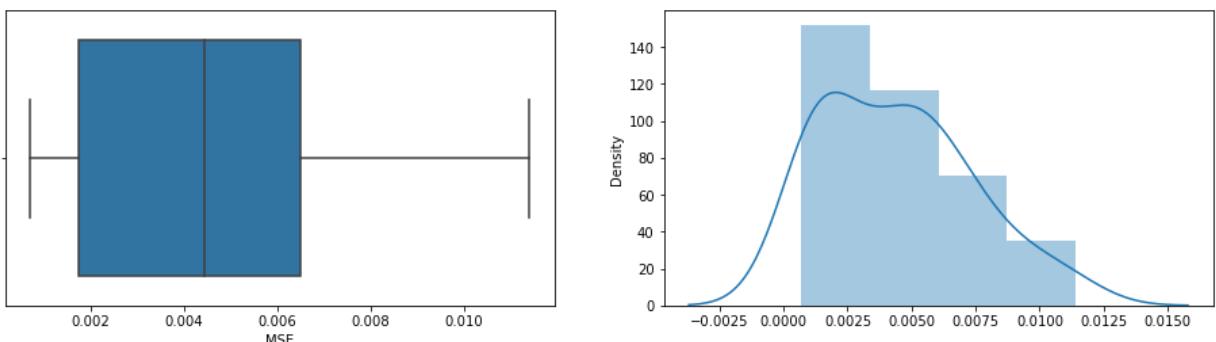
1.000: 0.992, data does not look normal (reject H0)

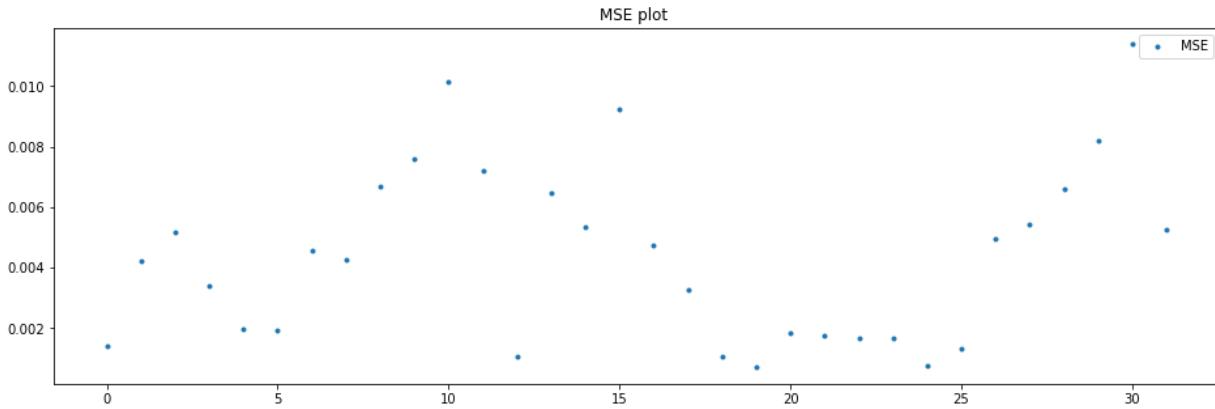
\*\*\*\*\*

Batch: 89

mean=0.004419375, median=0.00442 , max=0.01139, min=0.0007, variance=8.3176e-06

Boxplots and Distribution plot for Reconstruction Error





**Anderson\_Darling Test**

Statistic: 0.683

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

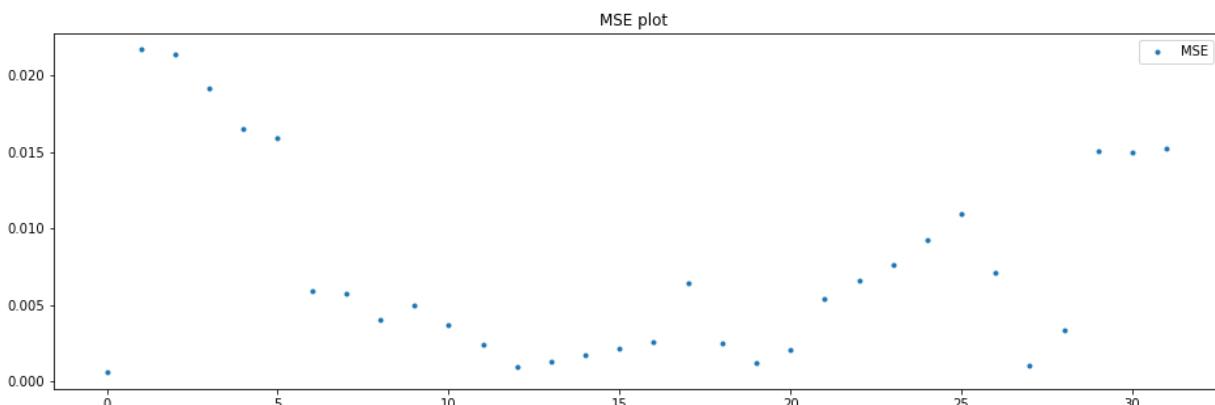
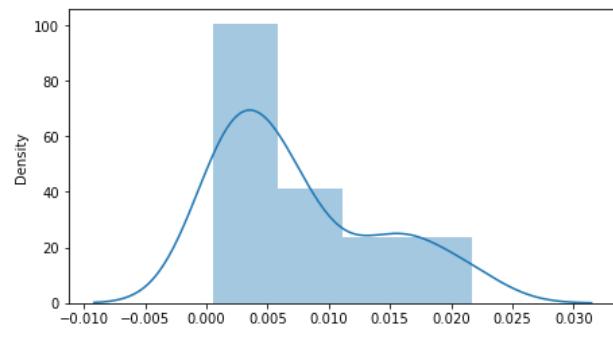
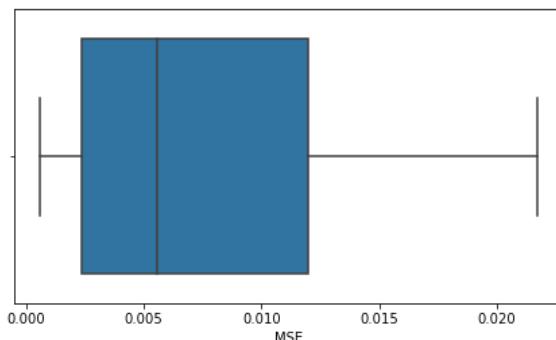
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 90

mean=0.007490625, median=0.005575 , max=0.0217, min=0.00058, variance=4.0887e-05

Boxplots and Distribution plot for Reconstruction Error



**Anderson\_Darling Test**

Statistic: 1.681

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

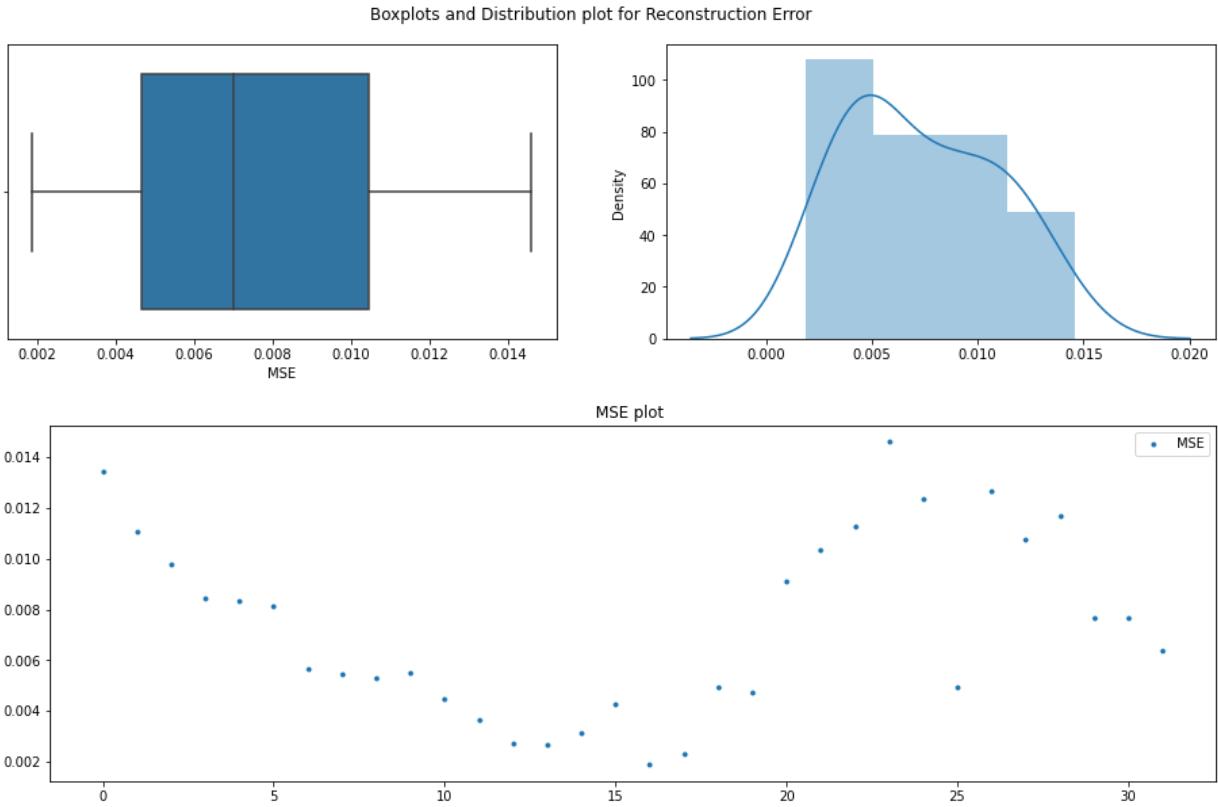
2.500: 0.834, data does not look normal (reject H0)

1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 91

mean=0.0073509375, median=0.007005 , max=0.0146, min=0.00188, variance=1.26399e-05



#### Anderson\_Darling Test

Statistic: 0.513

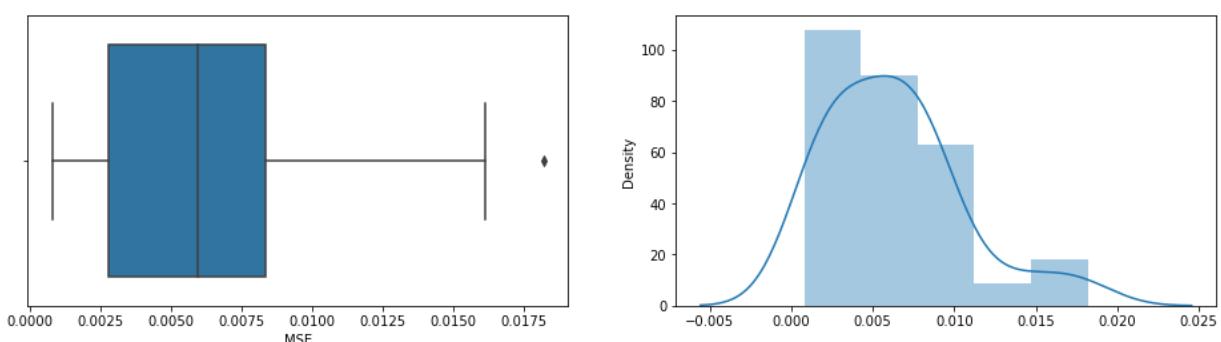
15.000: 0.523, data looks normal (fail to reject H0)  
 10.000: 0.596, data looks normal (fail to reject H0)  
 5.000: 0.715, data looks normal (fail to reject H0)  
 2.500: 0.834, data looks normal (fail to reject H0)  
 1.000: 0.992, data looks normal (fail to reject H0)

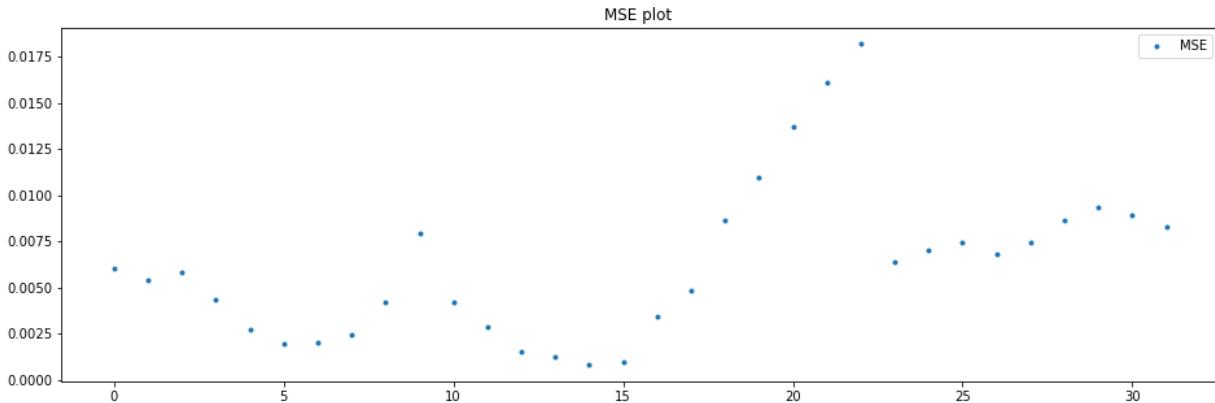
\*\*\*\*\*

Batch: 92

mean=0.0062740625, median=0.005935 , max=0.01819, min=0.0008, variance=1.74433e-05

Boxplots and Distribution plot for Reconstruction Error





**Anderson\_Darling Test**

Statistic: 0.668

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

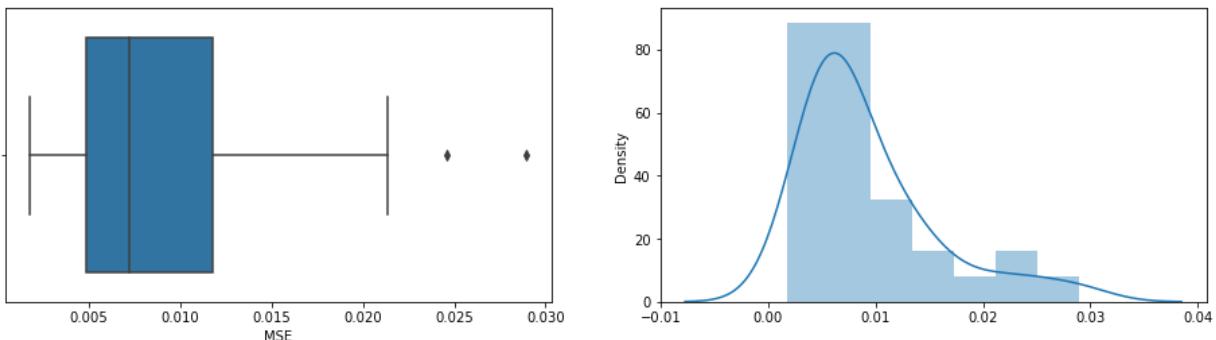
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

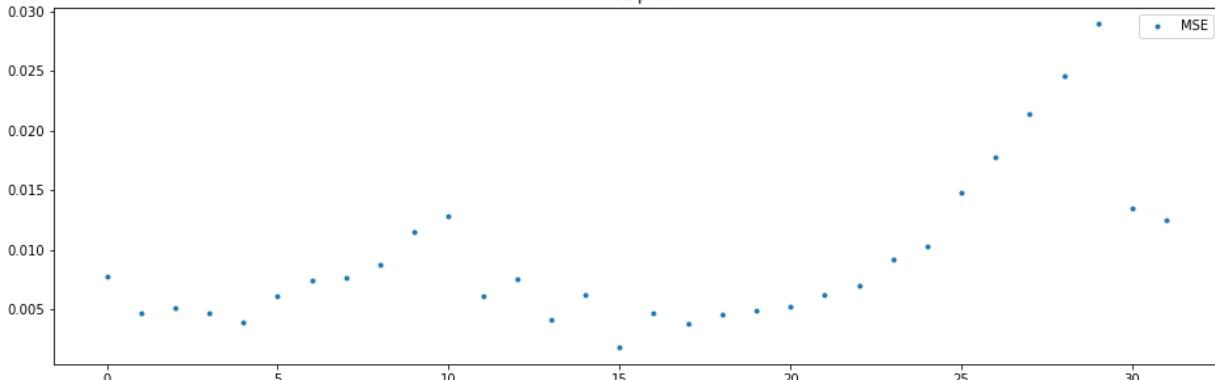
Batch: 93

mean=0.0092334375, median=0.007195 , max=0.02894, min=0.00177, variance=3.90933e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



**Anderson\_Darling Test**

Statistic: 2.051

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

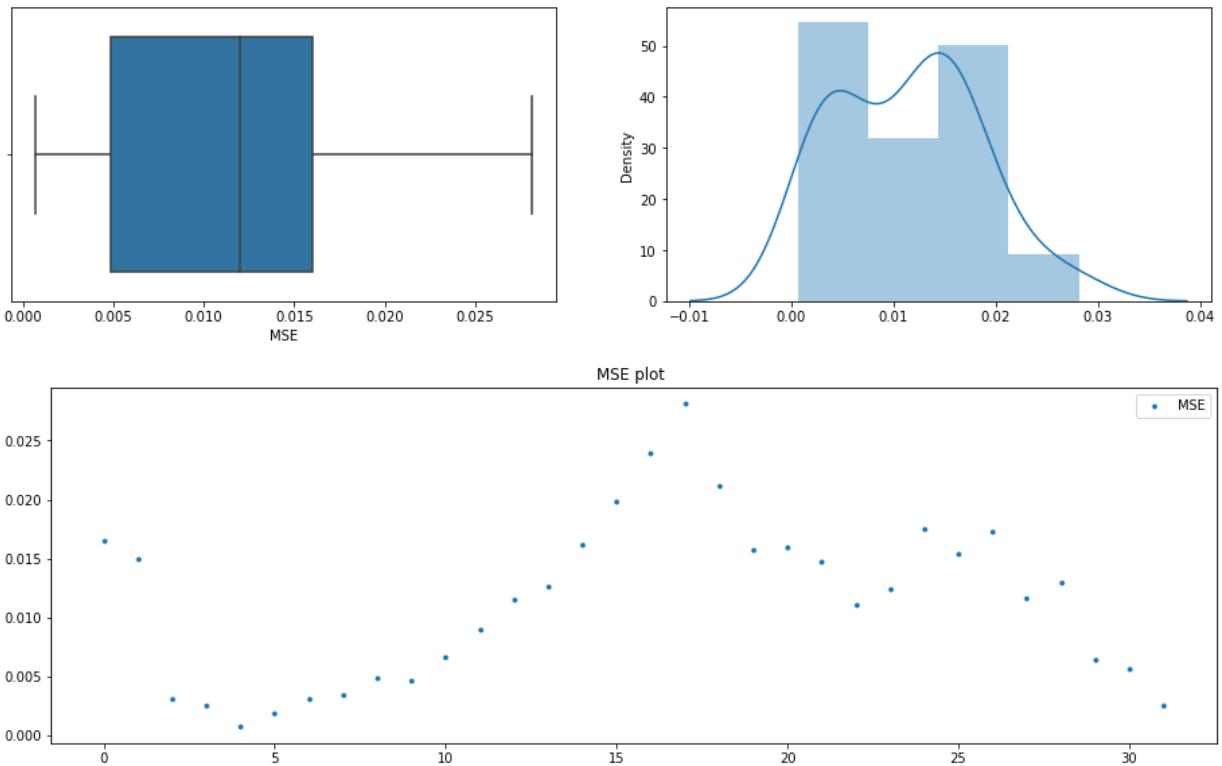
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 94

mean=0.0113646875, median=0.012015 , max=0.02812, min=0.0007, variance=4.82637e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson\_Darling Test**

Statistic: 0.539

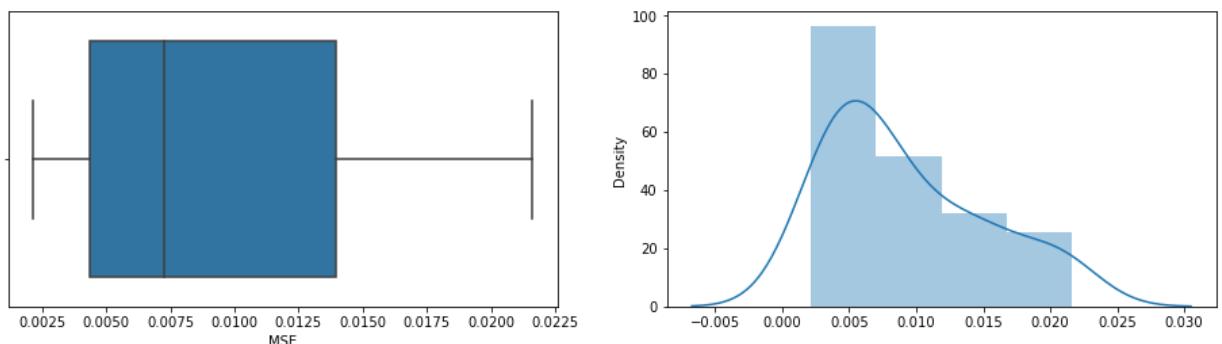
15.000: 0.523, data does not look normal (reject H<sub>0</sub>)  
 10.000: 0.596, data looks normal (fail to reject H<sub>0</sub>)  
 5.000: 0.715, data looks normal (fail to reject H<sub>0</sub>)  
 2.500: 0.834, data looks normal (fail to reject H<sub>0</sub>)  
 1.000: 0.992, data looks normal (fail to reject H<sub>0</sub>)

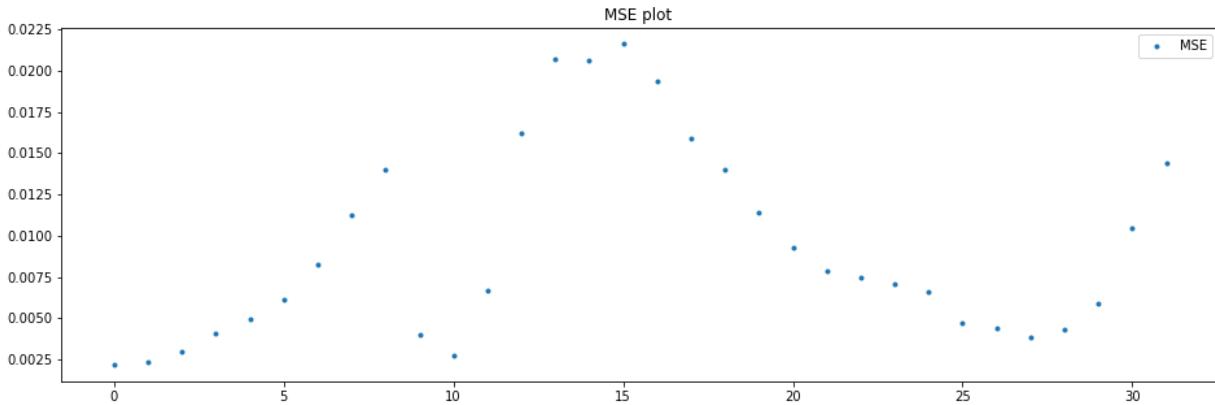
\*\*\*\*\*

Batch: 95

mean=0.009235625, median=0.007265 , max=0.02161, min=0.00215, variance=3.39413e-05

Boxplots and Distribution plot for Reconstruction Error



**Anderson\_Darling Test**

Statistic: 1.149

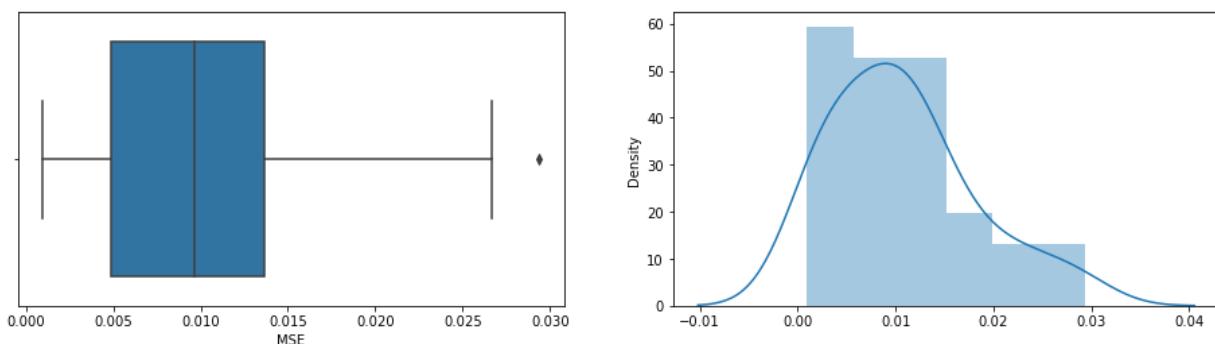
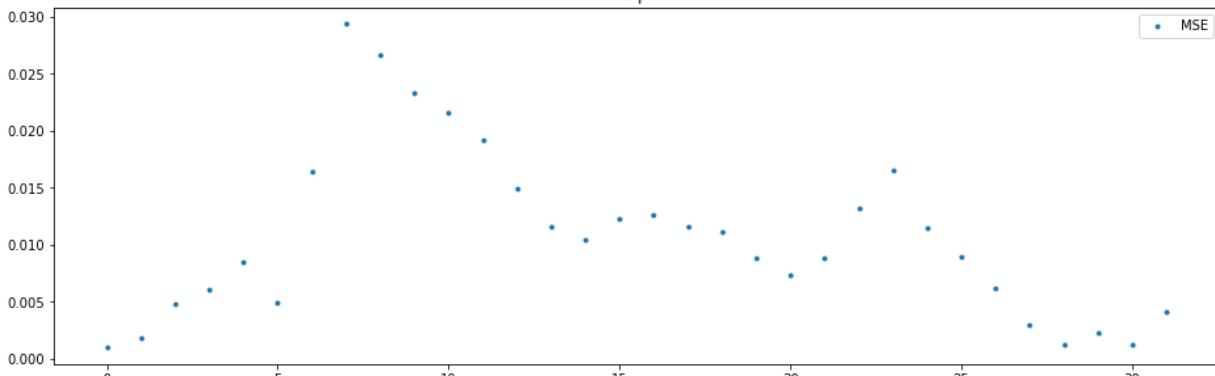
15.000: 0.523, data does not look normal (reject H0)  
 10.000: 0.596, data does not look normal (reject H0)  
 5.000: 0.715, data does not look normal (reject H0)  
 2.500: 0.834, data does not look normal (reject H0)  
 1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 96

mean=0.0106740625, median=0.00968 , max=0.02937, min=0.00098, variance=5.35637e-05

Boxplots and Distribution plot for Reconstruction Error

**MSE plot****Anderson\_Darling Test**

Statistic: 0.569

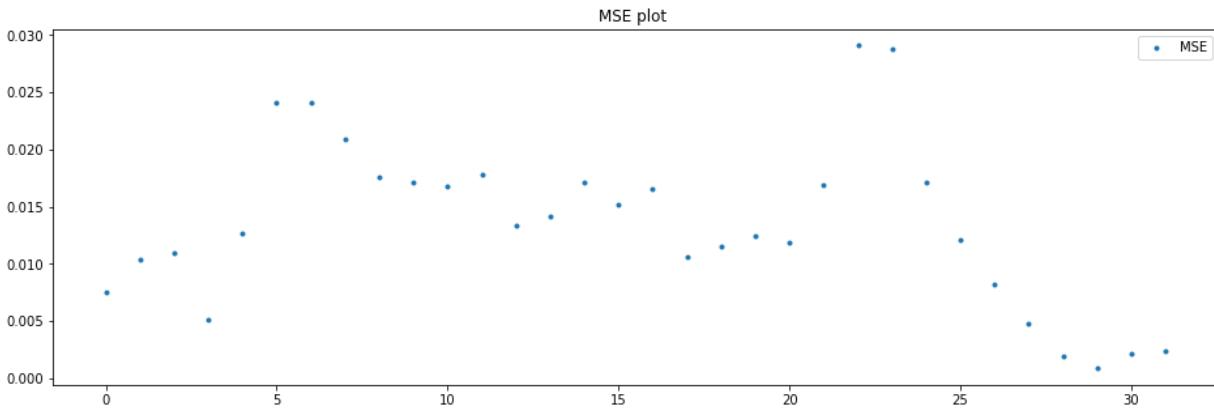
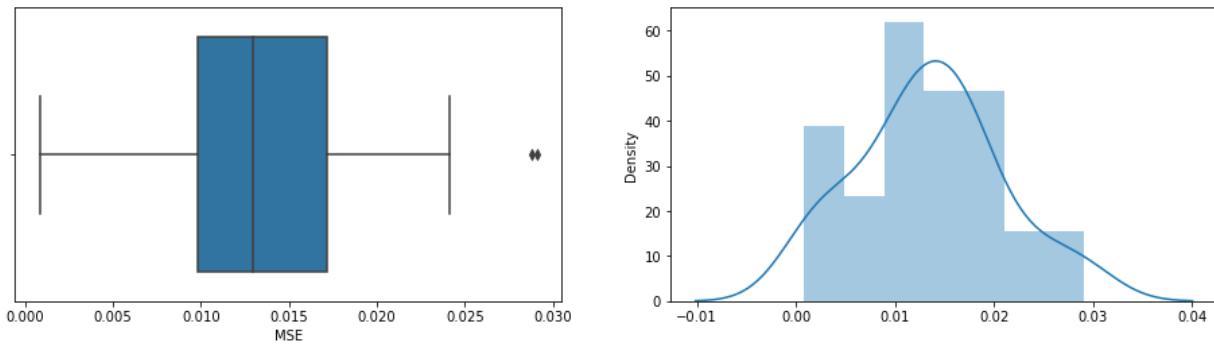
15.000: 0.523, data does not look normal (reject H0)  
 10.000: 0.596, data looks normal (fail to reject H0)  
 5.000: 0.715, data looks normal (fail to reject H0)  
 2.500: 0.834, data looks normal (fail to reject H0)  
 1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 97

mean=0.0134978125, median=0.01297 , max=0.02908, min=0.00085, variance=5.18194e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson\_Darling Test**

Statistic: 0.373

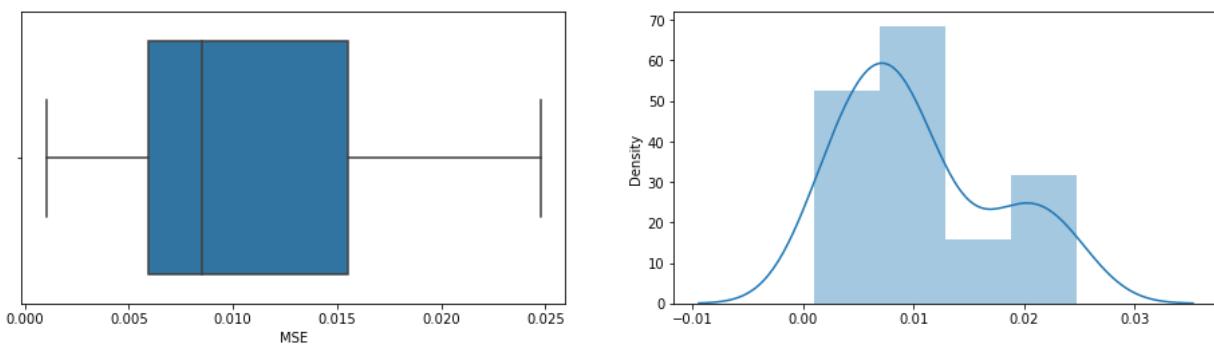
```
15.000: 0.523, data looks normal (fail to reject H0)
10.000: 0.596, data looks normal (fail to reject H0)
5.000: 0.715, data looks normal (fail to reject H0)
2.500: 0.834, data looks normal (fail to reject H0)
1.000: 0.992, data looks normal (fail to reject H0)
```

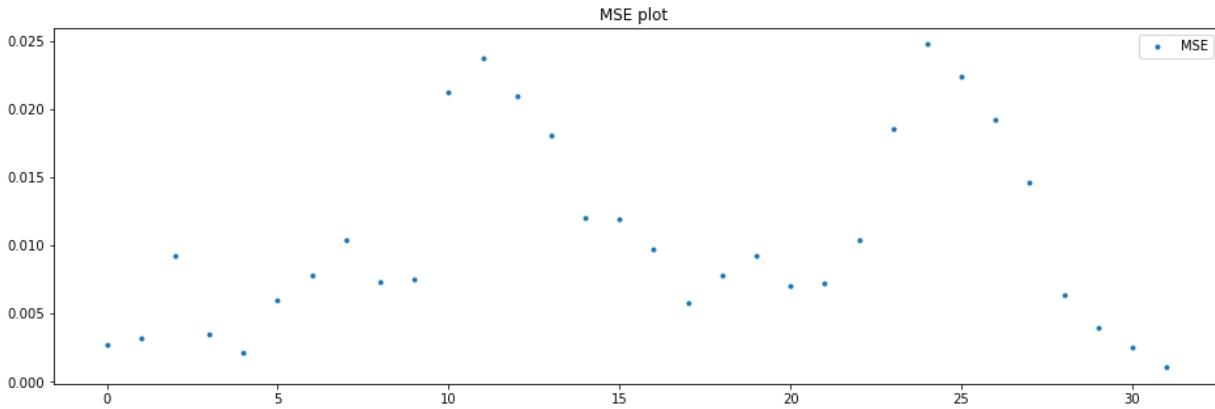
\*\*\*\*\*

Batch: 98

mean=0.010593125, median=0.008535 , max=0.02477, min=0.00105, variance=4.72439e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 1.092

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

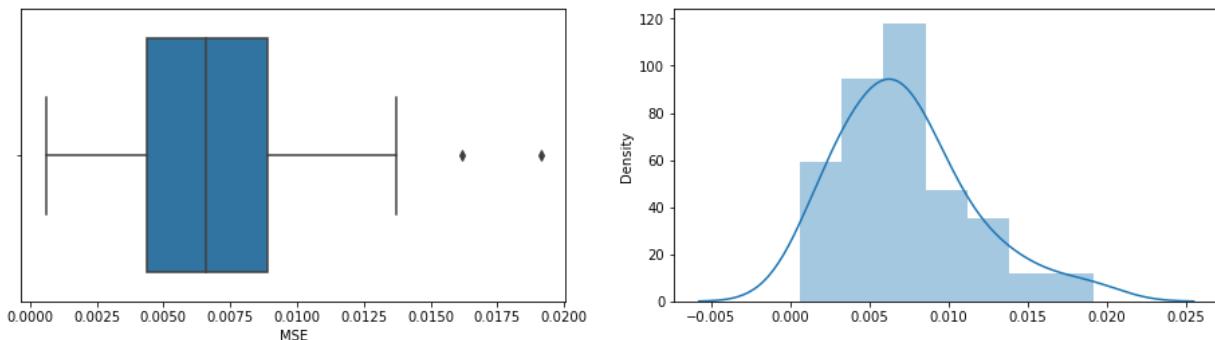
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

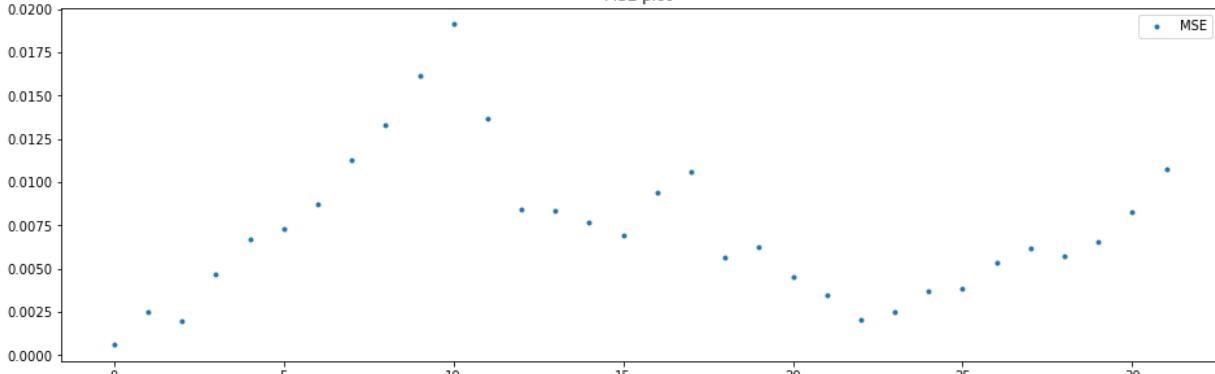
Batch: 99

mean=0.007259375, median=0.0066 , max=0.01912, min=0.0006, variance=1.73747e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.491

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

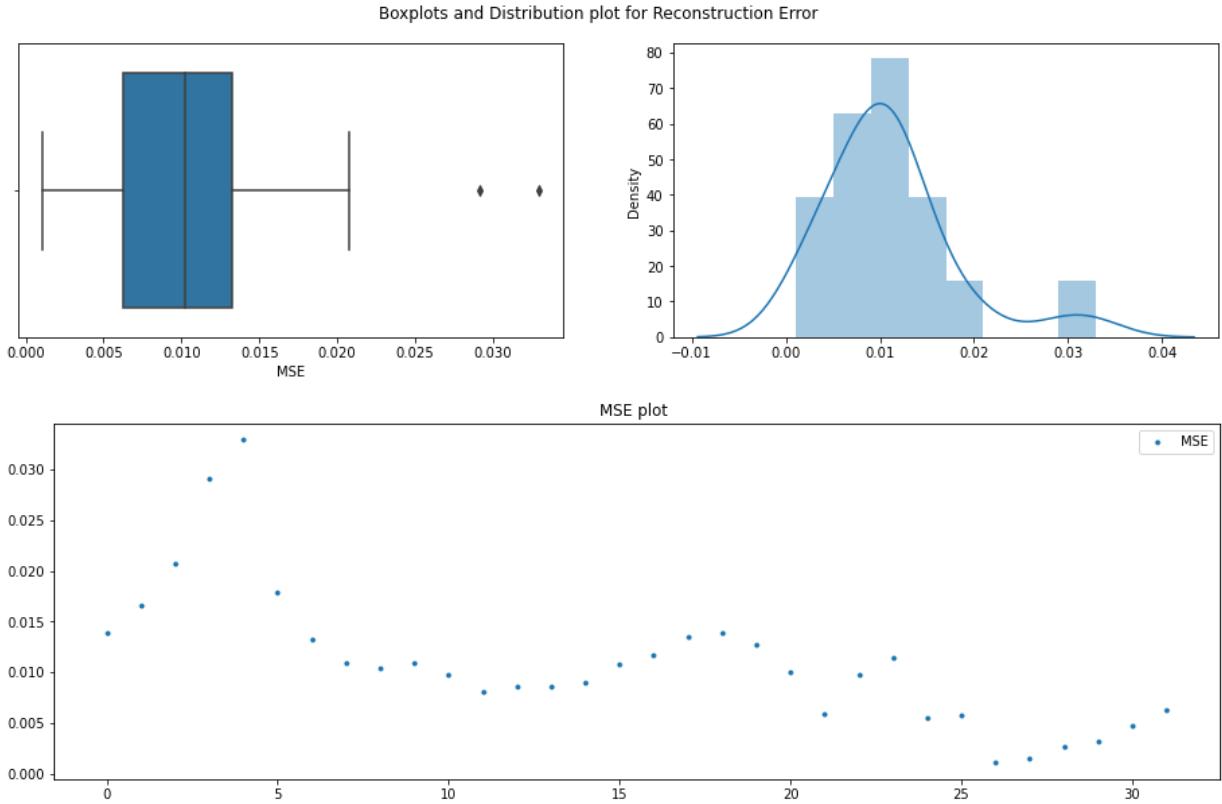
2.500: 0.834, data looks normal (fail to reject H0)

1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 100

mean=0.0109784375, median=0.0102 , max=0.03293, min=0.00108, variance=4.71346e-05



#### Anderson\_Darling Test

Statistic: 1.083

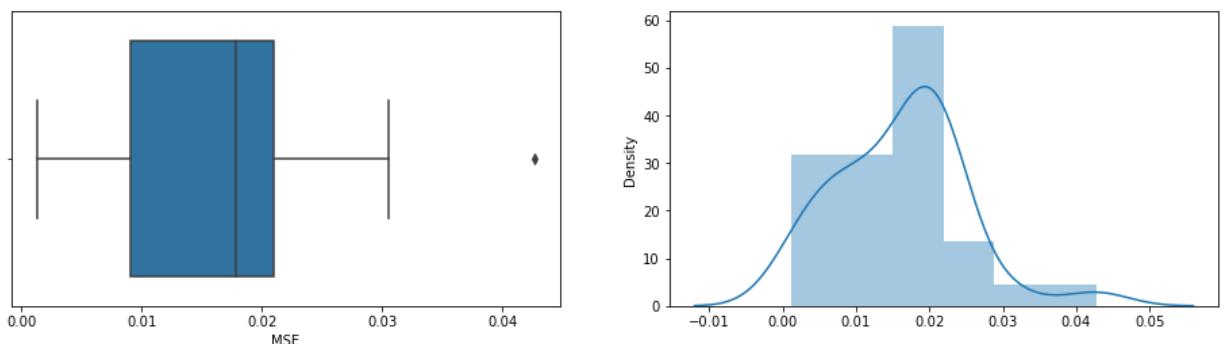
15.000: 0.523, data does not look normal (reject H<sub>0</sub>)  
 10.000: 0.596, data does not look normal (reject H<sub>0</sub>)  
 5.000: 0.715, data does not look normal (reject H<sub>0</sub>)  
 2.500: 0.834, data does not look normal (reject H<sub>0</sub>)  
 1.000: 0.992, data does not look normal (reject H<sub>0</sub>)

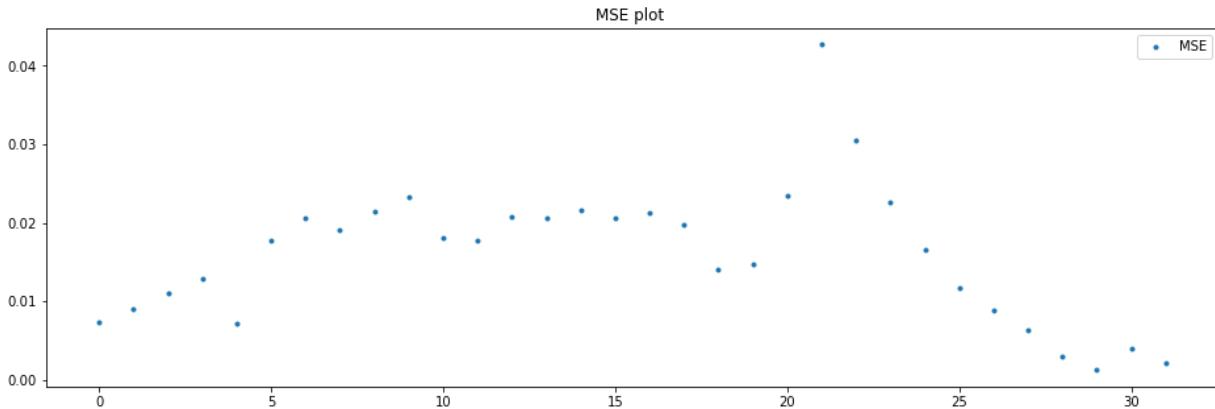
\*\*\*\*\*

Batch: 101

mean=0.01602375, median=0.017815 , max=0.04269, min=0.00125, variance=7.53313e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.595

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

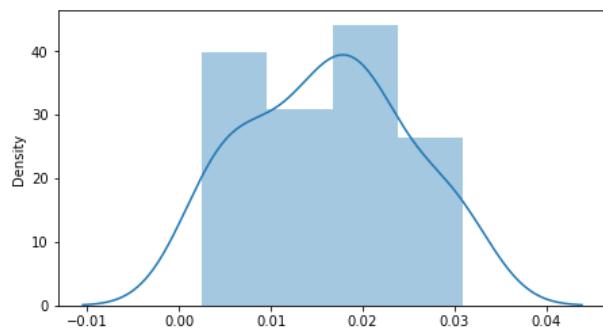
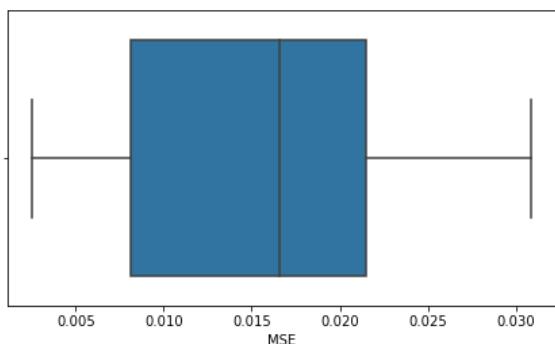
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

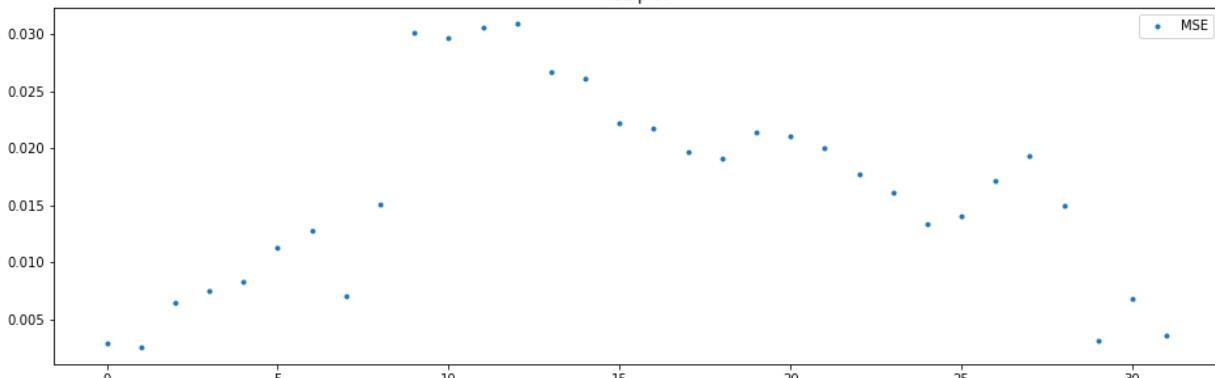
Batch: 102

mean=0.016230625, median=0.01661 , max=0.03088, min=0.00252, variance=7.2544e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.357

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

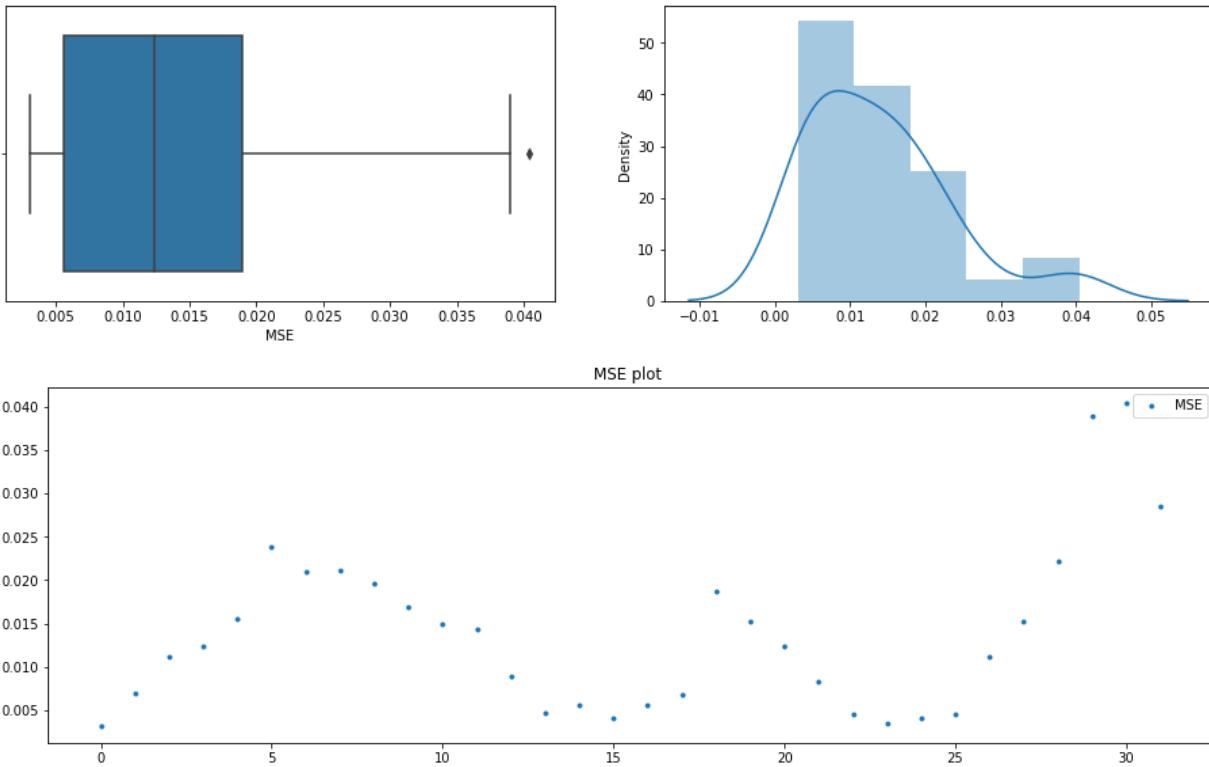
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 103

mean=0.01386125, median=0.0124 , max=0.04042, min=0.00307, variance=9.01196e-05

Boxplots and Distribution plot for Reconstruction Error



## Anderson\_Darling Test

Statistic: 0.968

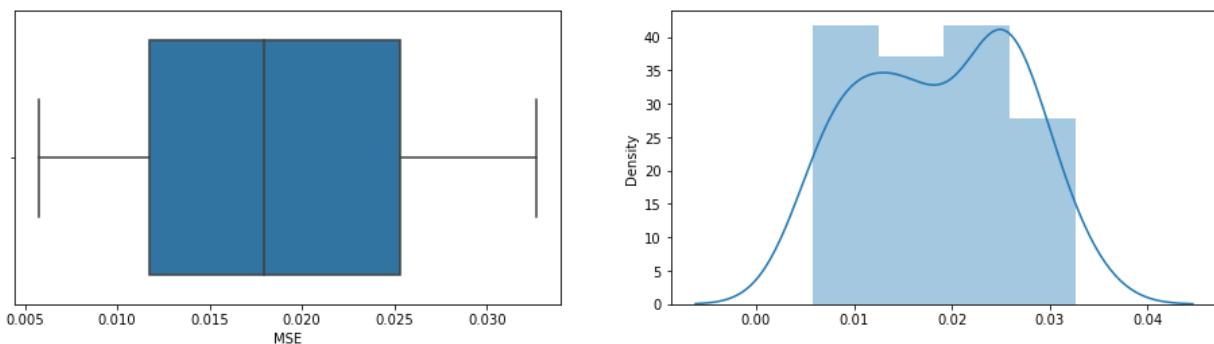
15.000: 0.523, data does not look normal (reject H0)  
 10.000: 0.596, data does not look normal (reject H0)  
 5.000: 0.715, data does not look normal (reject H0)  
 2.500: 0.834, data does not look normal (reject H0)  
 1.000: 0.992, data looks normal (fail to reject H0)

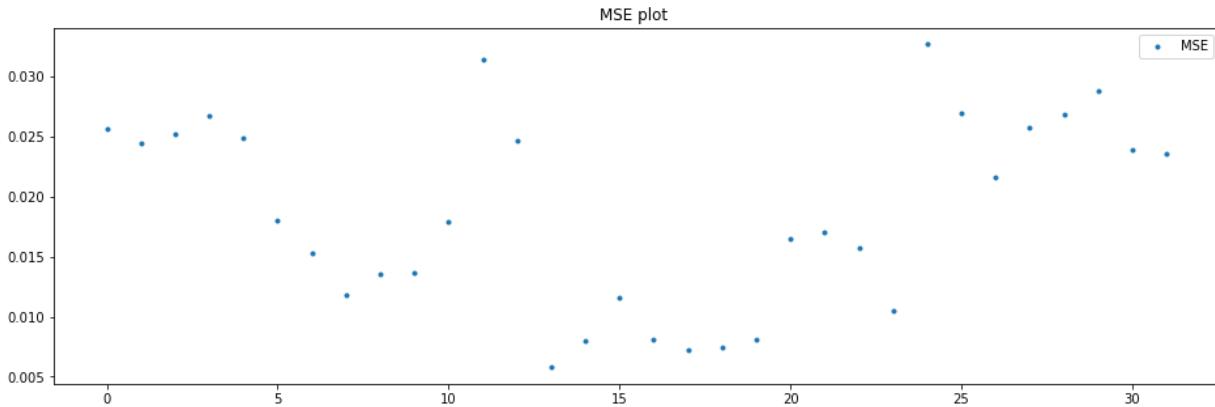
\*\*\*\*\*

Batch: 104

mean=0.0187203125, median=0.017945 , max=0.03267, min=0.00576, variance=6.15576e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.762

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

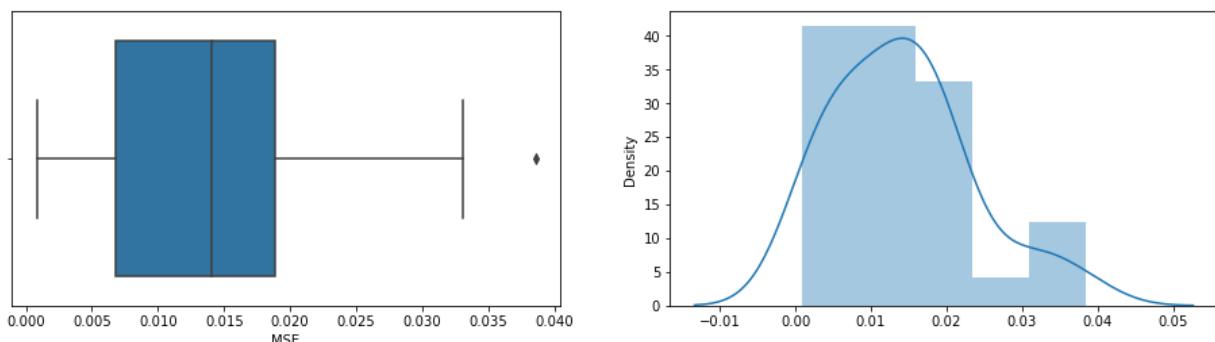
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

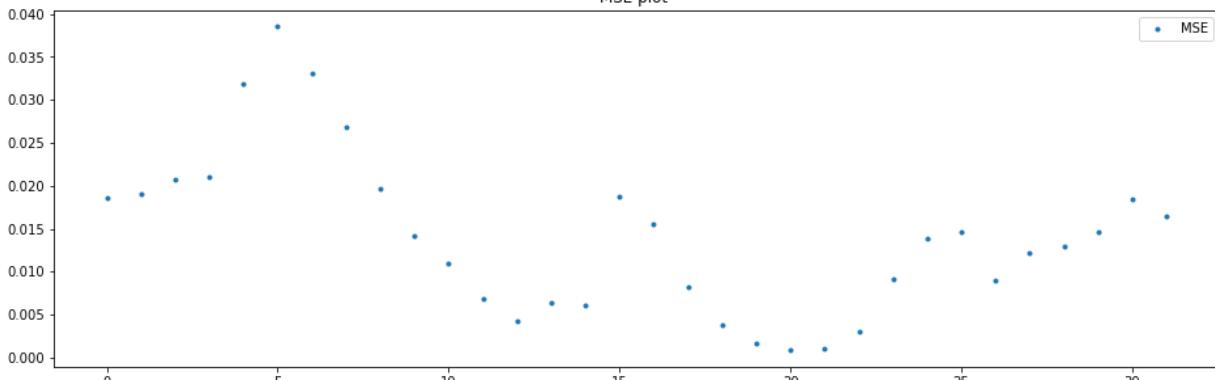
Batch: 105

mean=0.014131875, median=0.014005 , max=0.03853, min=0.00082, variance=8.62181e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.463

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

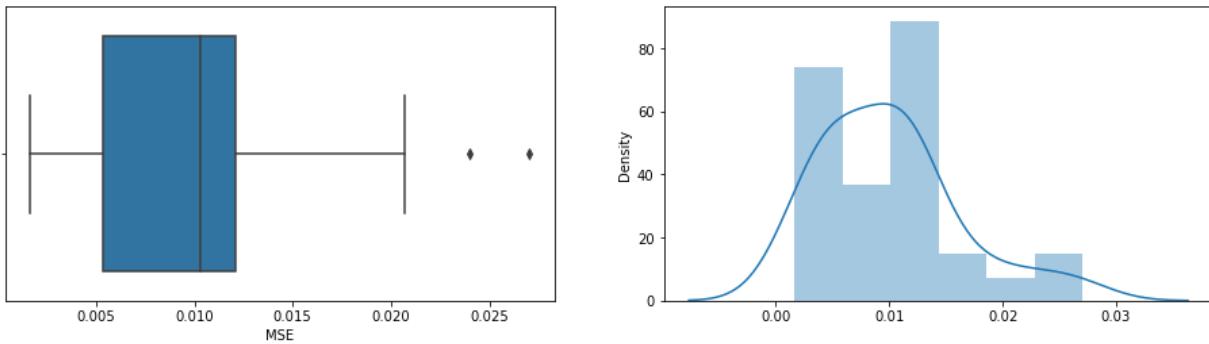
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

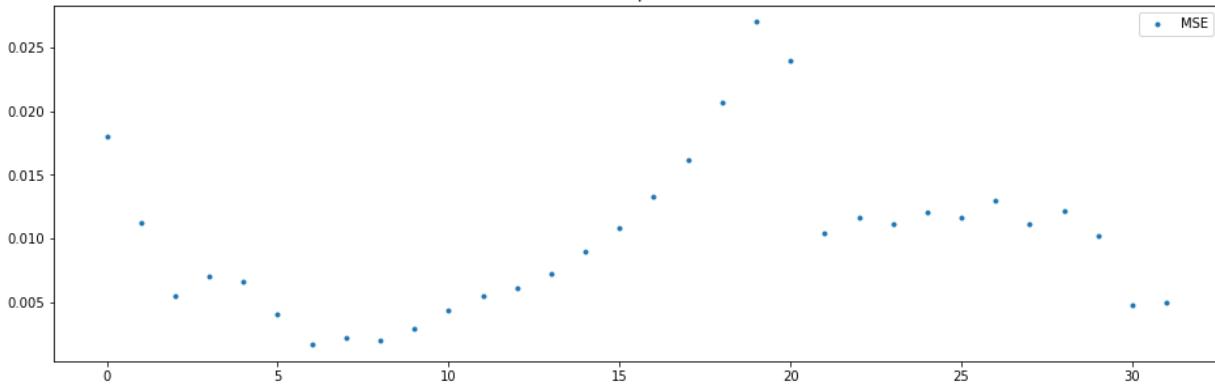
Batch: 106

mean=0.0099634375, median=0.010285 , max=0.02703, min=0.00165, variance=3.7129e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson\_Darling Test**

Statistic: 0.774

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

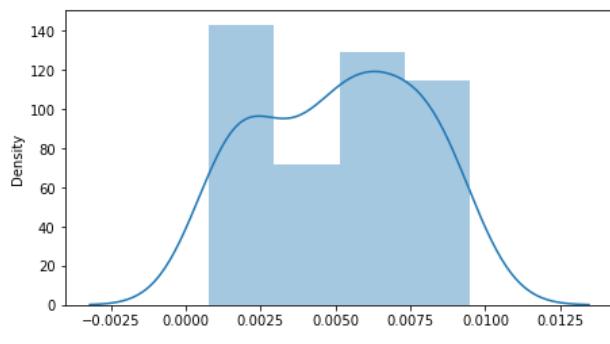
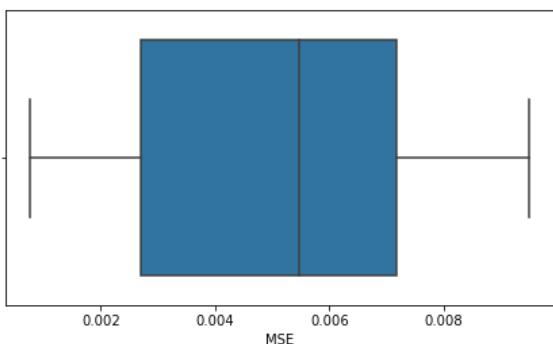
1.000: 0.992, data looks normal (fail to reject H0)

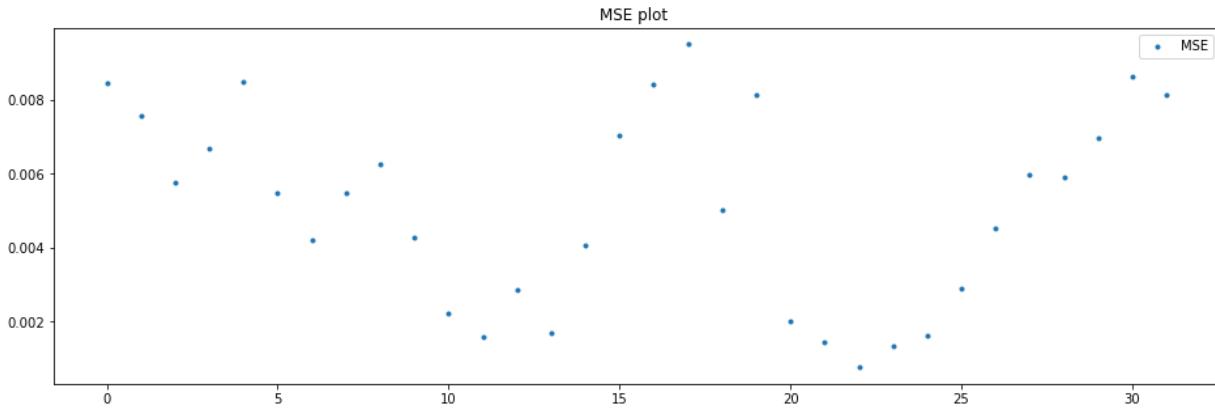
\*\*\*\*\*

Batch: 107

mean=0.0051121875, median=0.00548 , max=0.0095, min=0.00076, variance=6.7368e-06

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.612

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

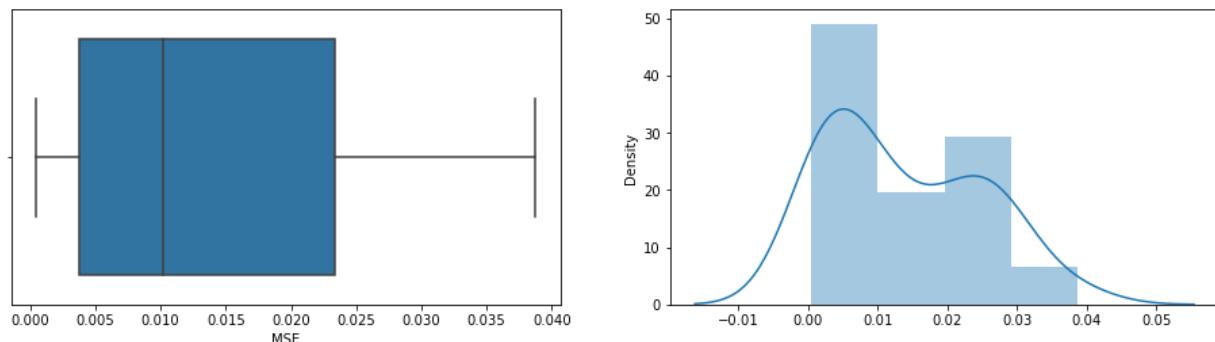
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

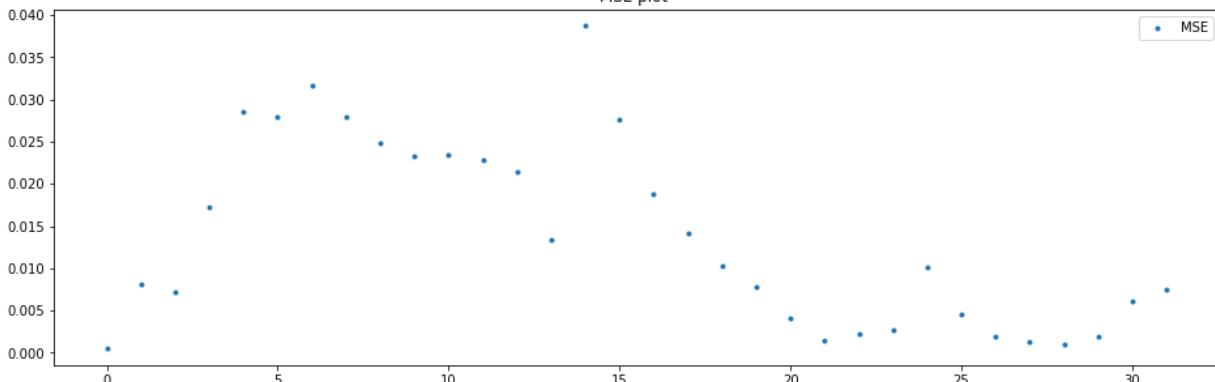
Batch: 108

mean=0.0137740625, median=0.010245 , max=0.03872, min=0.00047, variance=0.0001196497

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 1.074

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

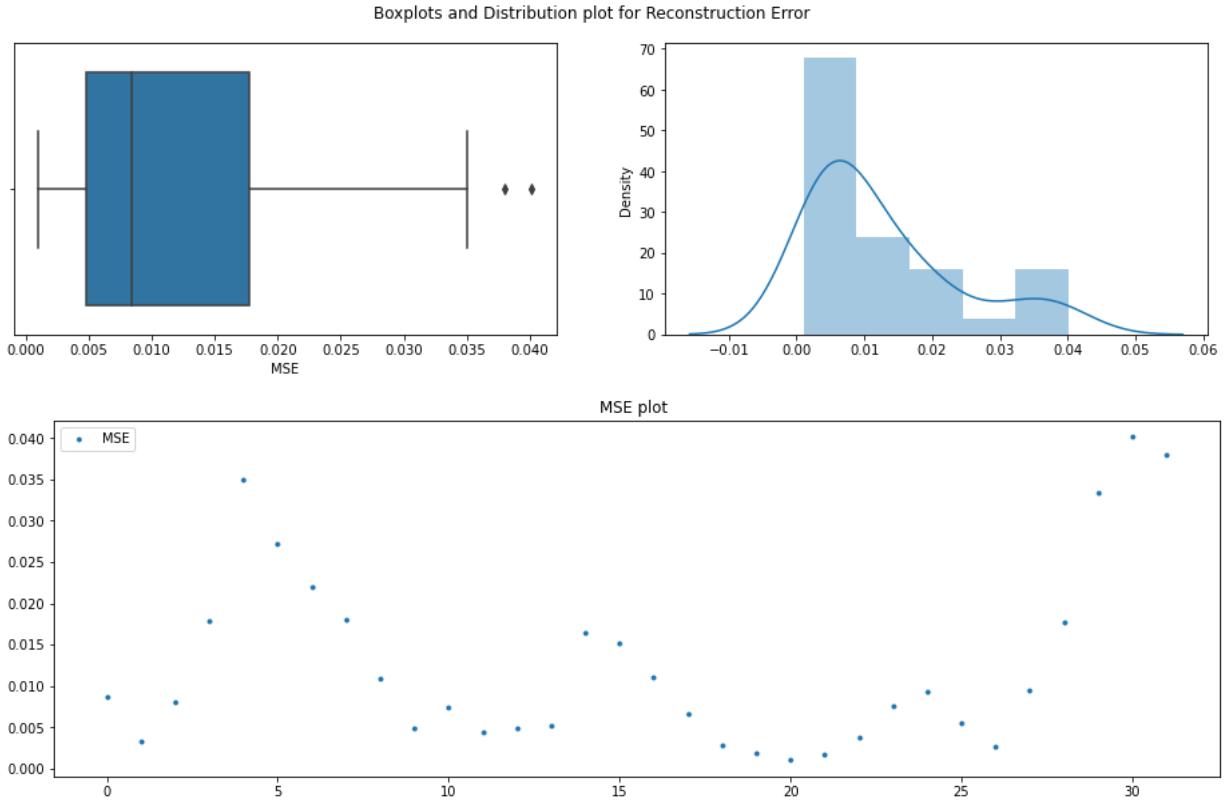
2.500: 0.834, data does not look normal (reject H0)

1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 109

mean=0.0125896875, median=0.00844 , max=0.04015, min=0.00105, variance=0.0001220431



#### Anderson\_Darling Test

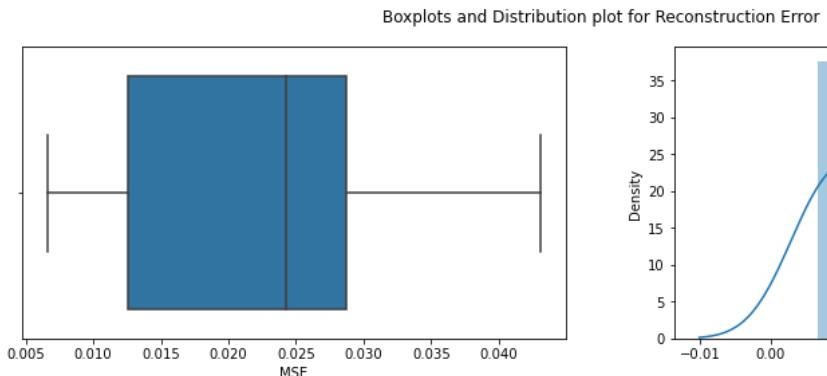
Statistic: 1.917

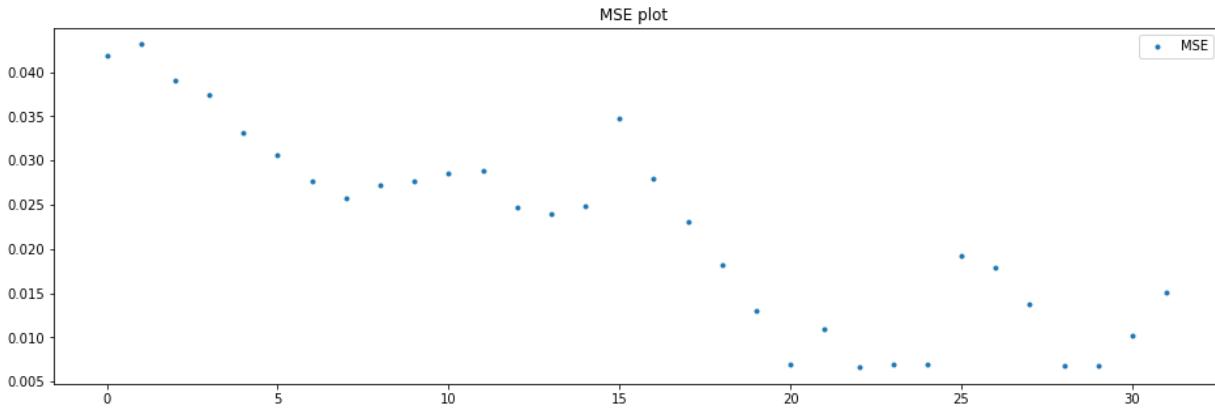
15.000: 0.523, data does not look normal (reject H0)  
 10.000: 0.596, data does not look normal (reject H0)  
 5.000: 0.715, data does not look normal (reject H0)  
 2.500: 0.834, data does not look normal (reject H0)  
 1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 110

mean=0.0221584375, median=0.02426 , max=0.04313, min=0.00658, variance=0.0001204839





Anderson\_Darling Test

Statistic: 0.544

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

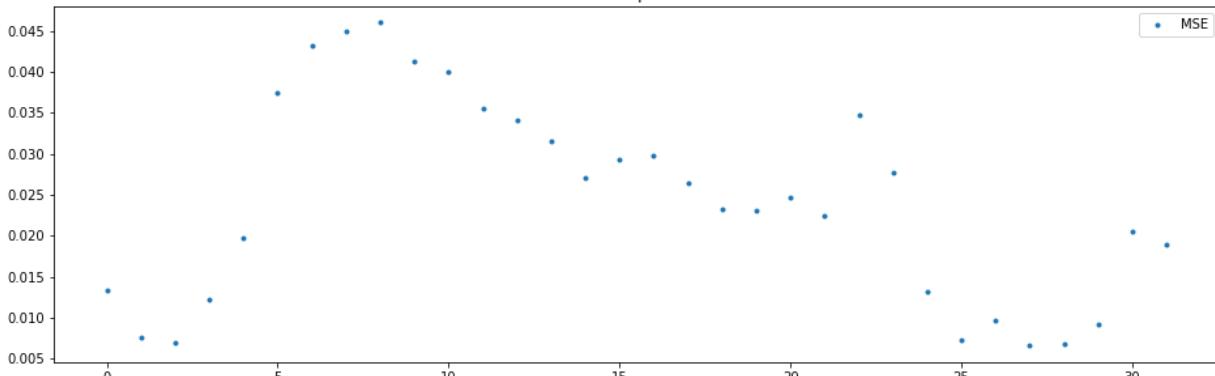
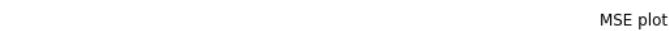
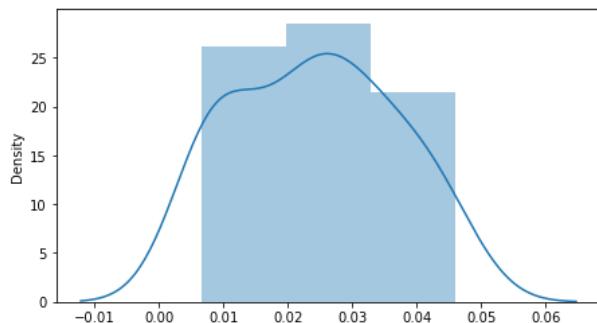
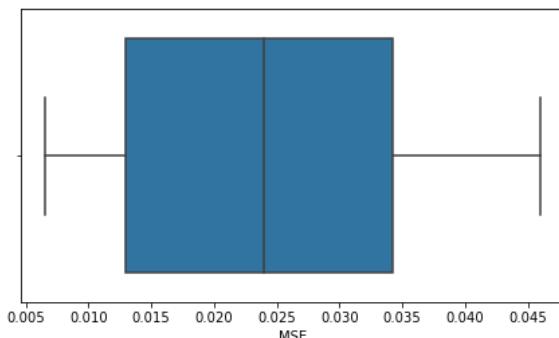
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 111

mean=0.02419, median=0.02395 , max=0.046, min=0.00655, variance=0.0001504433

Boxplots and Distribution plot for Reconstruction Error



Anderson\_Darling Test

Statistic: 0.455

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

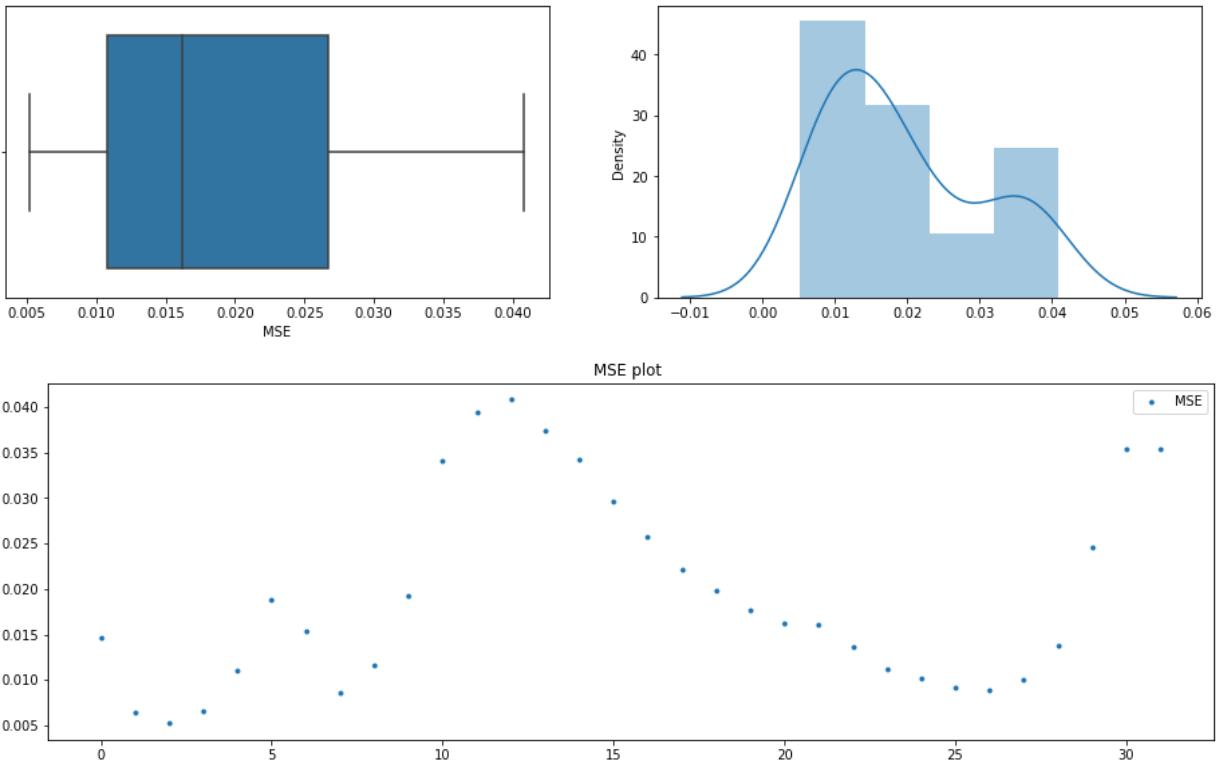
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 112

mean=0.01948125, median=0.016165 , max=0.04079, min=0.00522, variance=0.0001148199

Boxplots and Distribution plot for Reconstruction Error

**Anderson\_Darling Test**

Statistic: 1.147

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

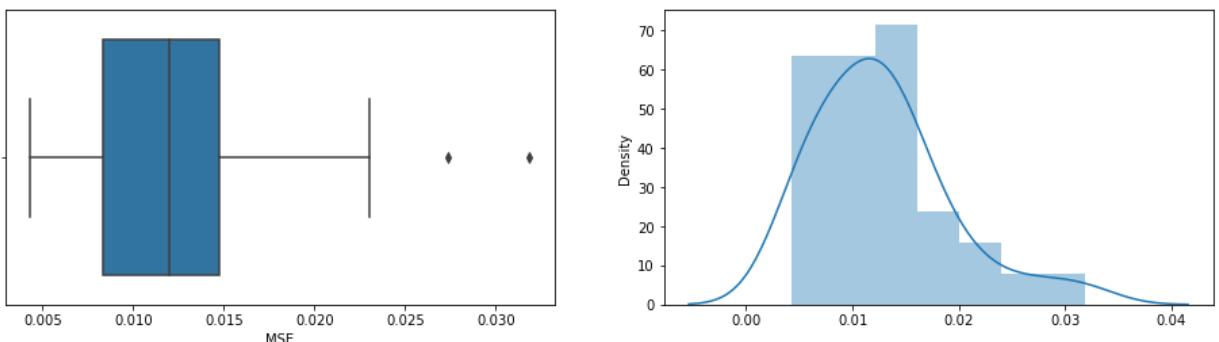
1.000: 0.992, data does not look normal (reject H0)

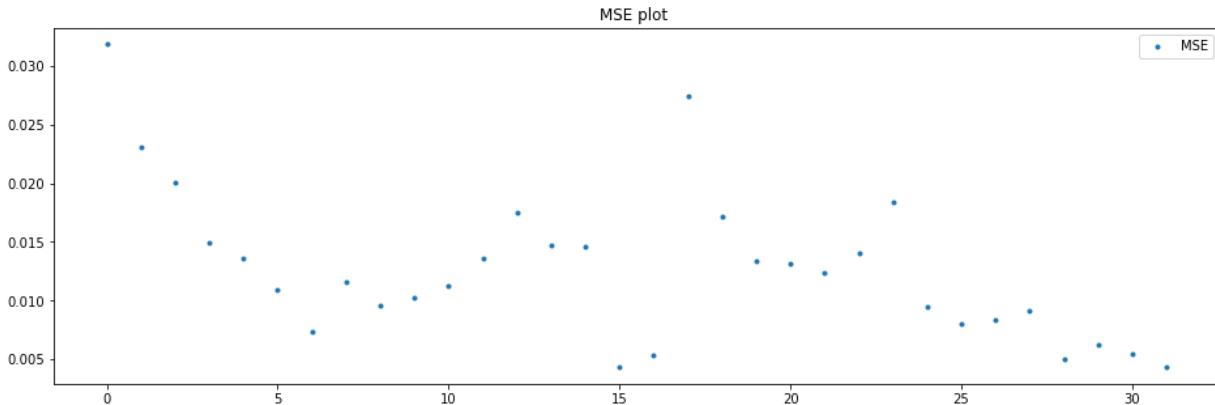
\*\*\*\*\*

Batch: 113

mean=0.0127190625, median=0.011995 , max=0.03184, min=0.00431, variance=4.04583e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.660

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

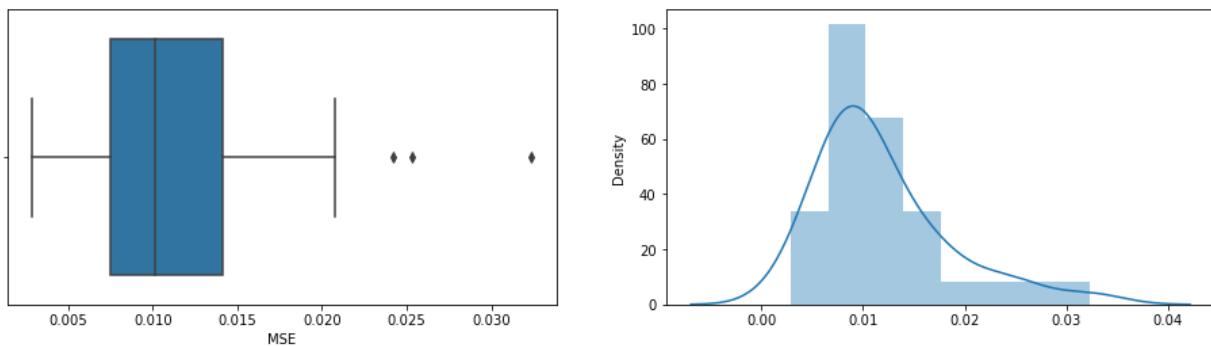
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

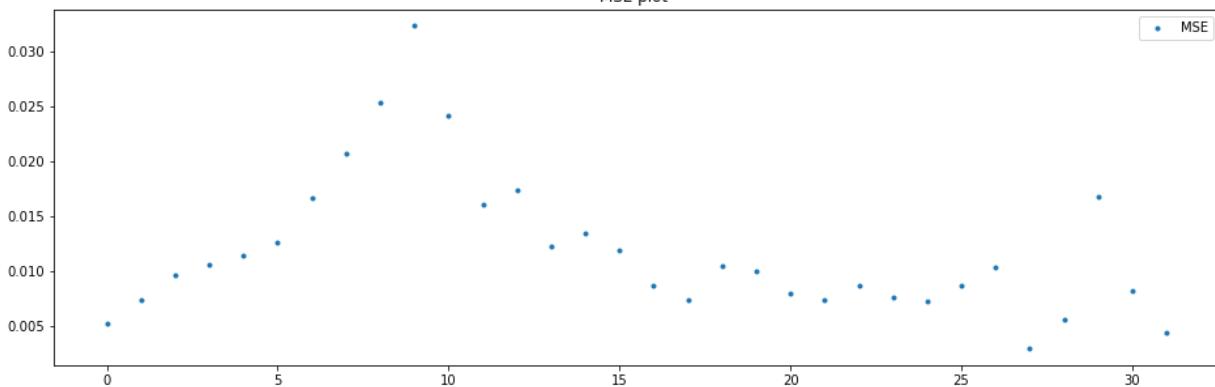
Batch: 114

mean=0.0118278125, median=0.010105 , max=0.03236, min=0.00286, variance=4.15162e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 1.394

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

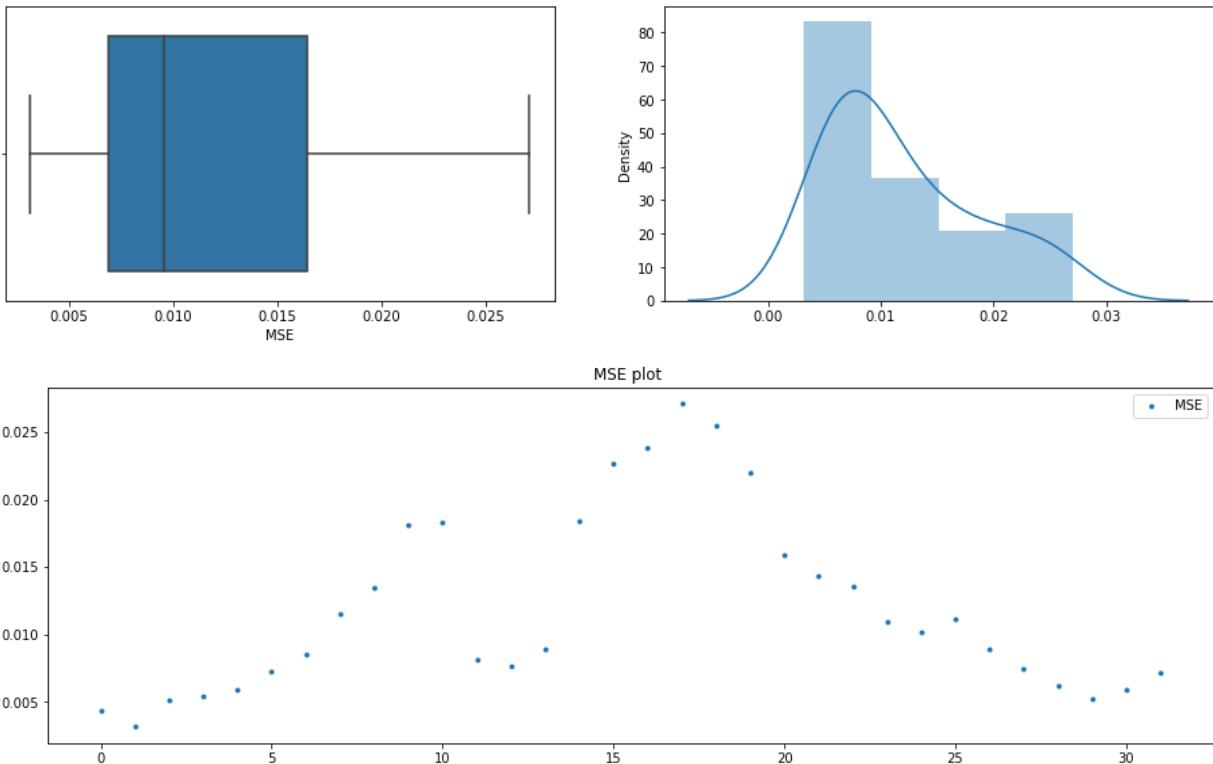
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 115

mean=0.0119471875, median=0.00958 , max=0.0271, min=0.00315, variance=4.44571e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson\_Darling Test**

Statistic: 1.157

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

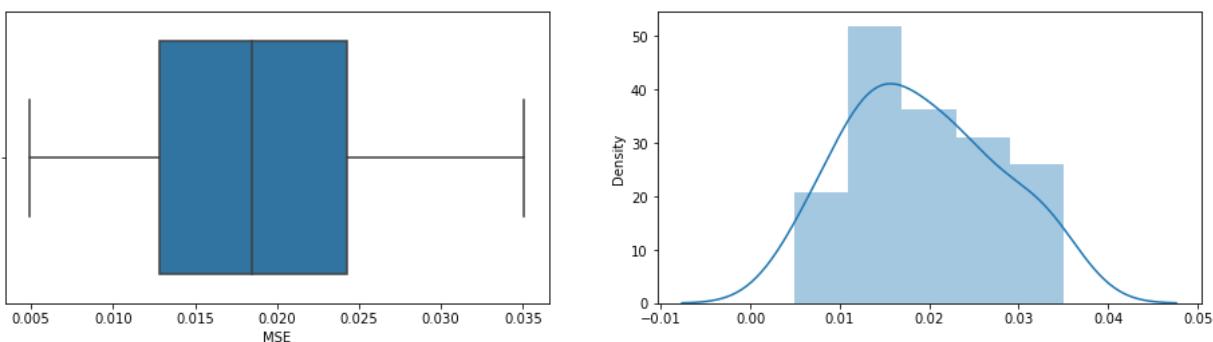
1.000: 0.992, data does not look normal (reject H0)

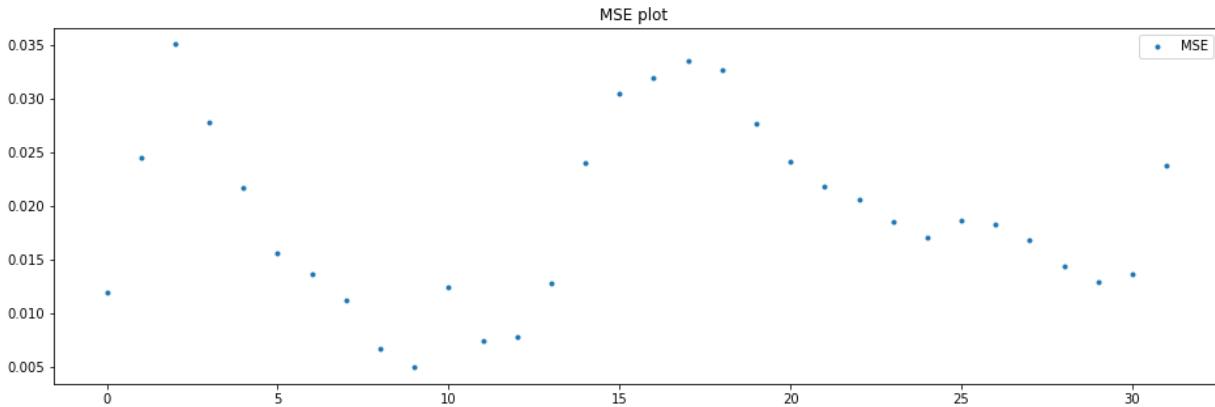
\*\*\*\*\*

Batch: 116

mean=0.019185,median=0.018435 ,max=0.03505,min=0.00492,variance=6.77949e-05

Boxplots and Distribution plot for Reconstruction Error





**Anderson\_Darling Test**

Statistic: 0.326

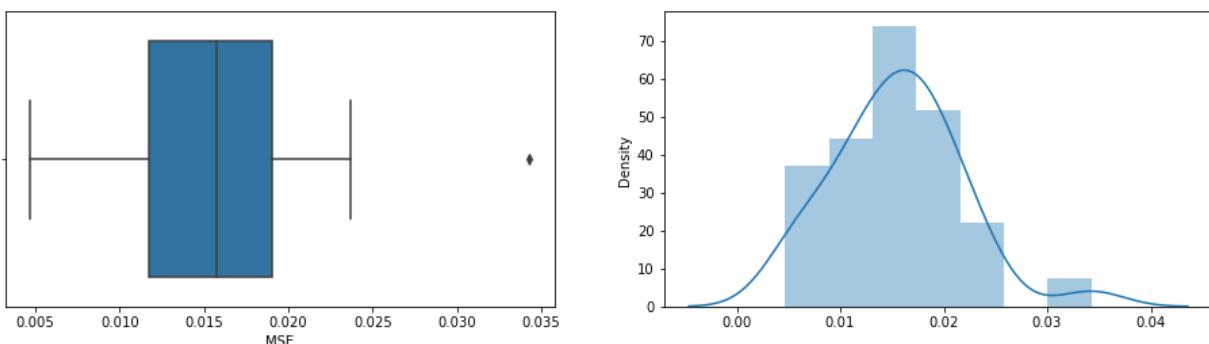
15.000: 0.523, data looks normal (fail to reject H<sub>0</sub>)  
 10.000: 0.596, data looks normal (fail to reject H<sub>0</sub>)  
 5.000: 0.715, data looks normal (fail to reject H<sub>0</sub>)  
 2.500: 0.834, data looks normal (fail to reject H<sub>0</sub>)  
 1.000: 0.992, data looks normal (fail to reject H<sub>0</sub>)

\*\*\*\*\*

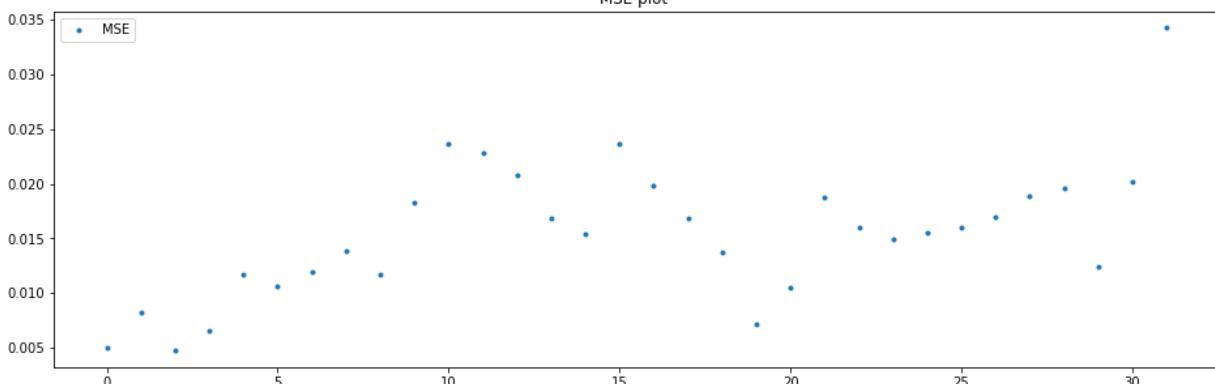
Batch: 117

mean=0.01554625, median=0.01576 , max=0.03427, min=0.0047, variance=3.74589e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



**Anderson\_Darling Test**

Statistic: 0.255

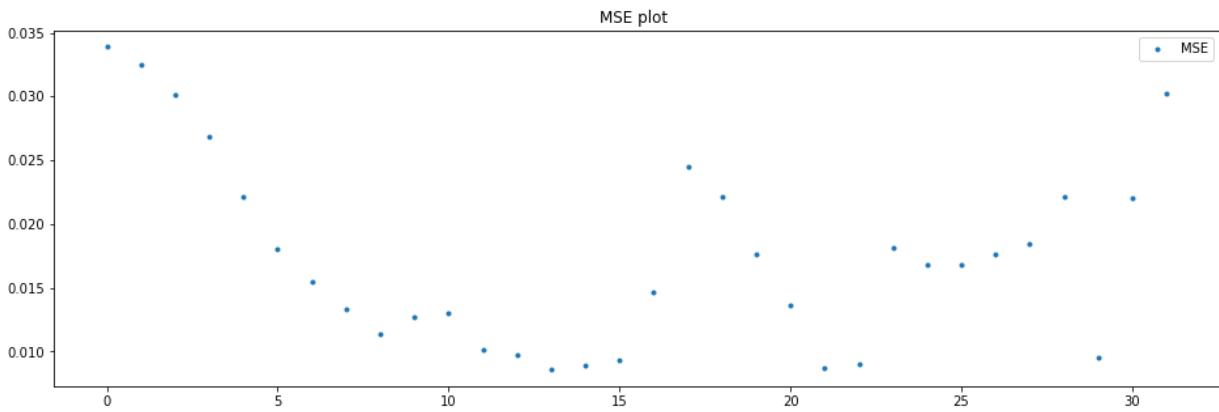
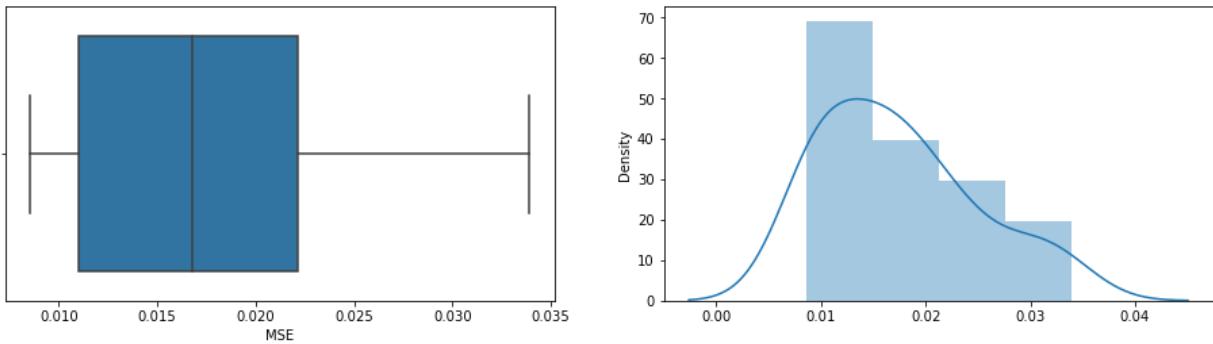
15.000: 0.523, data looks normal (fail to reject H<sub>0</sub>)  
 10.000: 0.596, data looks normal (fail to reject H<sub>0</sub>)  
 5.000: 0.715, data looks normal (fail to reject H<sub>0</sub>)  
 2.500: 0.834, data looks normal (fail to reject H<sub>0</sub>)  
 1.000: 0.992, data looks normal (fail to reject H<sub>0</sub>)

\*\*\*\*\*

Batch: 118

mean=0.01743375, median=0.016795 , max=0.03389, min=0.00855, variance=5.36503e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson\_Darling Test**

Statistic: 0.787

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

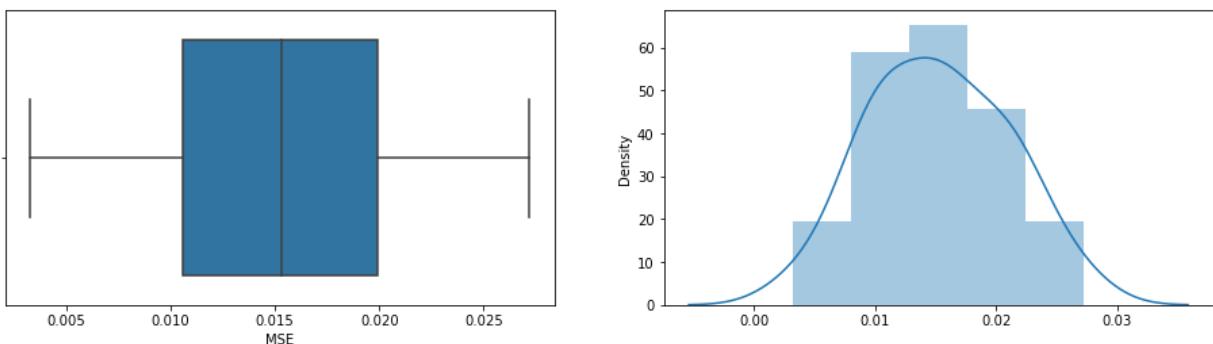
1.000: 0.992, data looks normal (fail to reject H0)

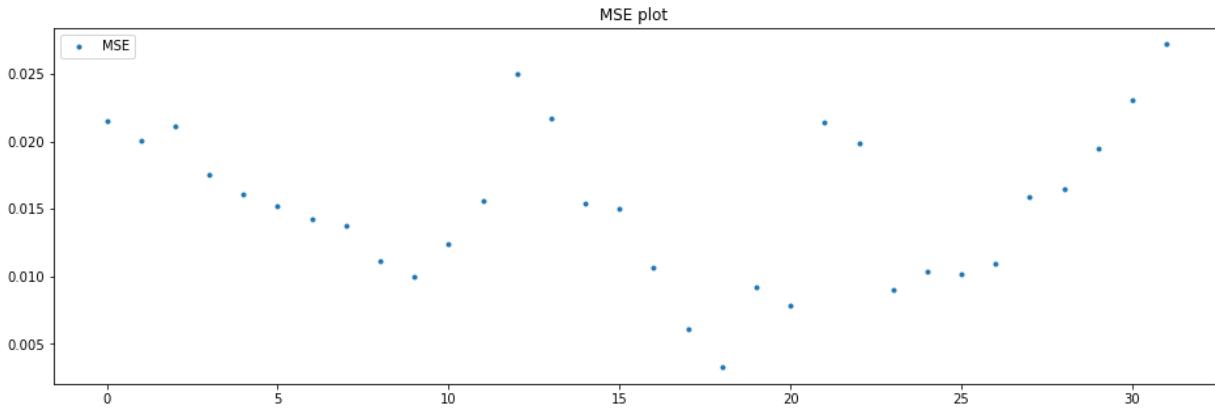
\*\*\*\*\*

Batch: 119

mean=0.0152134375, median=0.01529 , max=0.02718, min=0.00326, variance=3.20035e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.260

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

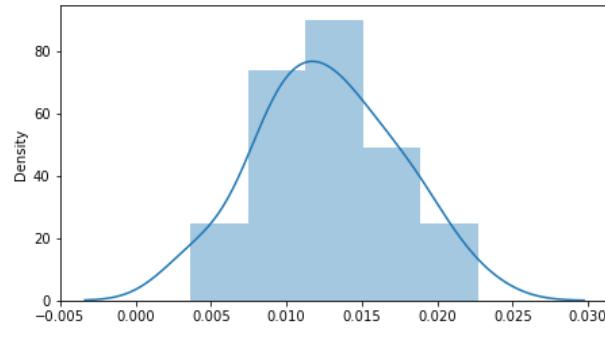
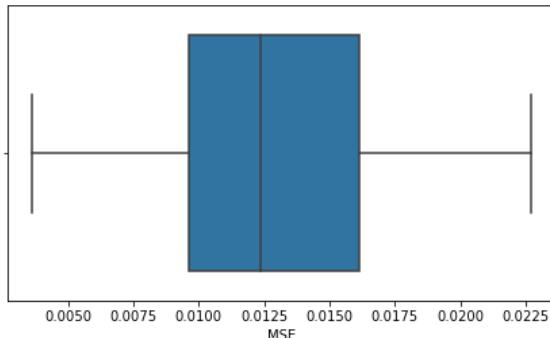
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

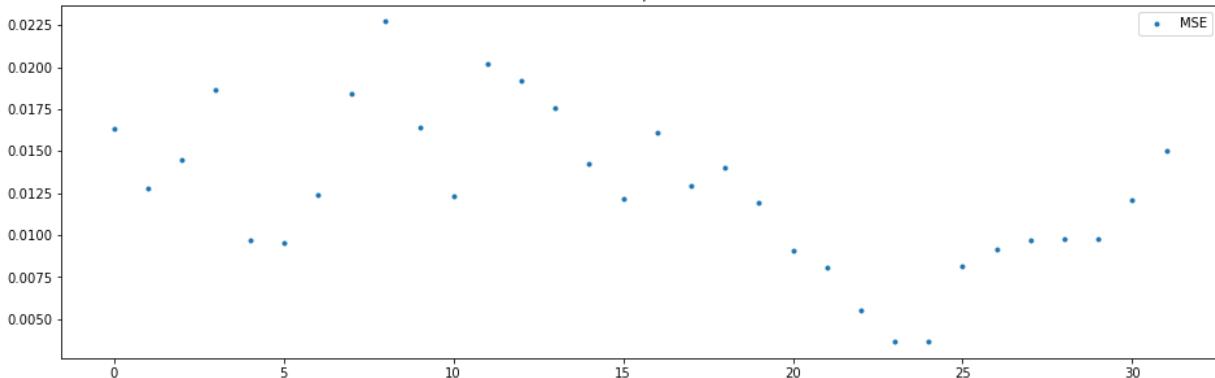
Batch: 120

mean=0.012674375, median=0.012355 , max=0.02272, min=0.00363, variance=2.1076e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.228

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

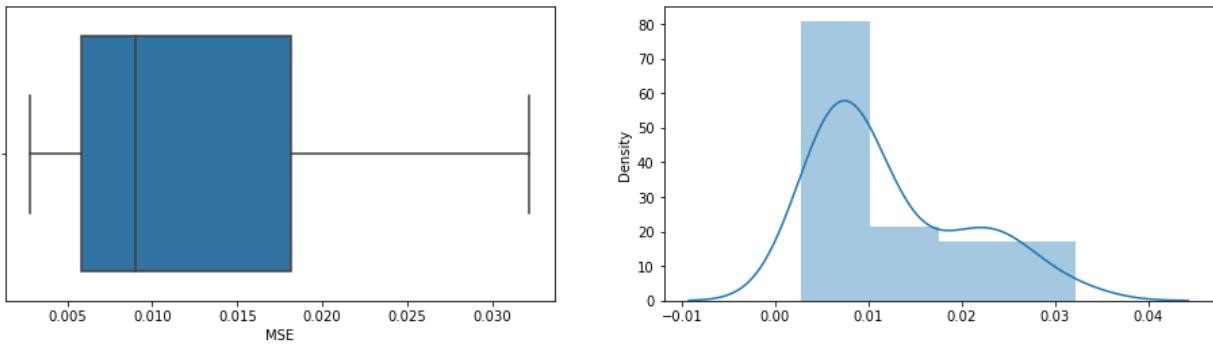
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

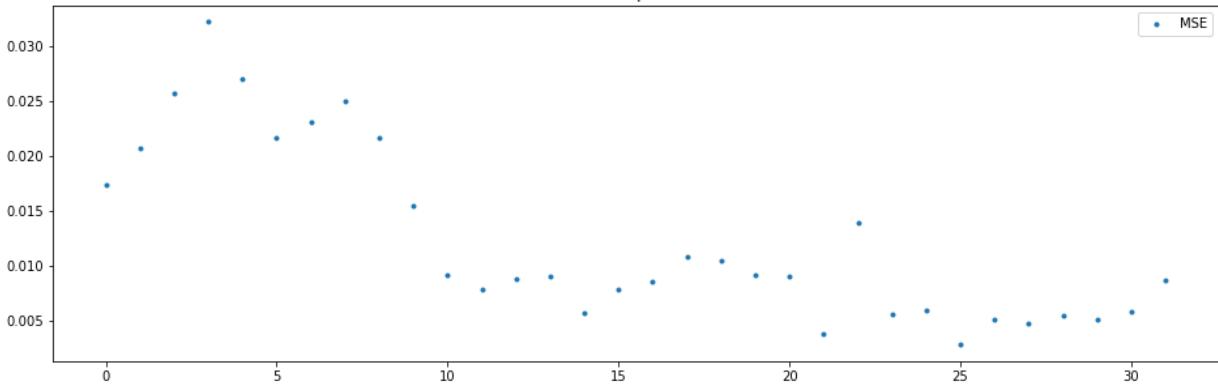
Batch: 121

mean=0.012279375, median=0.00903 , max=0.03217, min=0.00281, variance=6.2797e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson\_Darling Test**

Statistic: 1.822

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

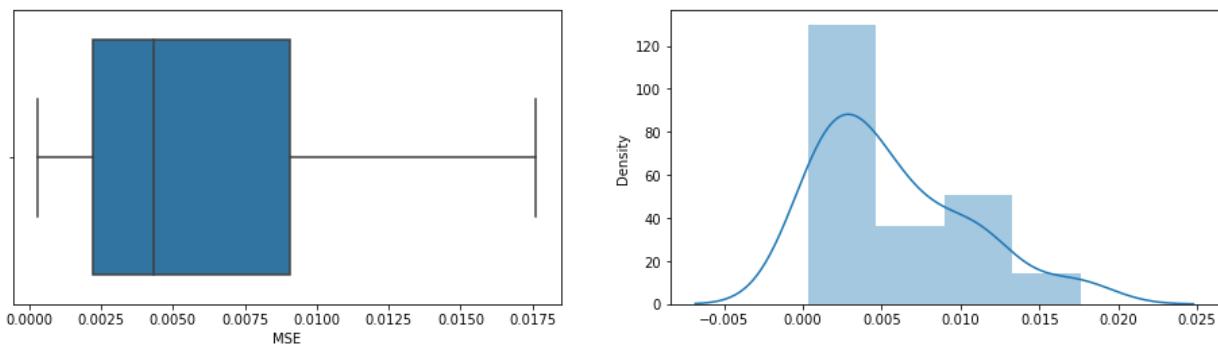
1.000: 0.992, data does not look normal (reject H0)

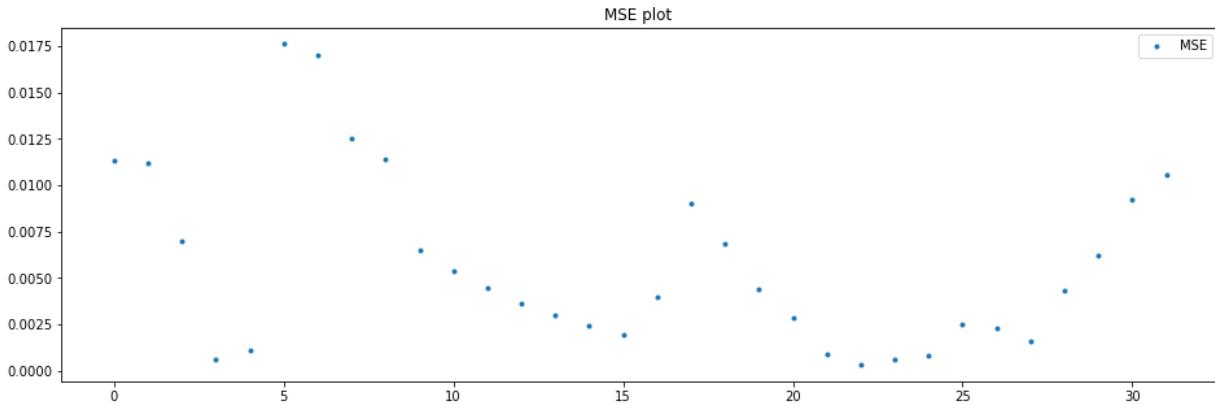
\*\*\*\*\*

Batch: 122

mean=0.0057415625, median=0.004345 , max=0.01762, min=0.00031, variance=2.19145e-05

Boxplots and Distribution plot for Reconstruction Error





**Anderson\_Darling Test**

Statistic: 1.067

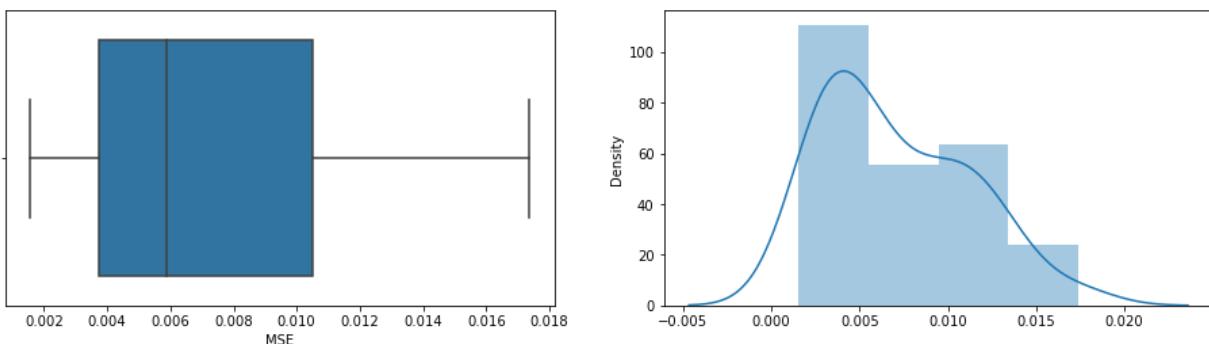
15.000: 0.523, data does not look normal (reject H0)  
 10.000: 0.596, data does not look normal (reject H0)  
 5.000: 0.715, data does not look normal (reject H0)  
 2.500: 0.834, data does not look normal (reject H0)  
 1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

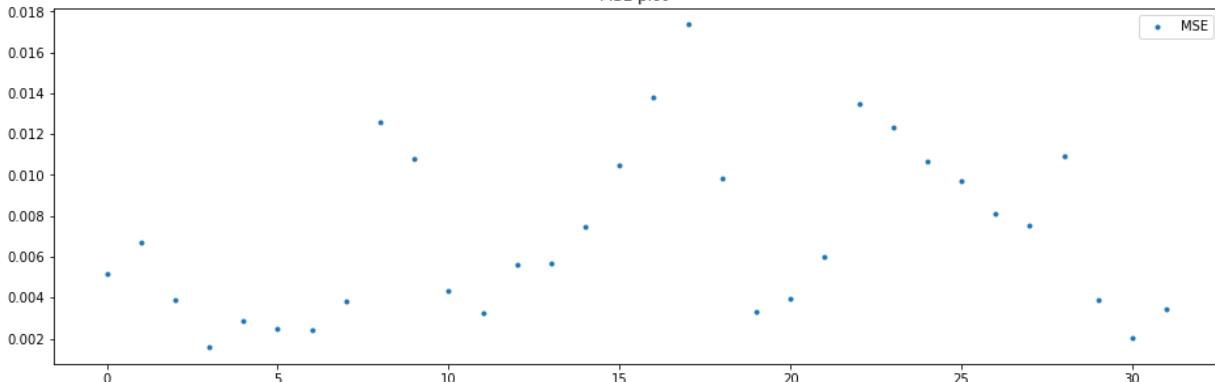
Batch: 123

mean=0.0070515625, median=0.005865 , max=0.01736, min=0.00156, variance=1.66962e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



**Anderson\_Darling Test**

Statistic: 0.841

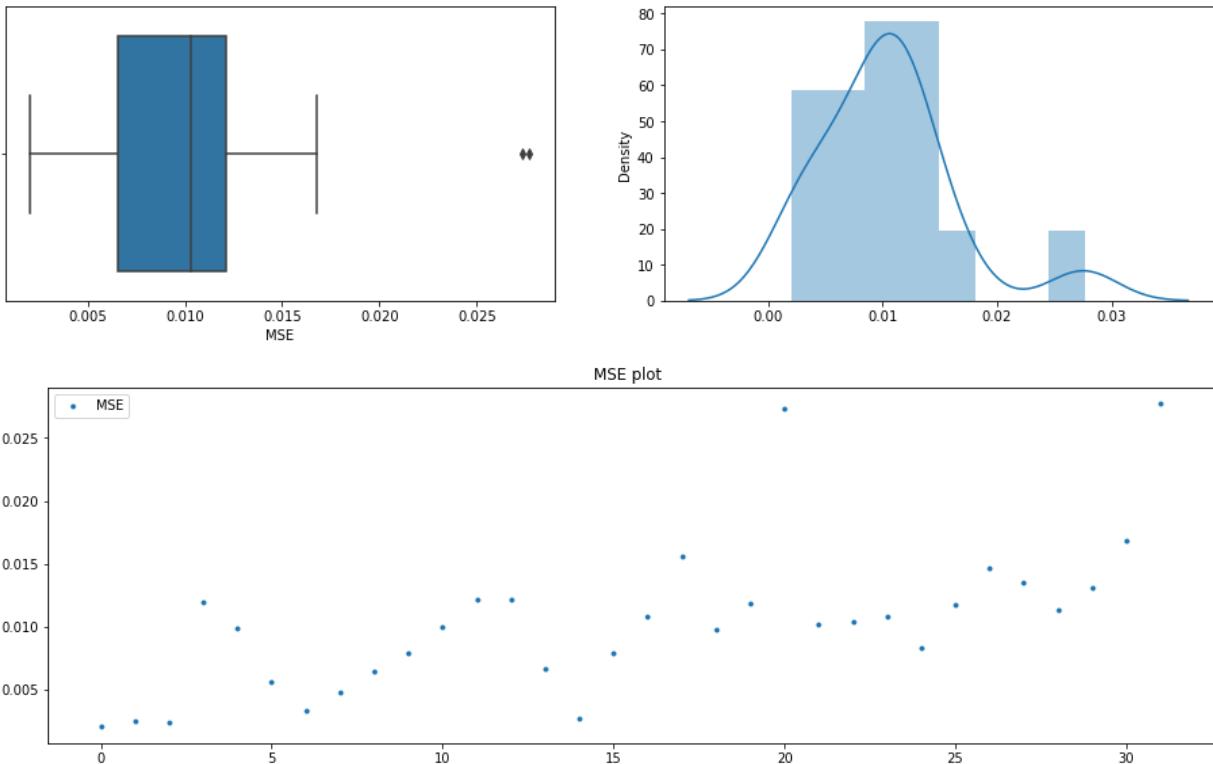
15.000: 0.523, data does not look normal (reject H0)  
 10.000: 0.596, data does not look normal (reject H0)  
 5.000: 0.715, data does not look normal (reject H0)  
 2.500: 0.834, data does not look normal (reject H0)  
 1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 124

mean=0.0103884375, median=0.010315 , max=0.0277, min=0.00204, variance=3.47507e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson\_Darling Test**

Statistic: 0.997

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

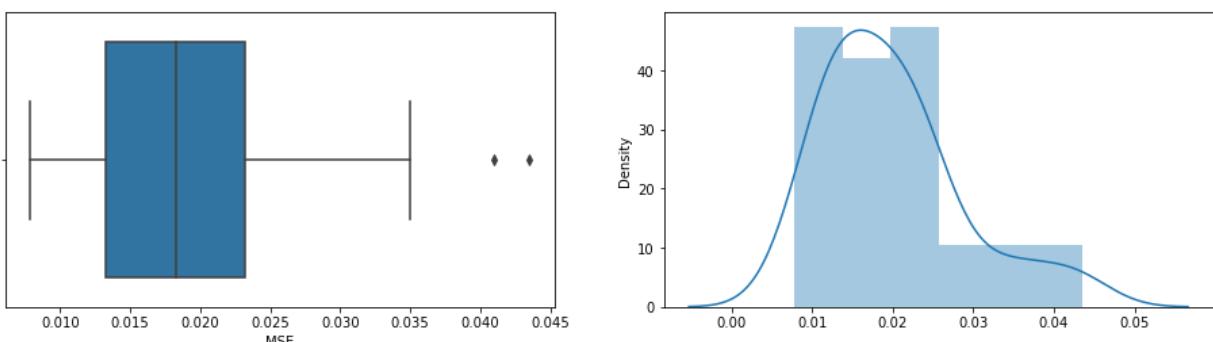
1.000: 0.992, data does not look normal (reject H0)

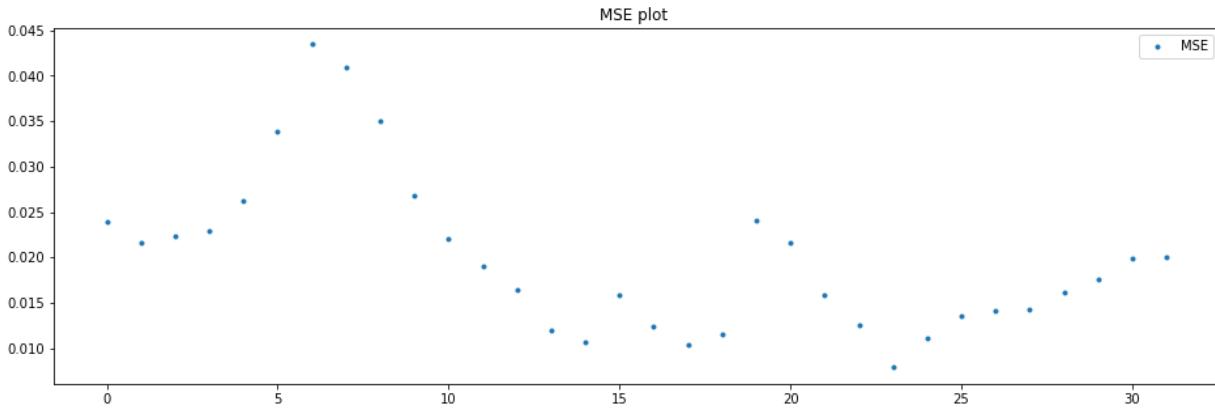
\*\*\*\*\*

Batch: 125

mean=0.0198715625, median=0.0183 , max=0.04348, min=0.00786, variance=7.44505e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.972

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

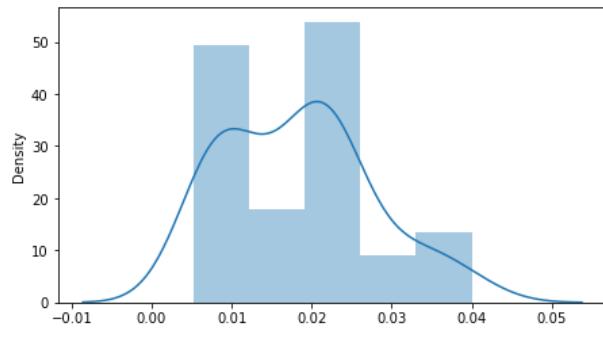
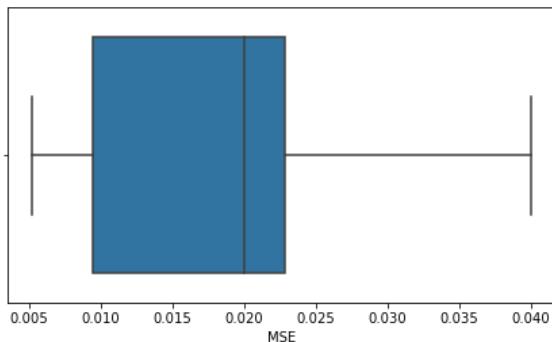
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

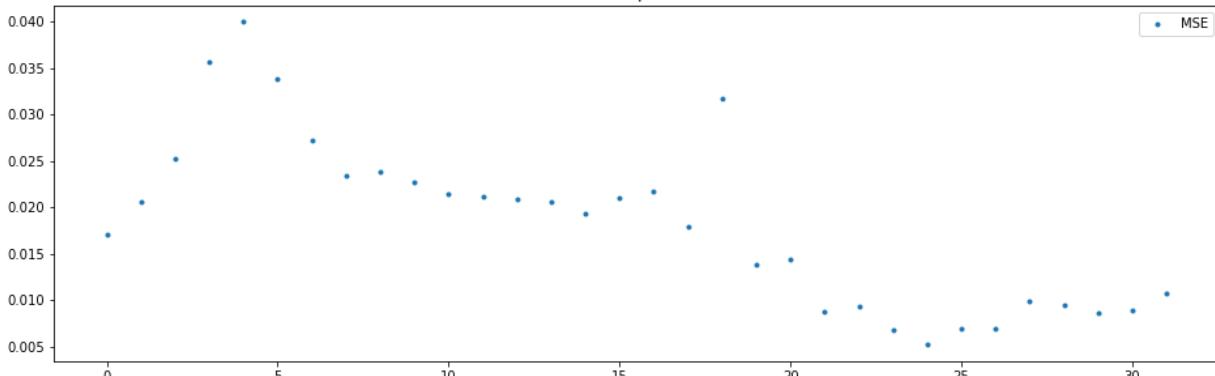
Batch: 126

mean=0.018293125, median=0.01995 , max=0.03999, min=0.00518, variance=8.16415e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.678

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

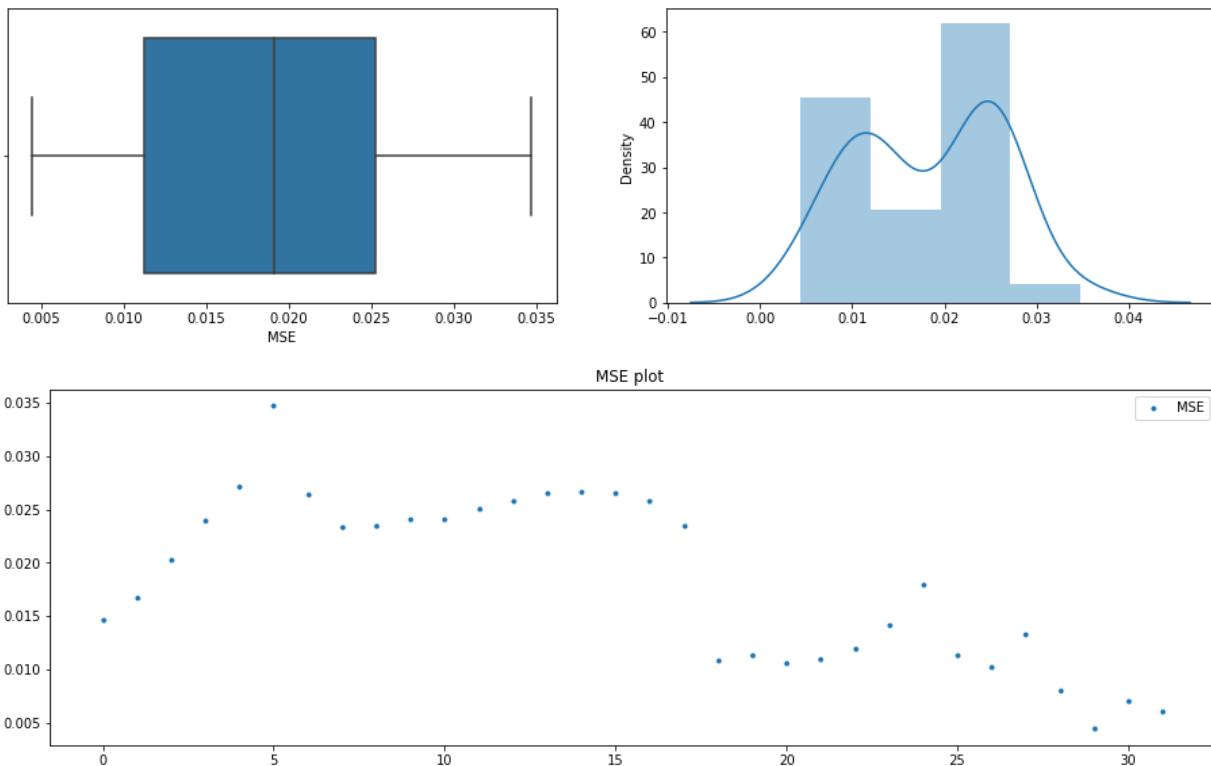
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 127

mean=0.01836, median=0.01913 , max=0.03469, min=0.00445, variance=6.12147e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson\_Darling Test**

Statistic: 1.136

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

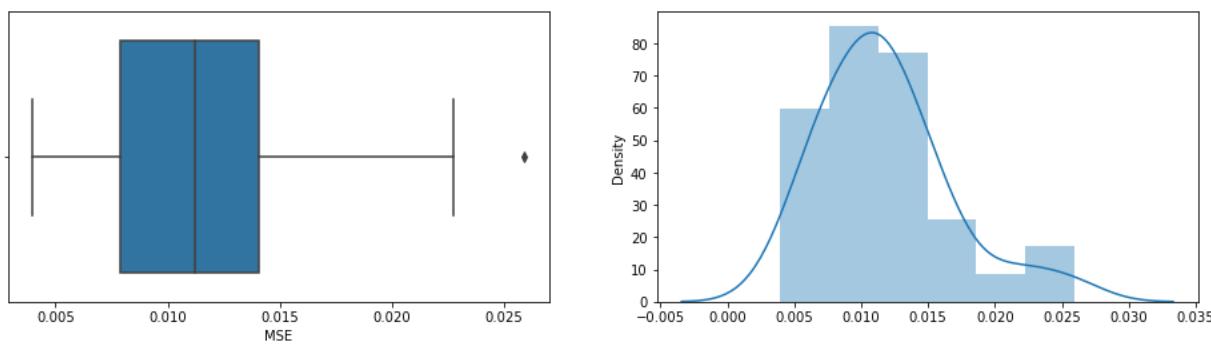
1.000: 0.992, data does not look normal (reject H0)

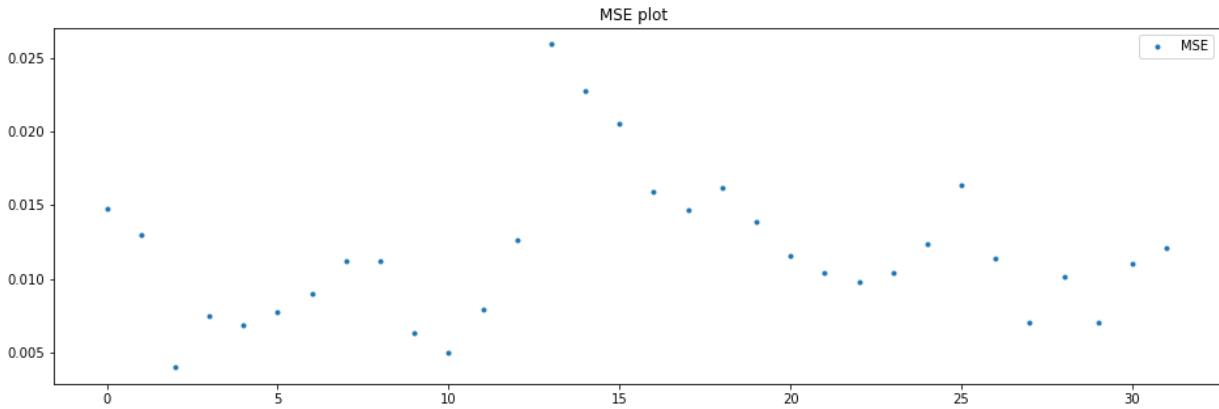
\*\*\*\*\*

Batch: 128

mean=0.011755625, median=0.0112 , max=0.02591, min=0.00397, variance=2.35962e-05

Boxplots and Distribution plot for Reconstruction Error





**Anderson\_Darling Test**

Statistic: 0.641

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

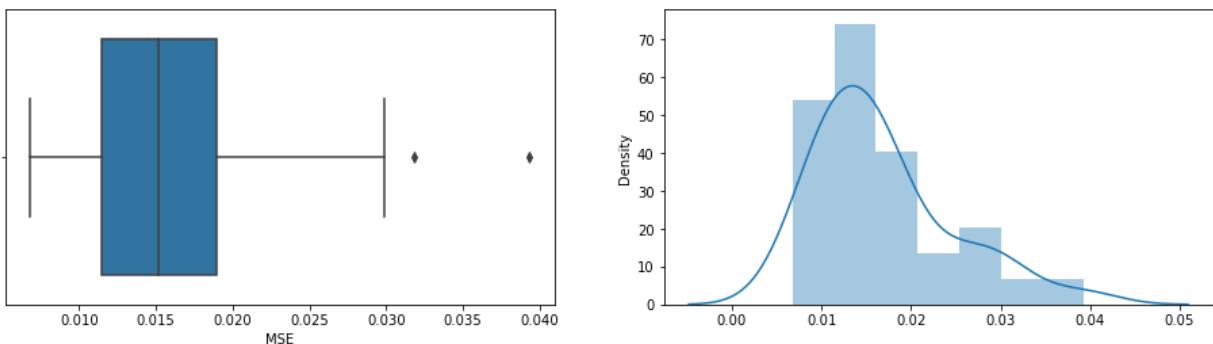
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

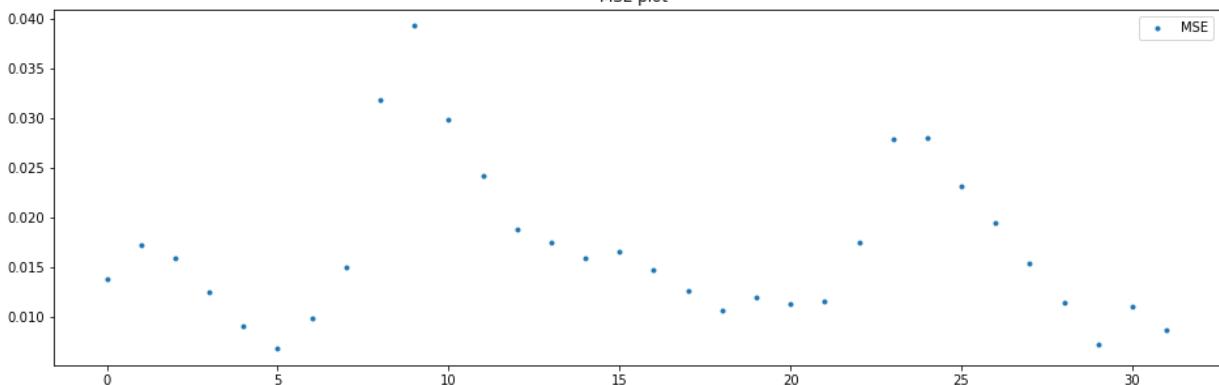
Batch: 129

mean=0.0168059375, median=0.01521 , max=0.03931, min=0.00682, variance=5.8015e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



**Anderson\_Darling Test**

Statistic: 1.168

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

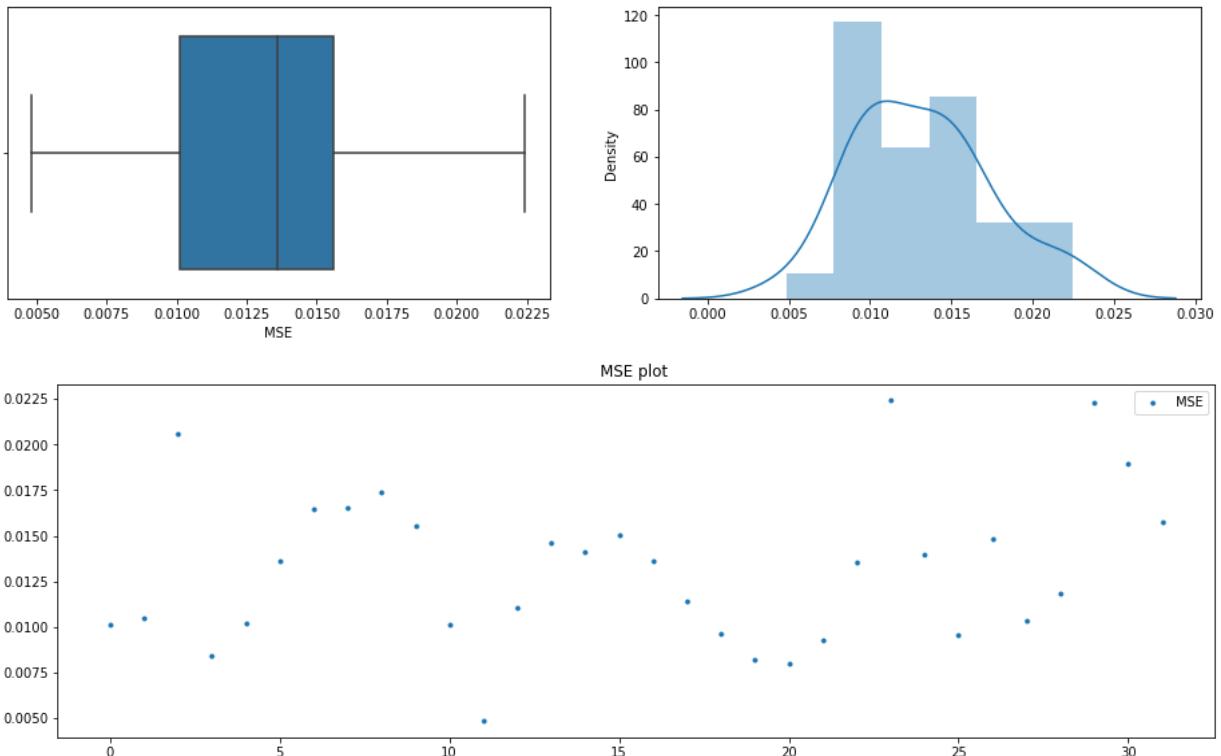
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 130

mean=0.0132125, median=0.01358 , max=0.02242, min=0.00483, variance=1.73931e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson\_Darling Test**

Statistic: 0.431

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

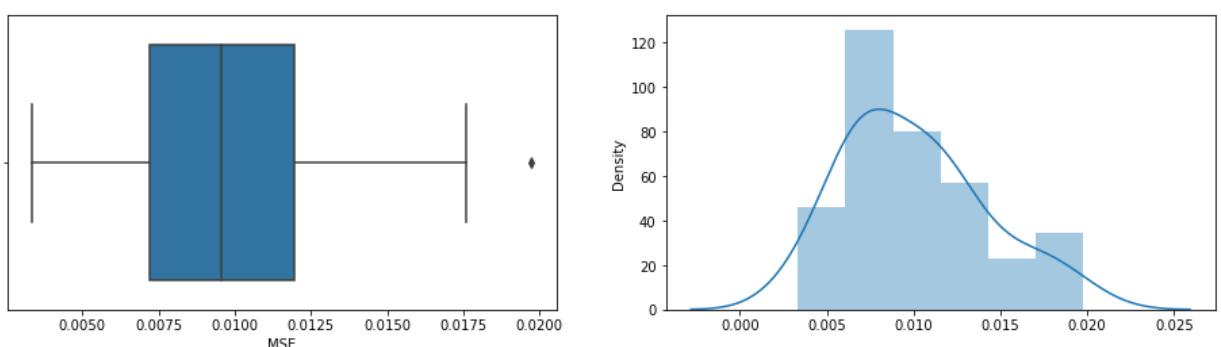
1.000: 0.992, data looks normal (fail to reject H0)

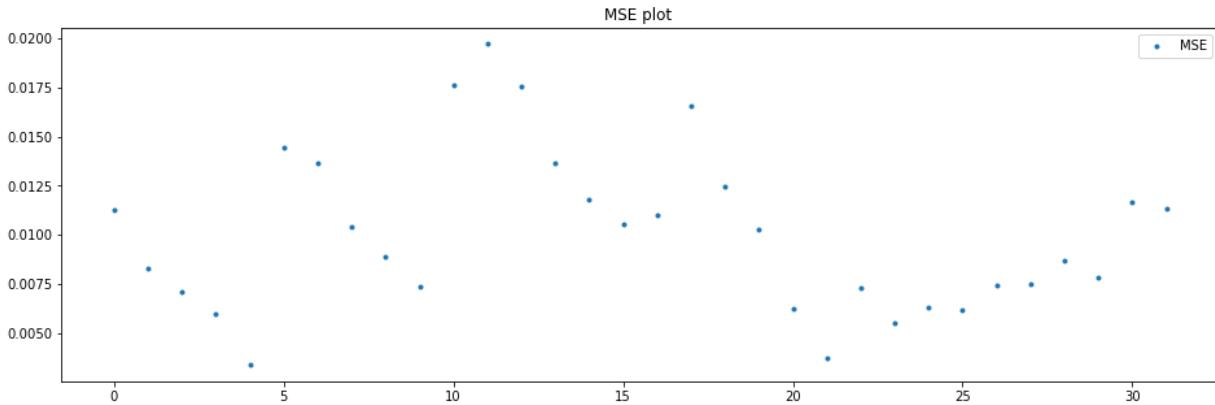
\*\*\*\*\*

Batch: 131

mean=0.010044375,median=0.009575 ,max=0.01973,min=0.00335,variance=1.64138e-05

Boxplots and Distribution plot for Reconstruction Error





**Anderson\_Darling Test**

Statistic: 0.506

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

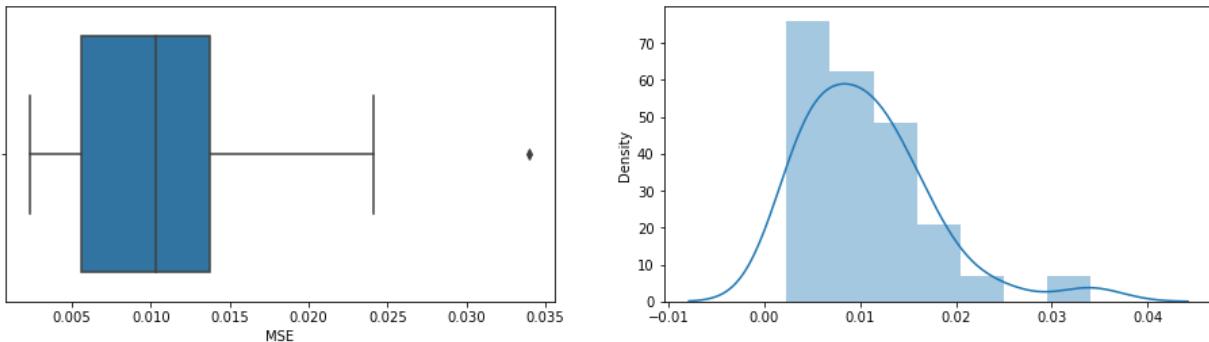
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

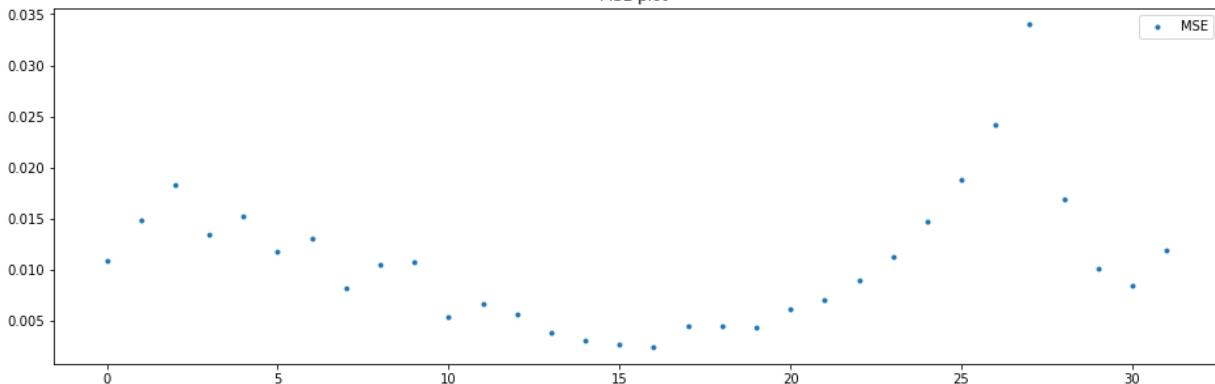
Batch: 132

mean=0.01067125, median=0.010275 , max=0.03399, min=0.00234, variance=4.47868e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



**Anderson\_Darling Test**

Statistic: 0.757

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

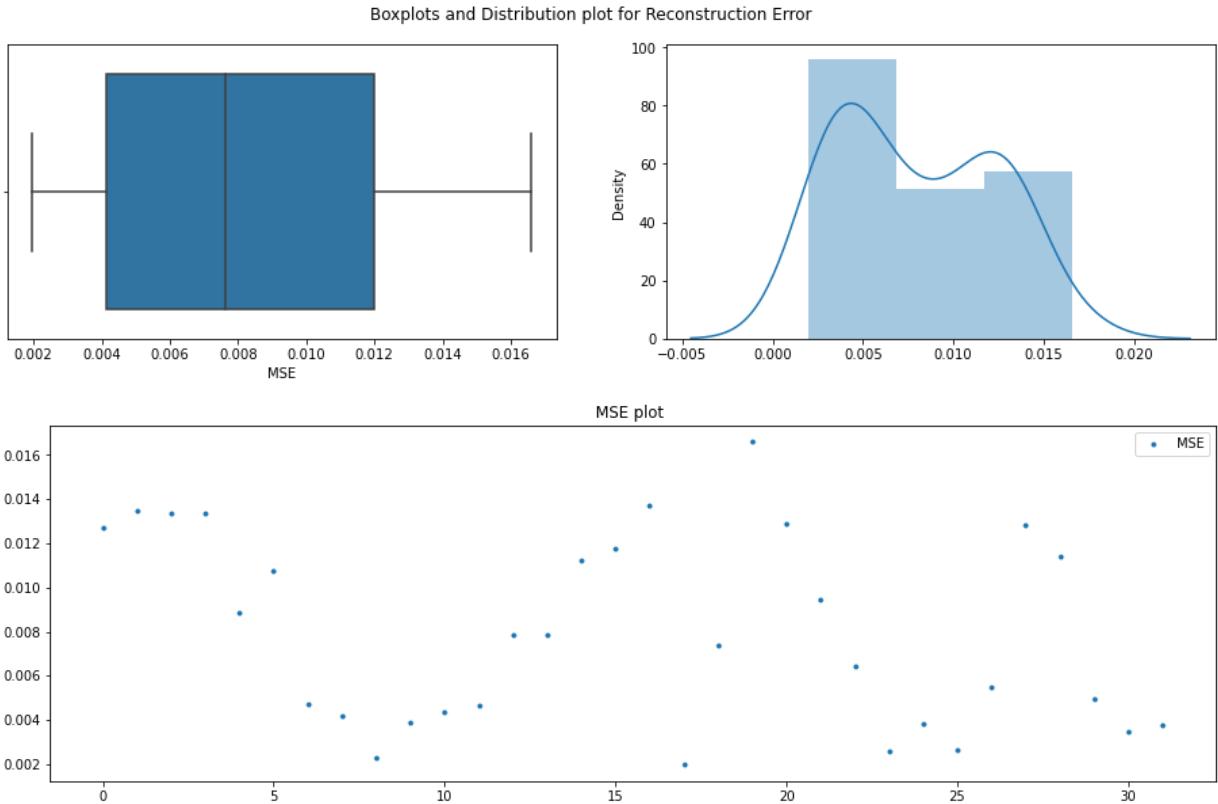
2.500: 0.834, data looks normal (fail to reject H0)

1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 133

mean=0.007958125, median=0.007615 , max=0.0166, min=0.00196, variance=1.80997e-05



#### Anderson\_Darling Test

Statistic: 1.029

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

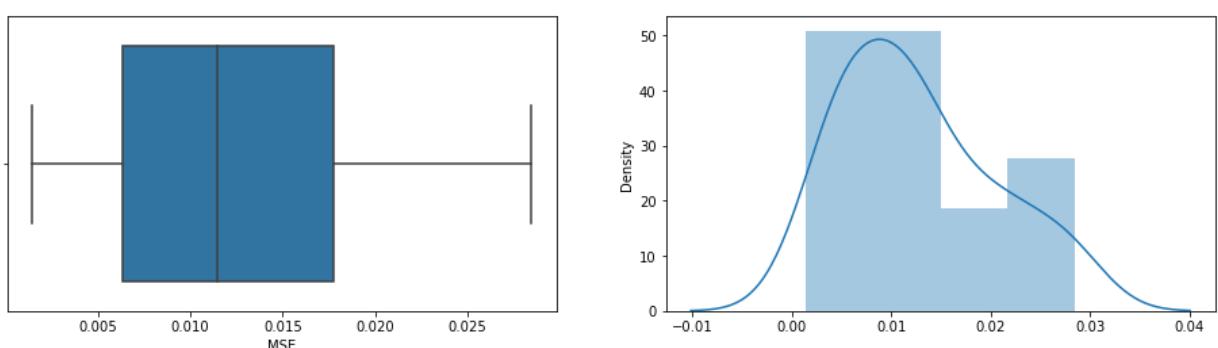
1.000: 0.992, data does not look normal (reject H0)

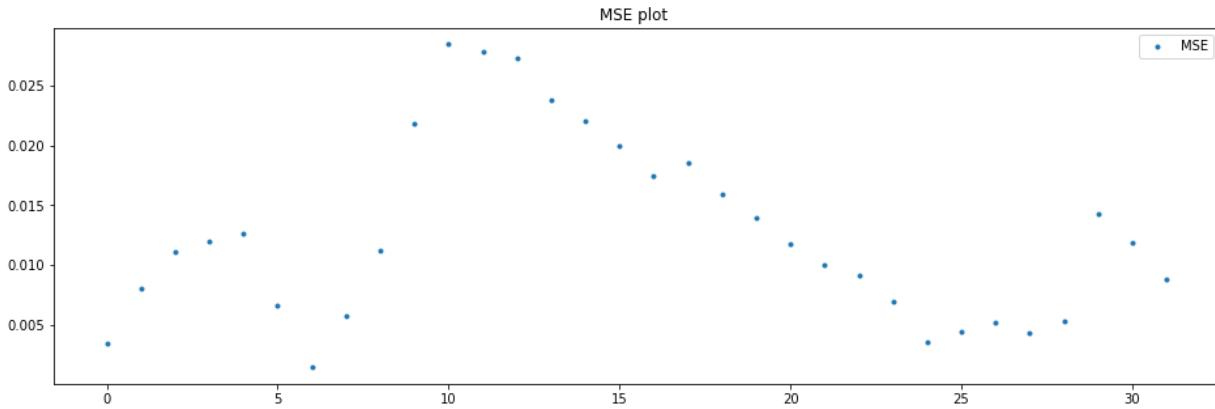
\*\*\*\*\*

Batch: 134

mean=0.012654375, median=0.011495 , max=0.02847, min=0.00143, variance=5.73752e-05

Boxplots and Distribution plot for Reconstruction Error





## Anderson\_Darling Test

Statistic: 0.668

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

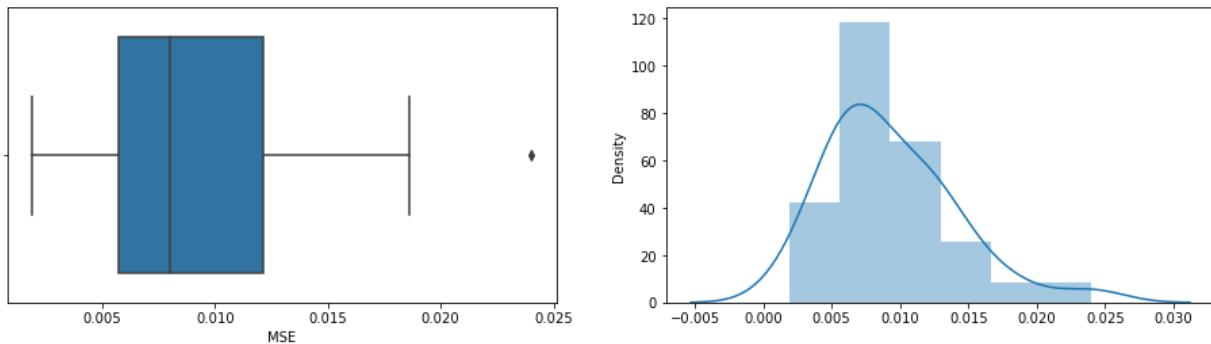
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

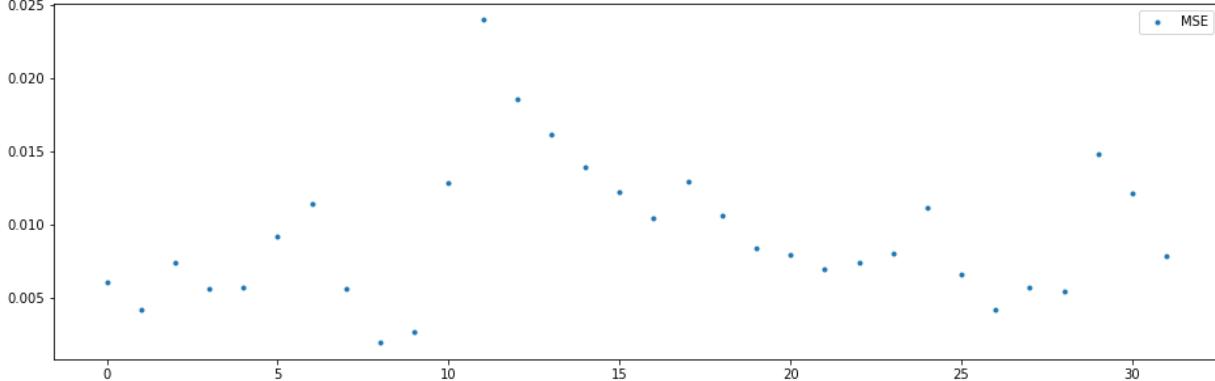
Batch: 135

mean=0.0093165625, median=0.007995 , max=0.02401, min=0.00189, variance=2.22521e-05

## Boxplots and Distribution plot for Reconstruction Error



## MSE plot



## Anderson\_Darling Test

Statistic: 0.603

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

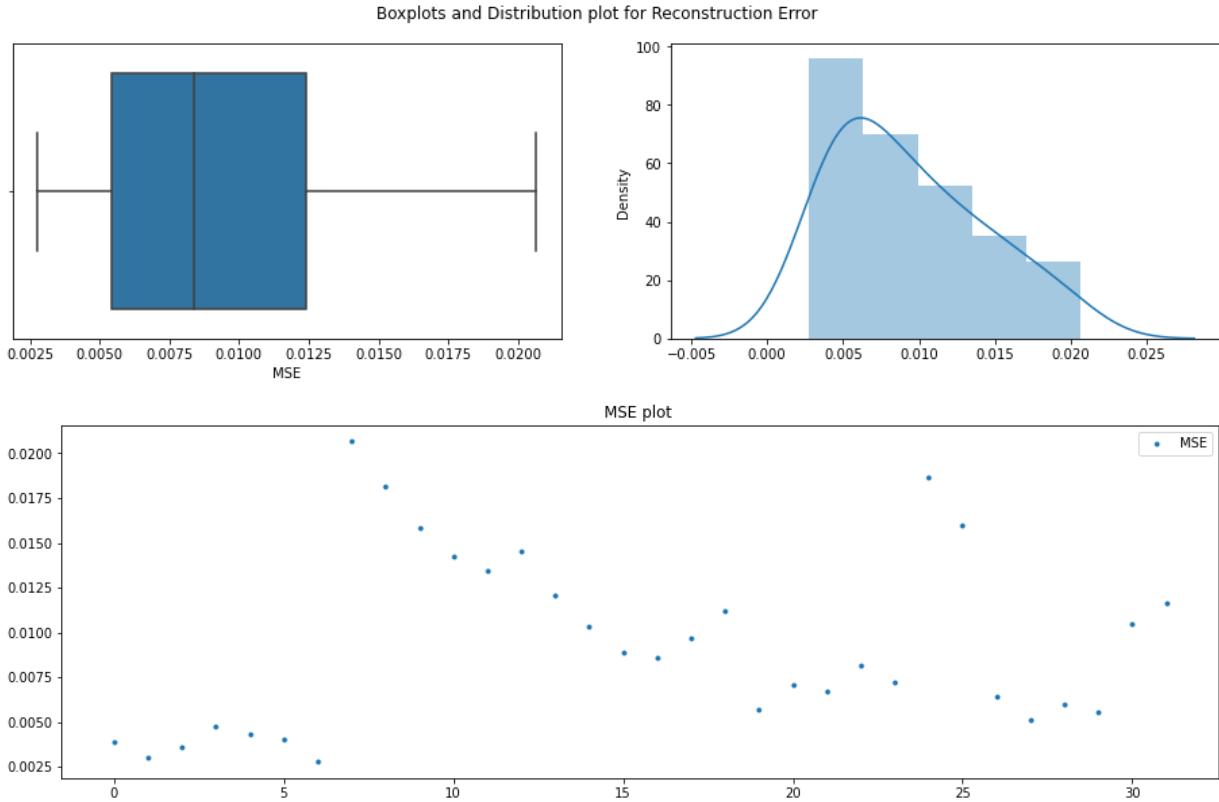
2.500: 0.834, data looks normal (fail to reject H0)

1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 136

mean=0.0093296875, median=0.008395 , max=0.02066, min=0.00277, variance=2.40731e-05



#### Anderson\_Darling Test

Statistic: 0.642

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

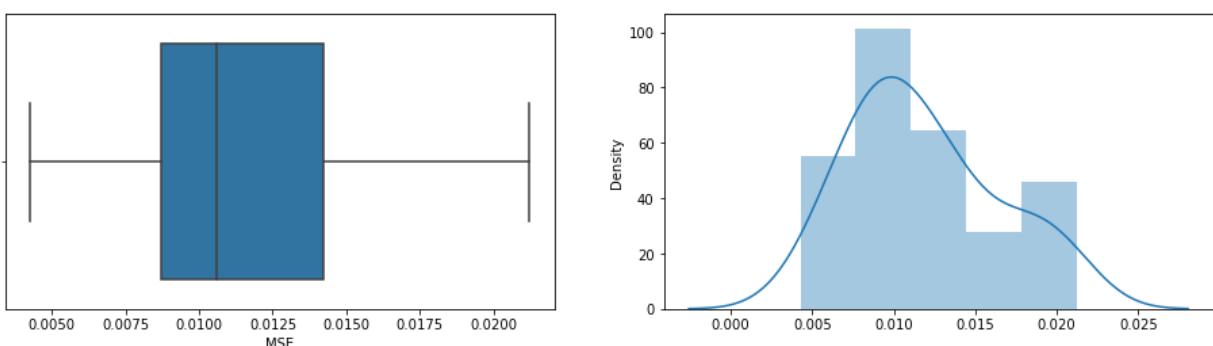
1.000: 0.992, data looks normal (fail to reject H0)

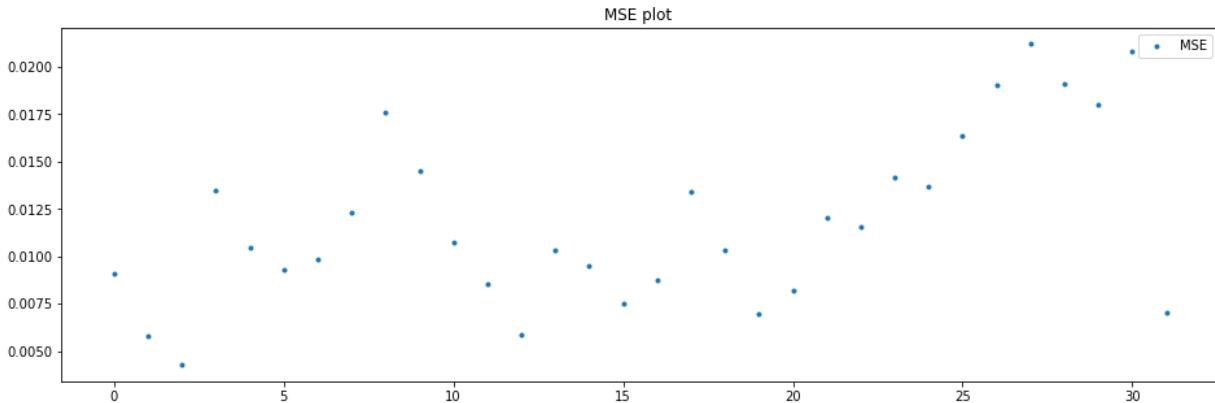
\*\*\*\*\*

Batch: 137

mean=0.011866875, median=0.010615 , max=0.02121, min=0.00426, variance=2.01499e-05

Boxplots and Distribution plot for Reconstruction Error





**Anderson\_Darling Test**

Statistic: 0.524

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

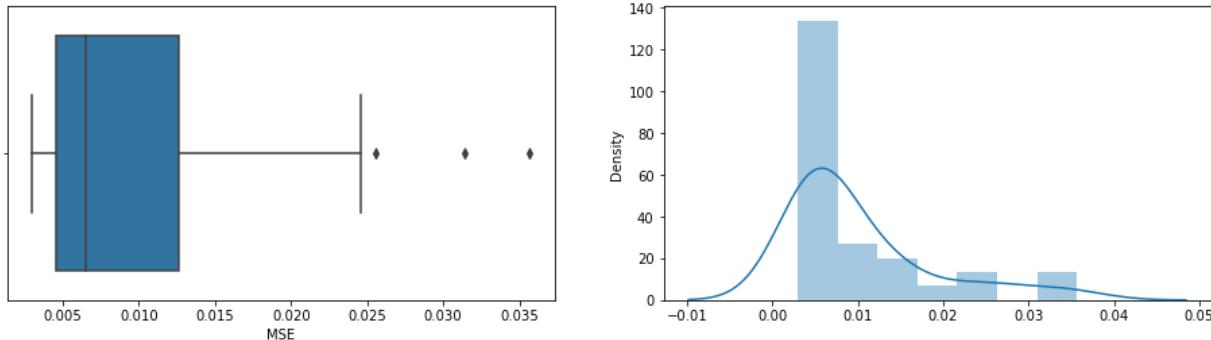
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

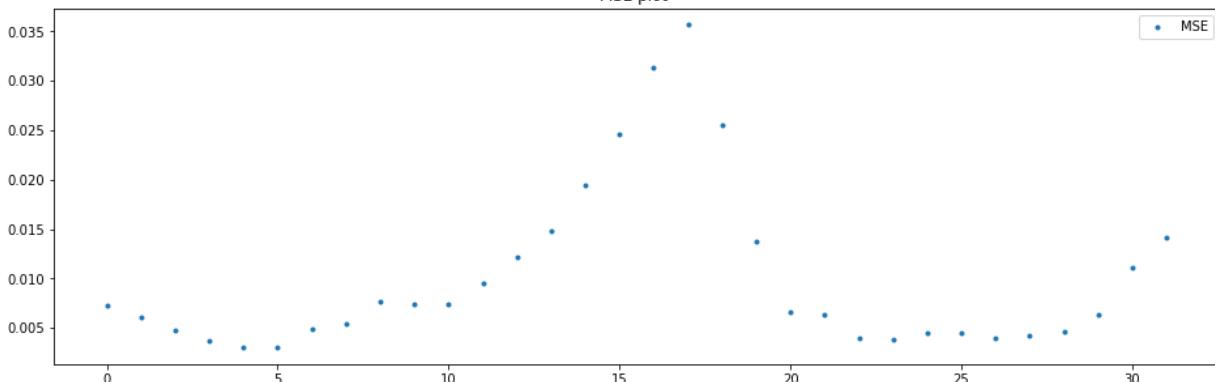
Batch: 138

mean=0.0100478125, median=0.0065 , max=0.03566, min=0.00297, variance=7.01302e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



**Anderson\_Darling Test**

Statistic: 2.923

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

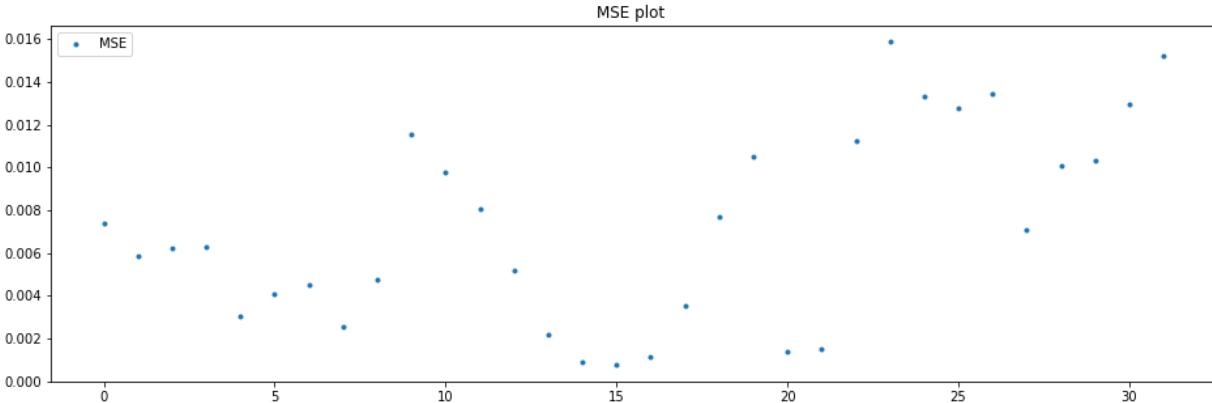
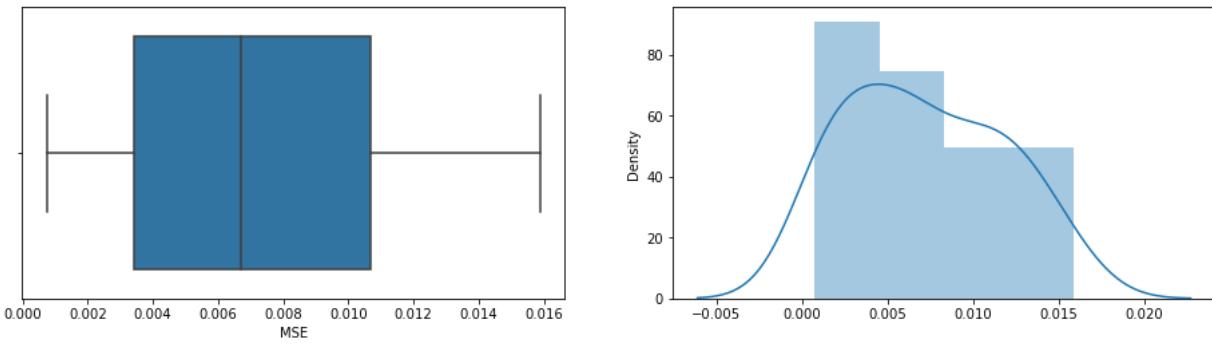
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 139

mean=0.0072134375, median=0.006685 , max=0.01587, min=0.00074, variance=2.01261e-05

Boxplots and Distribution plot for Reconstruction Error



## Anderson\_Darling Test

Statistic: 0.459

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

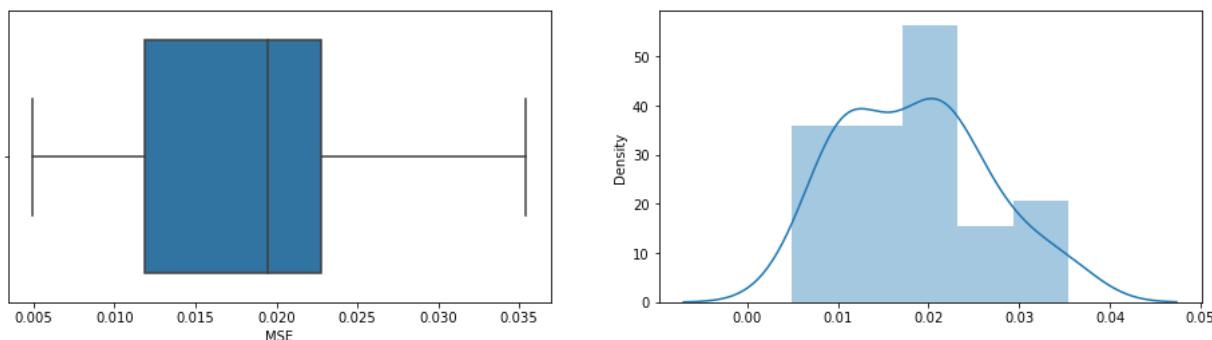
1.000: 0.992, data looks normal (fail to reject H0)

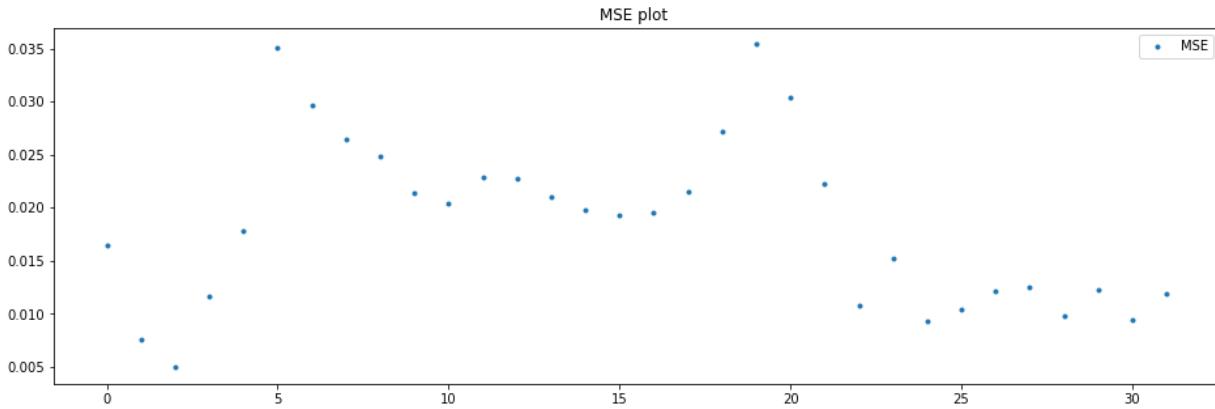
\*\*\*\*\*

Batch: 140

mean=0.0185053125, median=0.019465 , max=0.0354, min=0.00494, variance=6.17102e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.445

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

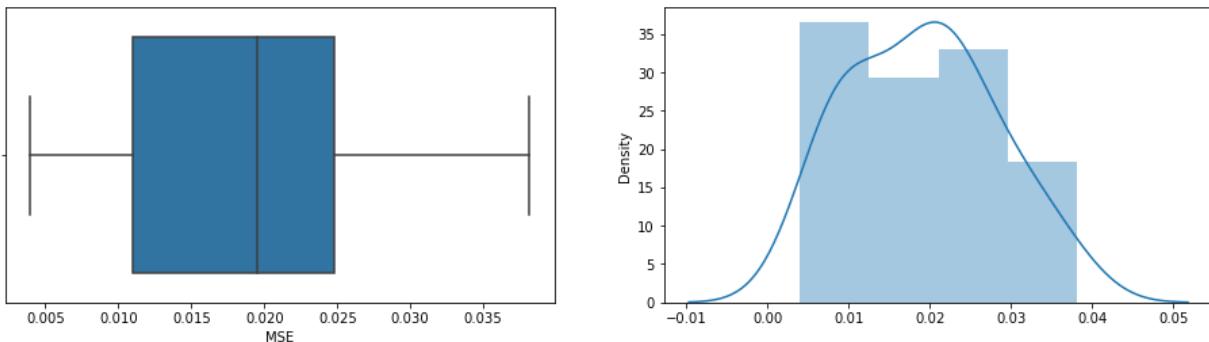
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

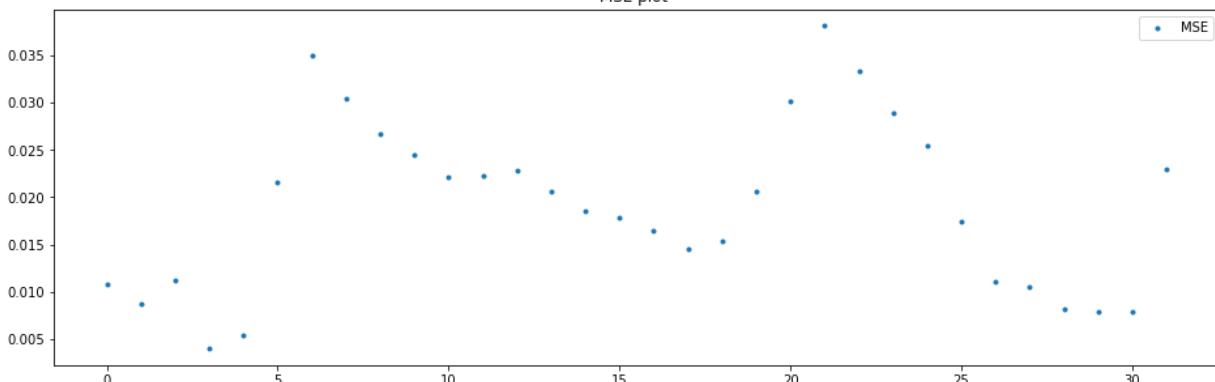
Batch: 141

mean=0.0190940625, median=0.01952 , max=0.03814, min=0.00395, variance=8.01429e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.277

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

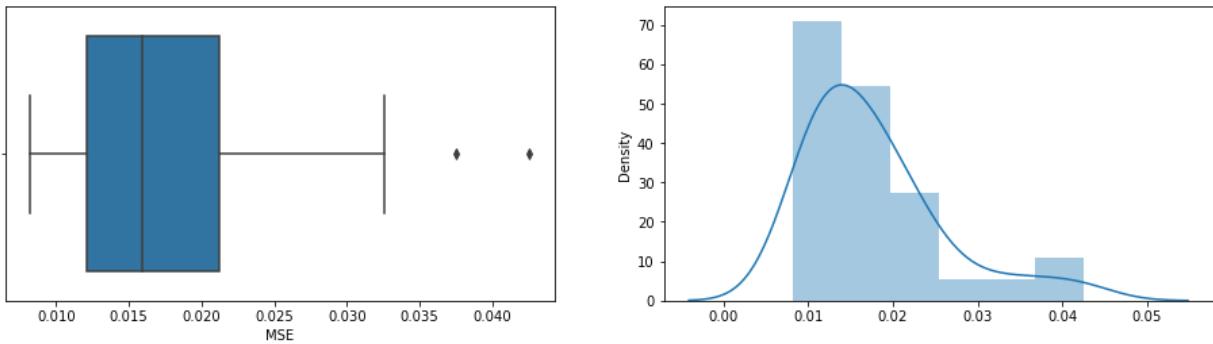
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

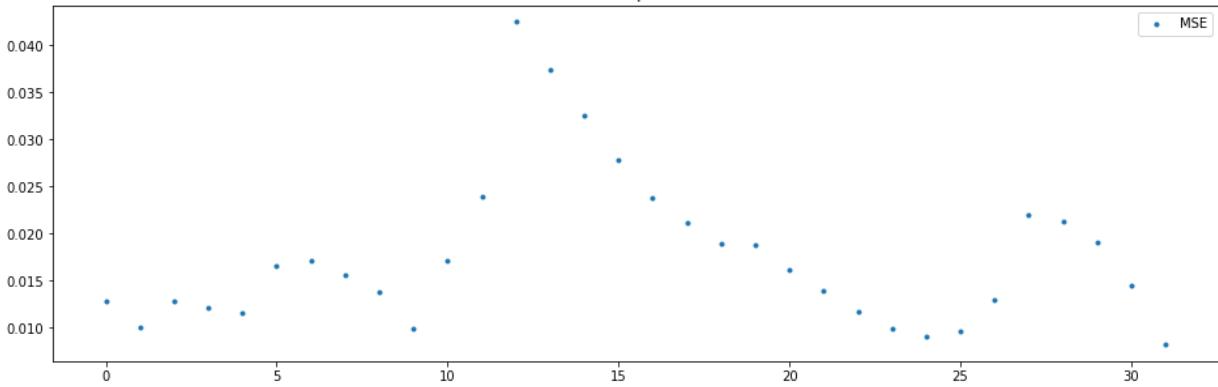
Batch: 142

mean=0.01766875, median=0.01591 , max=0.04252, min=0.0082, variance=6.50493e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson\_Darling Test**

Statistic: 1.287

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

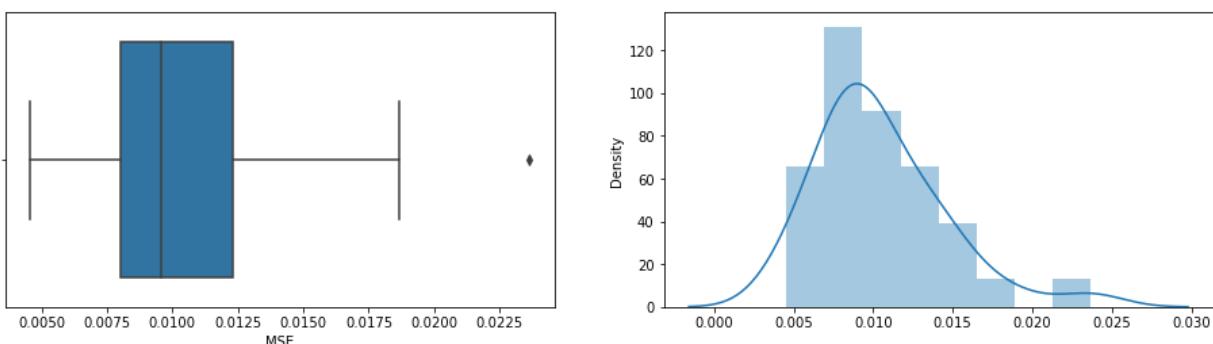
1.000: 0.992, data does not look normal (reject H0)

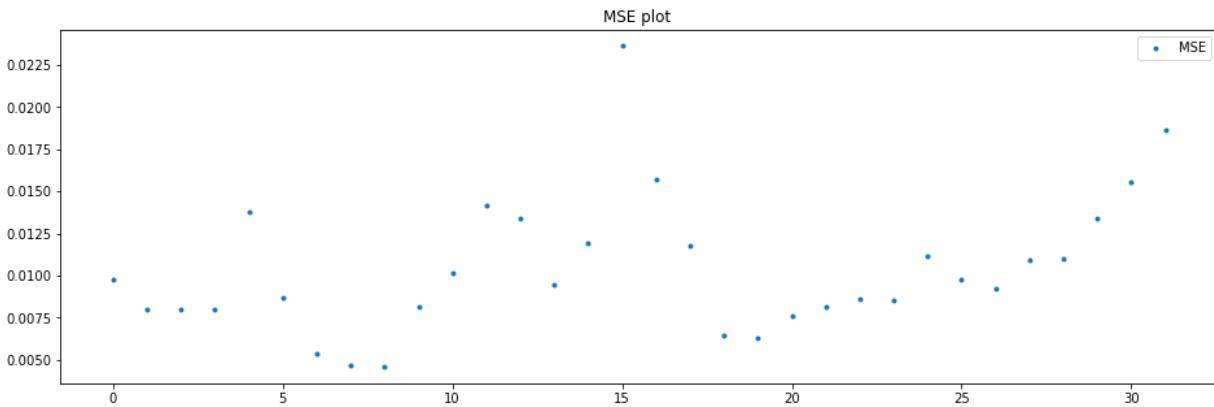
\*\*\*\*\*

Batch: 143

mean=0.010448125, median=0.00958 , max=0.02363, min=0.00456, variance=1.62203e-05

Boxplots and Distribution plot for Reconstruction Error





**Anderson\_Darling Test**

Statistic: 0.744

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

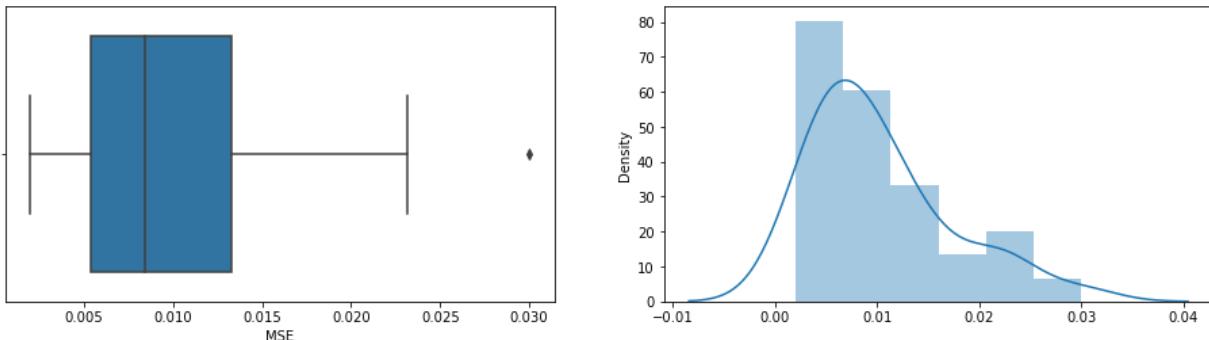
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

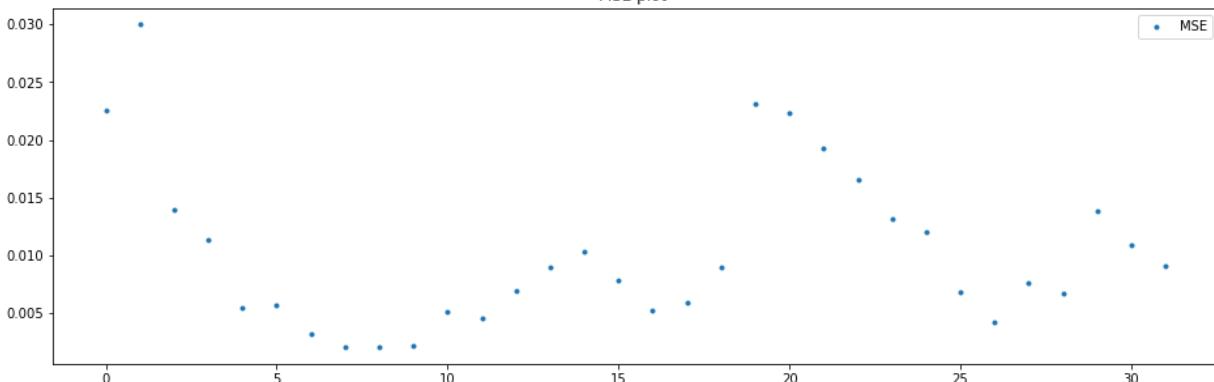
Batch: 144

mean=0.010226875, median=0.008405 , max=0.02999, min=0.00199, variance=4.69071e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



**Anderson\_Darling Test**

Statistic: 1.159

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

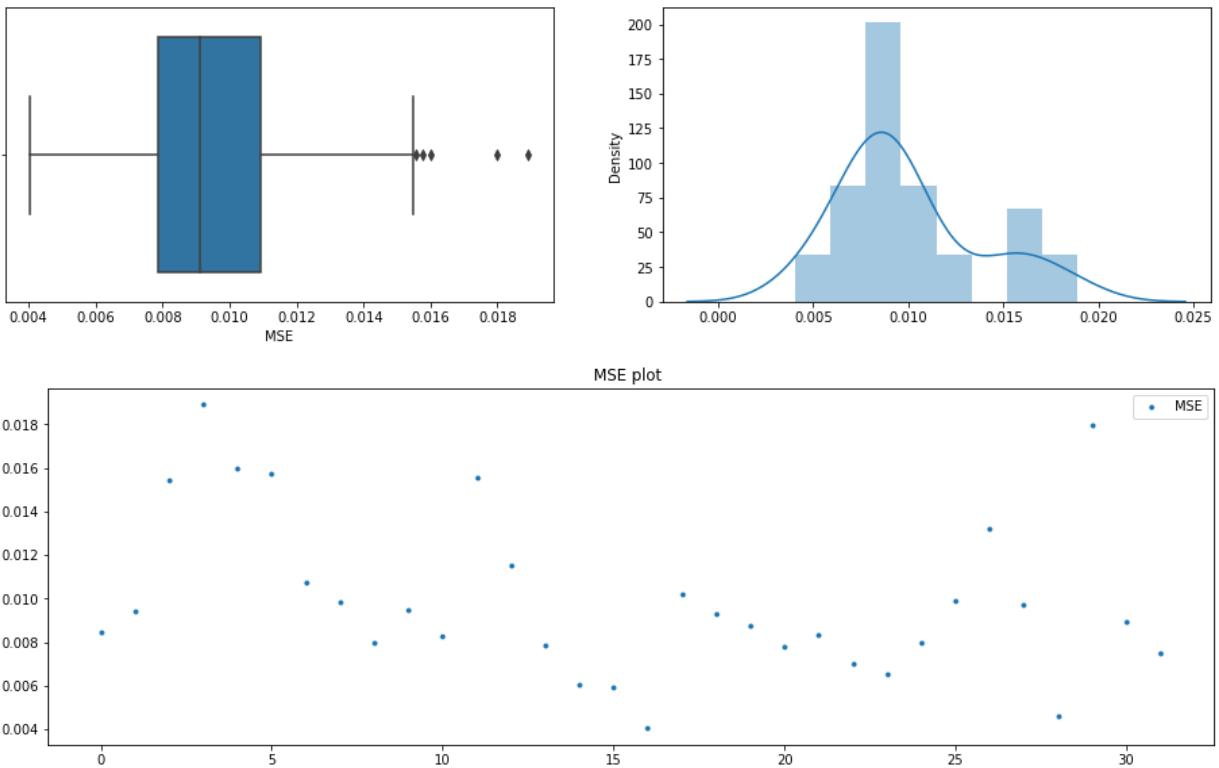
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 145

mean=0.0099728125, median=0.00912 , max=0.01891, min=0.00404, variance=1.37567e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson\_Darling Test**

Statistic: 1.300

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

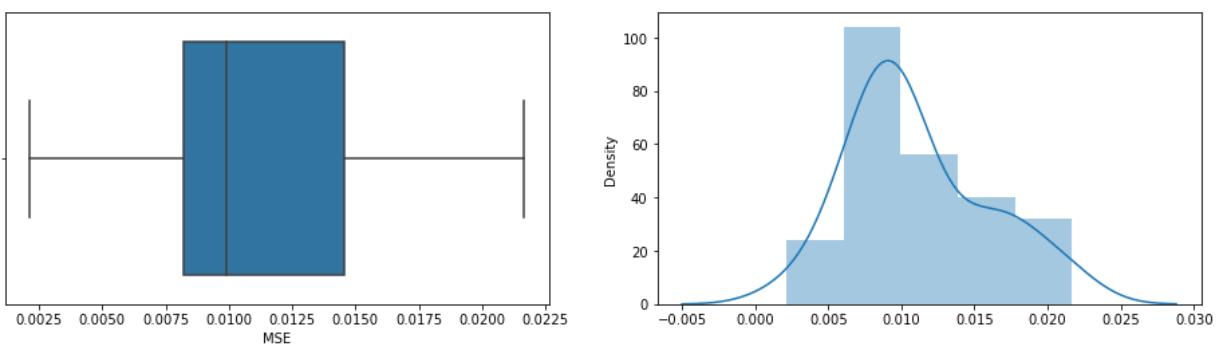
1.000: 0.992, data does not look normal (reject H0)

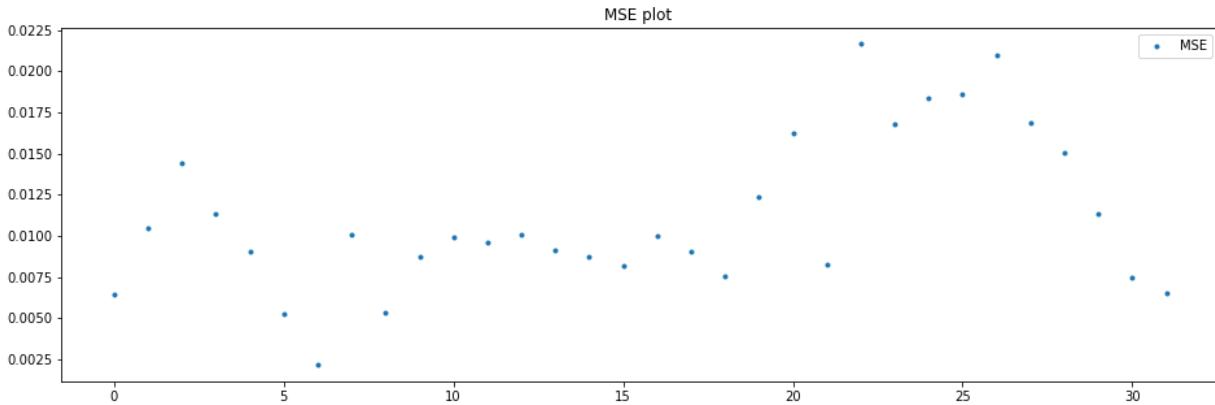
\*\*\*\*\*

Batch: 146

mean=0.0111178125, median=0.00993 , max=0.02165, min=0.00214, variance=2.19369e-05

Boxplots and Distribution plot for Reconstruction Error





**Anderson\_Darling Test**

Statistic: 0.928

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

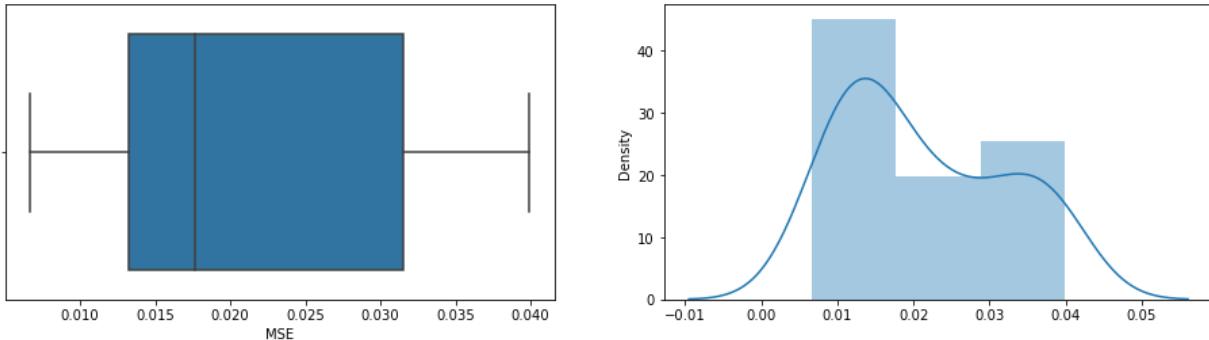
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

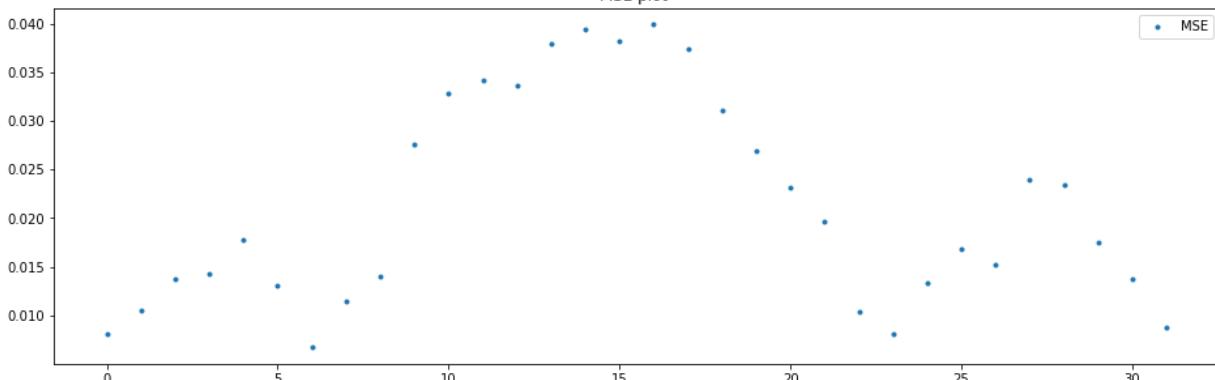
Batch: 147

mean=0.0213309375, median=0.01761 , max=0.0399, min=0.00668, variance=0.0001128556

Boxplots and Distribution plot for Reconstruction Error



MSE plot



**Anderson\_Darling Test**

Statistic: 1.054

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

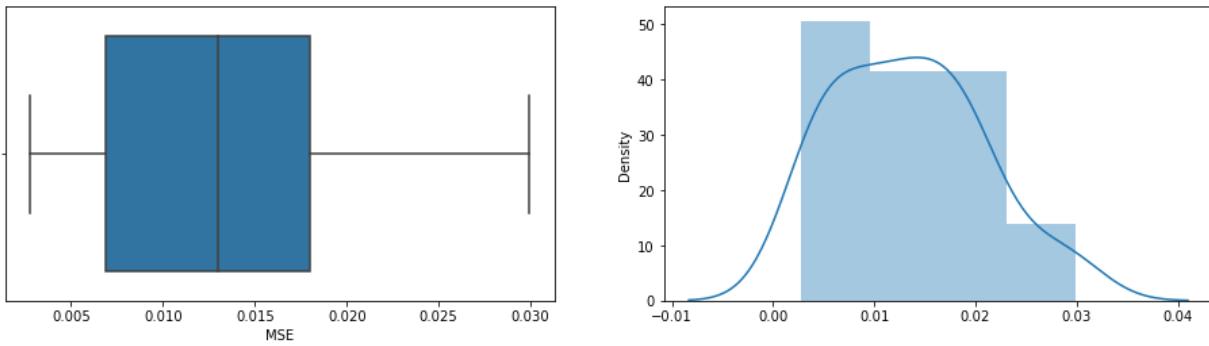
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

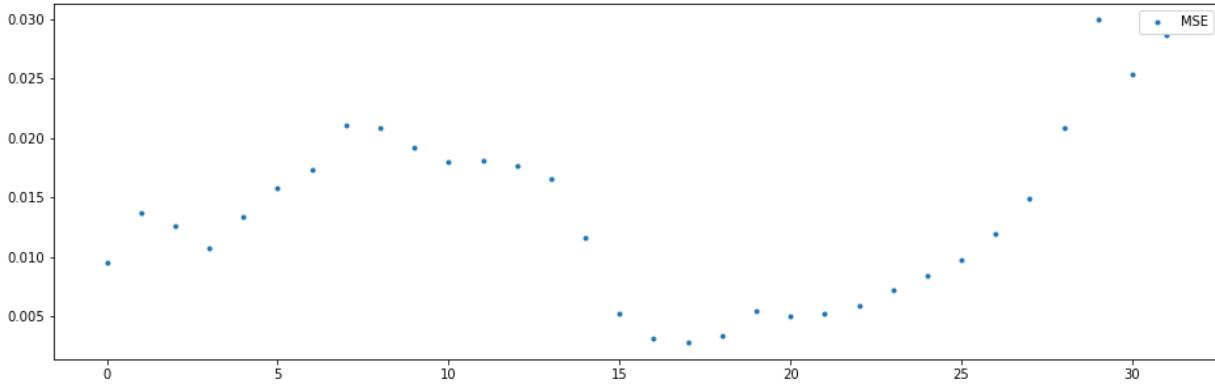
Batch: 148

mean=0.0134059375, median=0.012955 , max=0.02992, min=0.00277, variance=5.29036e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson\_Darling Test**

Statistic: 0.353

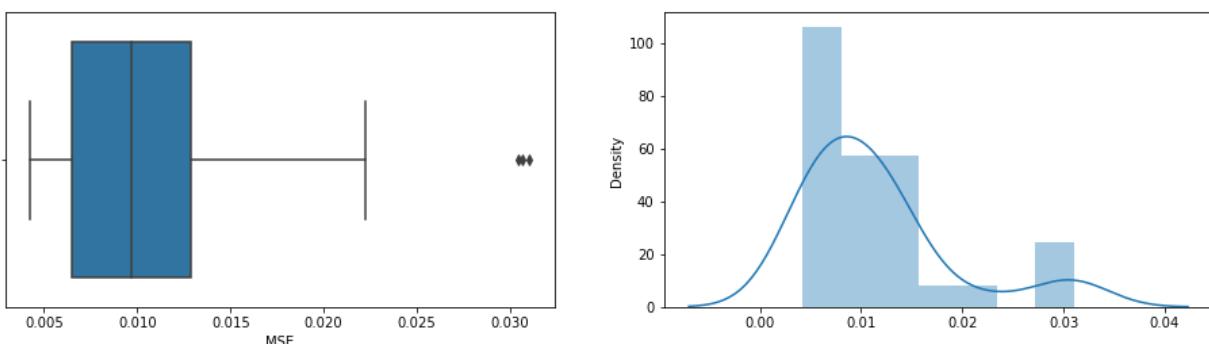
15.000: 0.523, data looks normal (fail to reject H0)  
 10.000: 0.596, data looks normal (fail to reject H0)  
 5.000: 0.715, data looks normal (fail to reject H0)  
 2.500: 0.834, data looks normal (fail to reject H0)  
 1.000: 0.992, data looks normal (fail to reject H0)

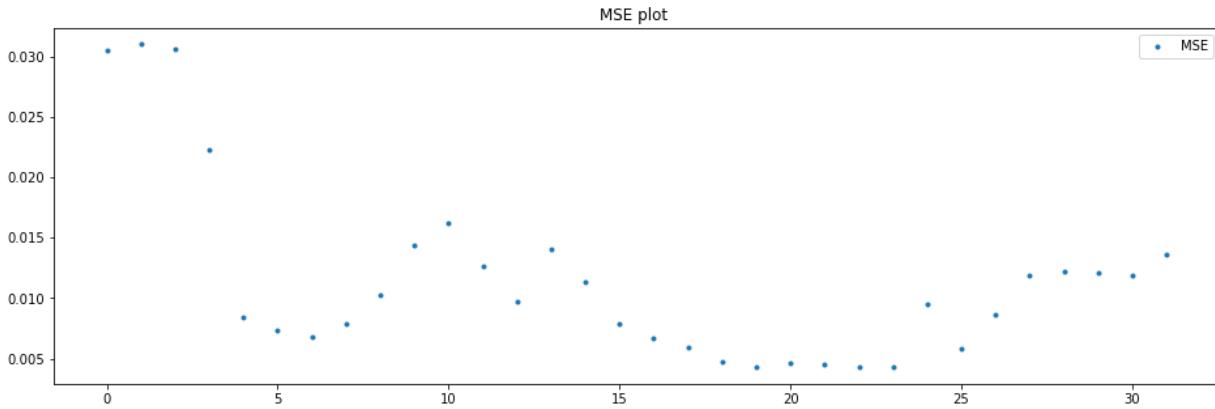
\*\*\*\*\*

Batch: 149

mean=0.01144875, median=0.009655 , max=0.03102, min=0.00425, variance=5.45042e-05

Boxplots and Distribution plot for Reconstruction Error





**Anderson\_Darling Test**

Statistic: 2.101

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

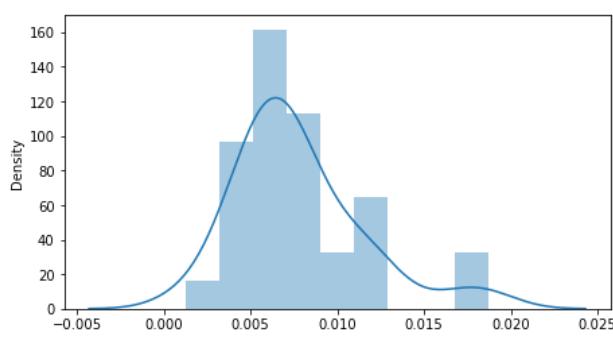
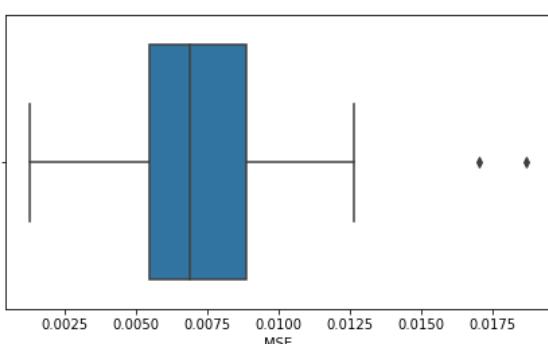
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

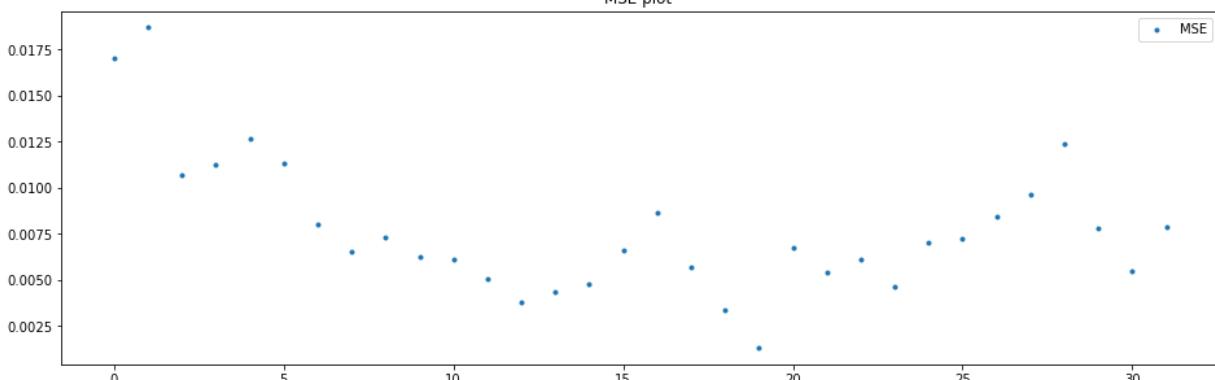
Batch: 150

mean=0.0077671875, median=0.006905 , max=0.0187, min=0.0013, variance=1.34767e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



**Anderson\_Darling Test**

Statistic: 1.008

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

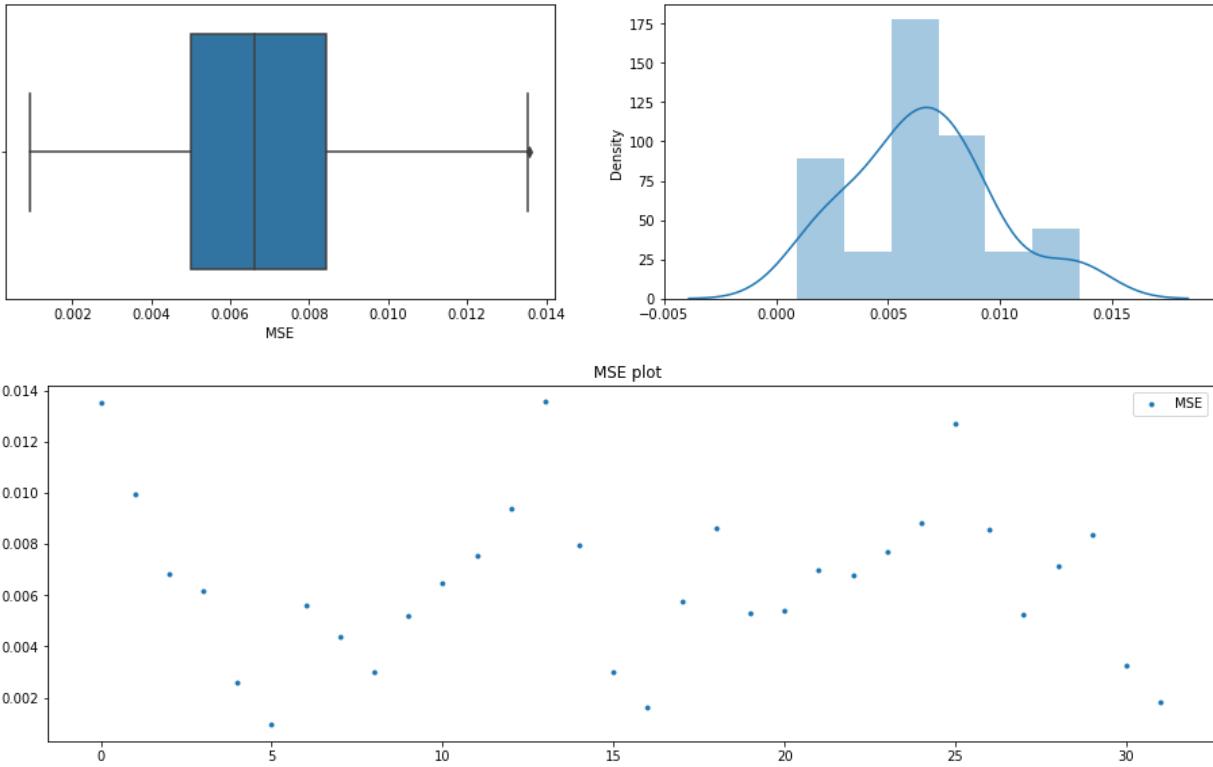
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 151

mean=0.0065690625, median=0.00662 , max=0.01357, min=0.00093, variance=1.00243e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson\_Darling Test**

Statistic: 0.336

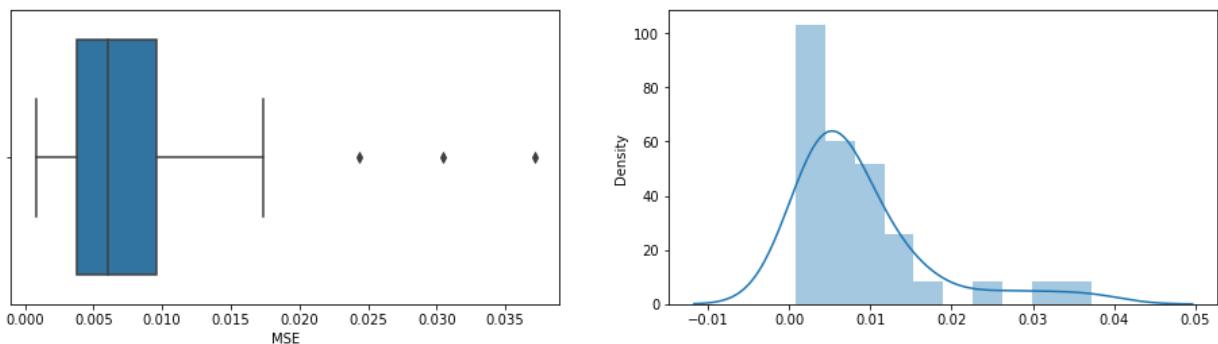
15.000: 0.523, data looks normal (fail to reject H<sub>0</sub>)  
 10.000: 0.596, data looks normal (fail to reject H<sub>0</sub>)  
 5.000: 0.715, data looks normal (fail to reject H<sub>0</sub>)  
 2.500: 0.834, data looks normal (fail to reject H<sub>0</sub>)  
 1.000: 0.992, data looks normal (fail to reject H<sub>0</sub>)

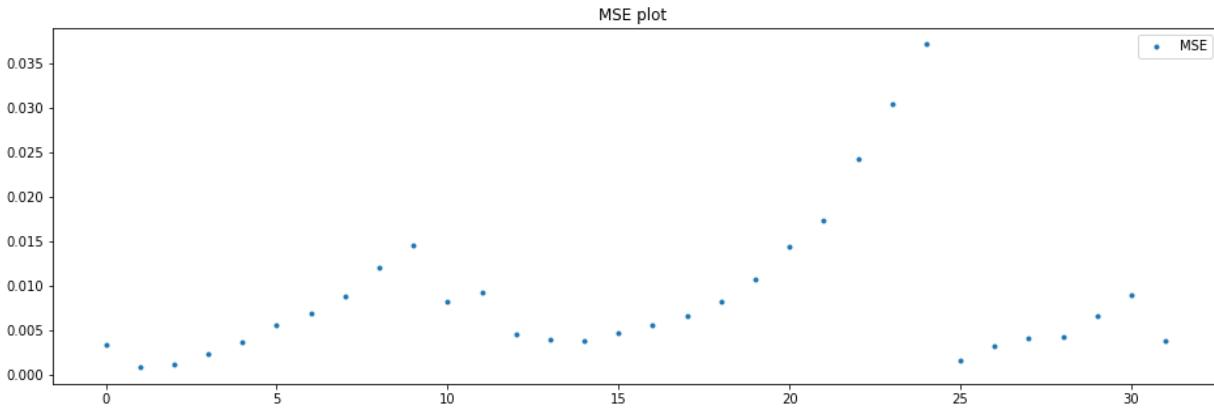
\*\*\*\*\*

Batch: 152

mean=0.0087796875, median=0.006085 , max=0.03712, min=0.00081, variance=6.72445e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 2.568

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

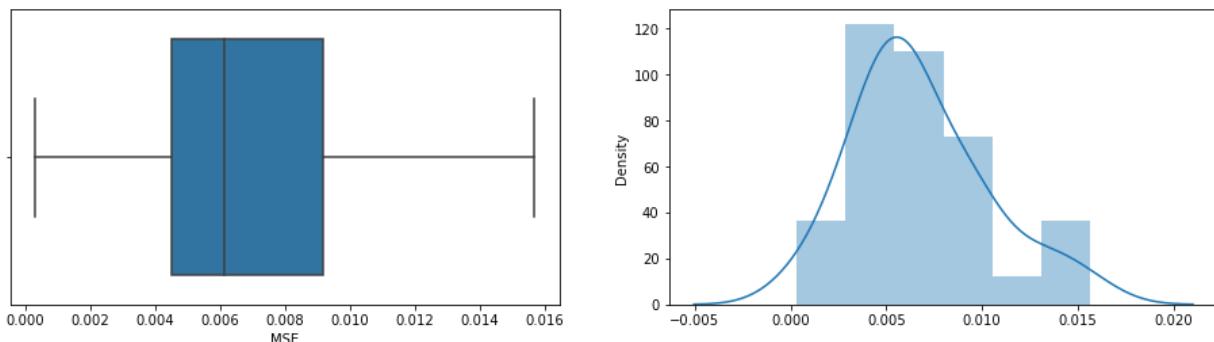
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

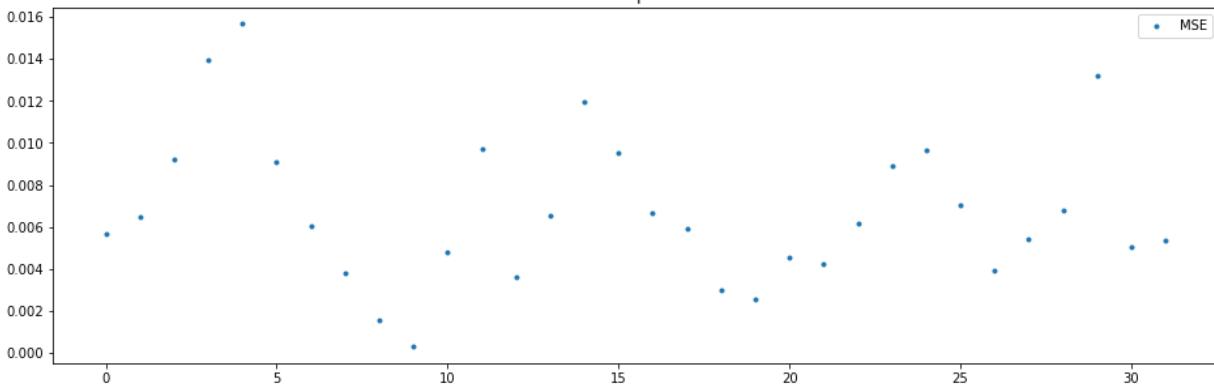
Batch: 153

mean=0.0067671875, median=0.00611 , max=0.01567, min=0.00029, variance=1.22569e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.584

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

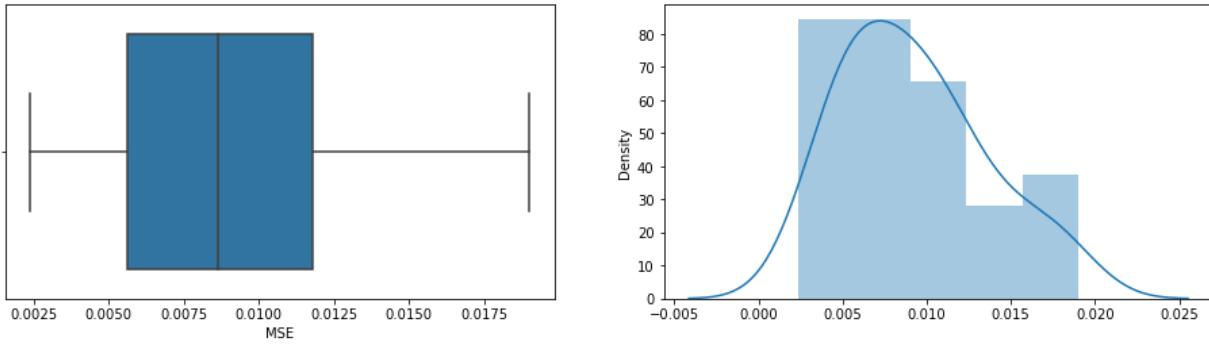
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

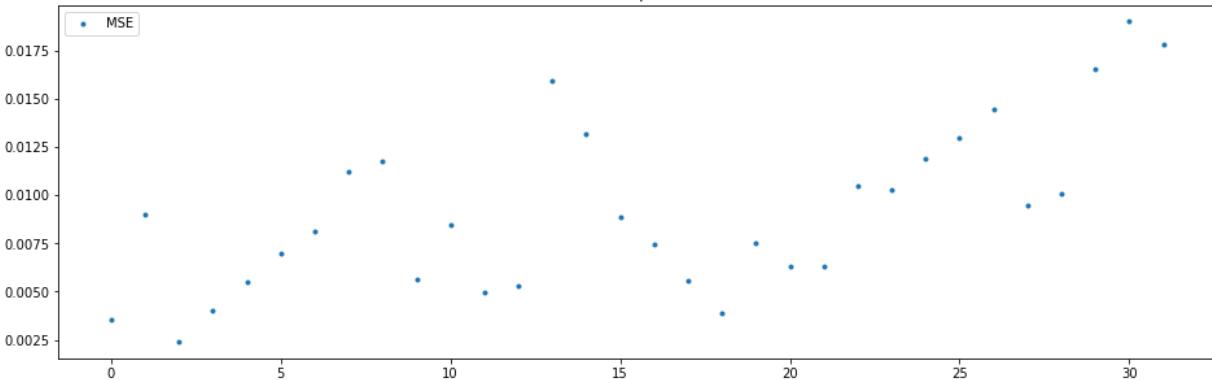
Batch: 154

mean=0.0092153125, median=0.008655 , max=0.019, min=0.00238, variance=1.82349e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson\_Darling Test**

Statistic: 0.412

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

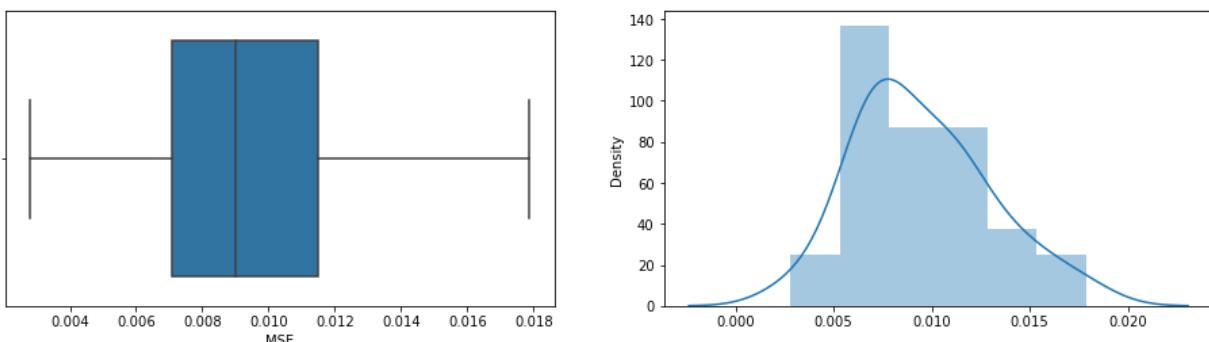
1.000: 0.992, data looks normal (fail to reject H0)

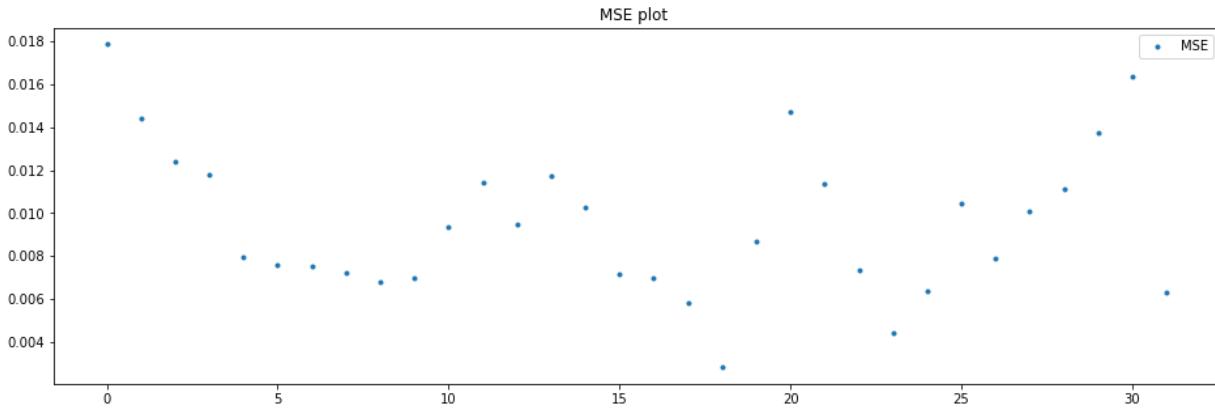
\*\*\*\*\*

Batch: 155

mean=0.0095078125, median=0.009015 , max=0.01787, min=0.0028, variance=1.15806e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.490

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

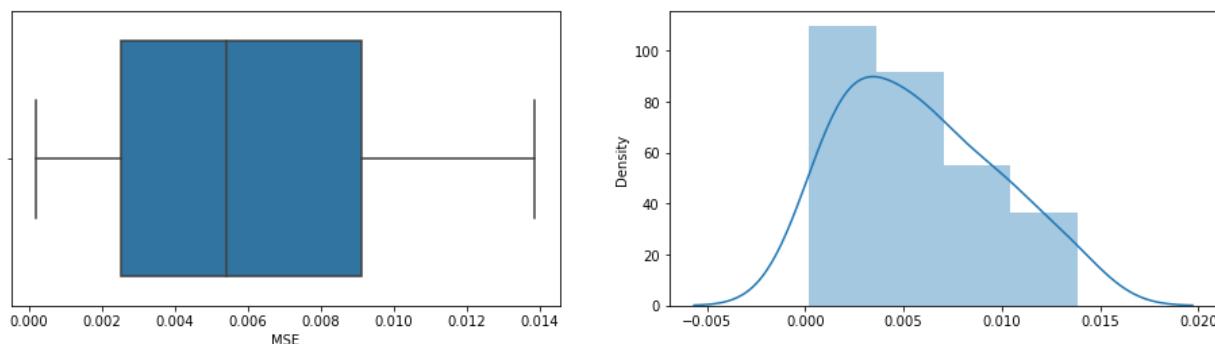
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

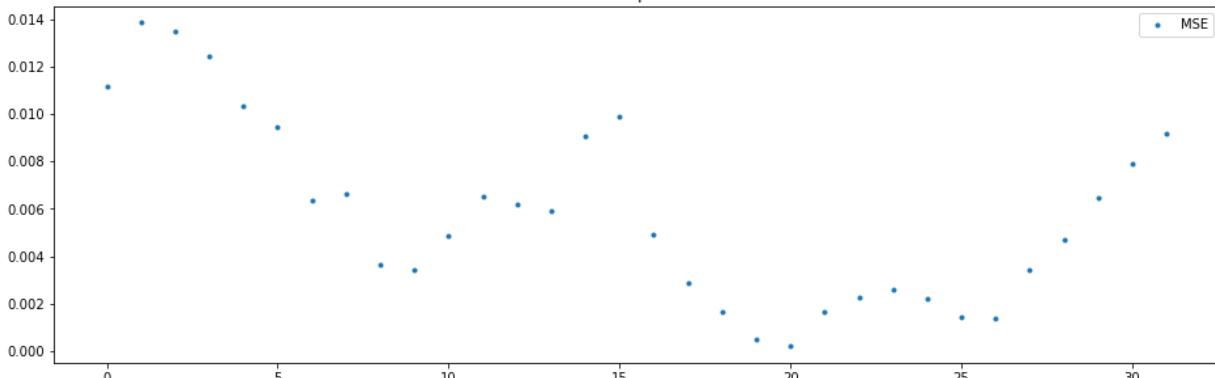
Batch: 156

mean=0.0058375, median=0.00542 , max=0.01385, min=0.0002, variance=1.47153e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.532

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

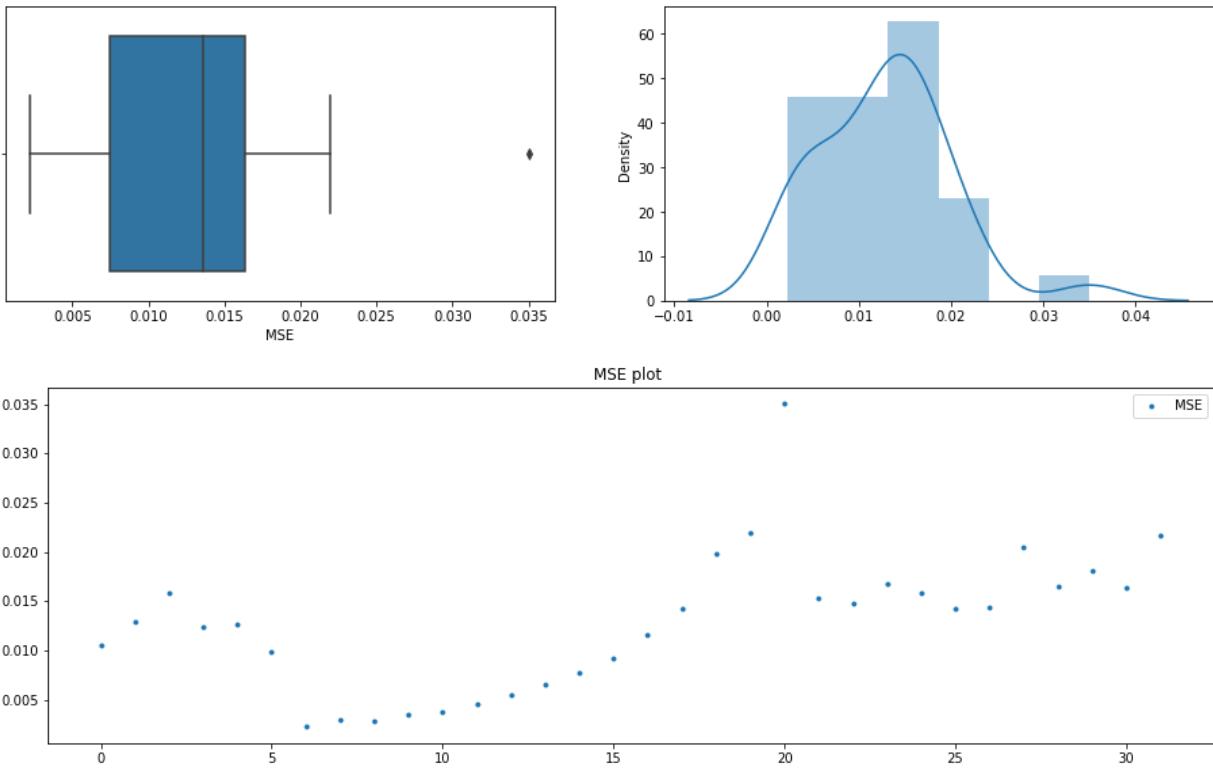
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 157

mean=0.0128028125, median=0.01359 , max=0.03504, min=0.00222, variance=4.89074e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson\_Darling Test**

Statistic: 0.450

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

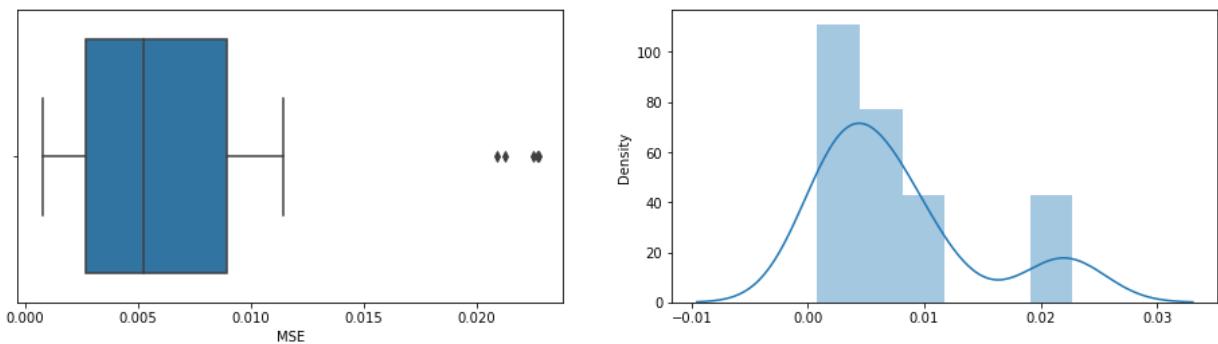
1.000: 0.992, data looks normal (fail to reject H0)

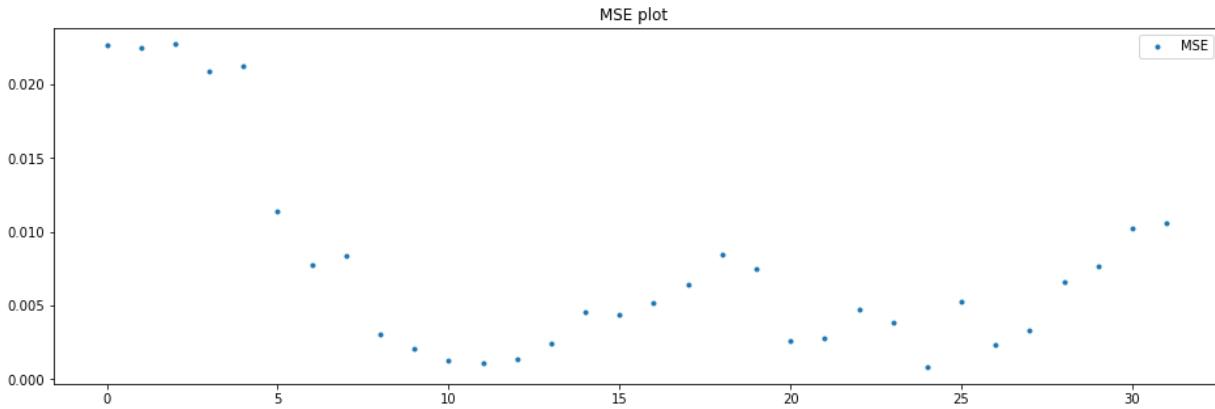
\*\*\*\*\*

Batch: 158

mean=0.007694375, median=0.00524 , max=0.02274, min=0.00079, variance=4.59334e-05

Boxplots and Distribution plot for Reconstruction Error





**Anderson\_Darling Test**

Statistic: 2.398

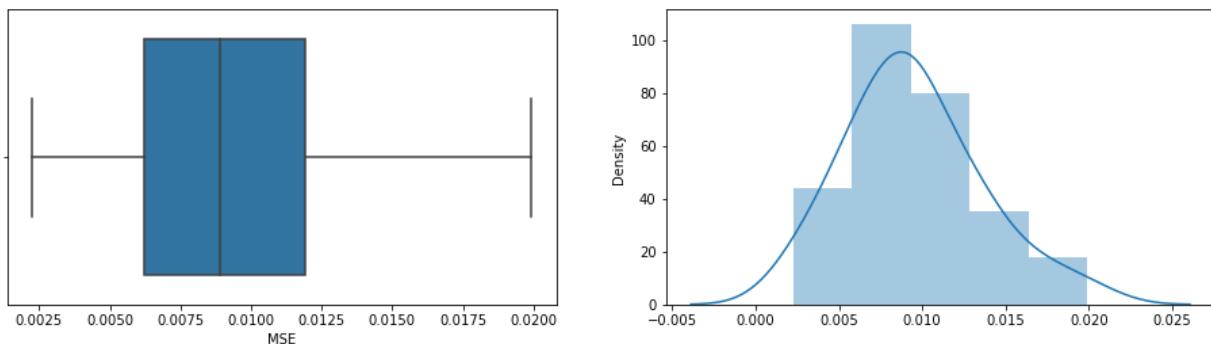
15.000: 0.523, data does not look normal (reject H0)  
 10.000: 0.596, data does not look normal (reject H0)  
 5.000: 0.715, data does not look normal (reject H0)  
 2.500: 0.834, data does not look normal (reject H0)  
 1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

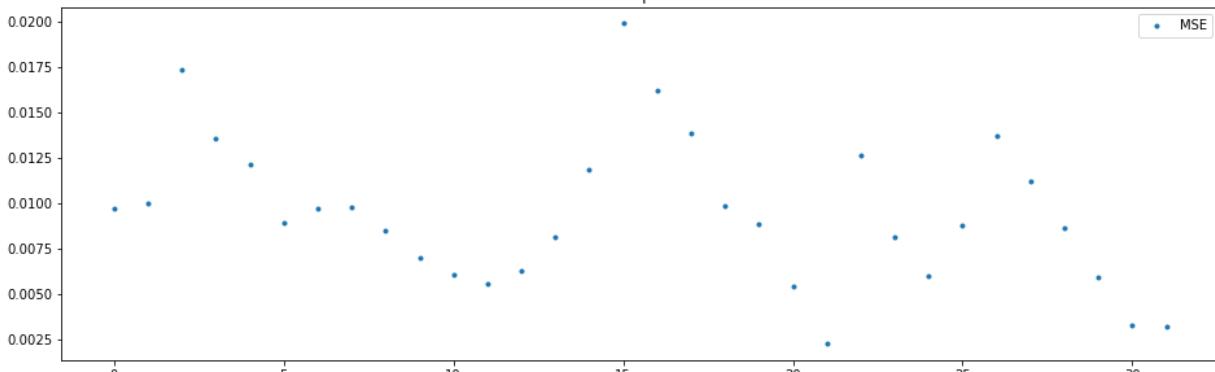
Batch: 159

mean=0.00946, median=0.008905 , max=0.01992, min=0.00225, variance=1.62196e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



**Anderson\_Darling Test**

Statistic: 0.355

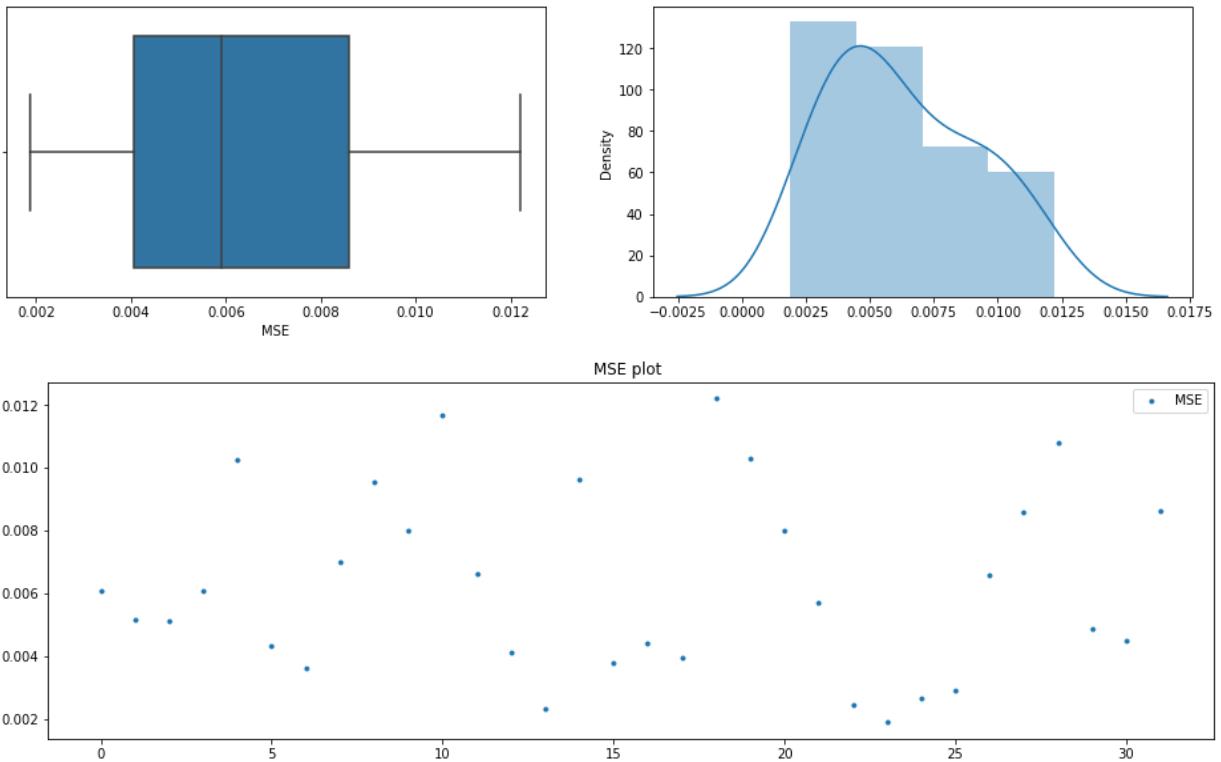
15.000: 0.523, data looks normal (fail to reject H0)  
 10.000: 0.596, data looks normal (fail to reject H0)  
 5.000: 0.715, data looks normal (fail to reject H0)  
 2.500: 0.834, data looks normal (fail to reject H0)  
 1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 160

mean=0.0063040625, median=0.005895 , max=0.01221, min=0.00188, variance=8.4177e-06

Boxplots and Distribution plot for Reconstruction Error

**Anderson\_Darling Test**

Statistic: 0.501

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

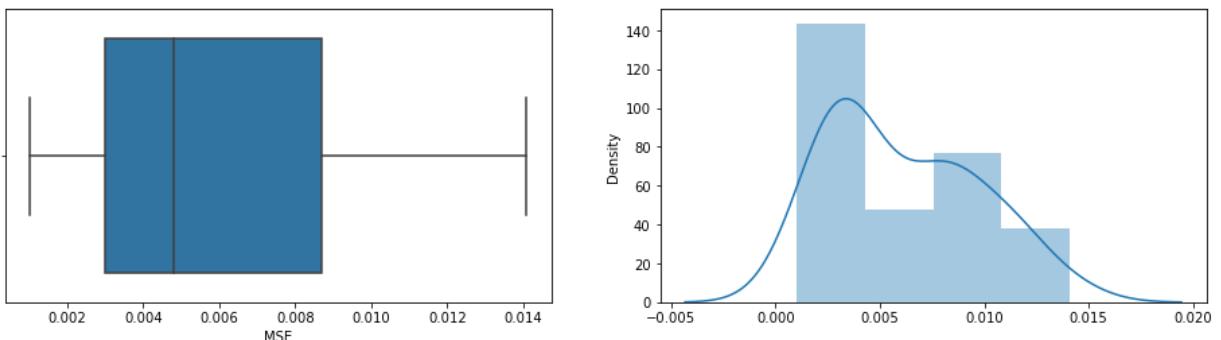
1.000: 0.992, data looks normal (fail to reject H0)

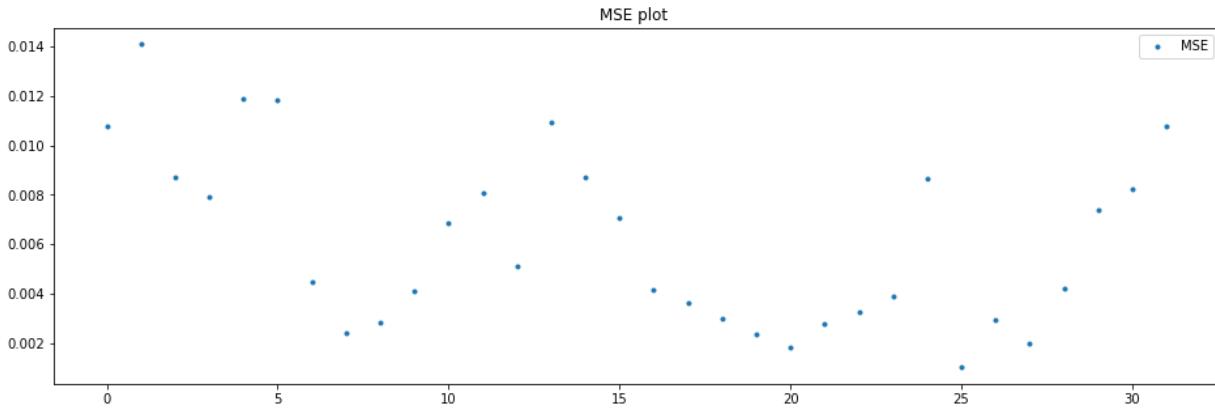
\*\*\*\*\*

Batch: 161

mean=0.006121875,median=0.00479 ,max=0.01408,min=0.00102,variance=1.23702e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.916

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

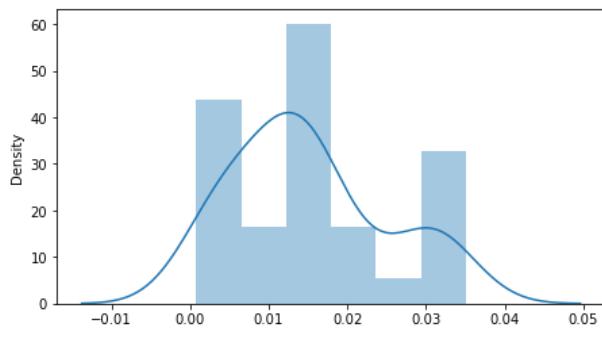
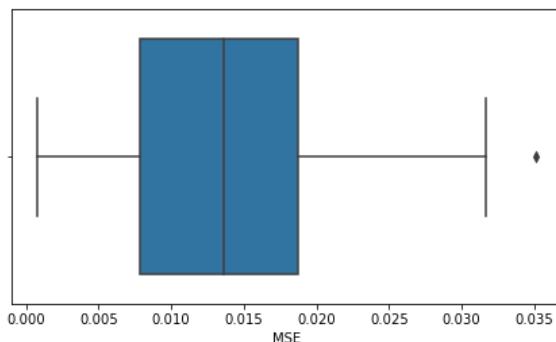
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

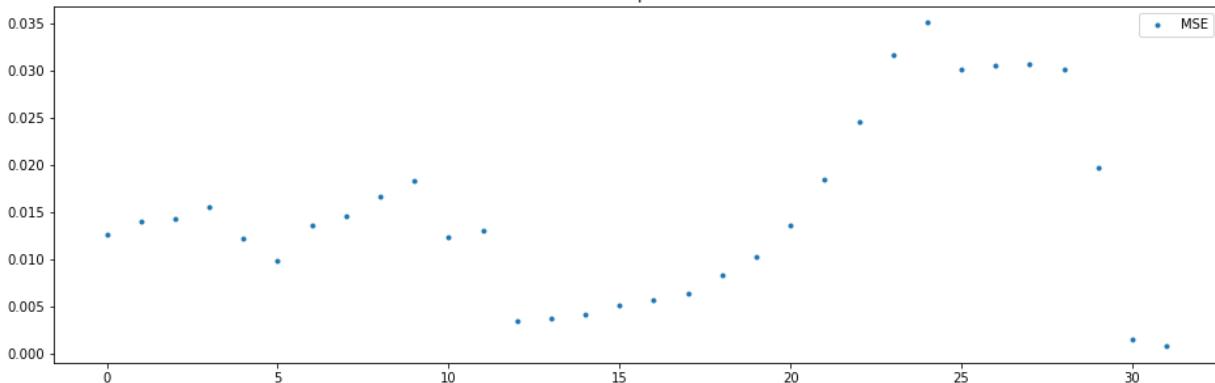
Batch: 162

mean=0.0150196875, median=0.013605 , max=0.03506, min=0.00075, variance=9.08911e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.863

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

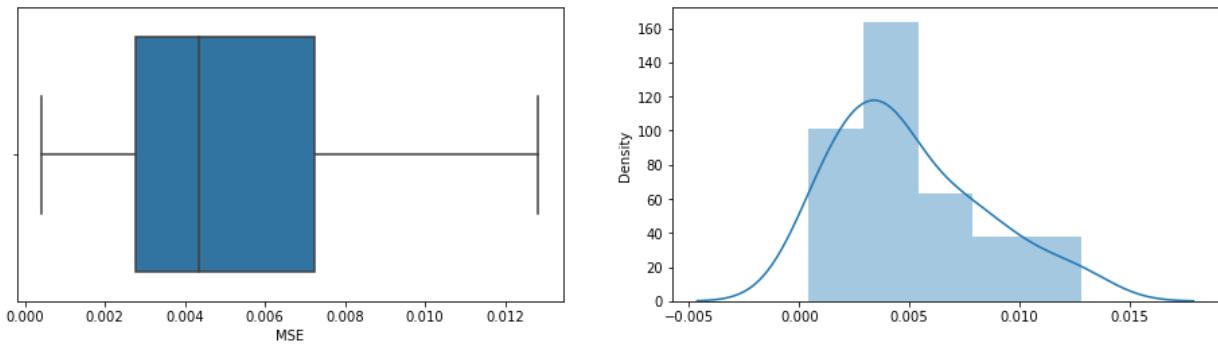
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

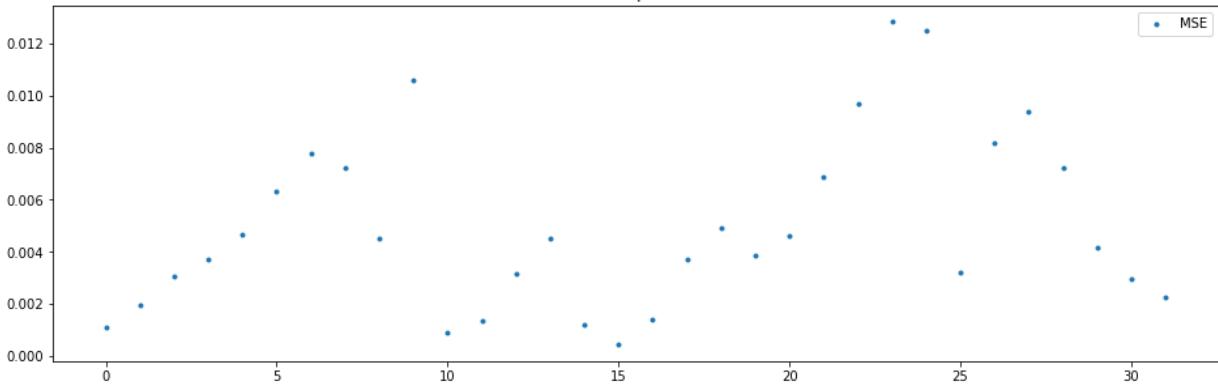
Batch: 163

mean=0.0050115625, median=0.00434 , max=0.01283, min=0.00043, variance=1.10512e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson\_Darling Test**

Statistic: 0.737

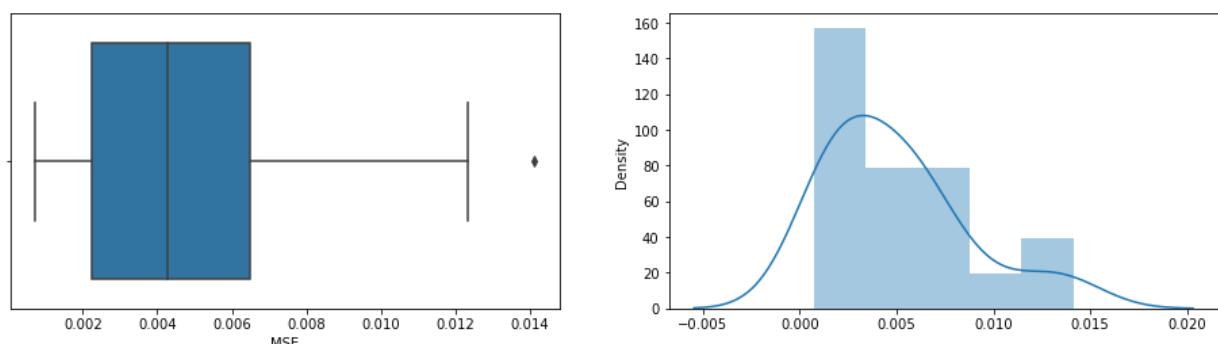
15.000: 0.523, data does not look normal (reject H<sub>0</sub>)  
 10.000: 0.596, data does not look normal (reject H<sub>0</sub>)  
 5.000: 0.715, data does not look normal (reject H<sub>0</sub>)  
 2.500: 0.834, data looks normal (fail to reject H<sub>0</sub>)  
 1.000: 0.992, data looks normal (fail to reject H<sub>0</sub>)

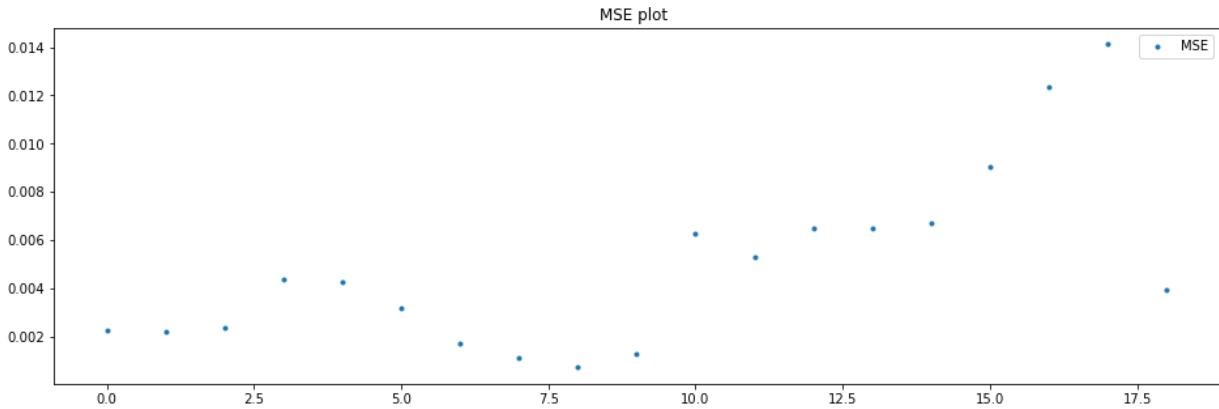
\*\*\*\*\*

Batch: 164

mean=0.0049610526, median=0.00427 , max=0.01412, min=0.00072, variance=1.30622e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.698

15.000: 0.505, data does not look normal (reject H<sub>0</sub>)  
 10.000: 0.575, data does not look normal (reject H<sub>0</sub>)  
 5.000: 0.690, data does not look normal (reject H<sub>0</sub>)  
 2.500: 0.804, data looks normal (fail to reject H<sub>0</sub>)  
 1.000: 0.957, data looks normal (fail to reject H<sub>0</sub>)

## Intance Threshold Computation

In [40]:

```
# This function computes instance threshold from first N batches
def compute_instance_threshold_firstN_batches(batch_avg_mse_values,N):
    zscore_list=[]
    #value_list=[]
    for k in range(0,N):
        value_list=batch_avg_mse_values[k]
        #Z_SCORE
        mean=np.mean(value_list)
        sigma=np.std(value_list)
        thres_zscore=(mean+3*sigma).round(4)
        zscore_list.append(thres_zscore)
        #print (value_list)
        #print(zscore_list)
    return (np.mean(zscore_list).round(4)) , zscore_list
```

In [41]:

```
instance_thresh_neg,zscore_list_neg=compute_instance_threshold_firstN_batches(batch_r
```

In [42]:

```
instance_thresh_neg
```

Out[42]: 0.0336

## Batch Threshold Computation

In [43]:

```
## computes loss threshold using IQR as well as ZScore from batch average recon. error
def compute_batch_threshold_testdata(batch_avg_mse):
    #val_loss=history['val_loss']
    ## Quartile Method
    Q1=np.quantile(batch_avg_mse,0.25)
    Q3=np.quantile(batch_avg_mse,0.75)
    IQR=Q3-Q1
    thres_iqr=(Q3 + 1.5*IQR).round(4)
    #Z_SCORE
    mean=np.mean(batch_avg_mse)
    sigma=np.std(batch_avg_mse)
    thres_zscore=(mean+3*sigma).round(4)

    return thres_iqr, thres_zscore
```

In [44]:

```
thres_iqr_batch_neg, thres_zscore_batch_neg =compute_batch_threshold_testdata(batch_avg_mse)
```

In [45]:

```
thres_zscore_batch_neg
```

Out[45]: 0.0278

## Count Threshold Computation

In [46]:

```
# This function computes how many instances in a batch exceed instance threshold
def threshold_exceed_count(batch_mse_values, thr):
    exceed_count={}
    for key in batch_mse_values.keys():
        count=0
        list=batch_mse_values[key]
        for a in range(0,len(list)):
            if list[a]>thr:
                count+=1
        exceed_count[key]=count
    values = exceed_count.values()
    total = sum(values)
    return exceed_count, total
```

In [47]:

```
# Counts the MSE values exceeding threshold in each batch
exceed_count_neg_en_neg,total_neg_en_neg=threshold_exceed_count(batch_mse_values_neg)
```

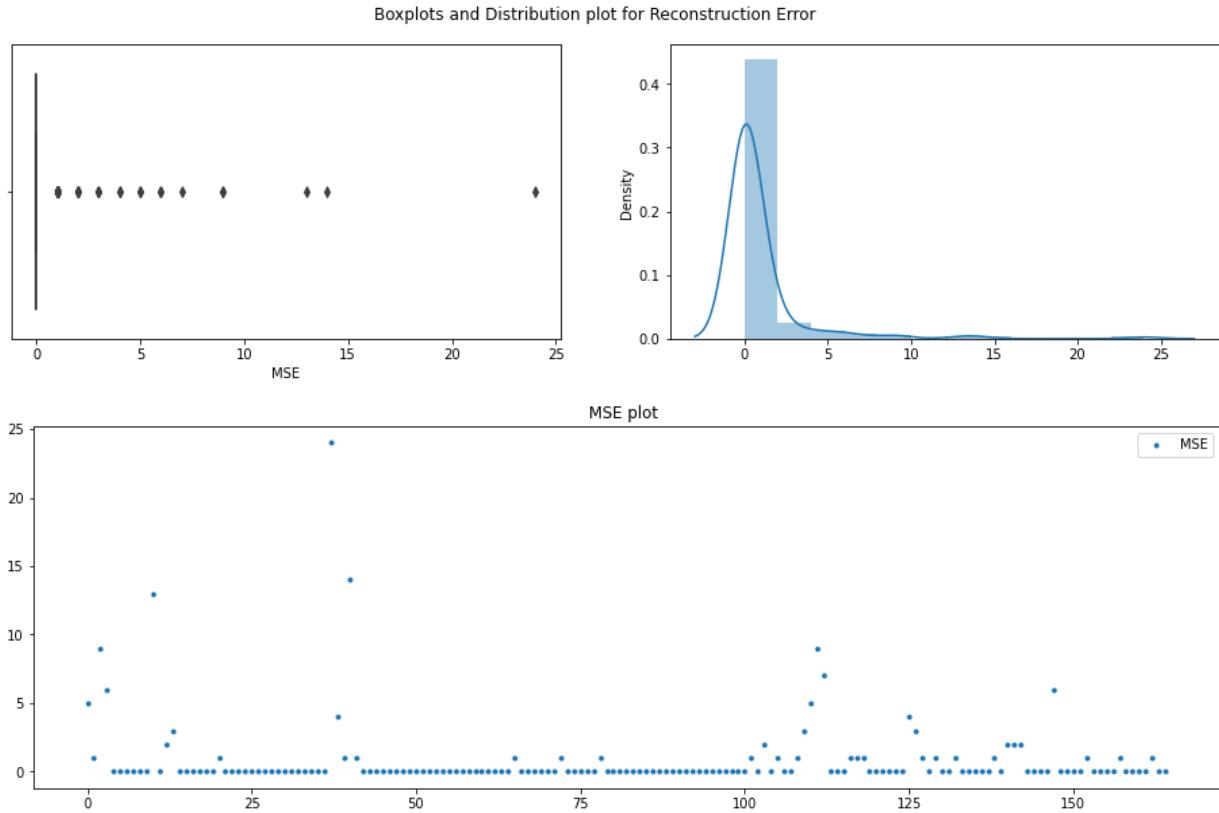
In [48]:

```
# Get a list of exceed count values . Above function returns a dic where key is batch
exceed_list_neg_en_neg=[]
for key in exceed_count_neg_en_neg.keys():
    exceed_list_neg_en_neg.append(exceed_count_neg_en_neg[key])
```

In [49]:

```
plot_results(exceed_list_neg_en_neg)
```

mean=0.8787878788, median=0.0 , max=24, min=0, variance=7.5489439853



Count Threshold is taken as median value

```
In [50]: count_thresh_neg=np.median(exceed_list_neg_en_neg)
```

```
In [51]: count_thresh_neg
```

```
Out[51]: 0.0
```

## 5. B) Positive Class Data

```
In [52]: predictions_pos=mse_predictions(test_pos_class,encoder_pos_class)
```

```
In [53]: test_pos_class
```

```
Out[53]:    day period nswprice nswdemand vicprice vicdemand transfer
```

<b>31738</b>	0.667	0.213	0.059	0.328	0.004	0.388	0.727
<b>31739</b>	0.667	0.234	0.062	0.406	0.004	0.454	0.658
<b>31752</b>	0.667	0.511	0.110	0.784	0.007	0.883	0.257
<b>31753</b>	0.667	0.532	0.228	0.792	0.015	0.904	0.157
<b>31754</b>	0.667	0.553	0.468	0.803	0.030	0.934	0.130
...	...	...	...	...	...	...	...

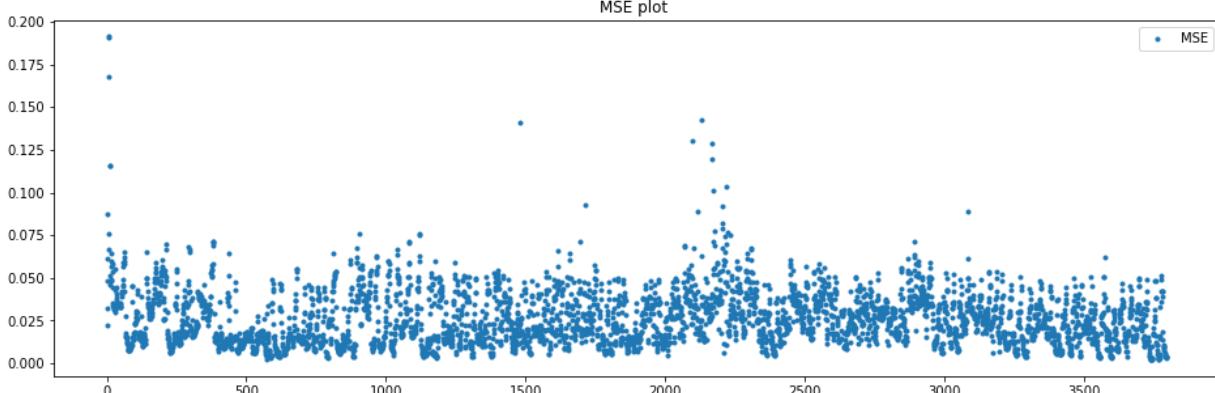
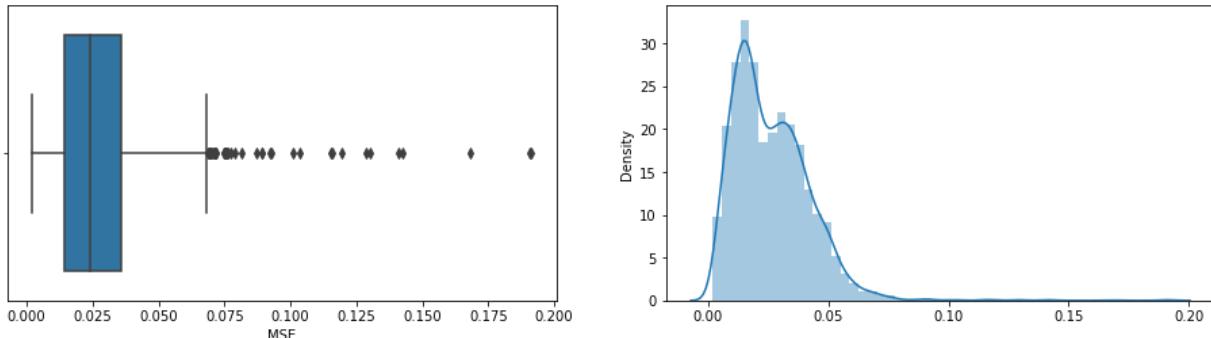
	day	period	nswprice	nswdemand	vicprice	vicdemand	transfer
<b>40775</b>	0.500	0.489	0.102	0.505	0.007	0.584	0.496
<b>40776</b>	0.500	0.511	0.093	0.497	0.006	0.558	0.525
<b>40777</b>	0.500	0.532	0.093	0.488	0.006	0.560	0.530
<b>40778</b>	0.500	0.553	0.098	0.484	0.007	0.577	0.511
<b>40779</b>	0.500	0.574	0.091	0.473	0.006	0.577	0.489

3795 rows × 7 columns

In [54]:

```
plot_results(predictions_pos)
```

mean=0.0263833694, median=0.023868 , max=0.191272, min=0.002061, variance=0.0002543558  
Boxplots and Distribution plot for Reconstruction Error



In [55]:

```
batches_pos=make_batches(test_pos_class)
```

In [56]:

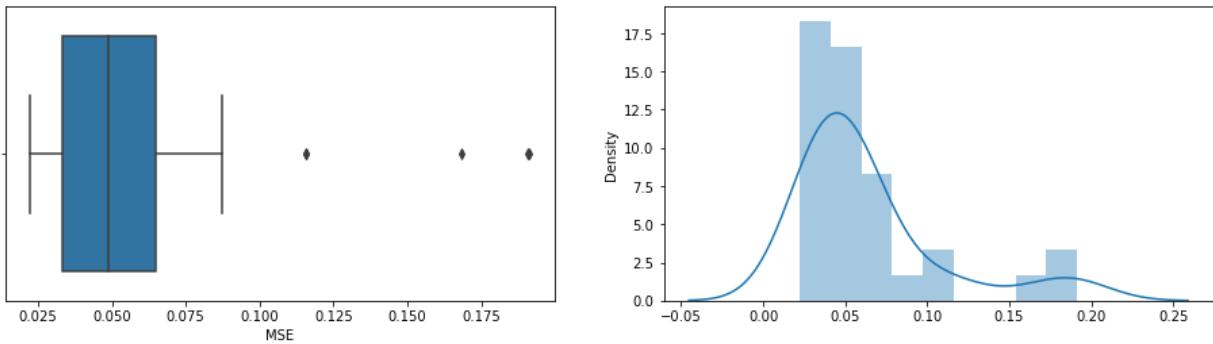
```
batch_avg_mse_pos,batch_mse_values_pos=check_all_batch_normality(batches_pos,encoder_
```

\*\*\*\*\*

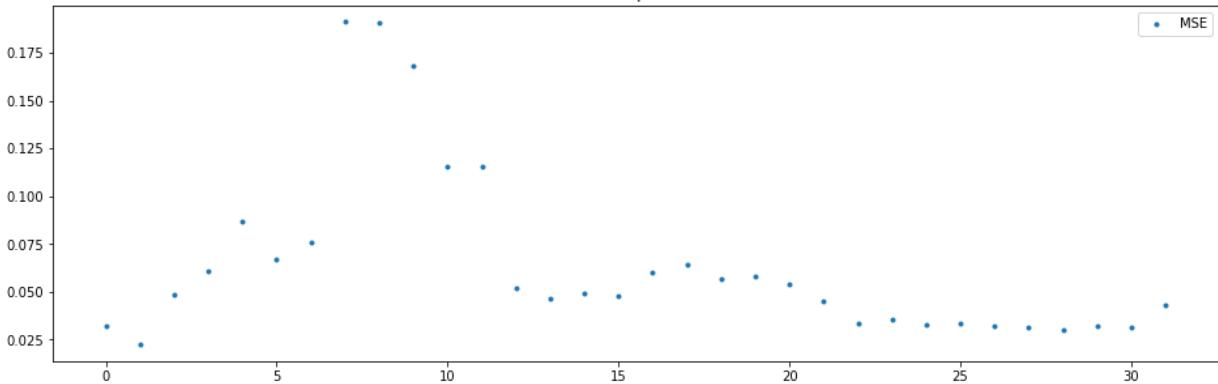
Batch: 0

mean=0.0639128125, median=0.048765 , max=0.19127, min=0.0223, variance=0.0019684997

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson\_Darling Test**

Statistic: 3.187

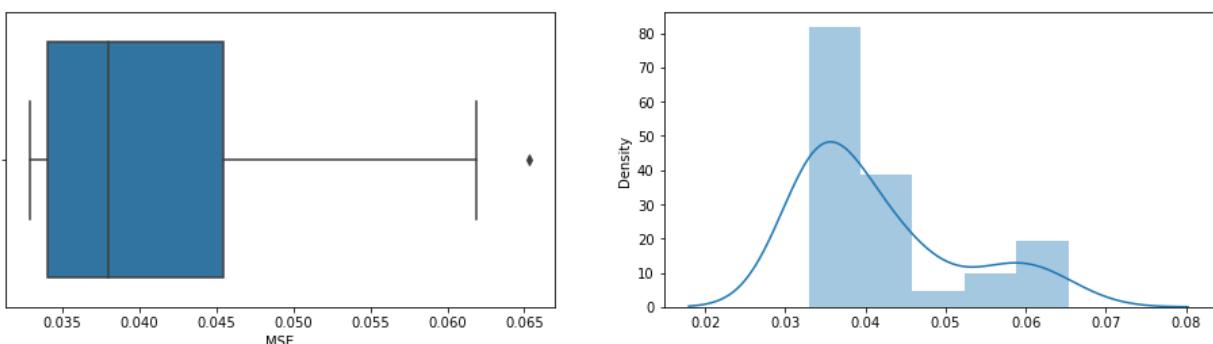
15.000: 0.523, data does not look normal (reject H<sub>0</sub>)  
 10.000: 0.596, data does not look normal (reject H<sub>0</sub>)  
 5.000: 0.715, data does not look normal (reject H<sub>0</sub>)  
 2.500: 0.834, data does not look normal (reject H<sub>0</sub>)  
 1.000: 0.992, data does not look normal (reject H<sub>0</sub>)

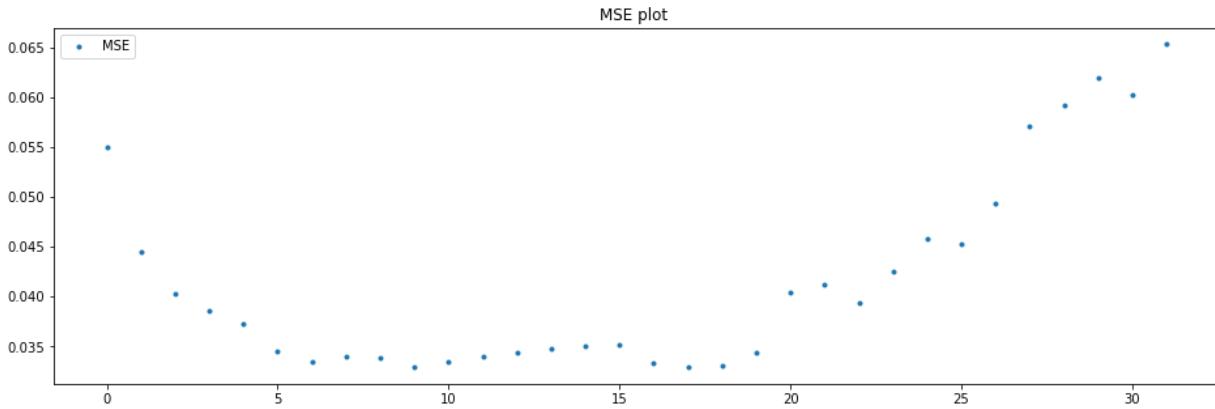
\*\*\*\*\*

Batch: 1

mean=0.041659375, median=0.037935 , max=0.06532, min=0.03289, variance=9.58892e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 2.335

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

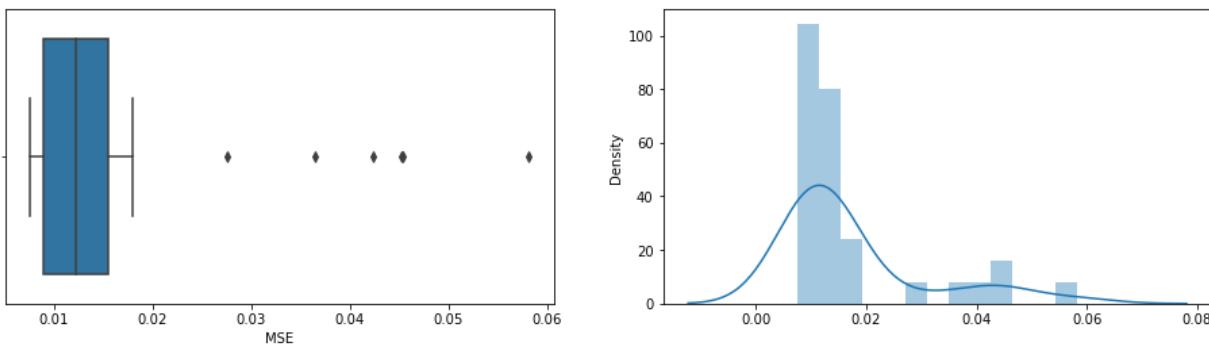
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

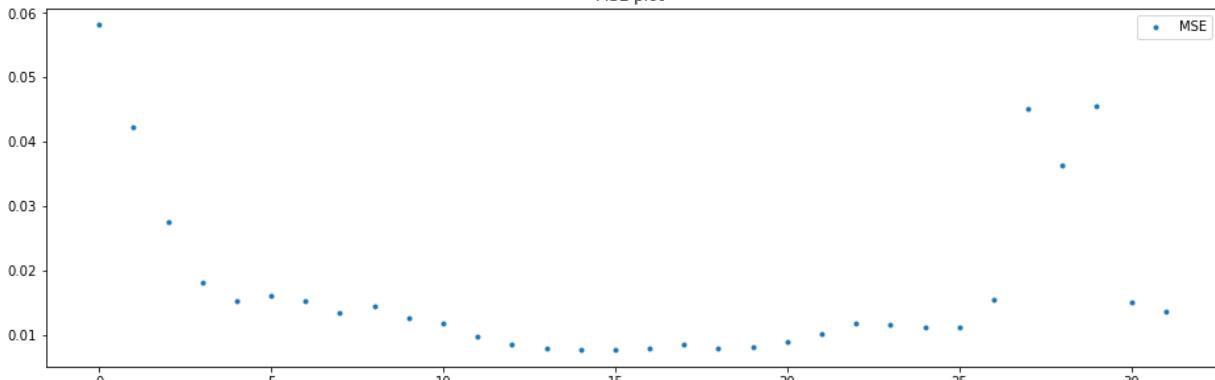
Batch: 2

mean=0.0173378125, median=0.012175 , max=0.05815, min=0.00759, variance=0.0001704373

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 3.946

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

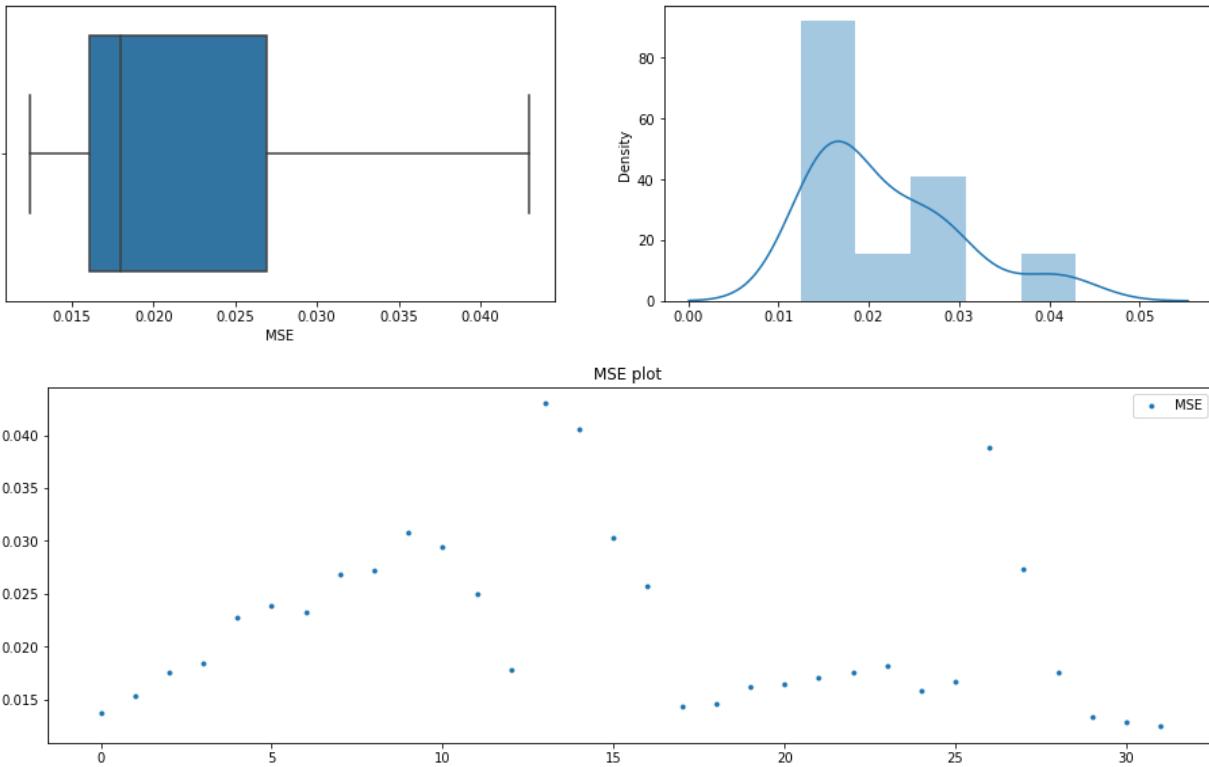
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 3

mean=0.02191, median=0.018025 , max=0.04299, min=0.01246, variance=6.58616e-05

Boxplots and Distribution plot for Reconstruction Error



## Anderson\_Darling Test

Statistic: 1.339

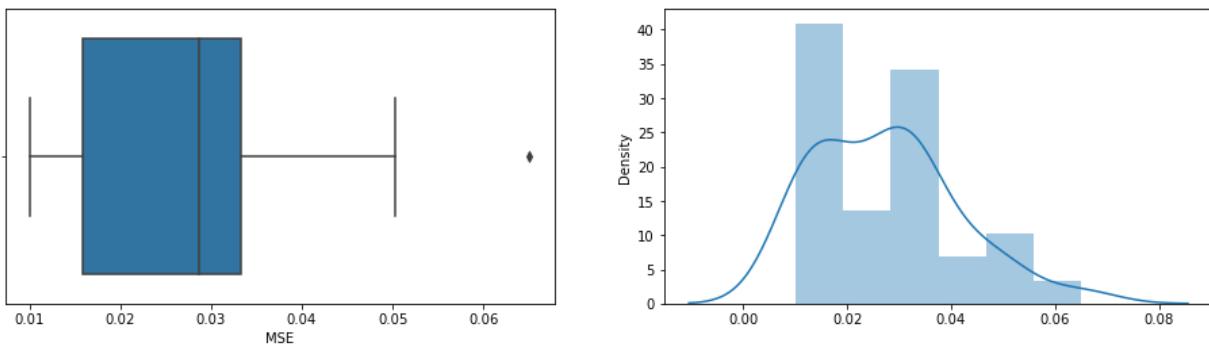
15.000: 0.523, data does not look normal (reject H0)  
 10.000: 0.596, data does not look normal (reject H0)  
 5.000: 0.715, data does not look normal (reject H0)  
 2.500: 0.834, data does not look normal (reject H0)  
 1.000: 0.992, data does not look normal (reject H0)

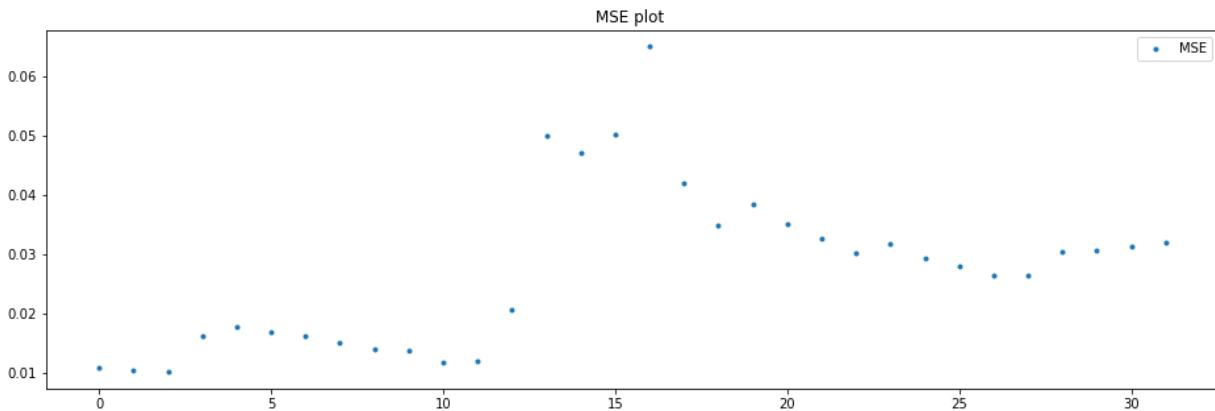
\*\*\*\*\*

Batch: 4

mean=0.0274246875, median=0.02861 , max=0.06504, min=0.01008, variance=0.0001808076

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.697

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

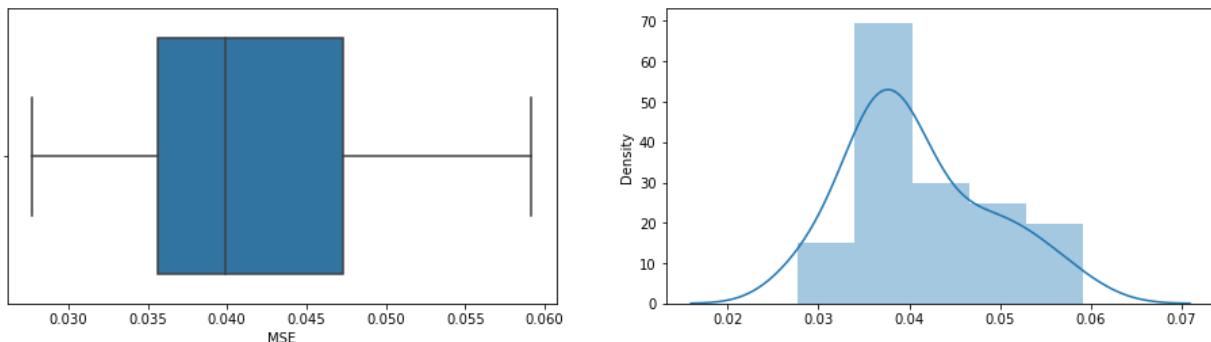
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

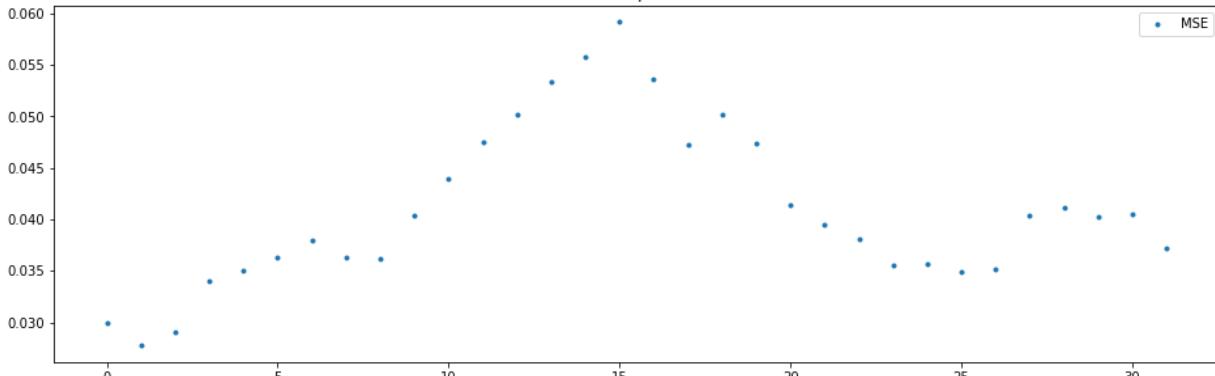
Batch: 5

mean=0.0409653125, median=0.039855 , max=0.05916, min=0.02772, variance=5.97881e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.767

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

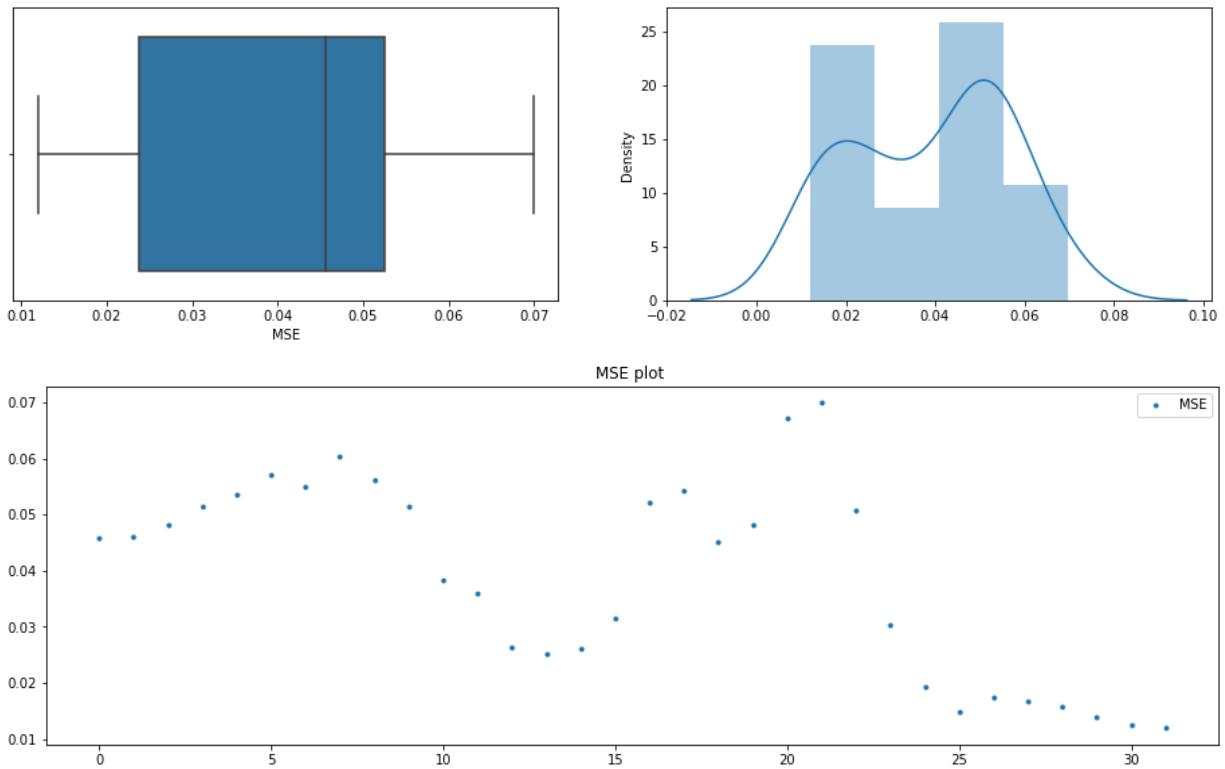
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 6

mean=0.039014375, median=0.04557 , max=0.06989, min=0.01192, variance=0.0003015263

Boxplots and Distribution plot for Reconstruction Error



## Anderson\_Darling Test

Statistic: 0.926

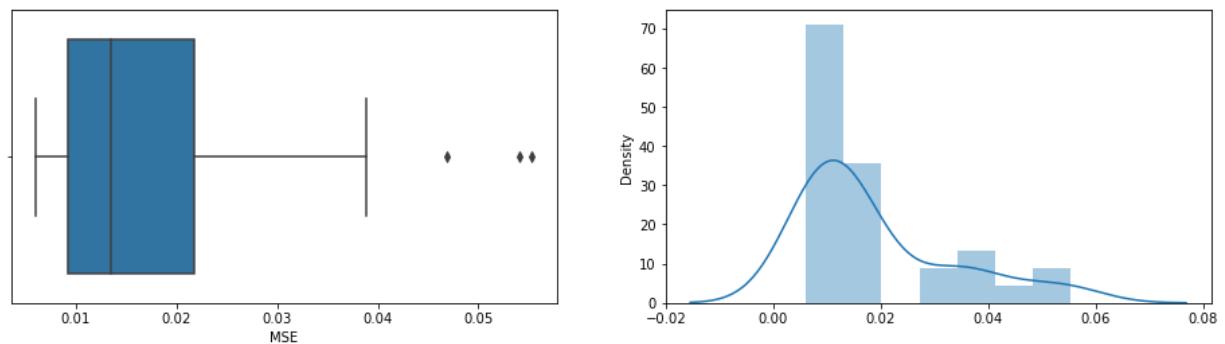
15.000: 0.523, data does not look normal (reject H0)  
 10.000: 0.596, data does not look normal (reject H0)  
 5.000: 0.715, data does not look normal (reject H0)  
 2.500: 0.834, data does not look normal (reject H0)  
 1.000: 0.992, data looks normal (fail to reject H0)

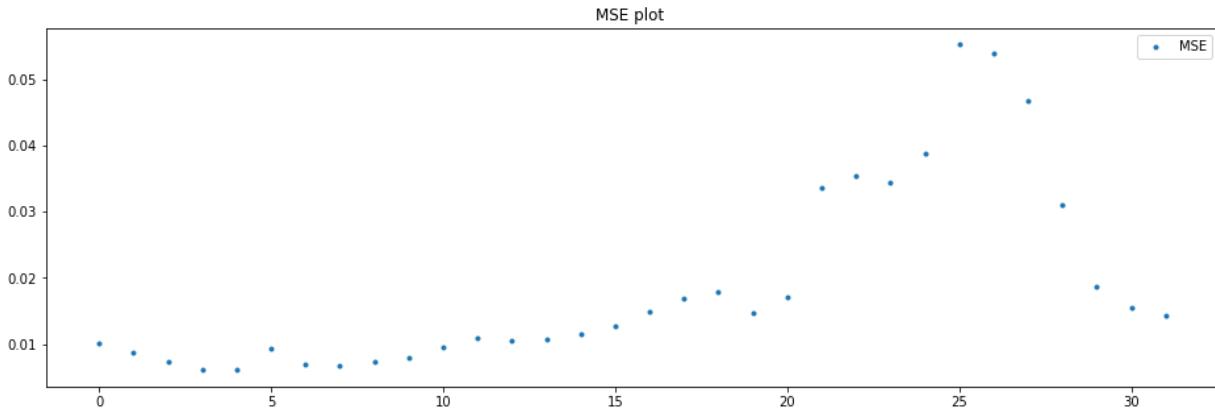
\*\*\*\*\*

Batch: 7

mean=0.0188209375, median=0.013465 , max=0.0553, min=0.00603, variance=0.0001988082

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 2.616

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

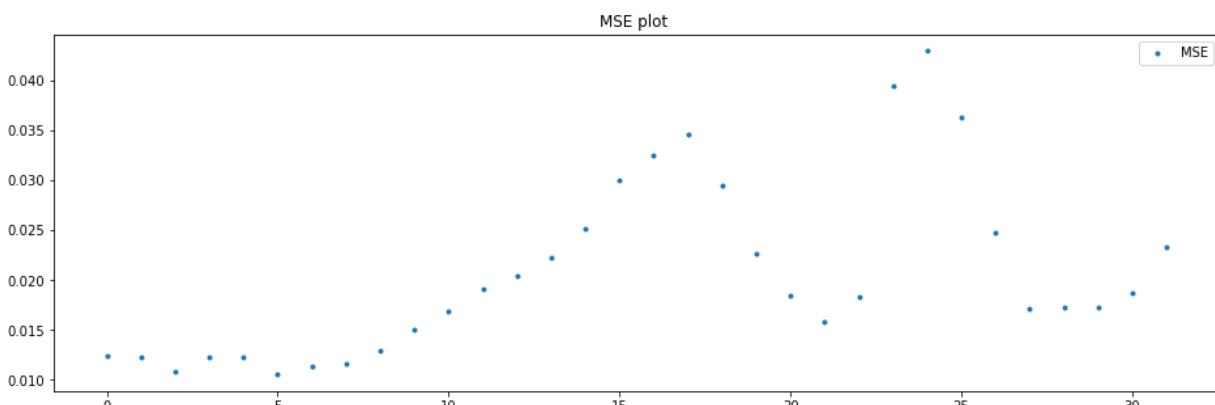
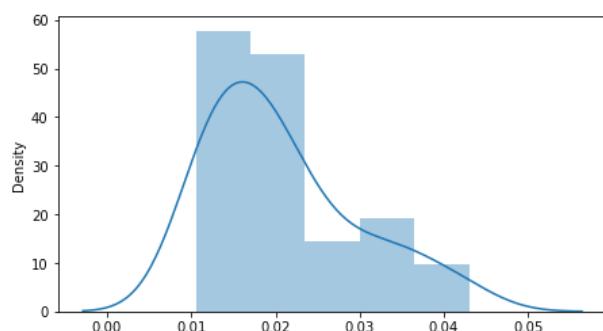
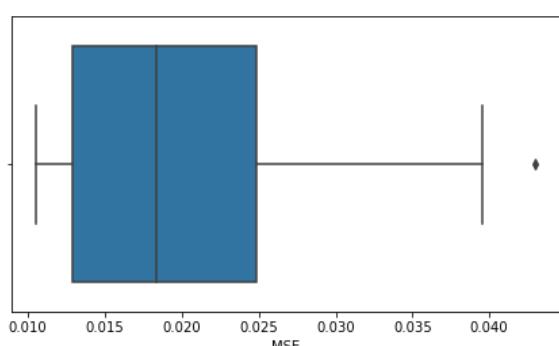
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 8

mean=0.02077625, median=0.018365 , max=0.04298, min=0.01053, variance=7.73298e-05

Boxplots and Distribution plot for Reconstruction Error



Anderson\_Darling Test

Statistic: 1.122

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

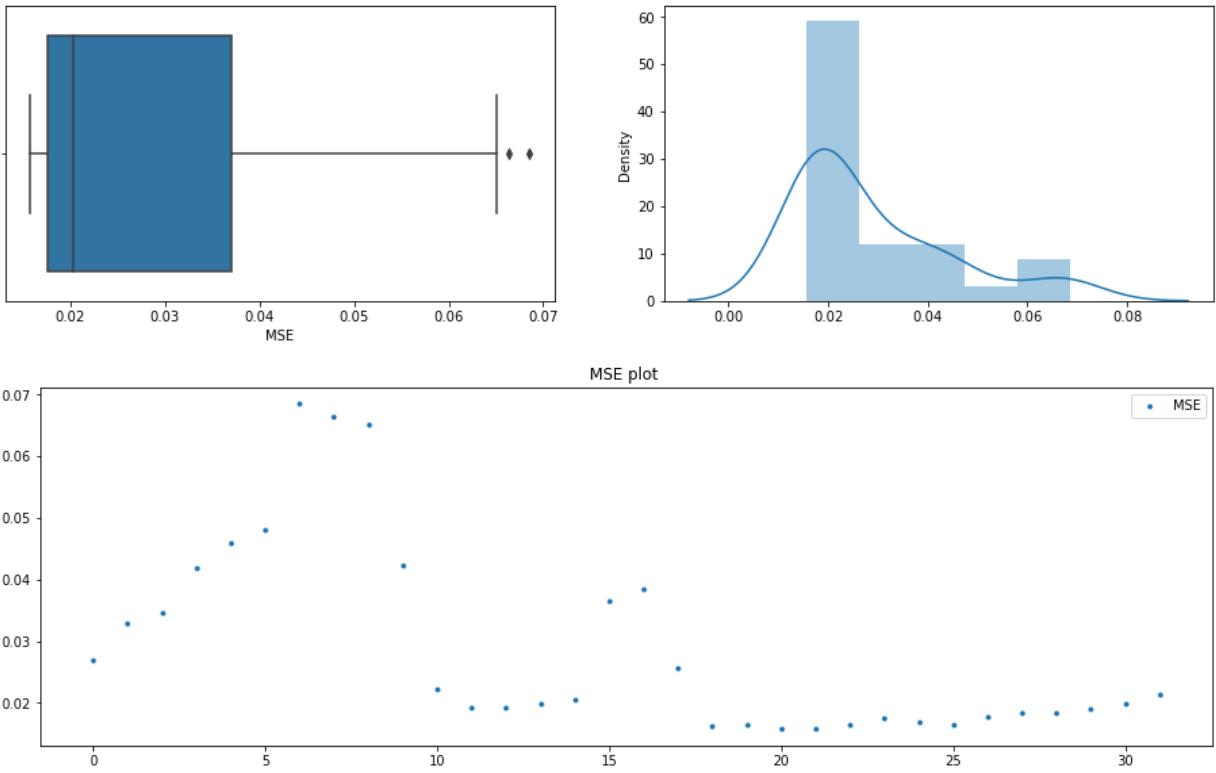
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 9

mean=0.0287615625, median=0.020225 , max=0.06852, min=0.01572, variance=0.0002411332

Boxplots and Distribution plot for Reconstruction Error



#### Anderson\_Darling Test

Statistic: 2.677

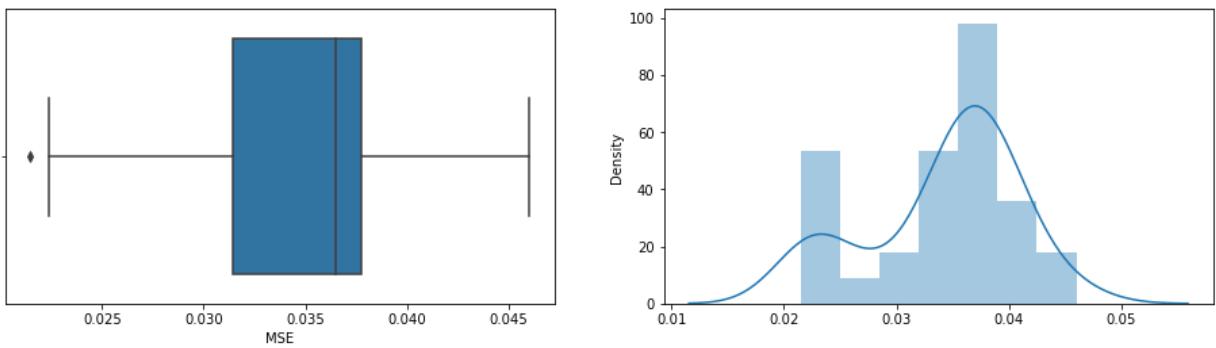
15.000: 0.523, data does not look normal (reject H<sub>0</sub>)  
 10.000: 0.596, data does not look normal (reject H<sub>0</sub>)  
 5.000: 0.715, data does not look normal (reject H<sub>0</sub>)  
 2.500: 0.834, data does not look normal (reject H<sub>0</sub>)  
 1.000: 0.992, data does not look normal (reject H<sub>0</sub>)

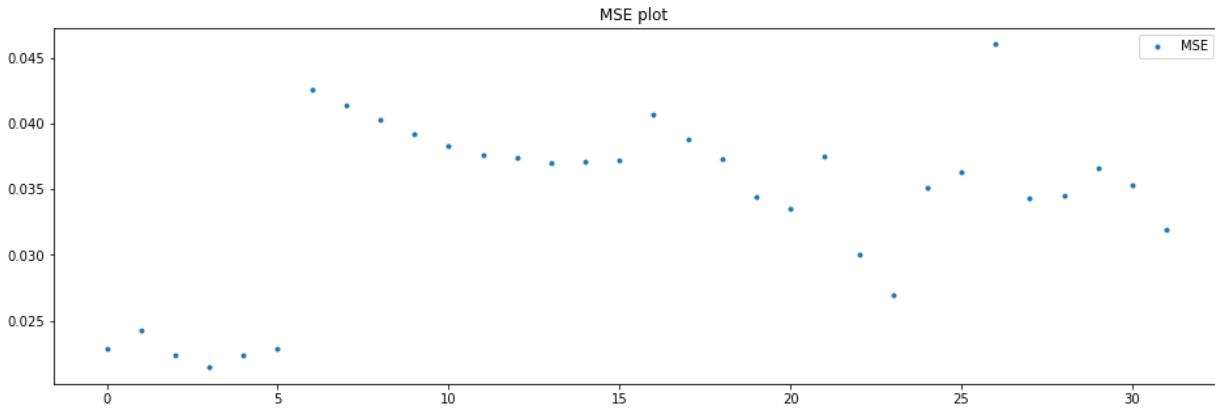
\*\*\*\*\*

Batch: 10

mean=0.0341809375, median=0.036475 , max=0.04601, min=0.02146, variance=4.23085e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 1.490

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

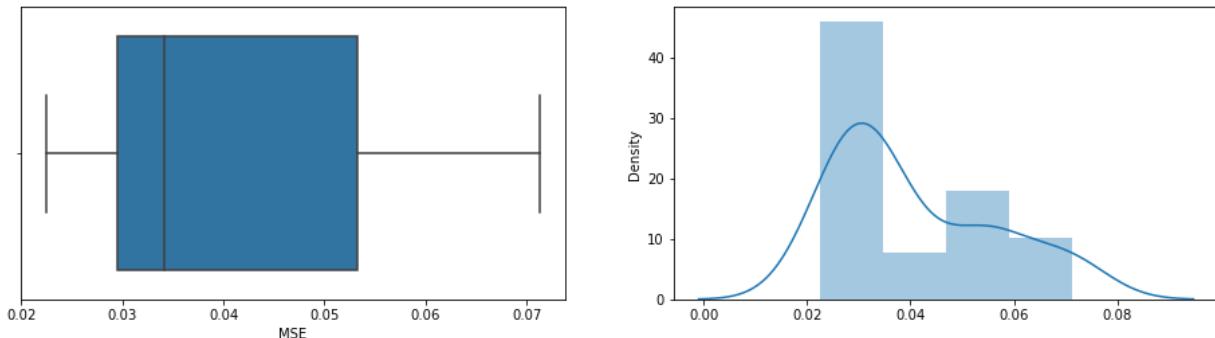
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

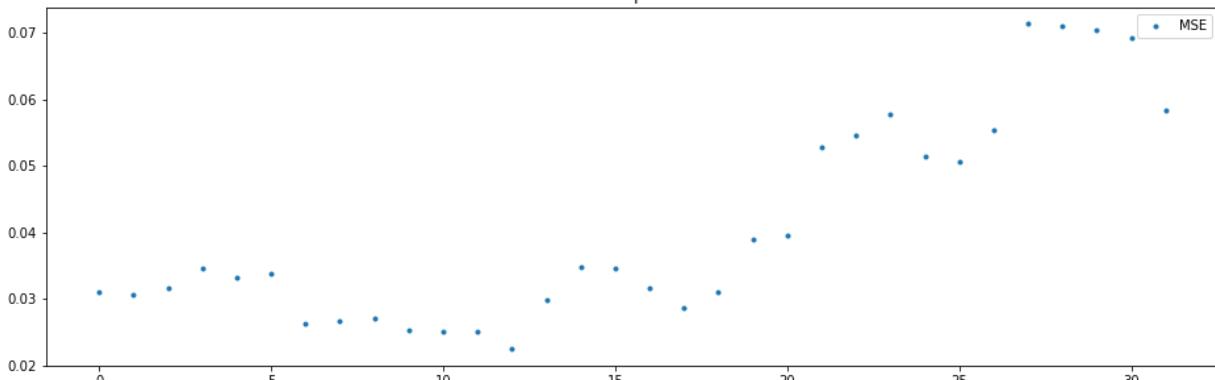
Batch: 11

mean=0.0407653125, median=0.0342 , max=0.07136, min=0.02241, variance=0.0002346583

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 1.801

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

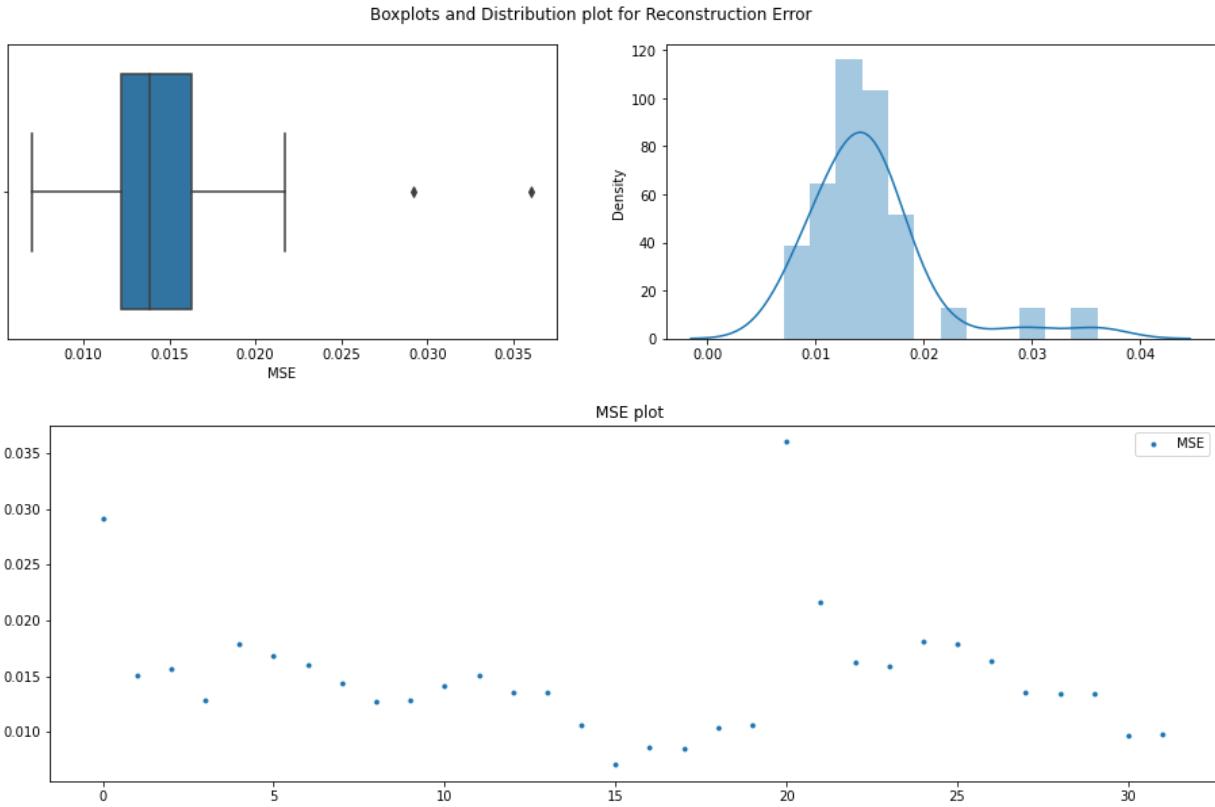
2.500: 0.834, data does not look normal (reject H0)

1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 12

mean=0.014914375, median=0.01386 , max=0.03602, min=0.00703, variance=3.16244e-05



#### Anderson\_Darling Test

Statistic: 1.656

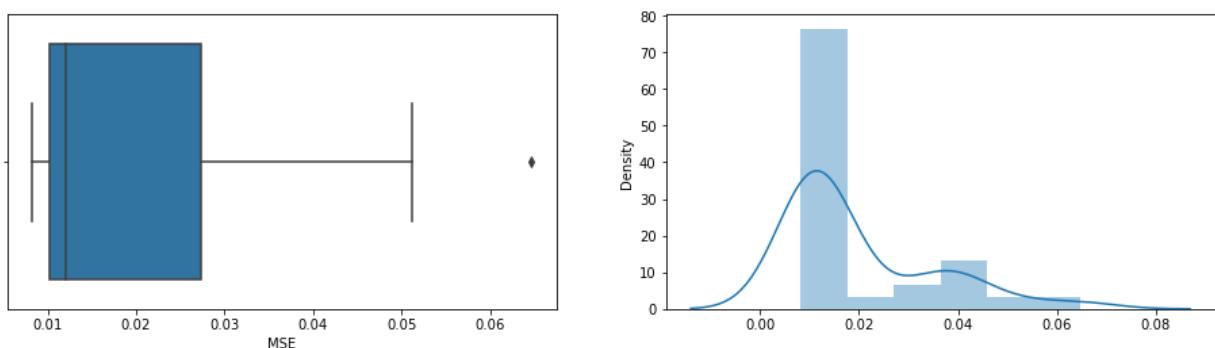
15.000: 0.523, data does not look normal (reject H<sub>0</sub>)  
 10.000: 0.596, data does not look normal (reject H<sub>0</sub>)  
 5.000: 0.715, data does not look normal (reject H<sub>0</sub>)  
 2.500: 0.834, data does not look normal (reject H<sub>0</sub>)  
 1.000: 0.992, data does not look normal (reject H<sub>0</sub>)

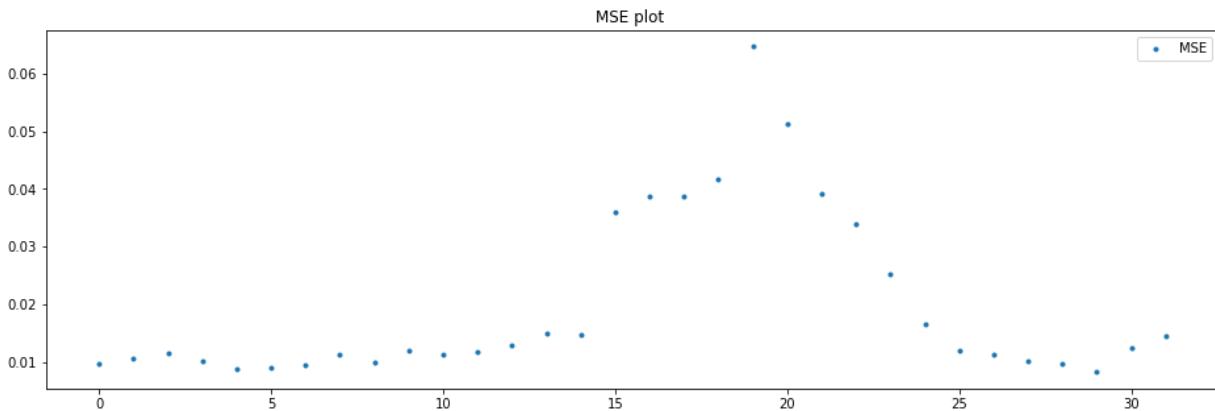
\*\*\*\*\*

Batch: 13

mean=0.0197503125, median=0.01202 , max=0.06467, min=0.00825, variance=0.0002114739

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 3.745

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

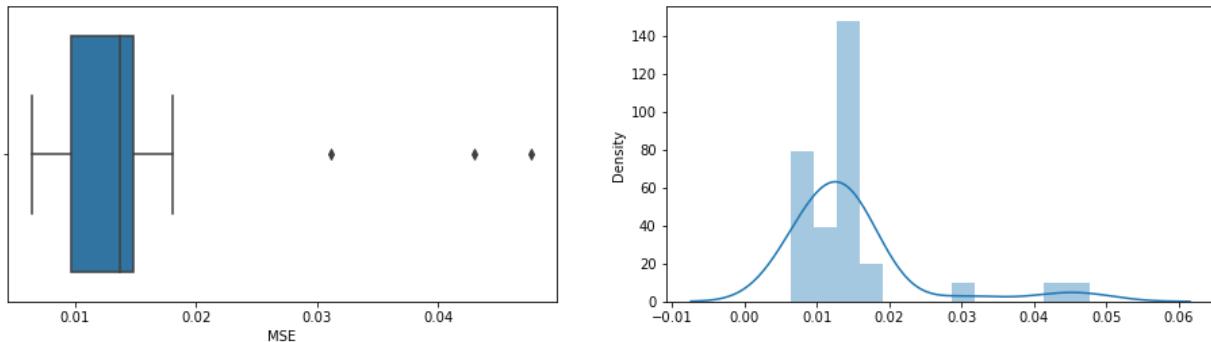
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

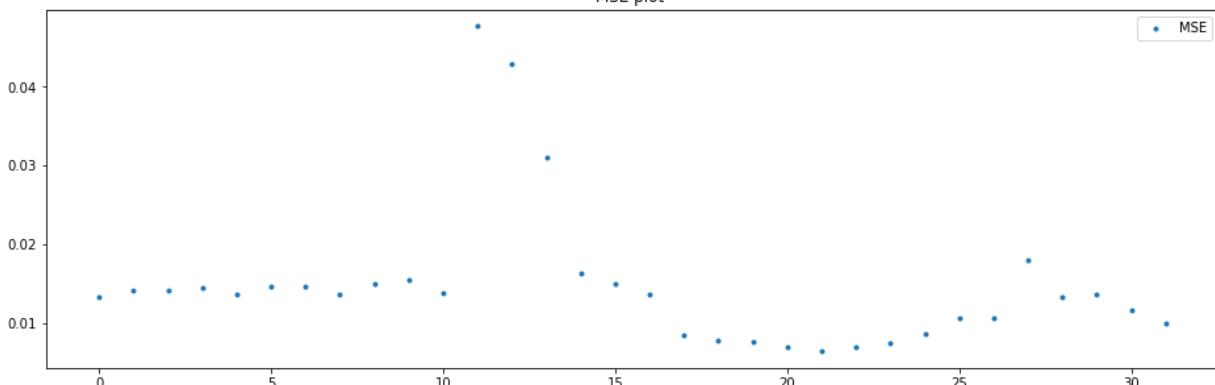
Batch: 14

mean=0.0147875, median=0.013695 , max=0.04768, min=0.00644, variance=8.27242e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 3.805

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

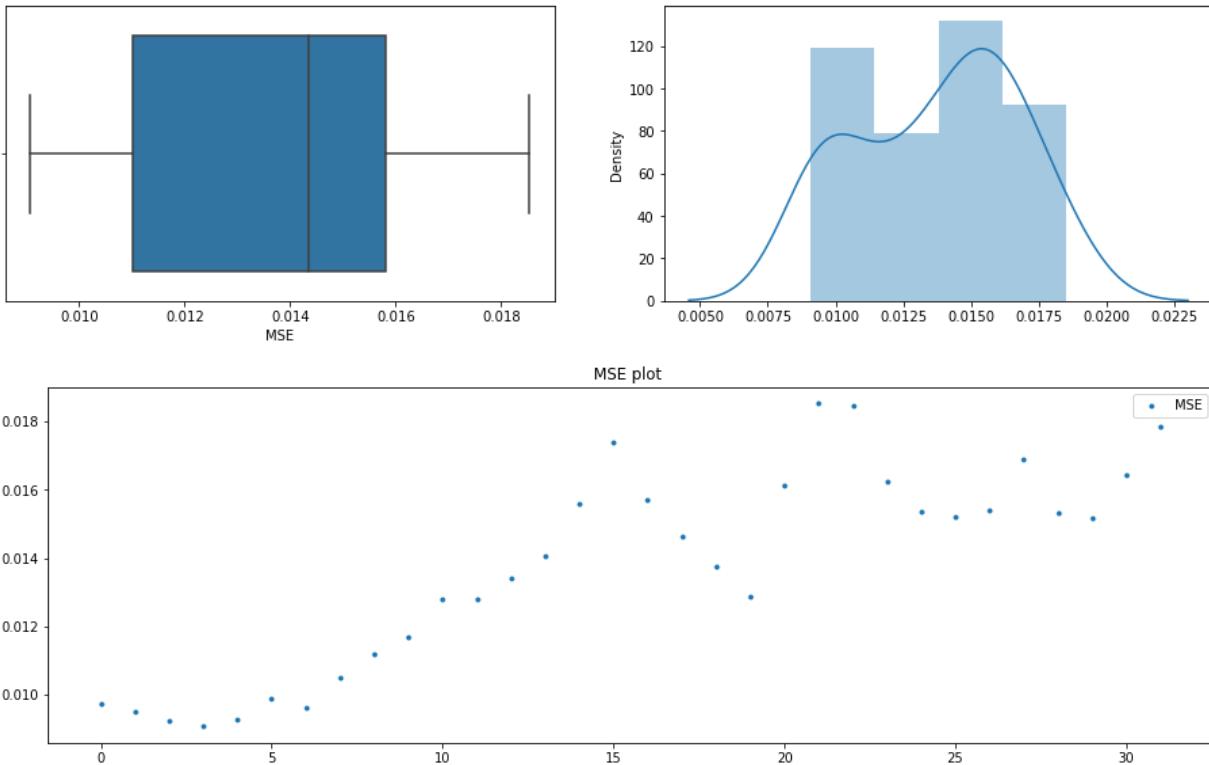
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 15

mean=0.013744375, median=0.01435 , max=0.01853, min=0.00907, variance=8.6614e-06

Boxplots and Distribution plot for Reconstruction Error



## Anderson\_Darling Test

Statistic: 0.740

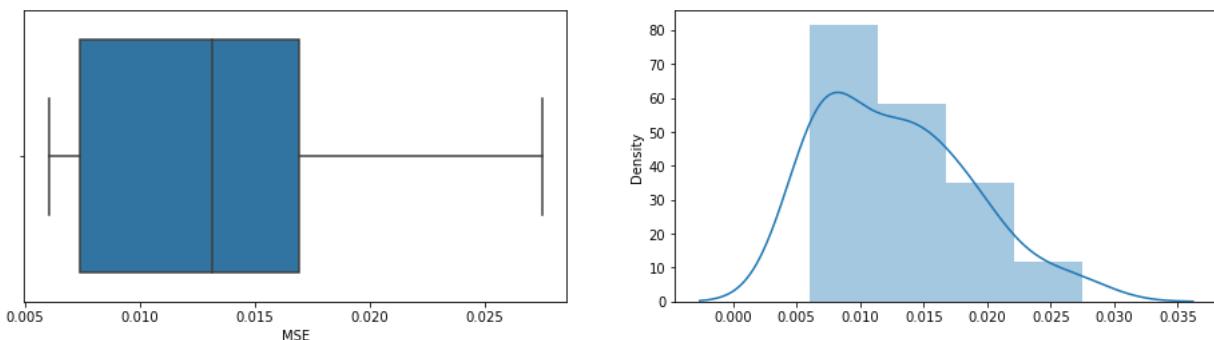
15.000: 0.523, data does not look normal (reject H0)  
 10.000: 0.596, data does not look normal (reject H0)  
 5.000: 0.715, data does not look normal (reject H0)  
 2.500: 0.834, data looks normal (fail to reject H0)  
 1.000: 0.992, data looks normal (fail to reject H0)

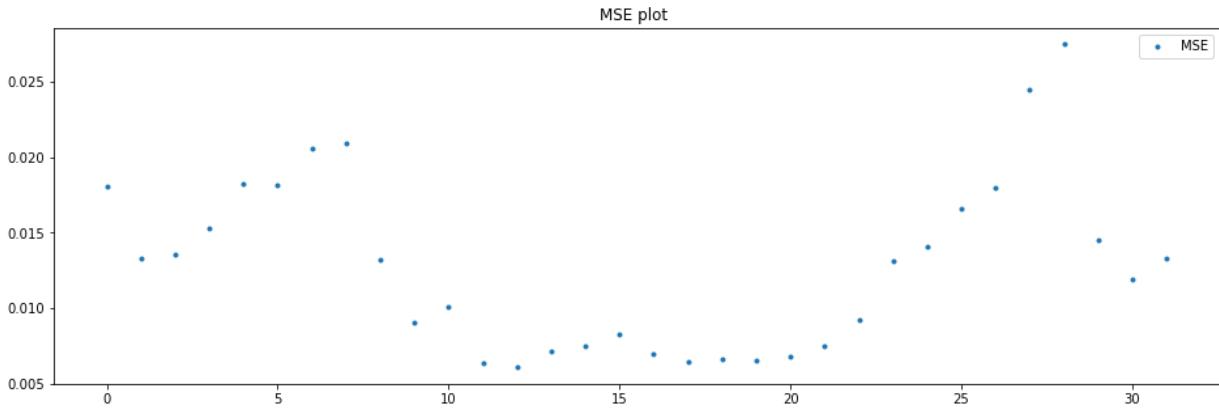
\*\*\*\*\*

Batch: 16

mean=0.01279125, median=0.01318 , max=0.02751, min=0.00606, variance=3.24401e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.847

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

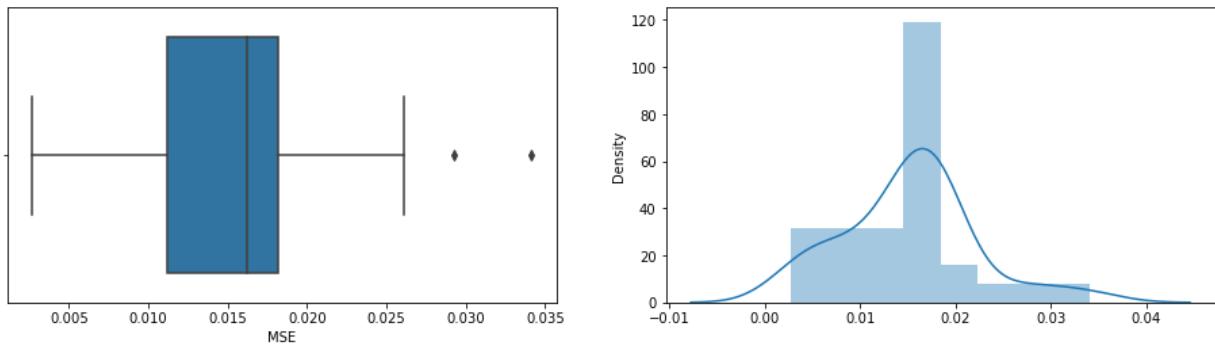
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

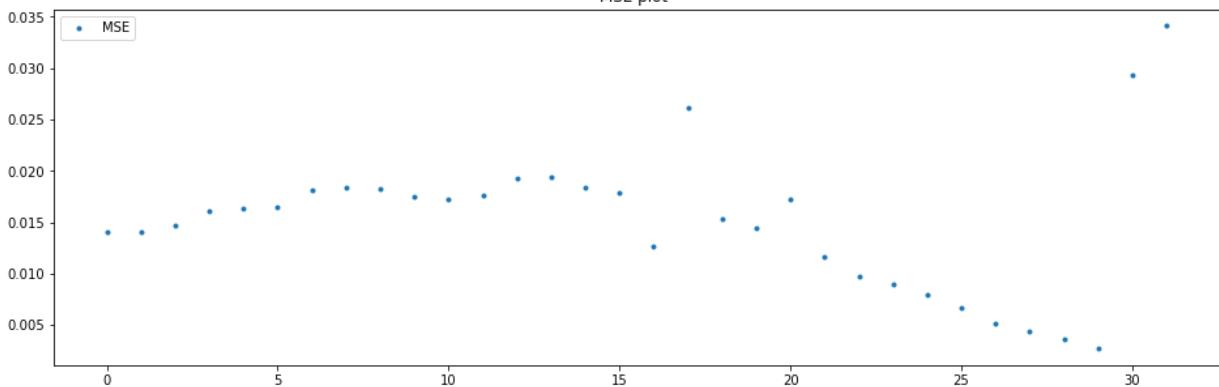
Batch: 17

mean=0.01511875, median=0.016225 , max=0.03412, min=0.00268, variance=4.69558e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.858

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

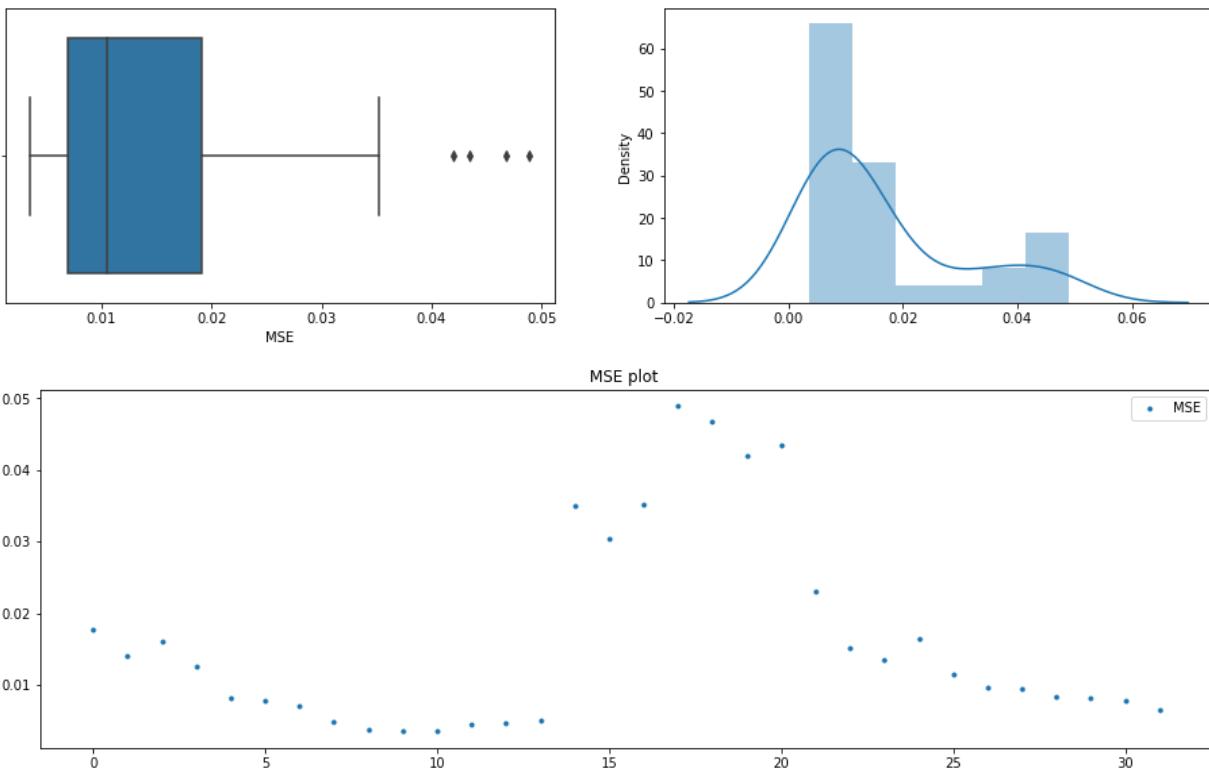
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 18

mean=0.0164015625, median=0.010545 , max=0.04889, min=0.0035, variance=0.0001879635

Boxplots and Distribution plot for Reconstruction Error

**Anderson\_Darling Test**

Statistic: 2.455

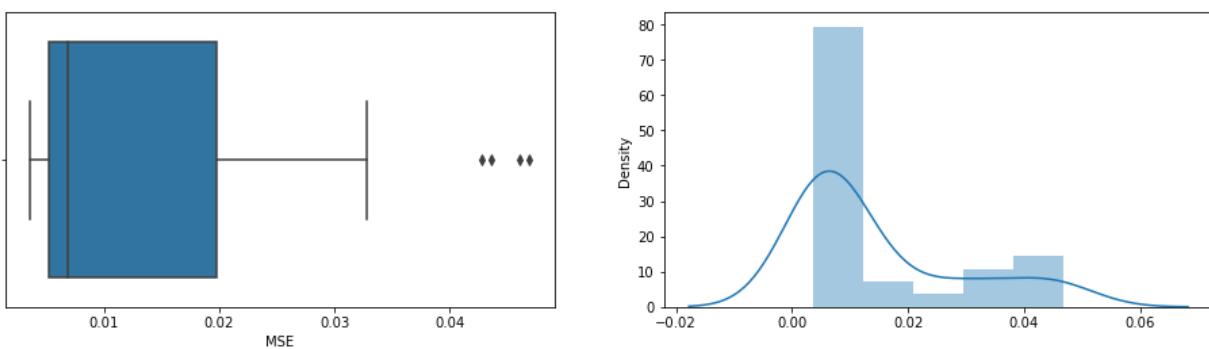
15.000: 0.523, data does not look normal (reject H<sub>0</sub>)  
 10.000: 0.596, data does not look normal (reject H<sub>0</sub>)  
 5.000: 0.715, data does not look normal (reject H<sub>0</sub>)  
 2.500: 0.834, data does not look normal (reject H<sub>0</sub>)  
 1.000: 0.992, data does not look normal (reject H<sub>0</sub>)

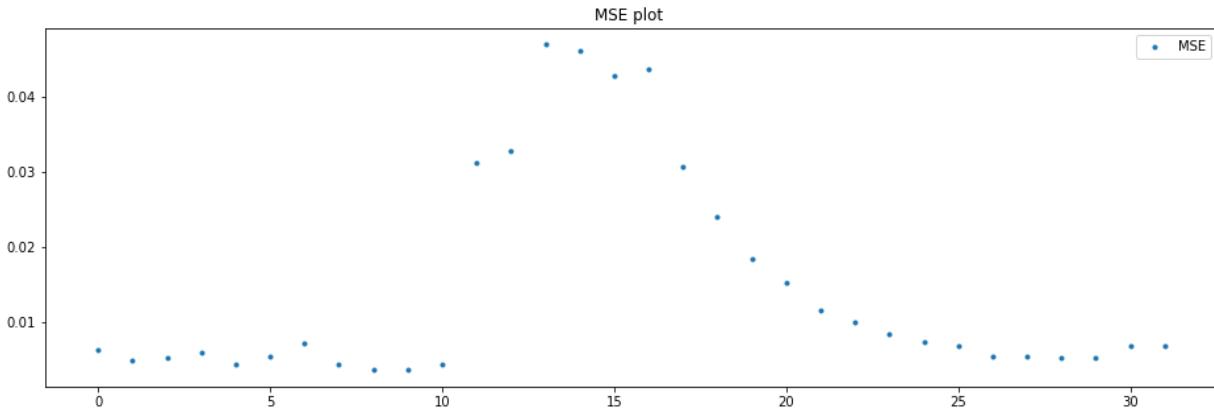
\*\*\*\*\*

Batch: 19

mean=0.014538125, median=0.006805 , max=0.04688, min=0.00358, variance=0.0001969021

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 3.813

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

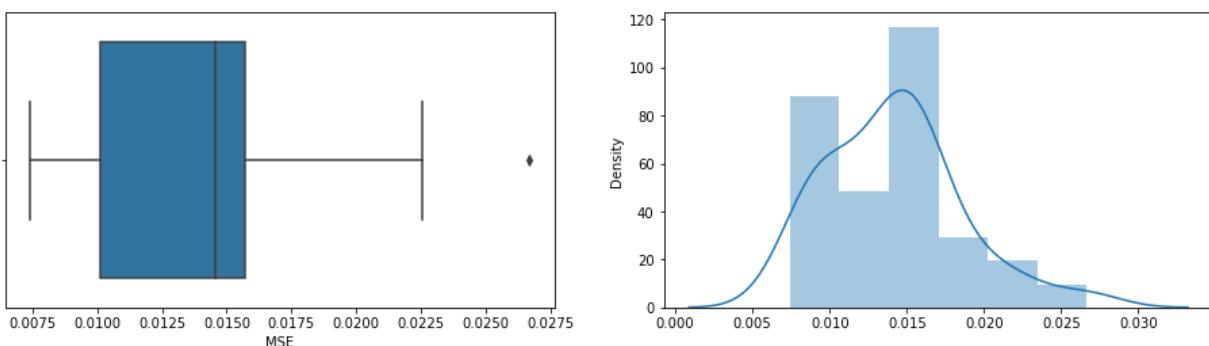
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

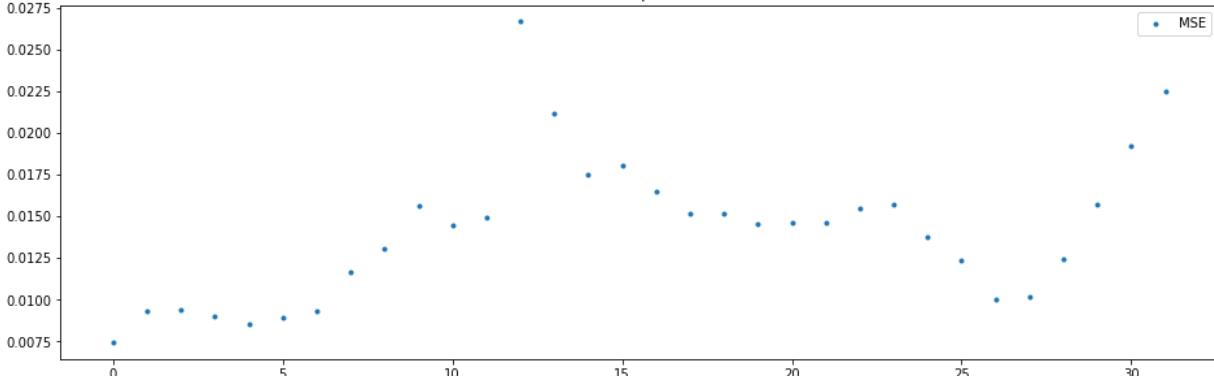
Batch: 20

mean=0.0141525, median=0.014565 , max=0.02666, min=0.00742, variance=1.84581e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.590

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

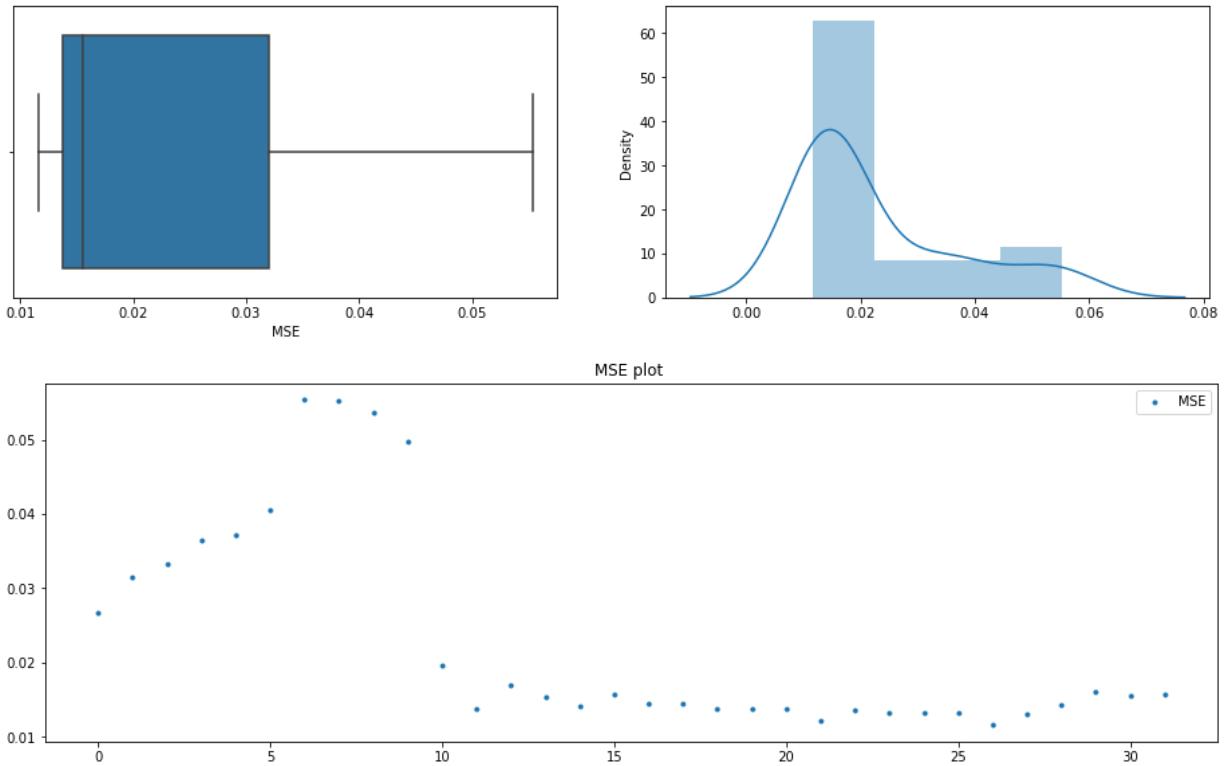
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 21

mean=0.02305375, median=0.01549 , max=0.05535, min=0.01158, variance=0.0001966997

Boxplots and Distribution plot for Reconstruction Error

**Anderson\_Darling Test**

Statistic: 3.785

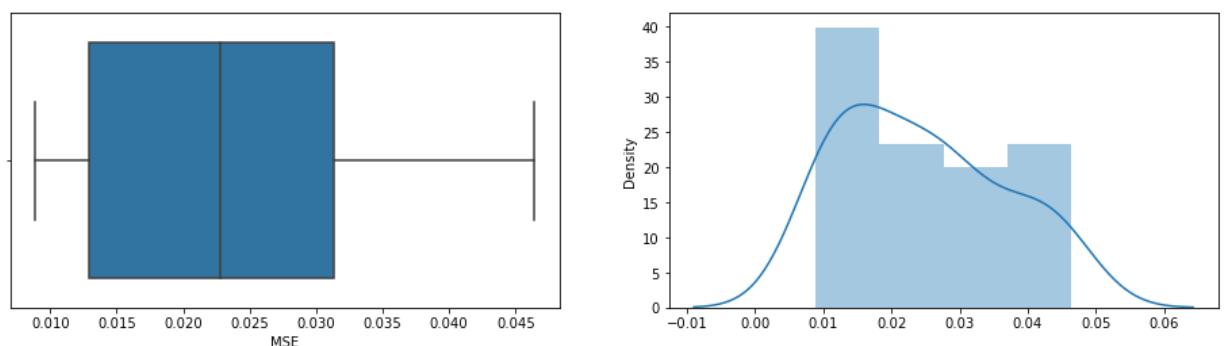
15.000: 0.523, data does not look normal (reject H<sub>0</sub>)  
 10.000: 0.596, data does not look normal (reject H<sub>0</sub>)  
 5.000: 0.715, data does not look normal (reject H<sub>0</sub>)  
 2.500: 0.834, data does not look normal (reject H<sub>0</sub>)  
 1.000: 0.992, data does not look normal (reject H<sub>0</sub>)

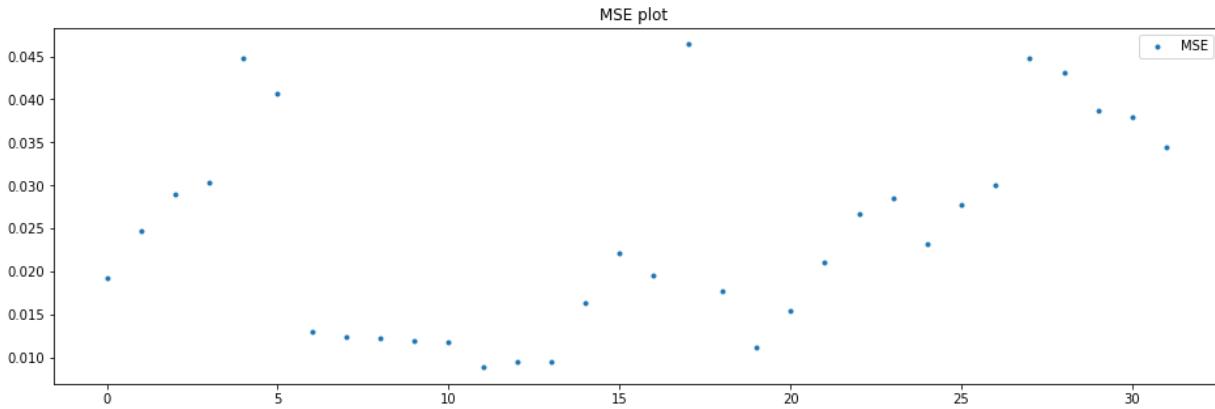
\*\*\*\*\*

Batch: 22

mean=0.02449875, median=0.02275 , max=0.0464, min=0.00886, variance=0.0001369205

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.694

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

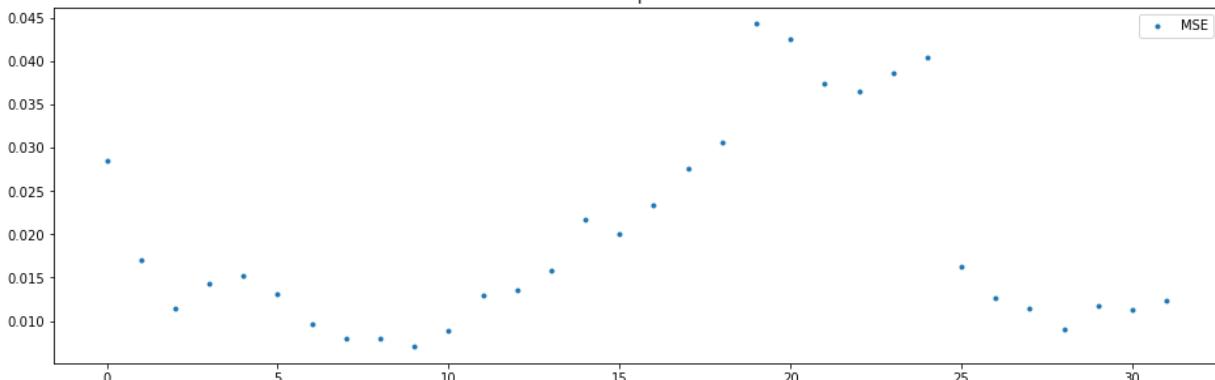
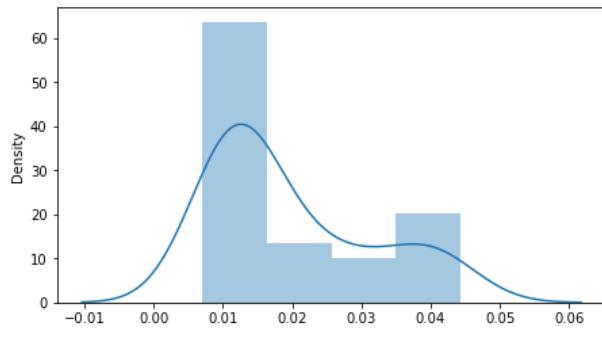
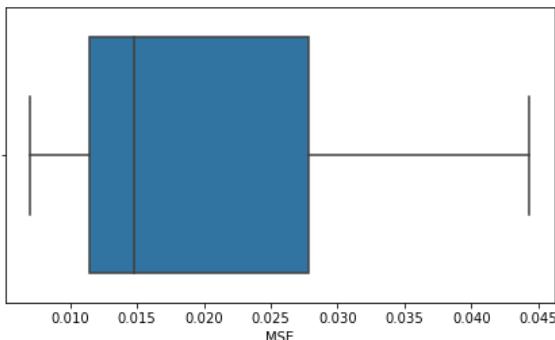
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 23

mean=0.0197328125, median=0.01475 , max=0.04433, min=0.007, variance=0.0001296652

Boxplots and Distribution plot for Reconstruction Error



Anderson\_Darling Test

Statistic: 1.906

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

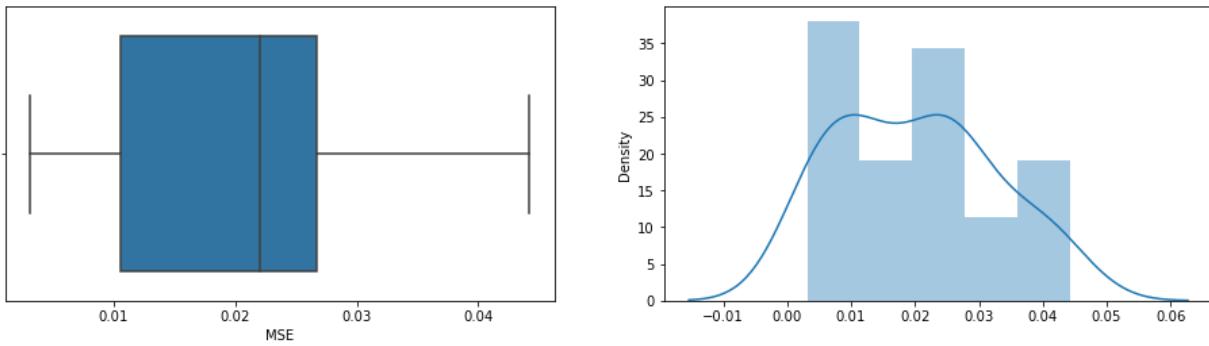
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

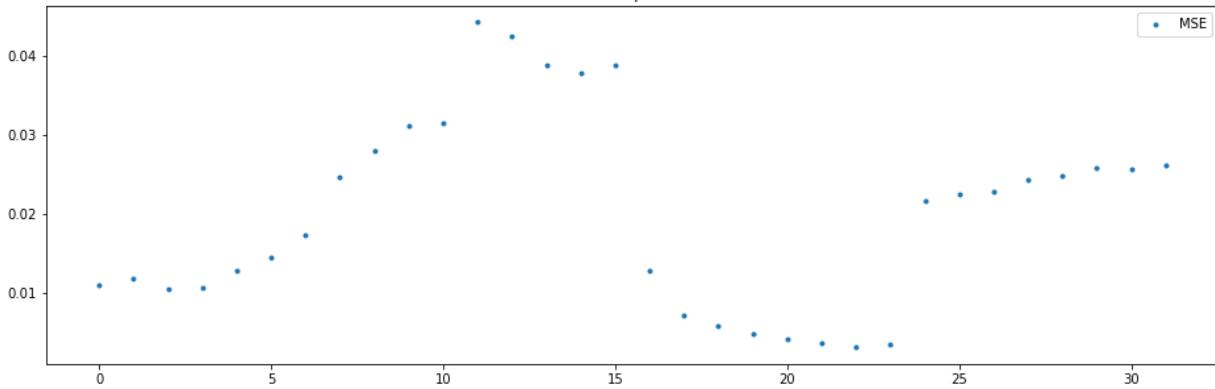
Batch: 24

mean=0.0201540625, median=0.02202 , max=0.04419, min=0.00314, variance=0.0001477156

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson\_Darling Test**

Statistic: 0.560

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

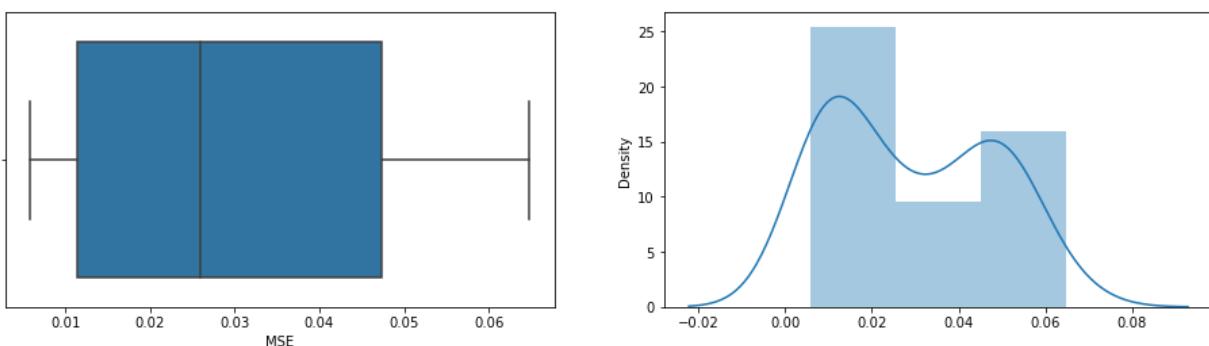
1.000: 0.992, data looks normal (fail to reject H0)

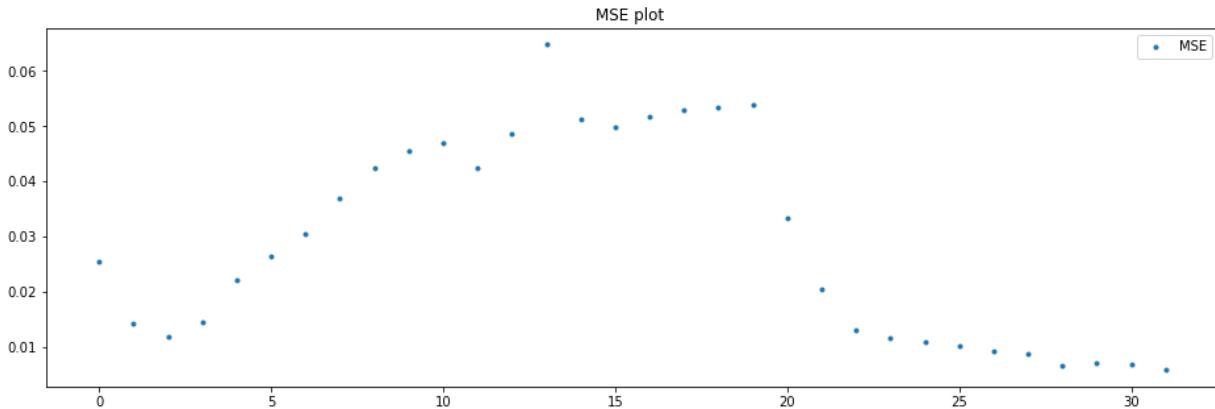
\*\*\*\*\*

Batch: 25

mean=0.029074375, median=0.025955 , max=0.06478, min=0.00585, variance=0.0003388272

Boxplots and Distribution plot for Reconstruction Error





## Anderson\_Darling Test

Statistic: 1.312

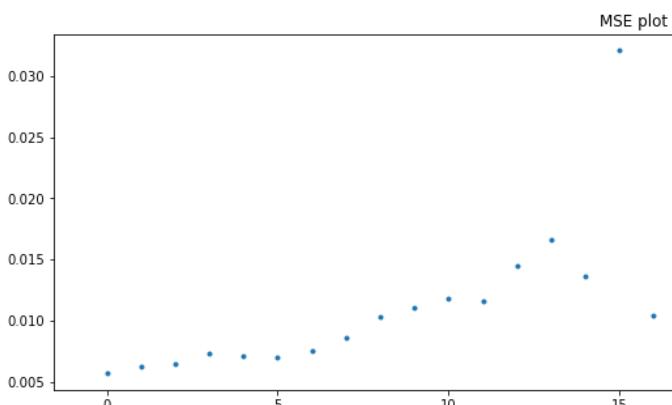
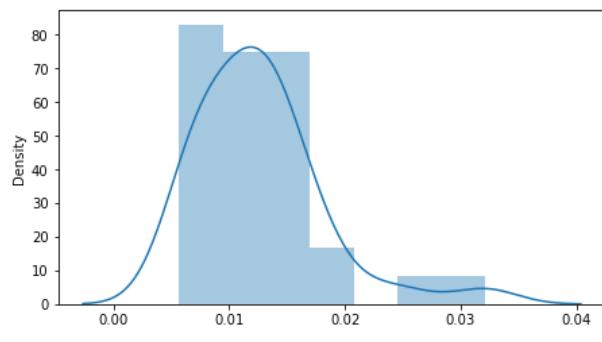
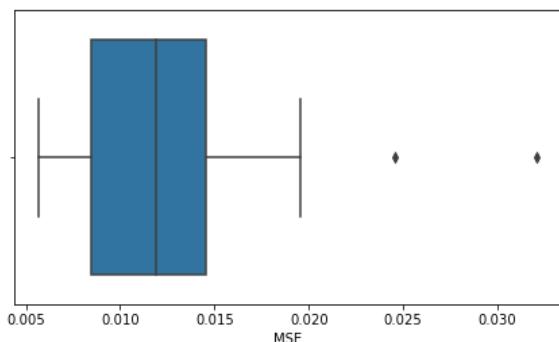
15.000: 0.523, data does not look normal (reject H<sub>0</sub>)  
 10.000: 0.596, data does not look normal (reject H<sub>0</sub>)  
 5.000: 0.715, data does not look normal (reject H<sub>0</sub>)  
 2.500: 0.834, data does not look normal (reject H<sub>0</sub>)  
 1.000: 0.992, data does not look normal (reject H<sub>0</sub>)

\*\*\*\*\*

Batch: 26

mean=0.0125815625, median=0.011925 , max=0.03207, min=0.00568, variance=2.98086e-05

## Boxplots and Distribution plot for Reconstruction Error



## Anderson\_Darling Test

Statistic: 0.941

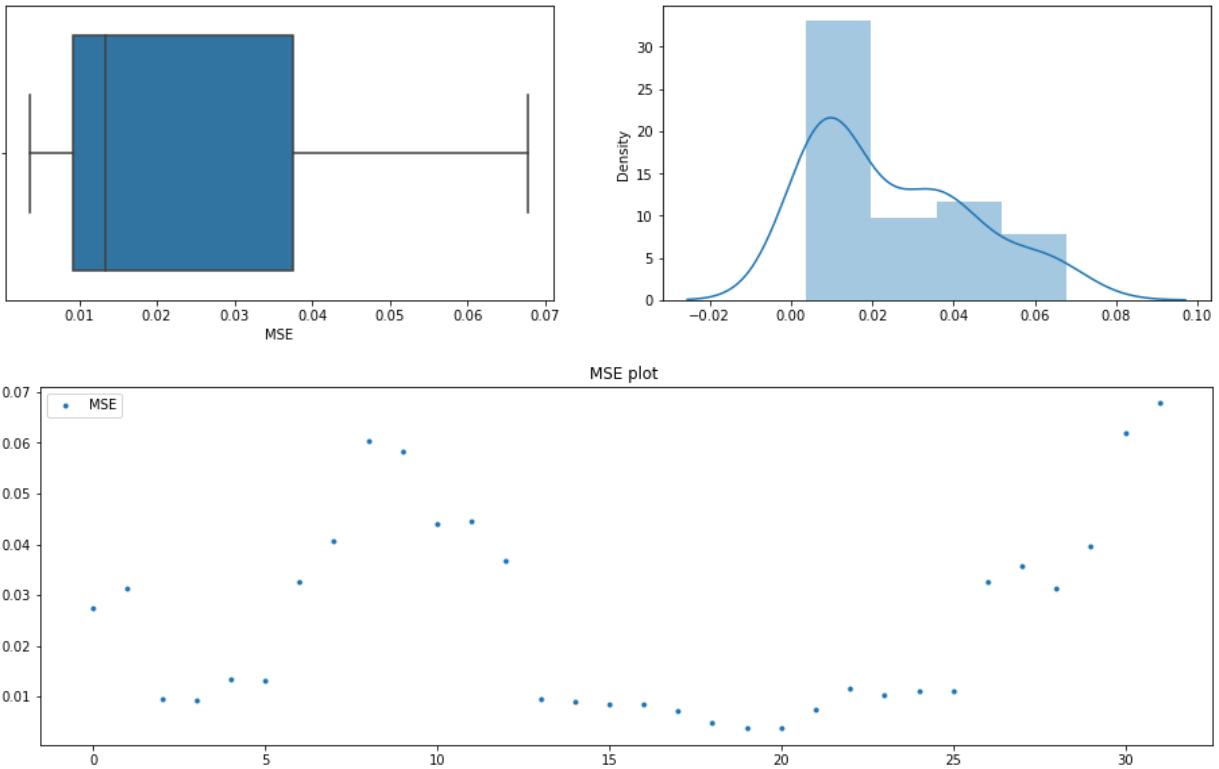
15.000: 0.523, data does not look normal (reject H<sub>0</sub>)  
 10.000: 0.596, data does not look normal (reject H<sub>0</sub>)  
 5.000: 0.715, data does not look normal (reject H<sub>0</sub>)  
 2.500: 0.834, data does not look normal (reject H<sub>0</sub>)  
 1.000: 0.992, data looks normal (fail to reject H<sub>0</sub>)

\*\*\*\*\*

Batch: 27

mean=0.0249240625, median=0.01331 , max=0.06781, min=0.00368, variance=0.0003670907

Boxplots and Distribution plot for Reconstruction Error



#### Anderson\_Darling Test

Statistic: 1.724

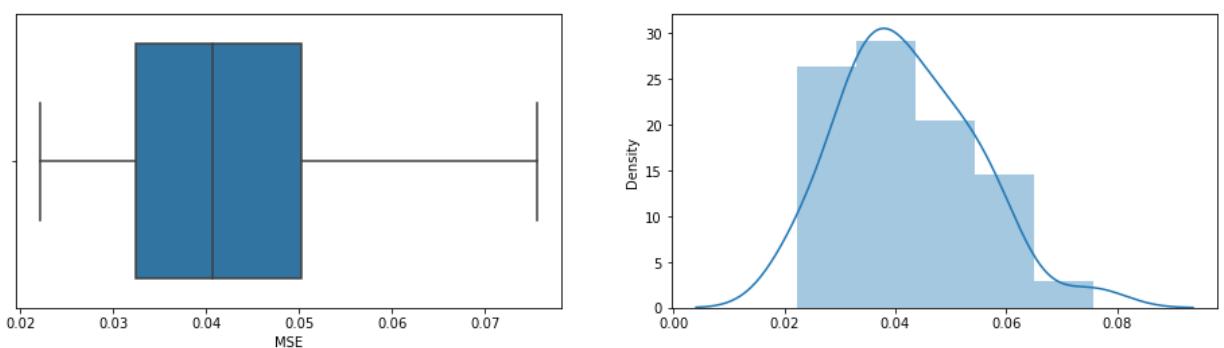
15.000: 0.523, data does not look normal (reject H0)  
 10.000: 0.596, data does not look normal (reject H0)  
 5.000: 0.715, data does not look normal (reject H0)  
 2.500: 0.834, data does not look normal (reject H0)  
 1.000: 0.992, data does not look normal (reject H0)

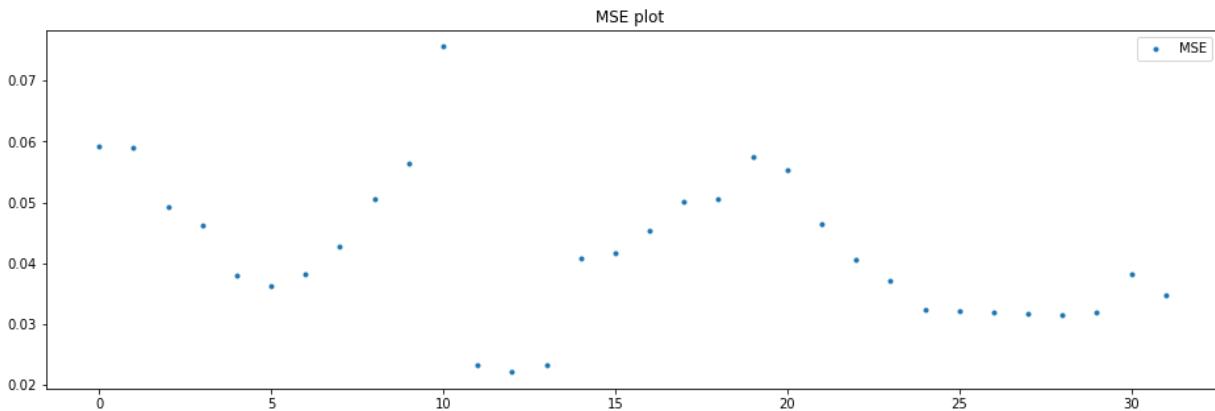
\*\*\*\*\*

Batch: 28

mean=0.042215625, median=0.04071 , max=0.07561, min=0.02213, variance=0.0001409507

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.342

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

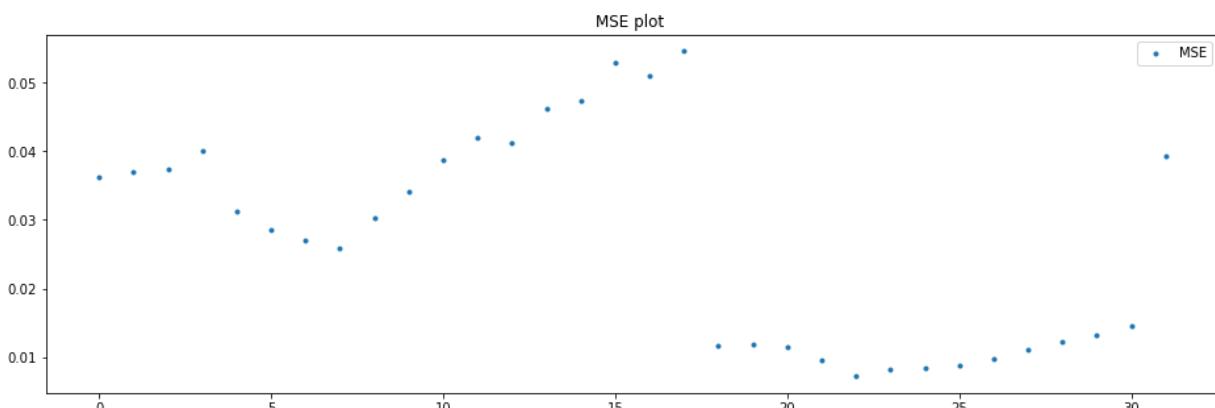
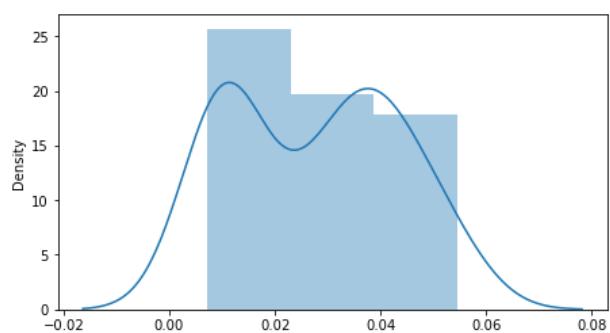
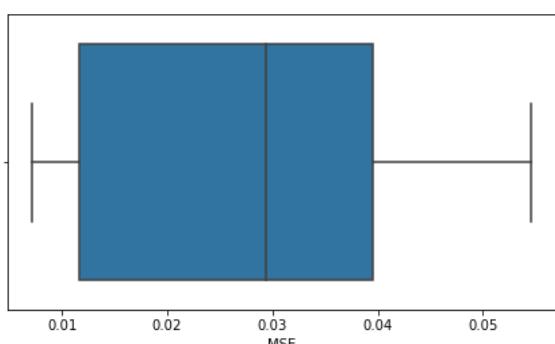
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 29

mean=0.0274821875, median=0.0294 , max=0.05461, min=0.00715, variance=0.0002376152

Boxplots and Distribution plot for Reconstruction Error



Anderson\_Darling Test

Statistic: 1.253

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

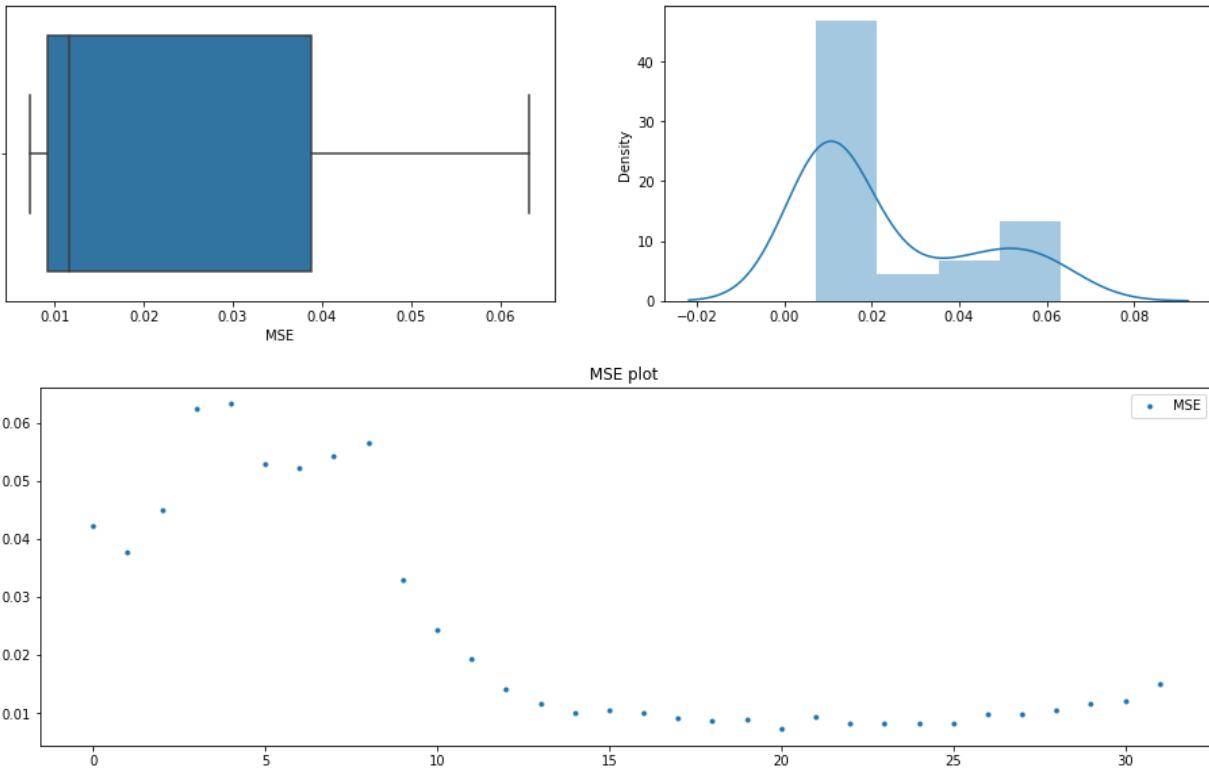
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 30

mean=0.0232759375, median=0.0117 , max=0.06327, min=0.00725, variance=0.0003626044

Boxplots and Distribution plot for Reconstruction Error



## Anderson\_Darling Test

Statistic: 3.440

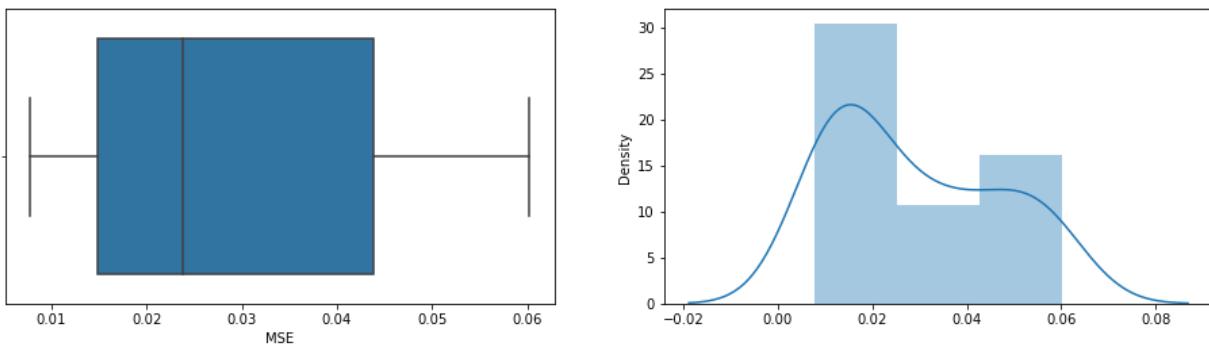
15.000: 0.523, data does not look normal (reject H0)  
 10.000: 0.596, data does not look normal (reject H0)  
 5.000: 0.715, data does not look normal (reject H0)  
 2.500: 0.834, data does not look normal (reject H0)  
 1.000: 0.992, data does not look normal (reject H0)

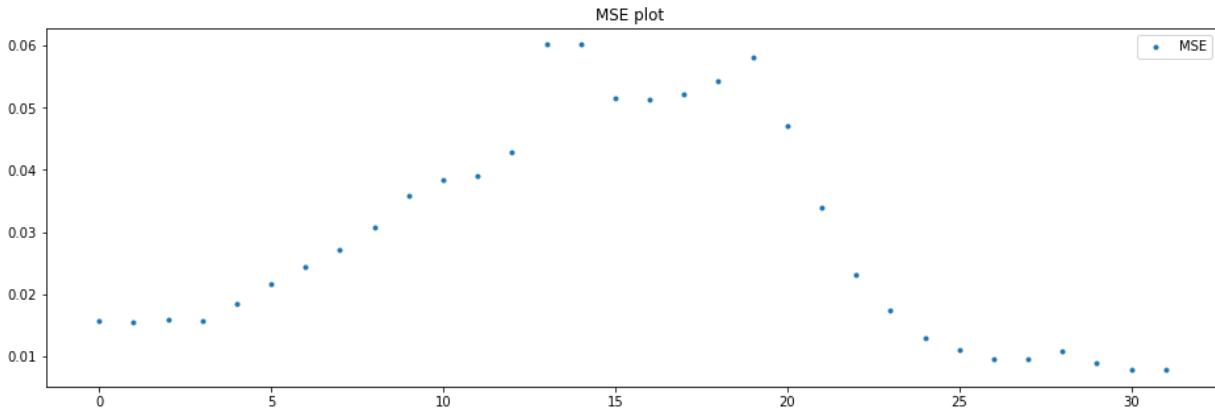
\*\*\*\*\*

Batch: 31

mean=0.029035625, median=0.023815 , max=0.06017, min=0.00778, variance=0.0003056147

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 1.126

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

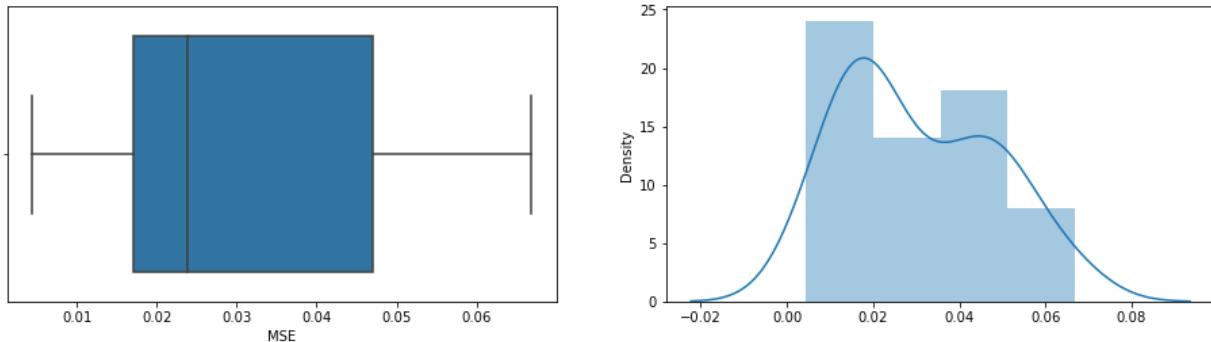
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

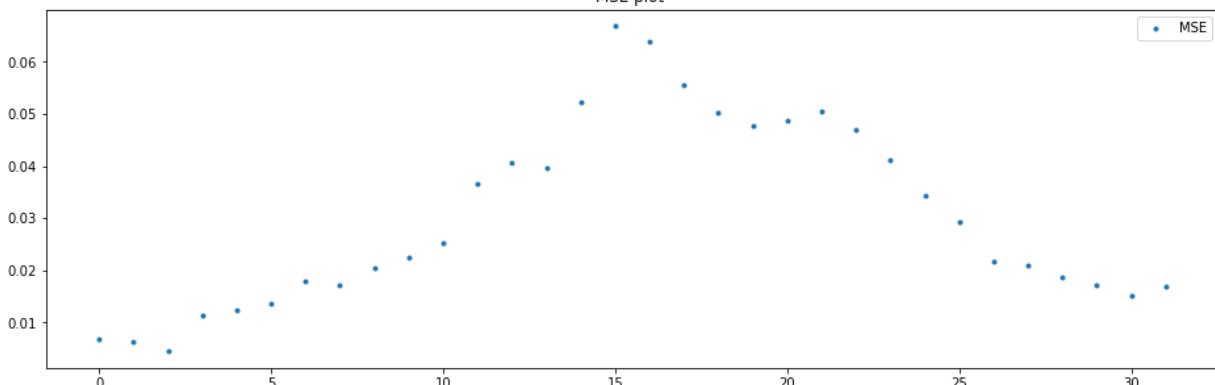
Batch: 32

mean=0.030395, median=0.023795 , max=0.06683, min=0.00443, variance=0.000307188

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.813

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

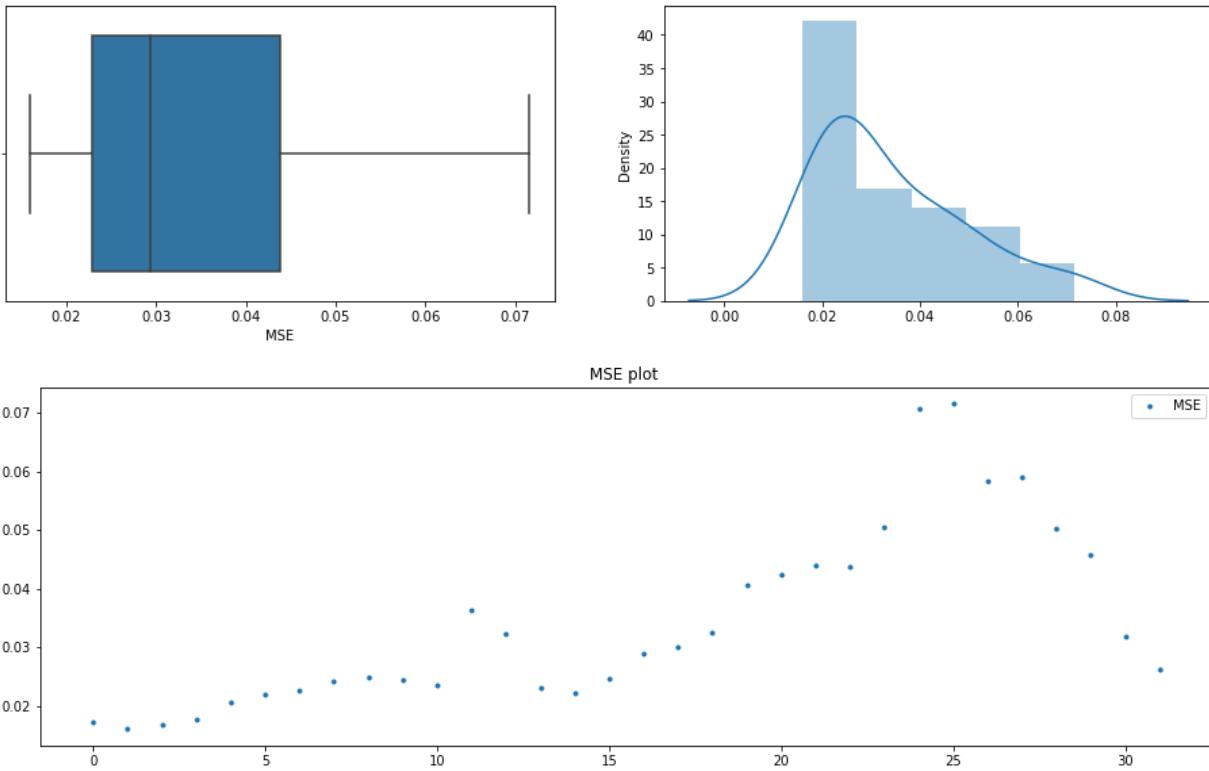
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 33

mean=0.034183125, median=0.0294 , max=0.07154, min=0.01599, variance=0.0002330184

Boxplots and Distribution plot for Reconstruction Error



## Anderson\_Darling Test

Statistic: 1.207

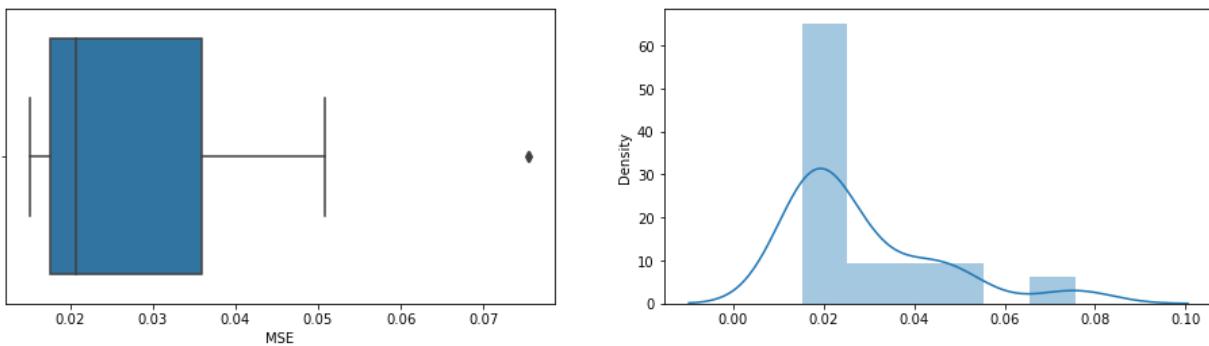
15.000: 0.523, data does not look normal (reject H0)  
 10.000: 0.596, data does not look normal (reject H0)  
 5.000: 0.715, data does not look normal (reject H0)  
 2.500: 0.834, data does not look normal (reject H0)  
 1.000: 0.992, data does not look normal (reject H0)

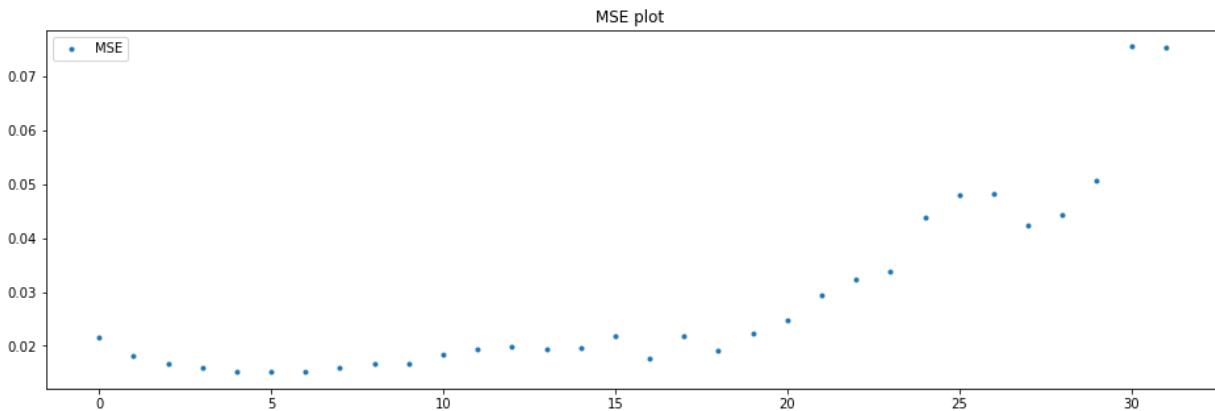
\*\*\*\*\*

Batch: 34

mean=0.02862125, median=0.02064 , max=0.07556, min=0.01512, variance=0.0002684078

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 2.801

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

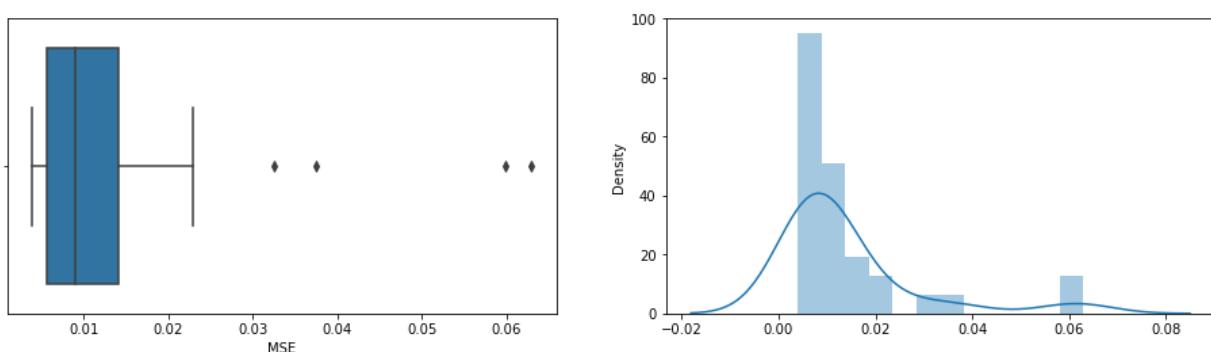
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

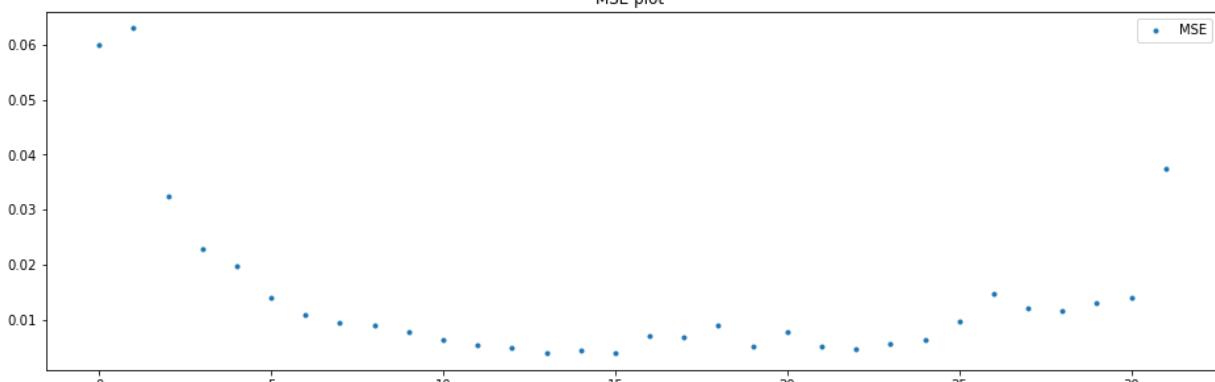
Batch: 35

mean=0.0140396875, median=0.009035 , max=0.06296, min=0.0039, variance=0.0002085003

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 4.078

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

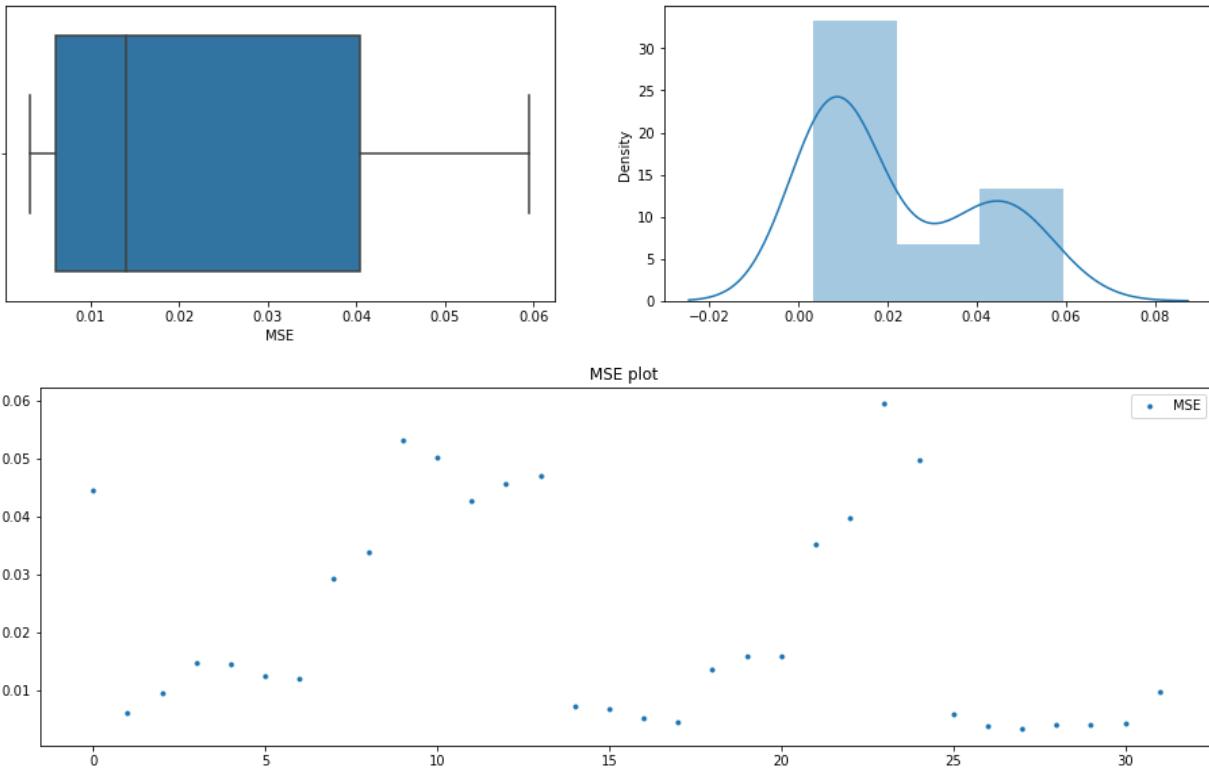
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 36

mean=0.02200375, median=0.014045 , max=0.05949, min=0.00323, variance=0.0003345582

Boxplots and Distribution plot for Reconstruction Error



#### Anderson\_Darling Test

Statistic: 2.129

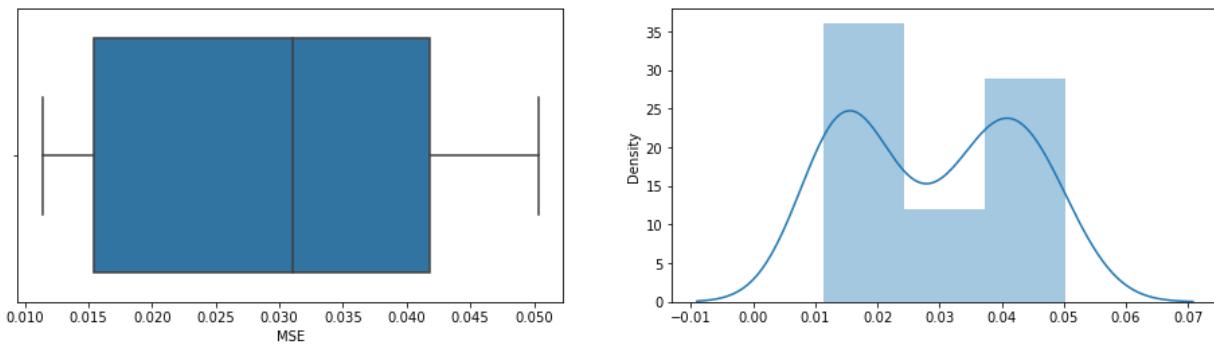
15.000: 0.523, data does not look normal (reject H0)  
 10.000: 0.596, data does not look normal (reject H0)  
 5.000: 0.715, data does not look normal (reject H0)  
 2.500: 0.834, data does not look normal (reject H0)  
 1.000: 0.992, data does not look normal (reject H0)

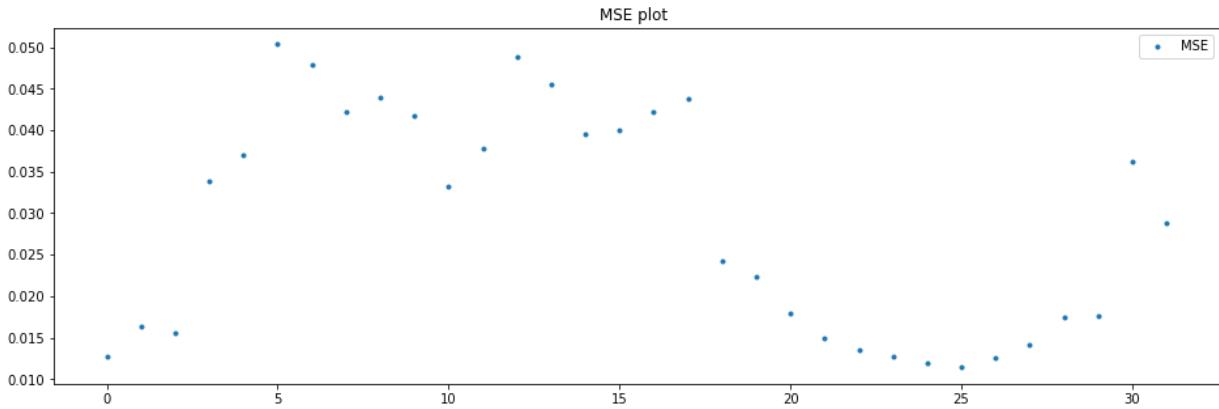
\*\*\*\*\*

Batch: 37

mean=0.0290209375, median=0.031075 , max=0.05035, min=0.01141, variance=0.0001796058

Boxplots and Distribution plot for Reconstruction Error





## Anderson\_Darling Test

Statistic: 1.471

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

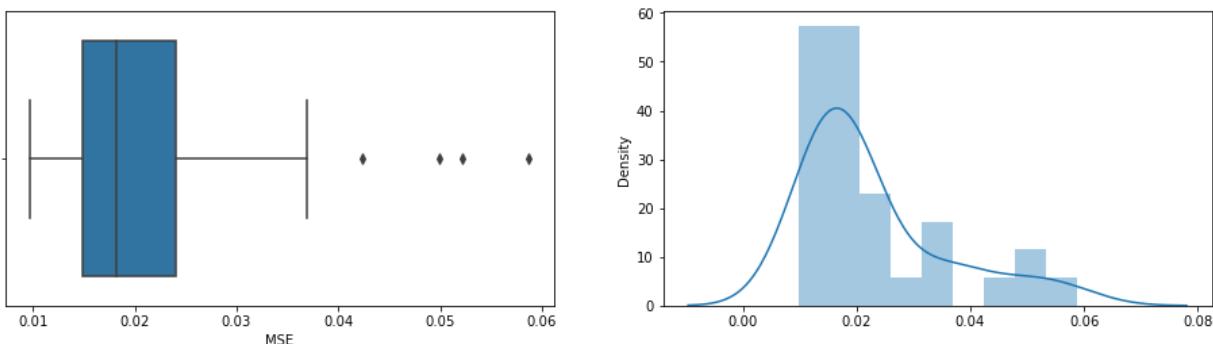
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

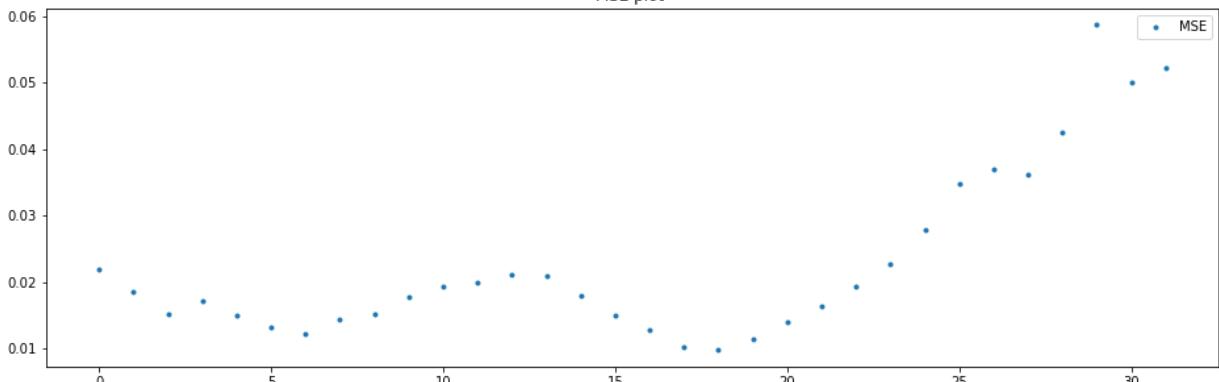
Batch: 38

mean=0.0228184375, median=0.01823 , max=0.05869, min=0.00971, variance=0.0001612798

Boxplots and Distribution plot for Reconstruction Error



## MSE plot



## Anderson\_Darling Test

Statistic: 2.458

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

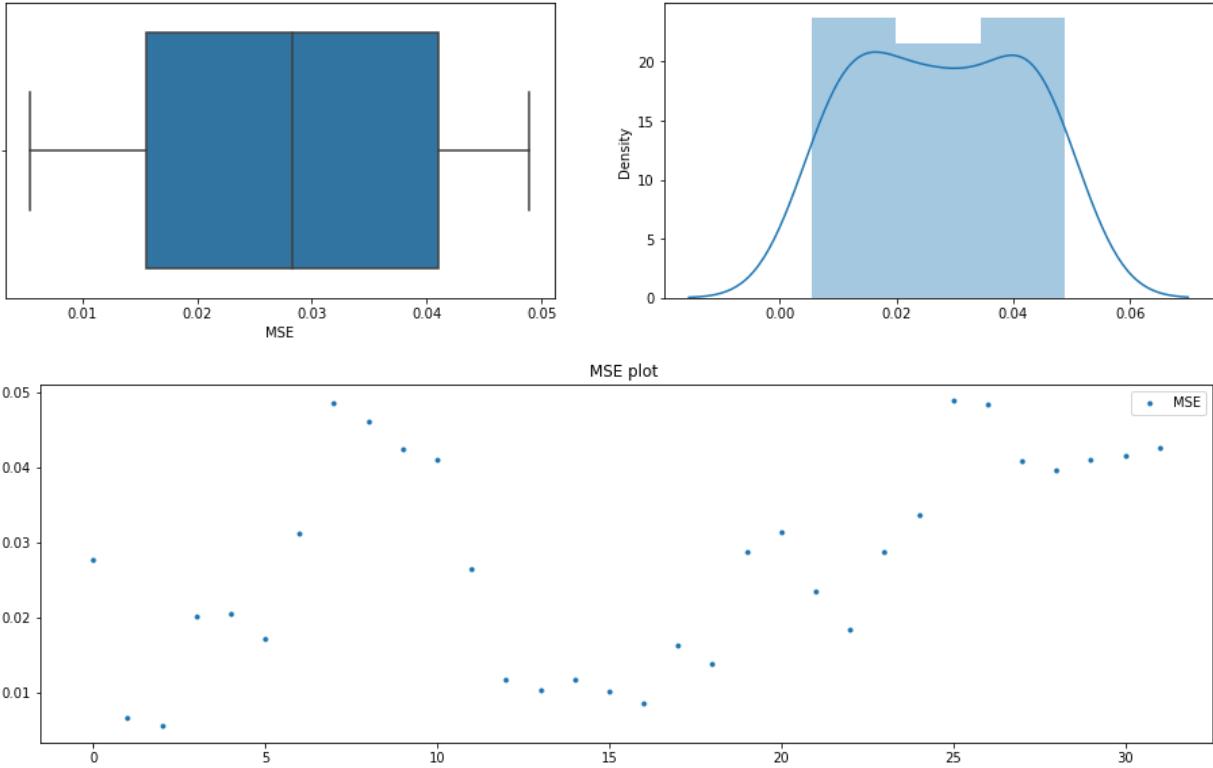
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 39

mean=0.0276109375, median=0.028265 , max=0.04892, min=0.00546, variance=0.0001907106

Boxplots and Distribution plot for Reconstruction Error



## Anderson\_Darling Test

Statistic: 0.681

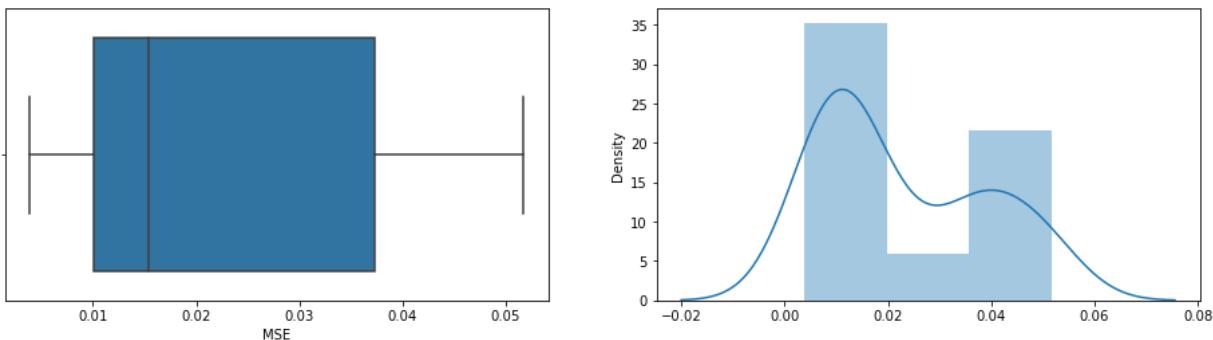
15.000: 0.523, data does not look normal (reject H0)  
 10.000: 0.596, data does not look normal (reject H0)  
 5.000: 0.715, data looks normal (fail to reject H0)  
 2.500: 0.834, data looks normal (fail to reject H0)  
 1.000: 0.992, data looks normal (fail to reject H0)

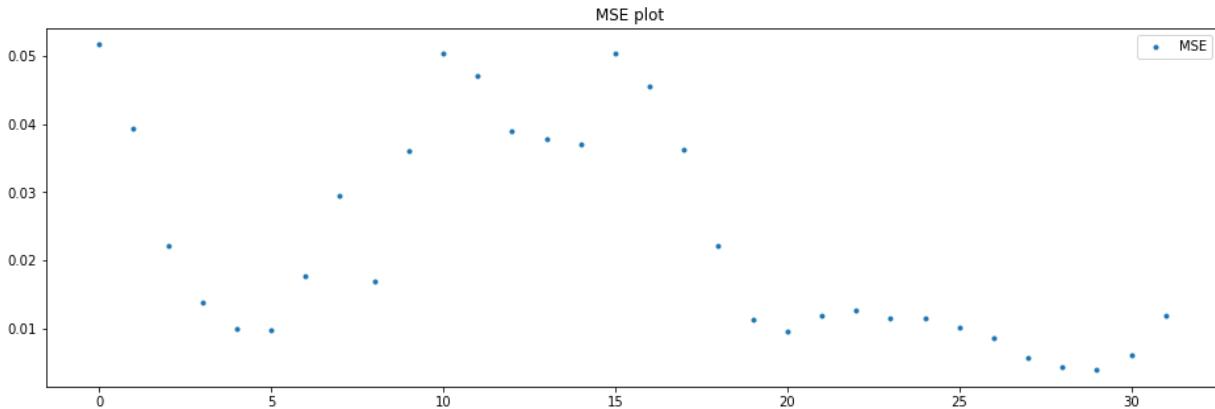
\*\*\*\*\*

Batch: 40

mean=0.022864375, median=0.01536 , max=0.0517, min=0.00386, variance=0.00024564

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 1.739

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

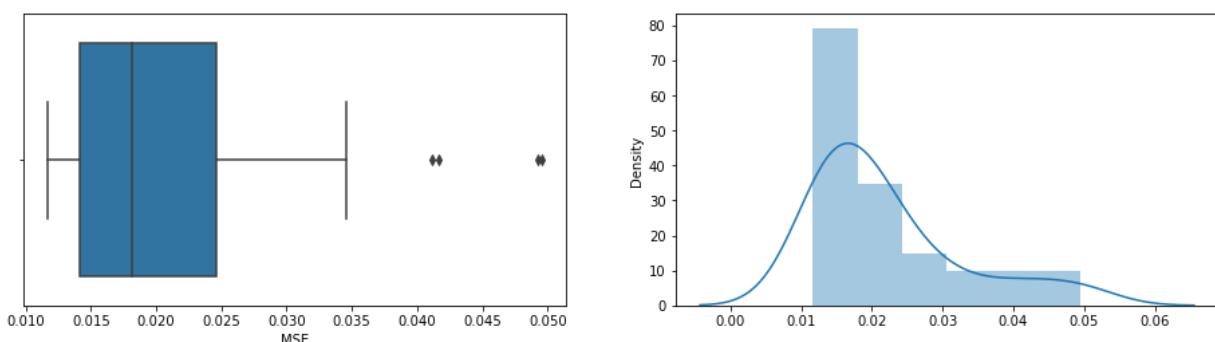
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

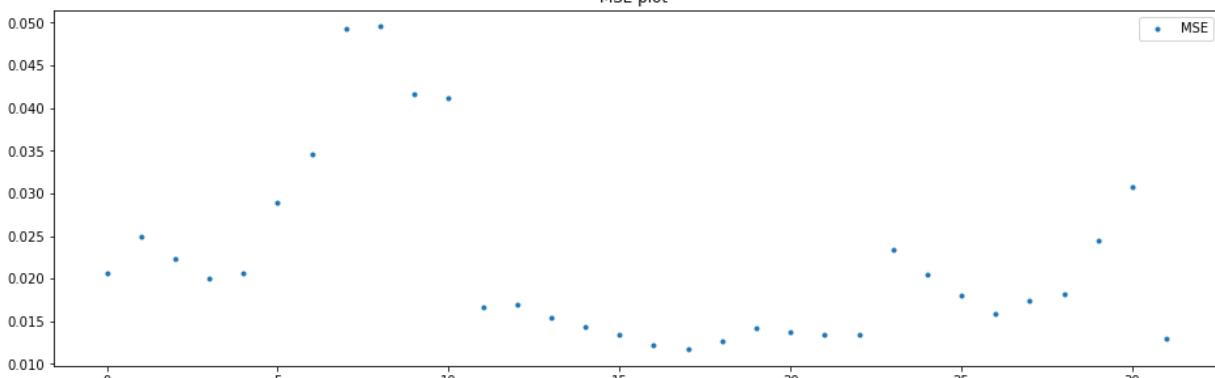
Batch: 41

mean=0.022000625, median=0.01812 , max=0.04956, min=0.01169, variance=0.000110204

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 2.109

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

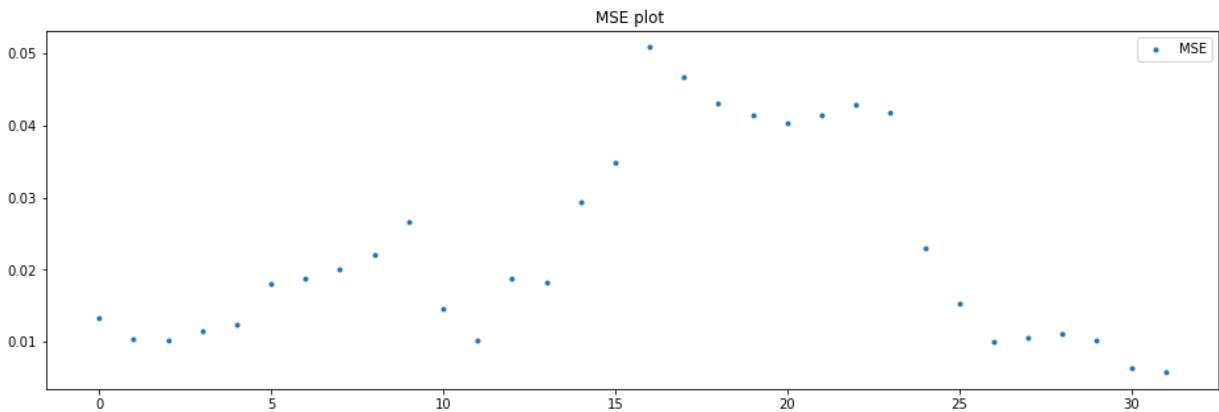
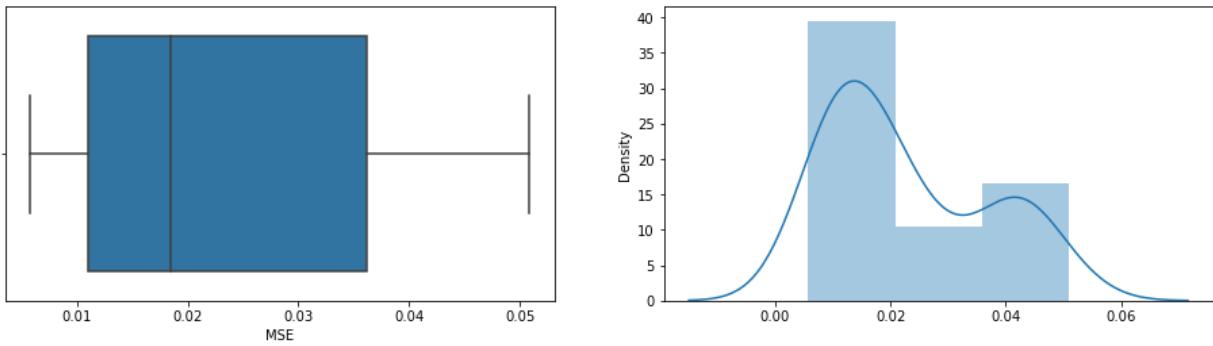
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 42

mean=0.0228228125, median=0.018455 , max=0.05084, min=0.00577, variance=0.0001847671

Boxplots and Distribution plot for Reconstruction Error

**Anderson\_Darling Test**

Statistic: 1.656

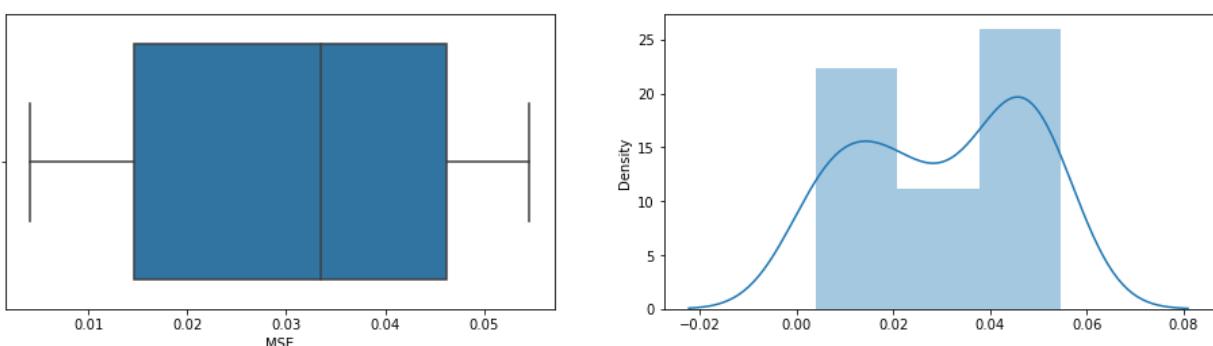
15.000: 0.523, data does not look normal (reject H<sub>0</sub>)  
 10.000: 0.596, data does not look normal (reject H<sub>0</sub>)  
 5.000: 0.715, data does not look normal (reject H<sub>0</sub>)  
 2.500: 0.834, data does not look normal (reject H<sub>0</sub>)  
 1.000: 0.992, data does not look normal (reject H<sub>0</sub>)

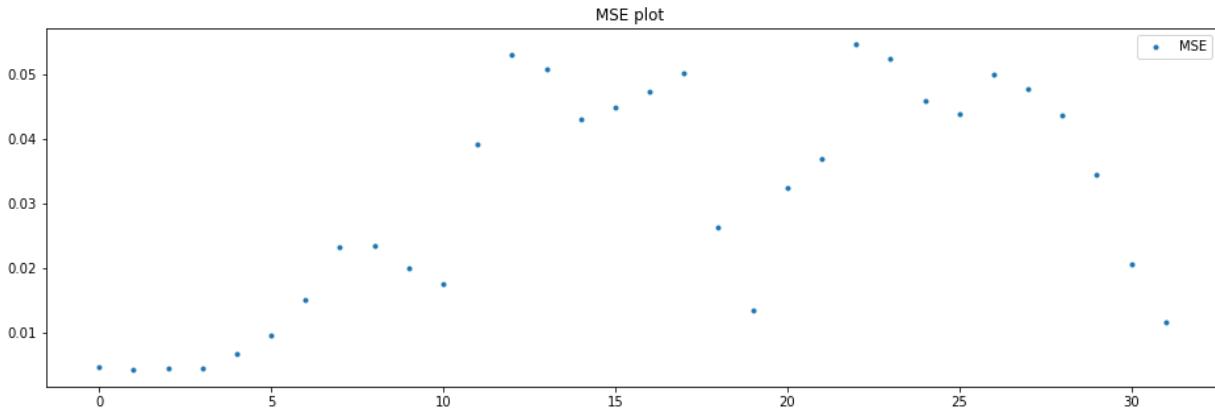
\*\*\*\*\*

Batch: 43

mean=0.0304515625, median=0.033455 , max=0.05456, min=0.00411, variance=0.0002982509

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 1.051

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

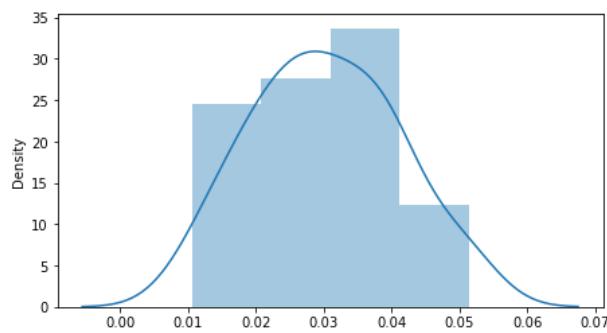
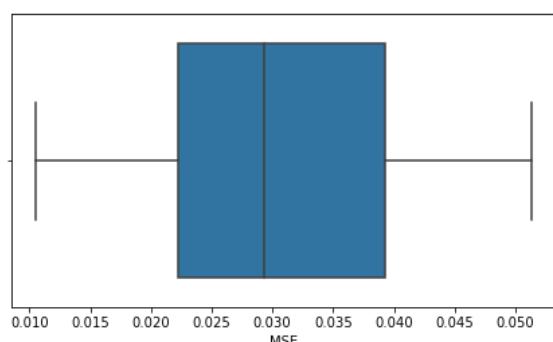
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

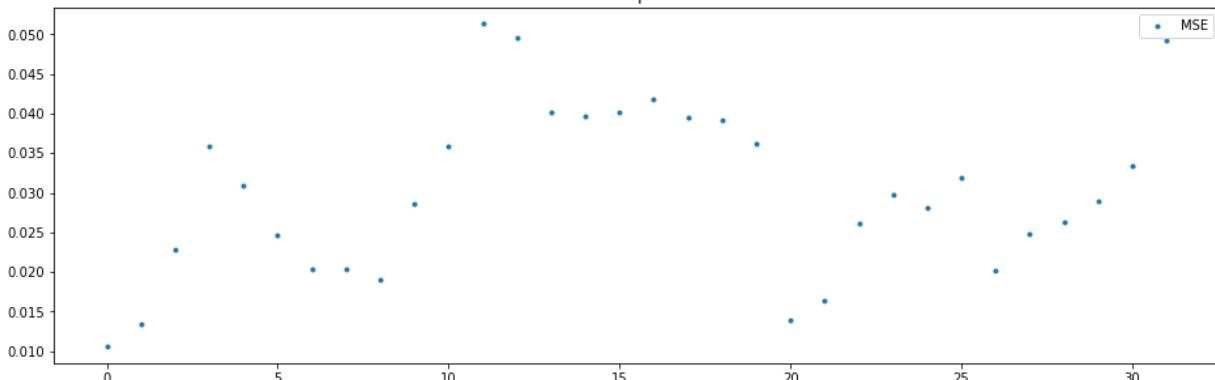
Batch: 44

mean=0.0302646875, median=0.029325 , max=0.05134, min=0.01053, variance=0.0001121601

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.208

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

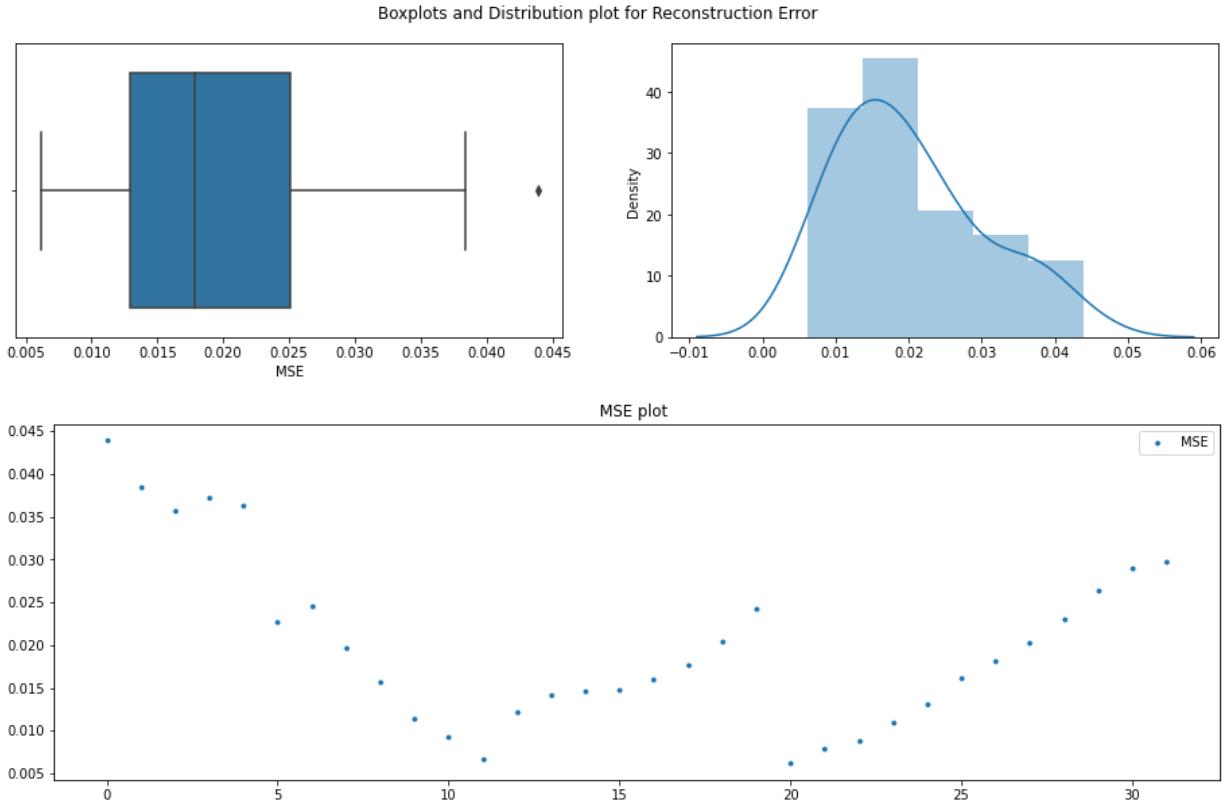
2.500: 0.834, data looks normal (fail to reject H0)

1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 45

mean=0.0201678125, median=0.017875 , max=0.04389, min=0.00616, variance=9.83665e-05



#### Anderson\_Darling Test

Statistic: 0.645

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

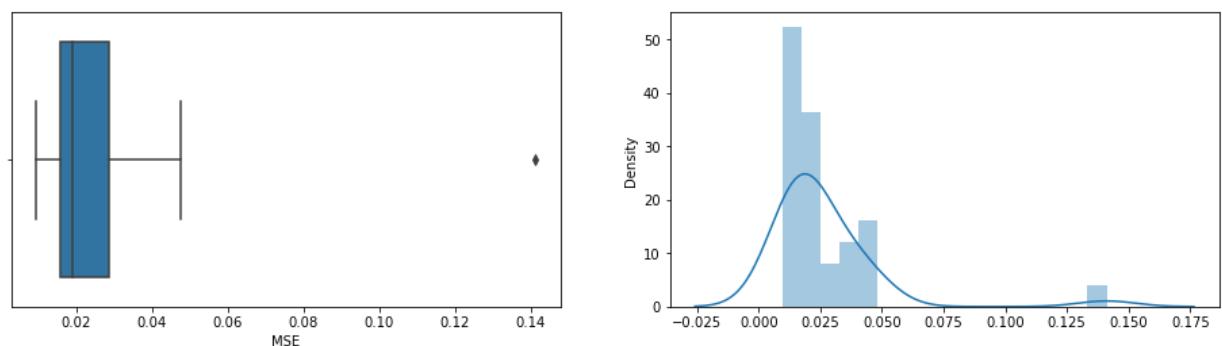
1.000: 0.992, data looks normal (fail to reject H0)

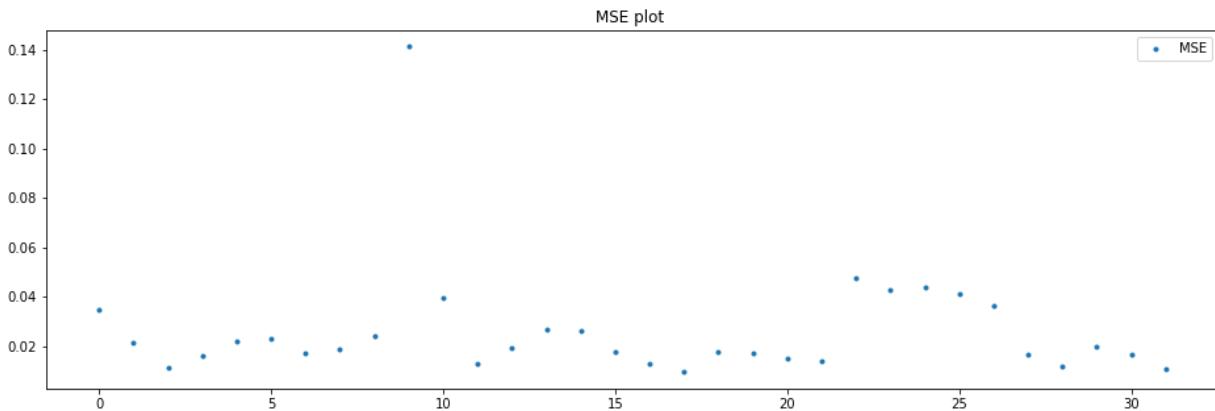
\*\*\*\*\*

Batch: 46

mean=0.026461875, median=0.018995 , max=0.14118, min=0.00948, variance=0.000538096

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 3.740

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

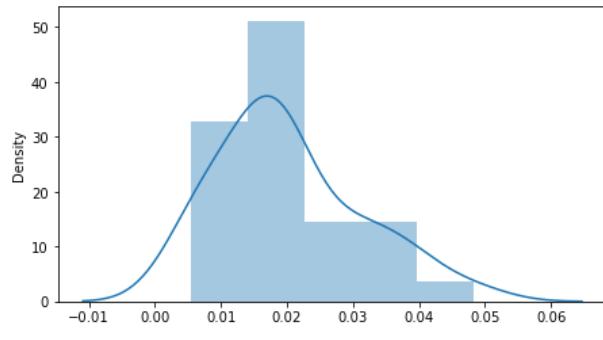
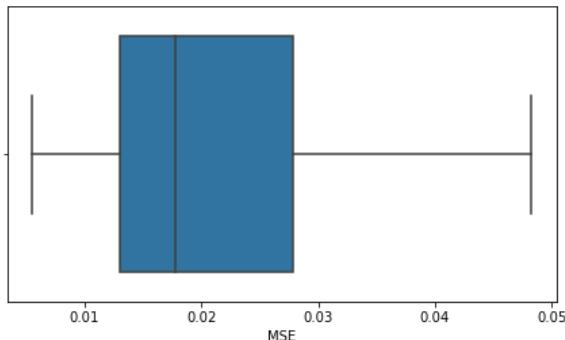
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

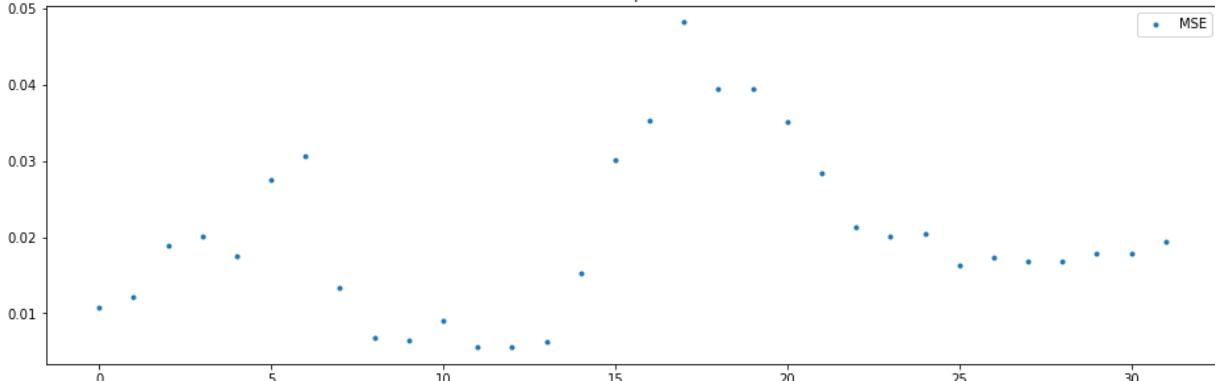
Batch: 47

mean=0.02021875, median=0.01783 , max=0.04825, min=0.00551, variance=0.0001163643

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.794

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

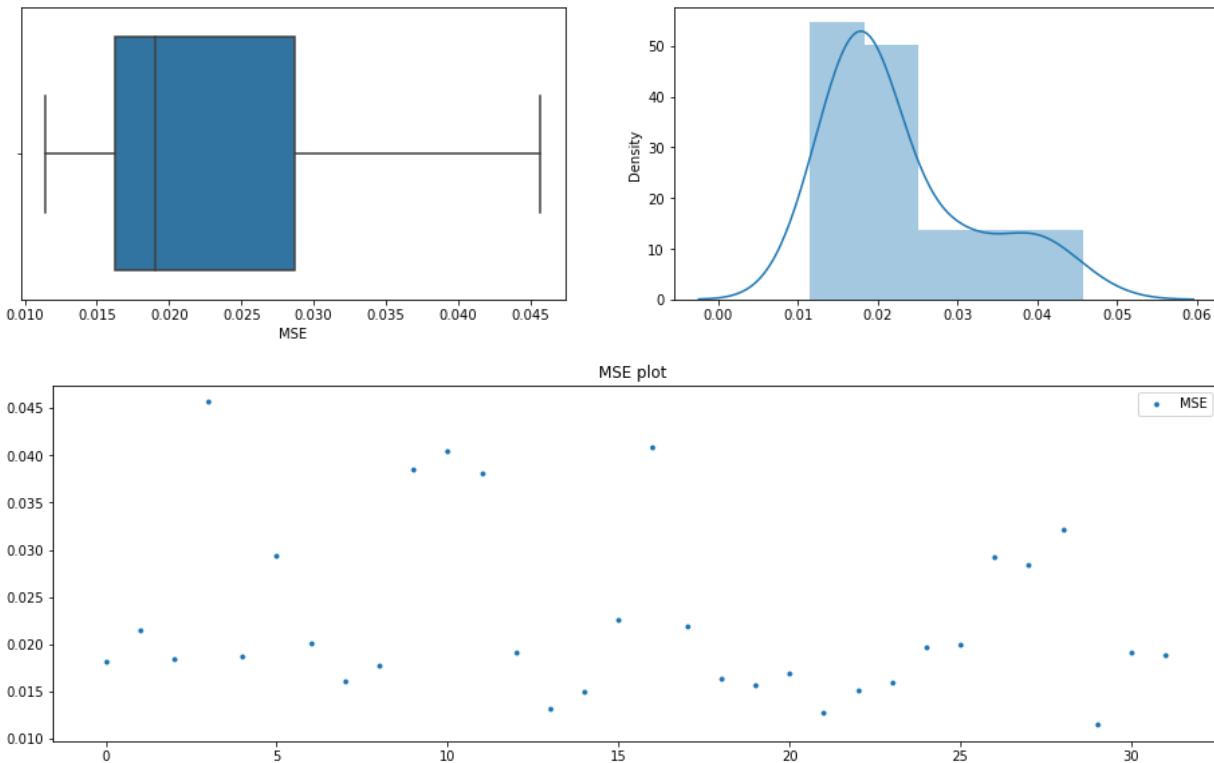
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 48

mean=0.0227346875, median=0.01908 , max=0.04568, min=0.01146, variance=8.31882e-05

Boxplots and Distribution plot for Reconstruction Error



## Anderson\_Darling Test

Statistic: 2.047

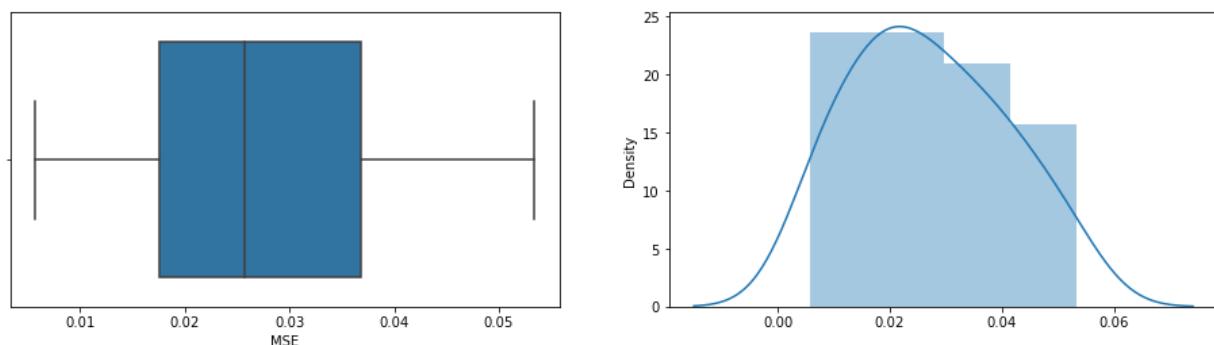
15.000: 0.523, data does not look normal (reject H<sub>0</sub>)  
 10.000: 0.596, data does not look normal (reject H<sub>0</sub>)  
 5.000: 0.715, data does not look normal (reject H<sub>0</sub>)  
 2.500: 0.834, data does not look normal (reject H<sub>0</sub>)  
 1.000: 0.992, data does not look normal (reject H<sub>0</sub>)

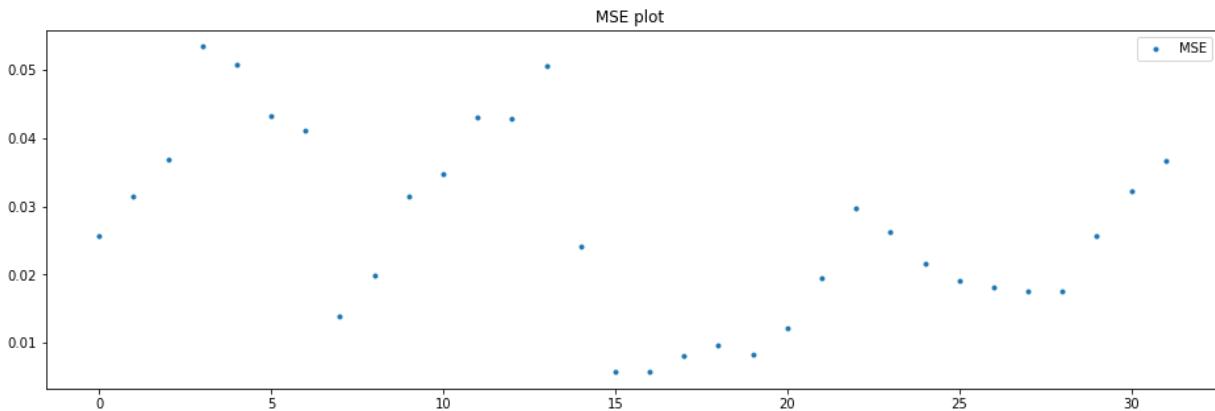
\*\*\*\*\*

Batch: 49

mean=0.026788125, median=0.02569 , max=0.05337, min=0.00571, variance=0.000183584

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.319

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

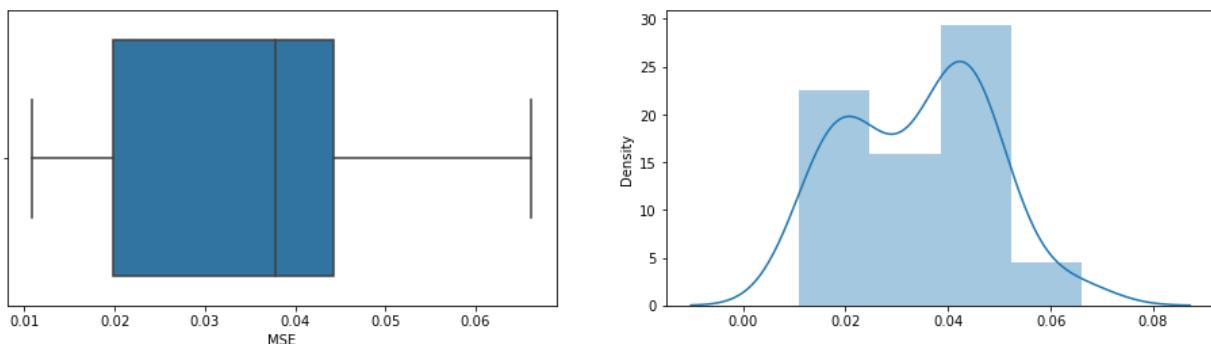
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

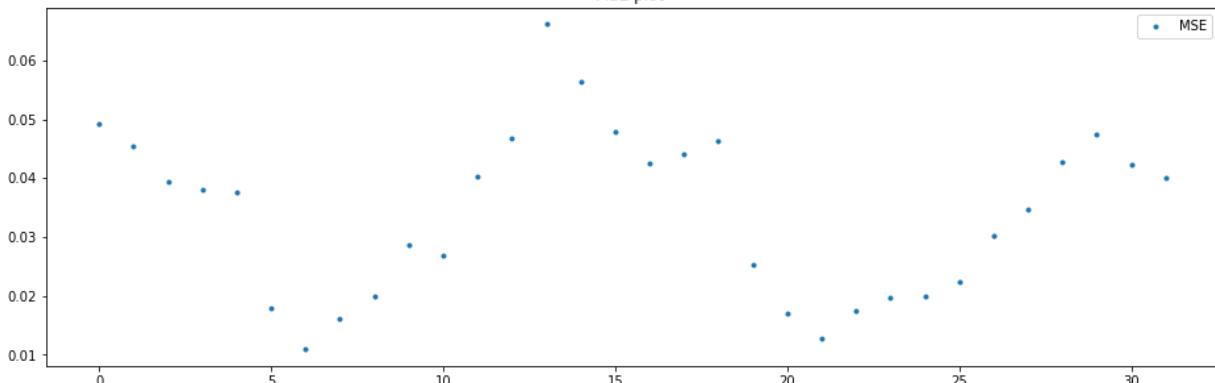
Batch: 50

mean=0.03412625, median=0.03781 , max=0.06616, min=0.01087, variance=0.0001898436

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.666

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

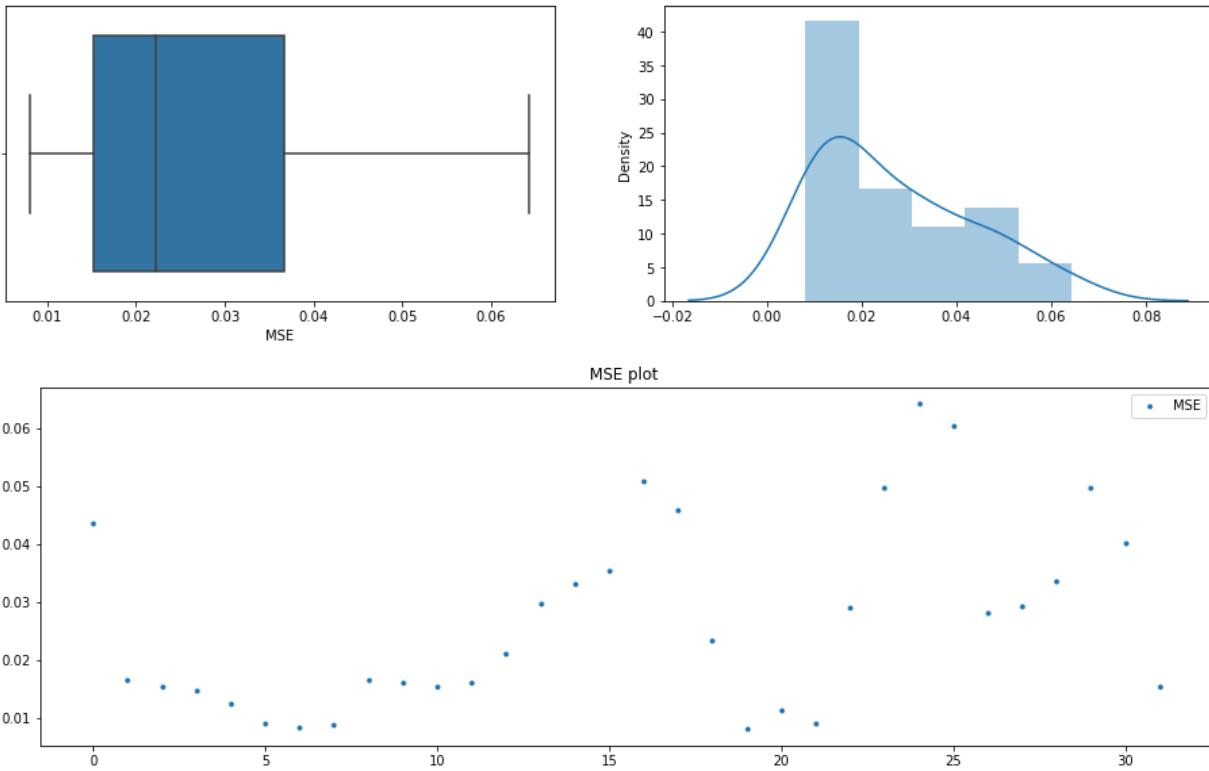
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 51

mean=0.0269178125, median=0.022205 , max=0.06429, min=0.00806, variance=0.0002595485

Boxplots and Distribution plot for Reconstruction Error



#### Anderson\_Darling Test

Statistic: 1.078

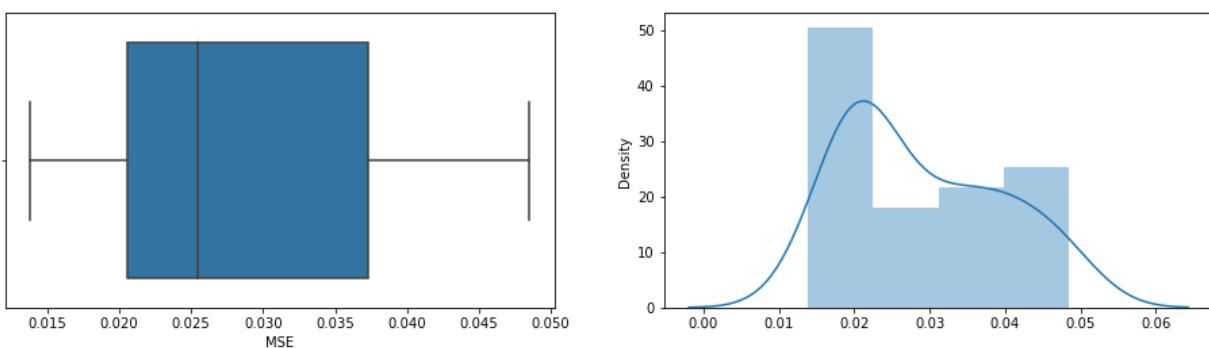
15.000: 0.523, data does not look normal (reject H0)  
 10.000: 0.596, data does not look normal (reject H0)  
 5.000: 0.715, data does not look normal (reject H0)  
 2.500: 0.834, data does not look normal (reject H0)  
 1.000: 0.992, data does not look normal (reject H0)

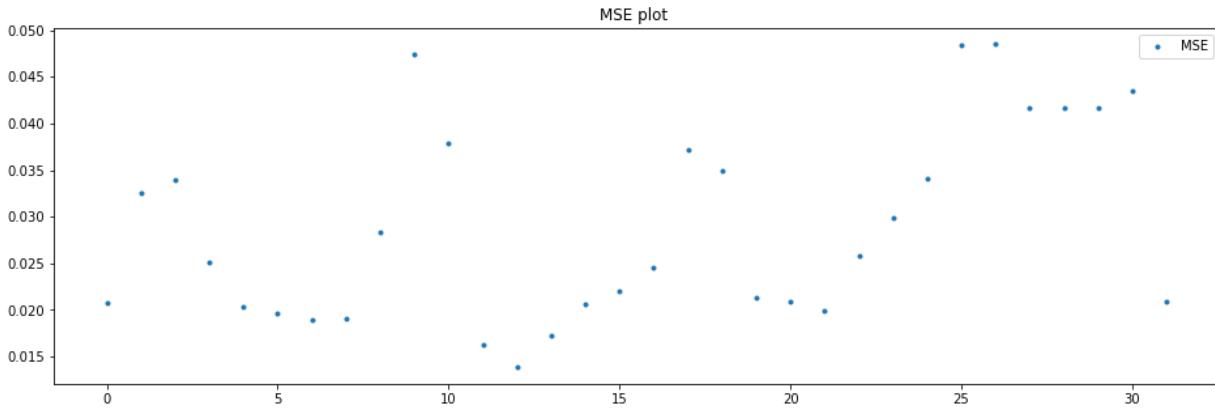
\*\*\*\*\*

Batch: 52

mean=0.0290253125, median=0.02547 , max=0.0485, min=0.01381, variance=0.0001069712

Boxplots and Distribution plot for Reconstruction Error





## Anderson\_Darling Test

Statistic: 1.119

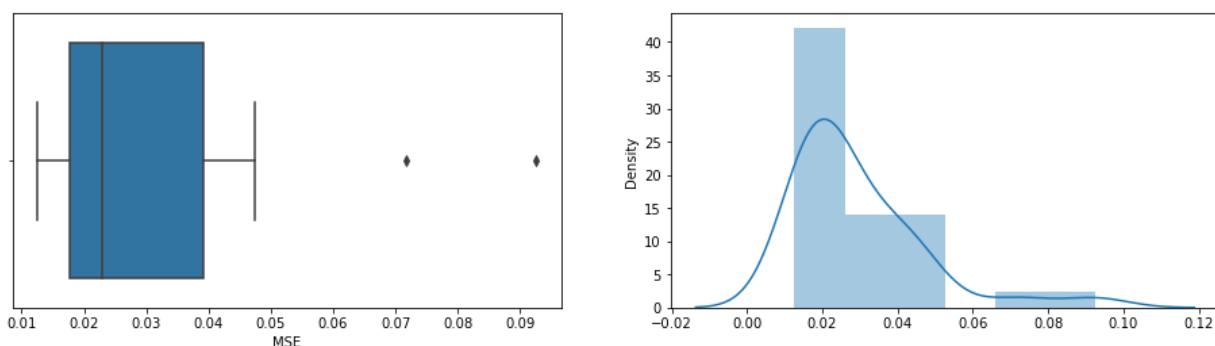
15.000: 0.523, data does not look normal (reject H<sub>0</sub>)  
 10.000: 0.596, data does not look normal (reject H<sub>0</sub>)  
 5.000: 0.715, data does not look normal (reject H<sub>0</sub>)  
 2.500: 0.834, data does not look normal (reject H<sub>0</sub>)  
 1.000: 0.992, data does not look normal (reject H<sub>0</sub>)

\*\*\*\*\*

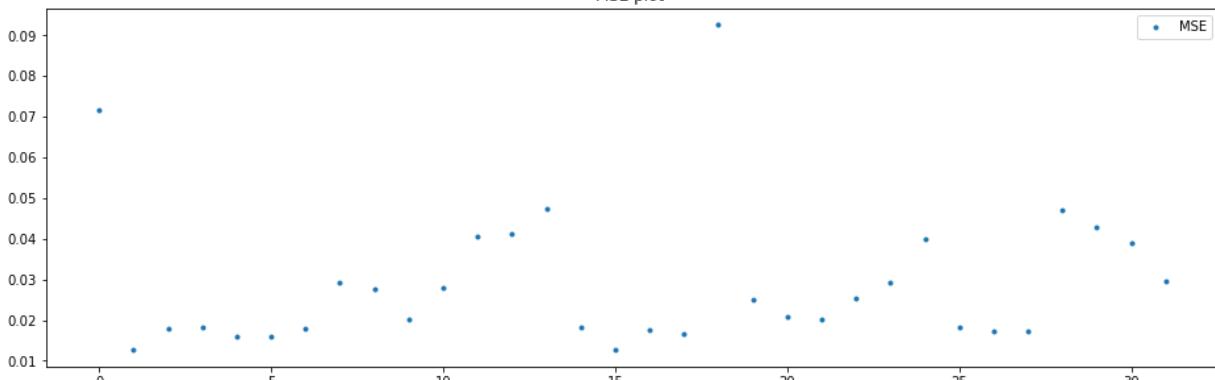
Batch: 53

mean=0.0292109375, median=0.02299 , max=0.09258, min=0.01259, variance=0.0002966479

Boxplots and Distribution plot for Reconstruction Error



## MSE plot



## Anderson\_Darling Test

Statistic: 2.181

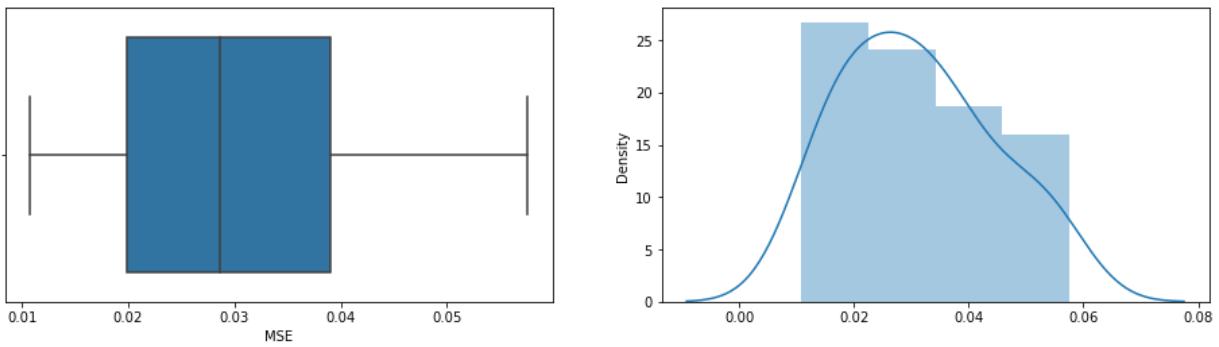
15.000: 0.523, data does not look normal (reject H<sub>0</sub>)  
 10.000: 0.596, data does not look normal (reject H<sub>0</sub>)  
 5.000: 0.715, data does not look normal (reject H<sub>0</sub>)  
 2.500: 0.834, data does not look normal (reject H<sub>0</sub>)  
 1.000: 0.992, data does not look normal (reject H<sub>0</sub>)

\*\*\*\*\*

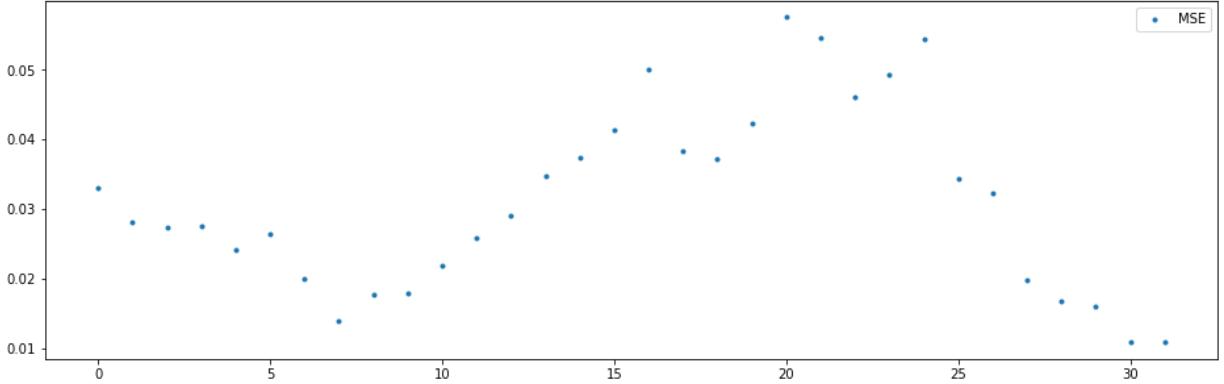
Batch: 54

mean=0.0311328125, median=0.028605 , max=0.05757, min=0.01077, variance=0.0001715172

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson\_Darling Test**

Statistic: 0.345

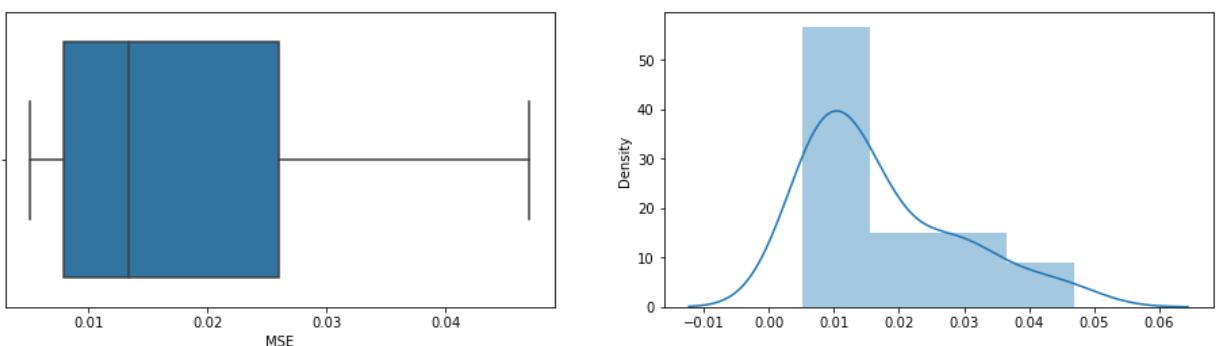
15.000: 0.523, data looks normal (fail to reject H0)  
 10.000: 0.596, data looks normal (fail to reject H0)  
 5.000: 0.715, data looks normal (fail to reject H0)  
 2.500: 0.834, data looks normal (fail to reject H0)  
 1.000: 0.992, data looks normal (fail to reject H0)

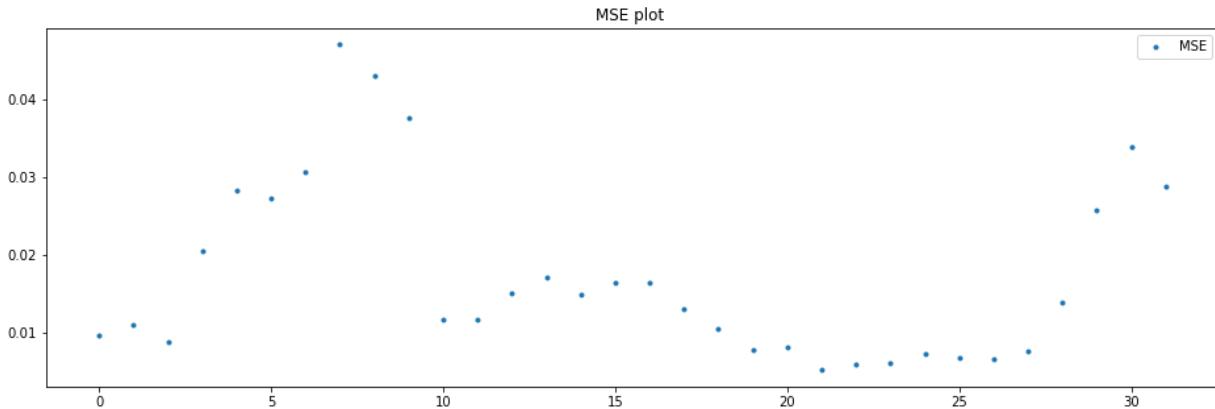
\*\*\*\*\*

Batch: 55

mean=0.0172621875, median=0.01341 , max=0.04701, min=0.0051, variance=0.000130527

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 1.581

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

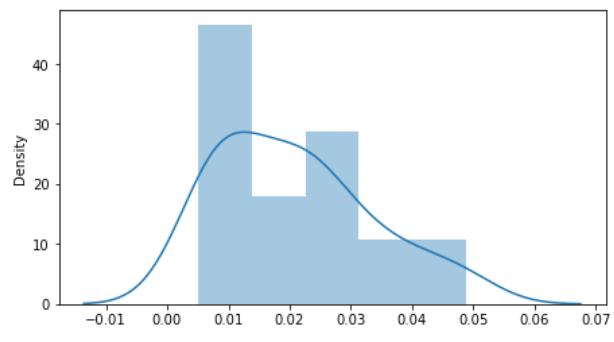
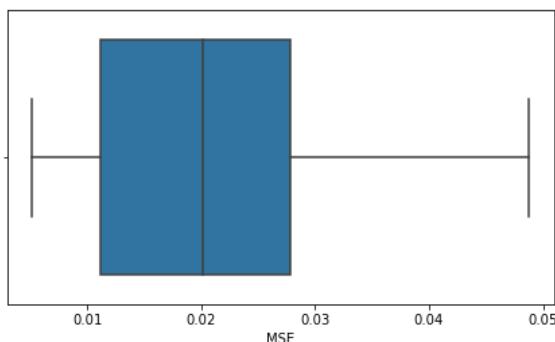
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

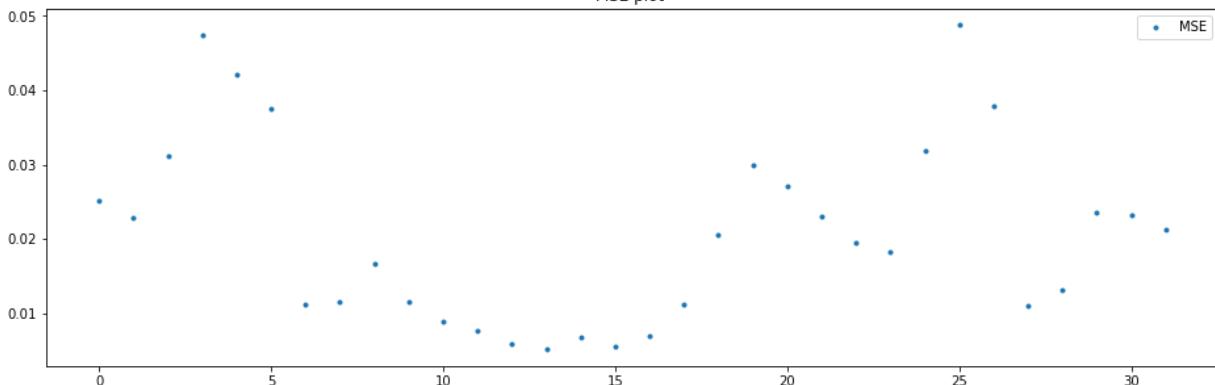
Batch: 56

mean=0.0207696875, median=0.0201 , max=0.04876, min=0.00514, variance=0.0001515005

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.688

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

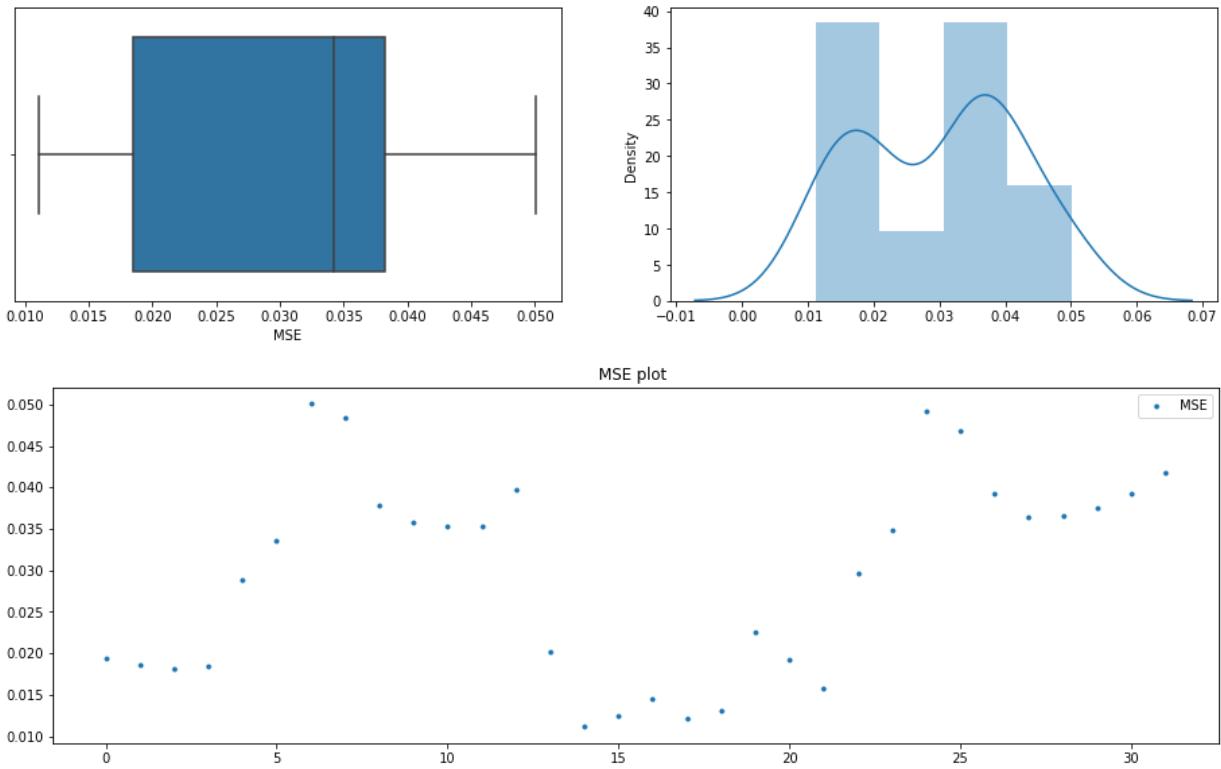
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 57

mean=0.0297365625, median=0.03419 , max=0.05007, min=0.01112, variance=0.0001444852

Boxplots and Distribution plot for Reconstruction Error



## Anderson\_Darling Test

Statistic: 0.952

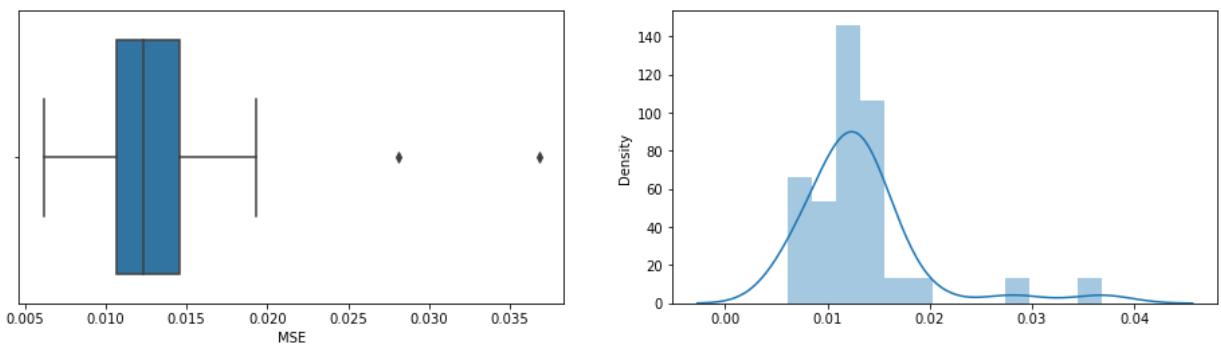
15.000: 0.523, data does not look normal (reject H<sub>0</sub>)  
 10.000: 0.596, data does not look normal (reject H<sub>0</sub>)  
 5.000: 0.715, data does not look normal (reject H<sub>0</sub>)  
 2.500: 0.834, data does not look normal (reject H<sub>0</sub>)  
 1.000: 0.992, data looks normal (fail to reject H<sub>0</sub>)

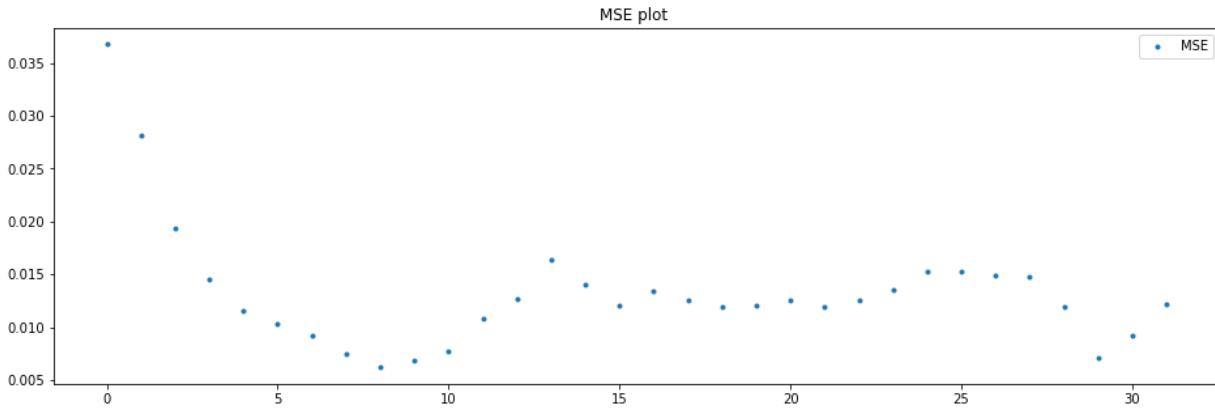
\*\*\*\*\*

Batch: 58

mean=0.0132759375, median=0.01232 , max=0.03679, min=0.00617, variance=3.40674e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 2.393

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

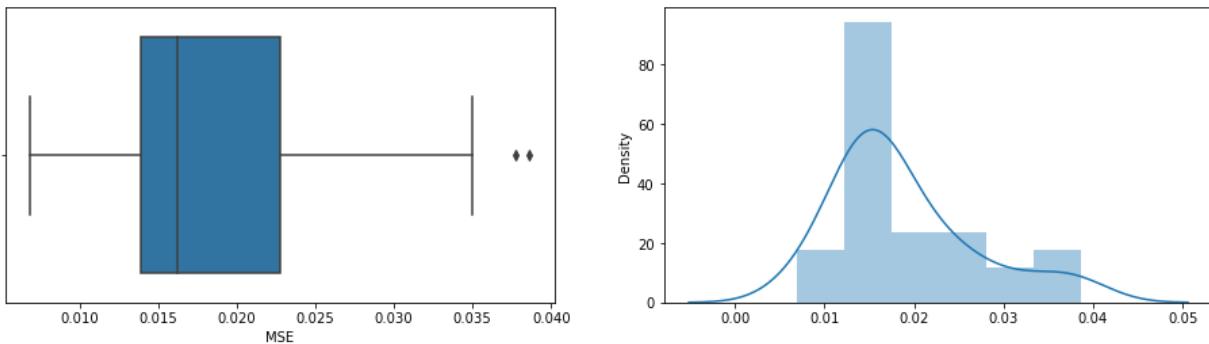
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

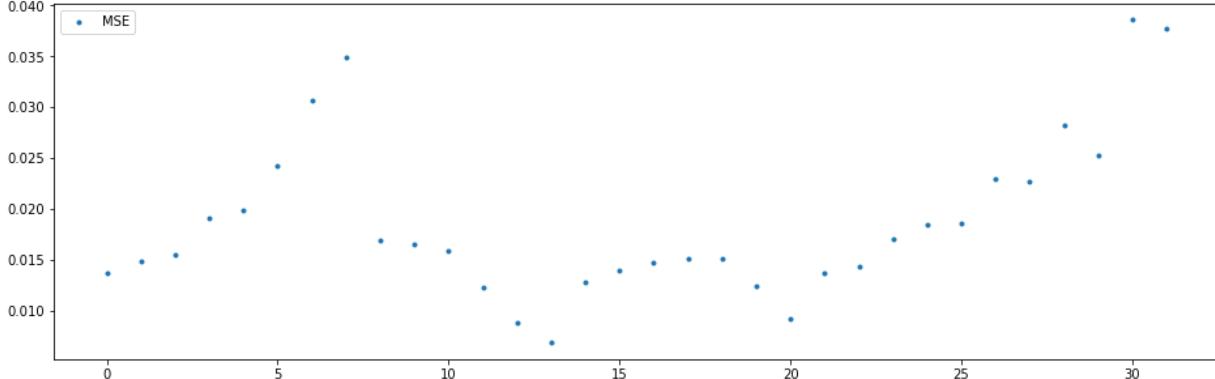
Batch: 59

mean=0.01879375, median=0.01619 , max=0.0386, min=0.00685, variance=6.20172e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 1.368

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

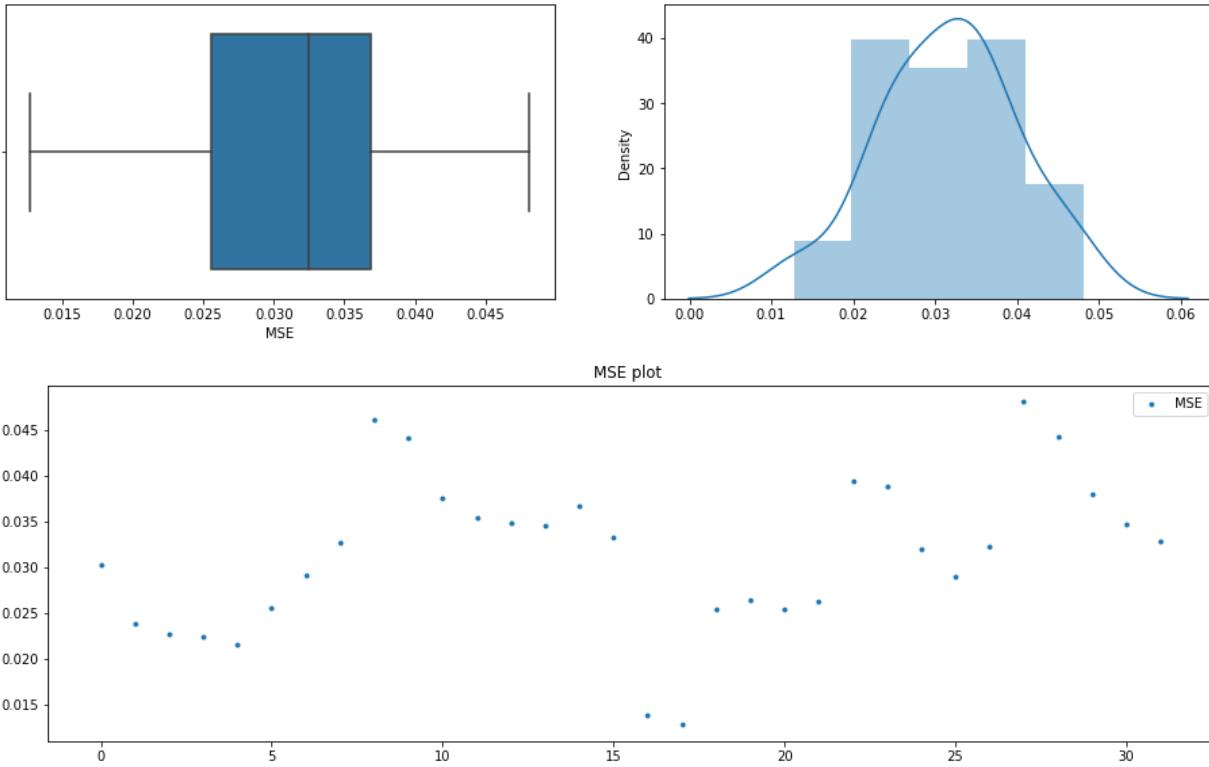
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 60

mean=0.03155375, median=0.032465 , max=0.0481, min=0.01272, variance=7.03947e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson\_Darling Test**

Statistic: 0.207

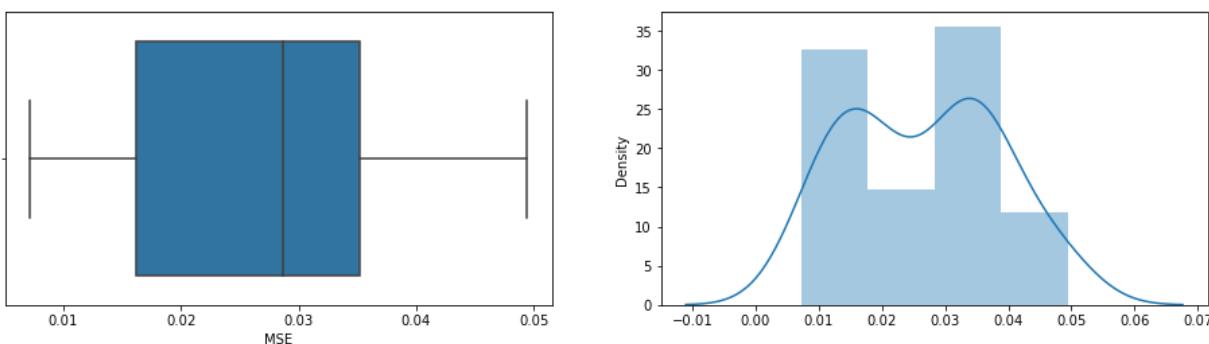
15.000: 0.523, data looks normal (fail to reject H<sub>0</sub>)  
 10.000: 0.596, data looks normal (fail to reject H<sub>0</sub>)  
 5.000: 0.715, data looks normal (fail to reject H<sub>0</sub>)  
 2.500: 0.834, data looks normal (fail to reject H<sub>0</sub>)  
 1.000: 0.992, data looks normal (fail to reject H<sub>0</sub>)

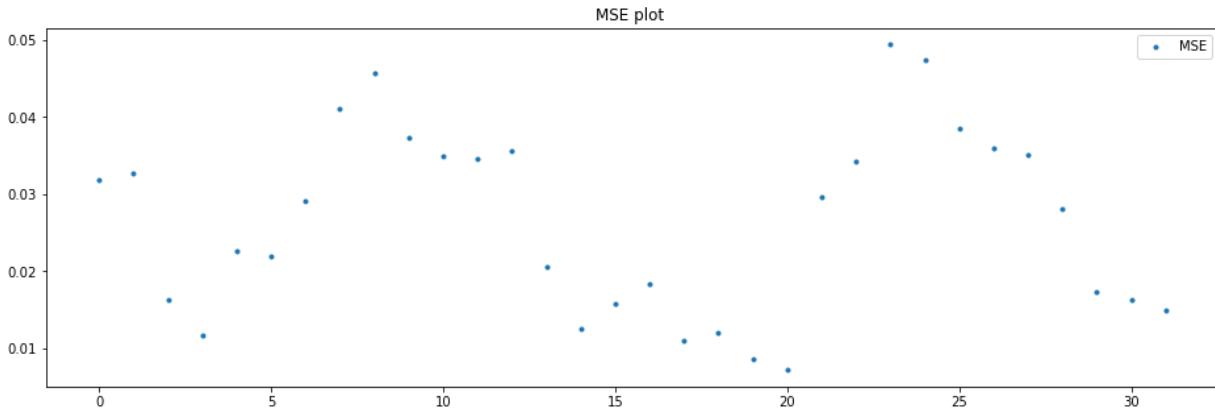
\*\*\*\*\*

Batch: 61

mean=0.026524375, median=0.028635 , max=0.04938, min=0.0072, variance=0.000142892

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.630

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

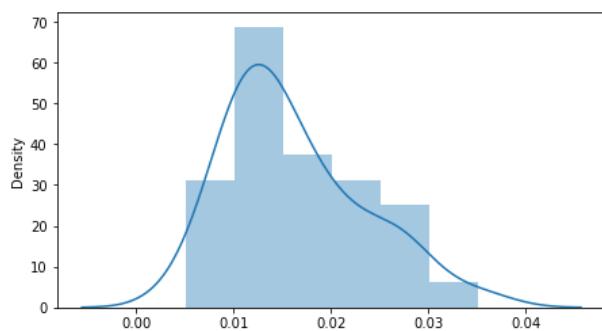
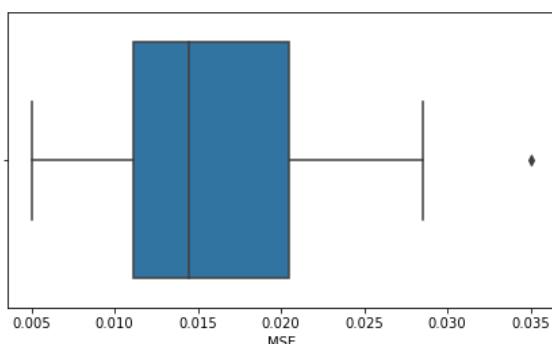
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

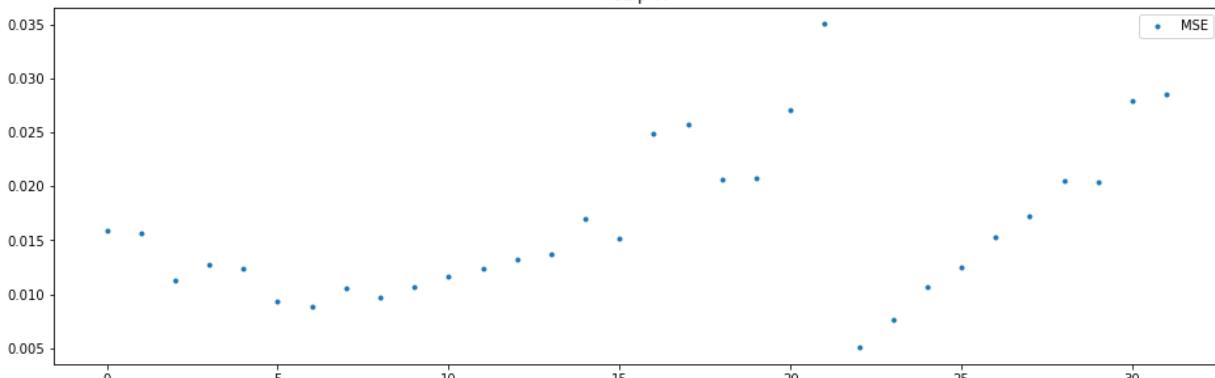
Batch: 62

mean=0.016236875, median=0.01442 , max=0.03504, min=0.00503, variance=4.86693e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.907

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

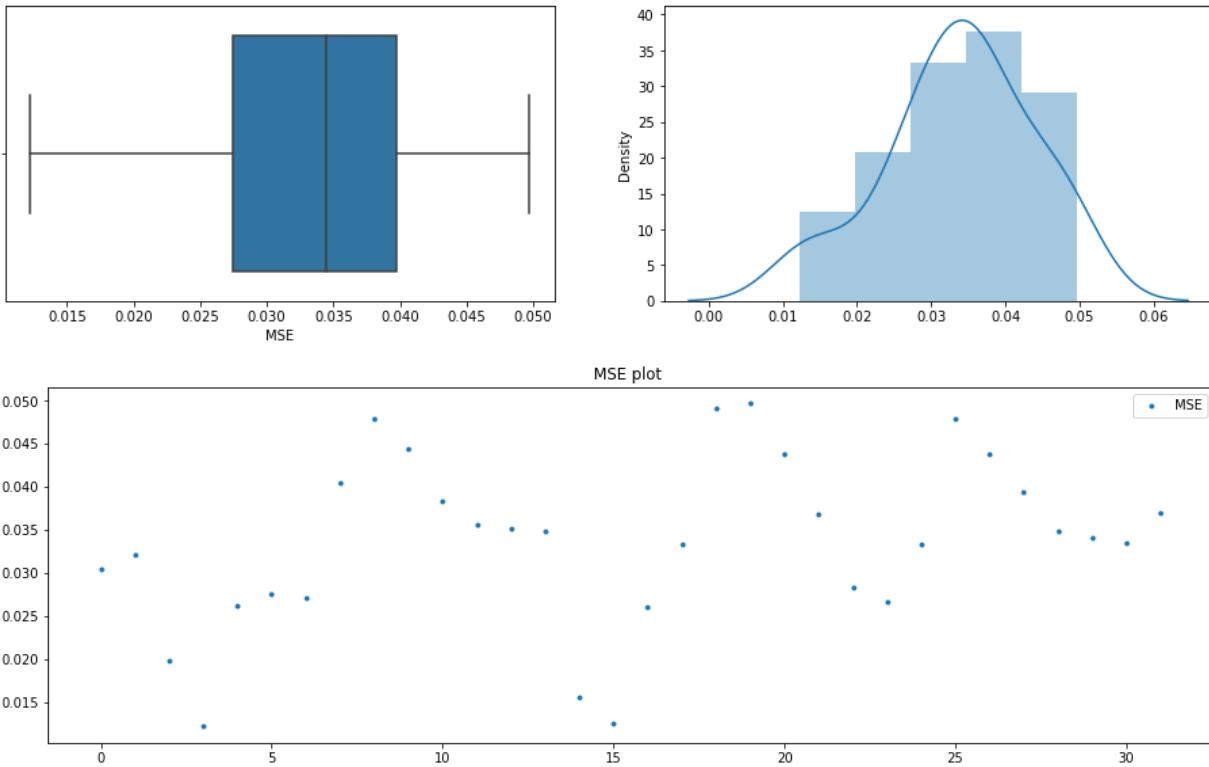
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 63

mean=0.0337215625, median=0.03446 , max=0.04969, min=0.01223, variance=9.57348e-05

Boxplots and Distribution plot for Reconstruction Error



## Anderson\_Darling Test

Statistic: 0.380

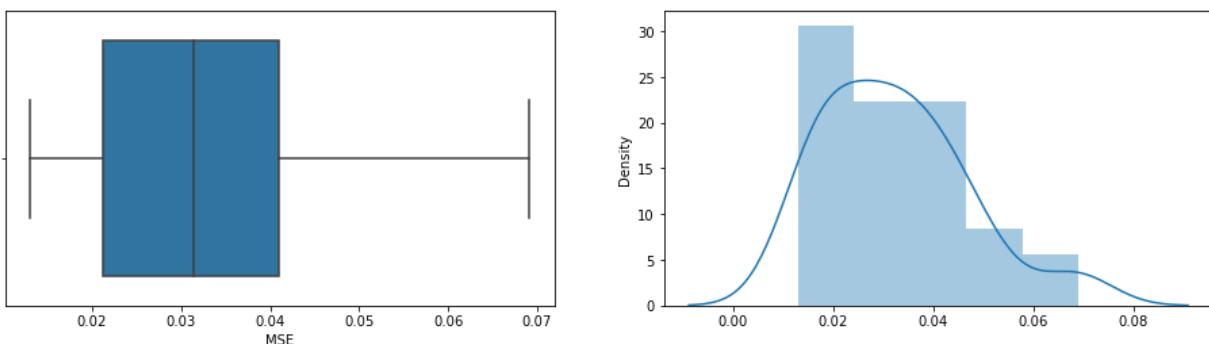
15.000: 0.523, data looks normal (fail to reject H<sub>0</sub>)  
 10.000: 0.596, data looks normal (fail to reject H<sub>0</sub>)  
 5.000: 0.715, data looks normal (fail to reject H<sub>0</sub>)  
 2.500: 0.834, data looks normal (fail to reject H<sub>0</sub>)  
 1.000: 0.992, data looks normal (fail to reject H<sub>0</sub>)

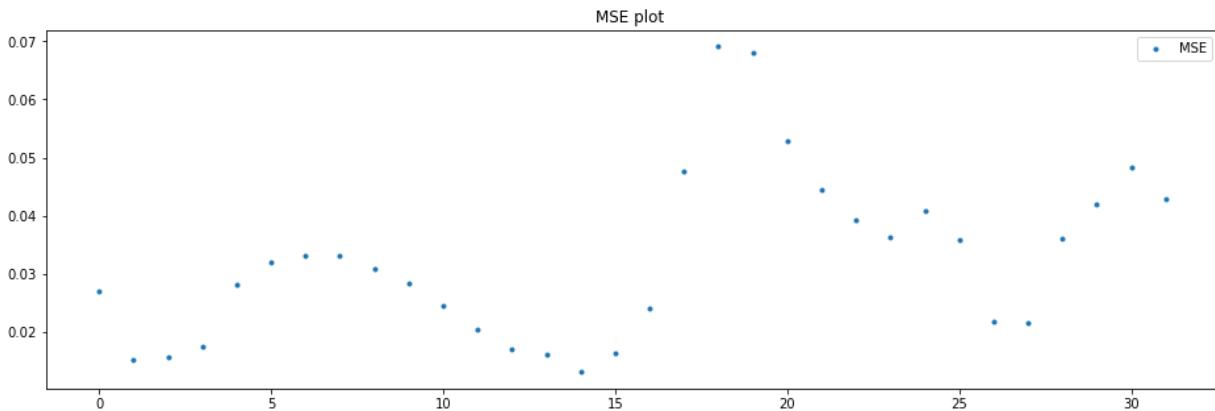
\*\*\*\*\*

Batch: 64

mean=0.032435625, median=0.03141 , max=0.0691, min=0.01303, variance=0.0002047123

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.533

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

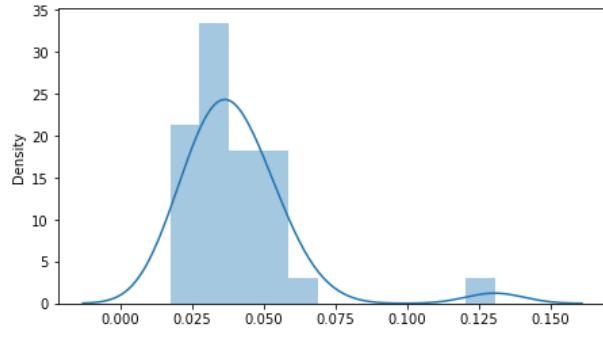
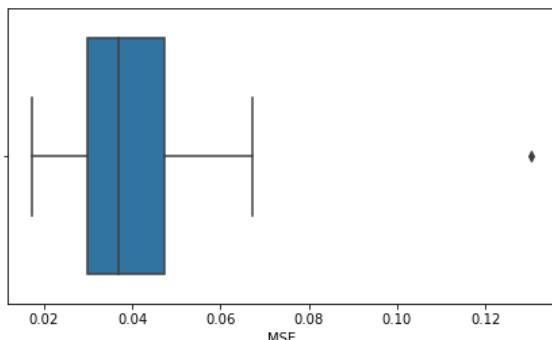
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

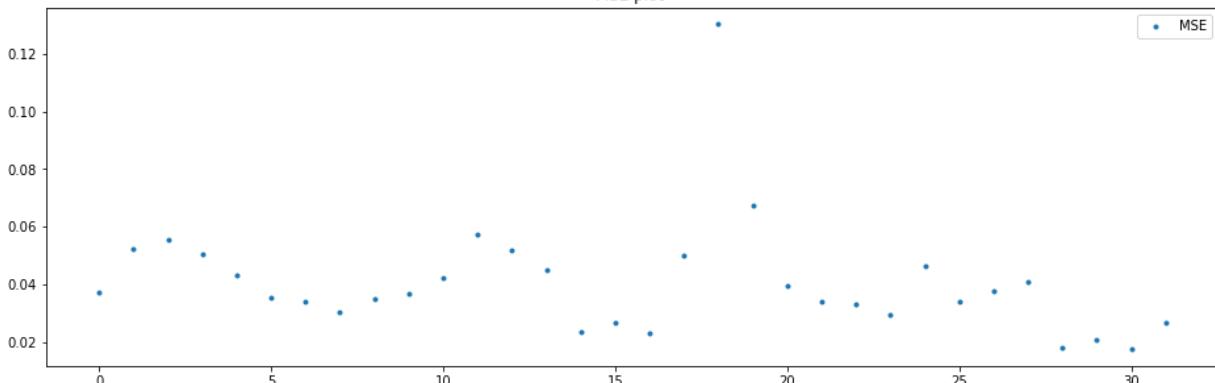
Batch: 65

mean=0.0407675, median=0.03699 , max=0.13037, min=0.01734, variance=0.0003976307

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 1.712

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

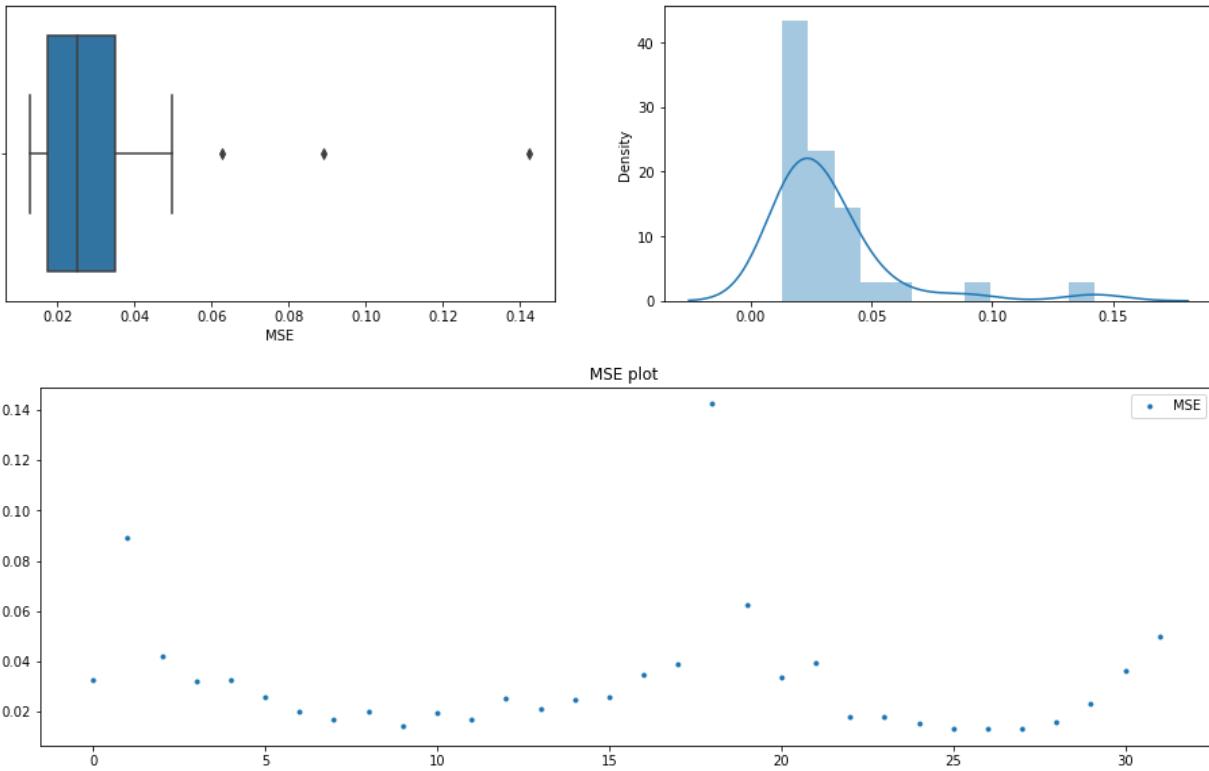
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 66

mean=0.03202, median=0.02508 , max=0.14245, min=0.01295, variance=0.0006429602

Boxplots and Distribution plot for Reconstruction Error



## Anderson\_Darling Test

Statistic: 3.231

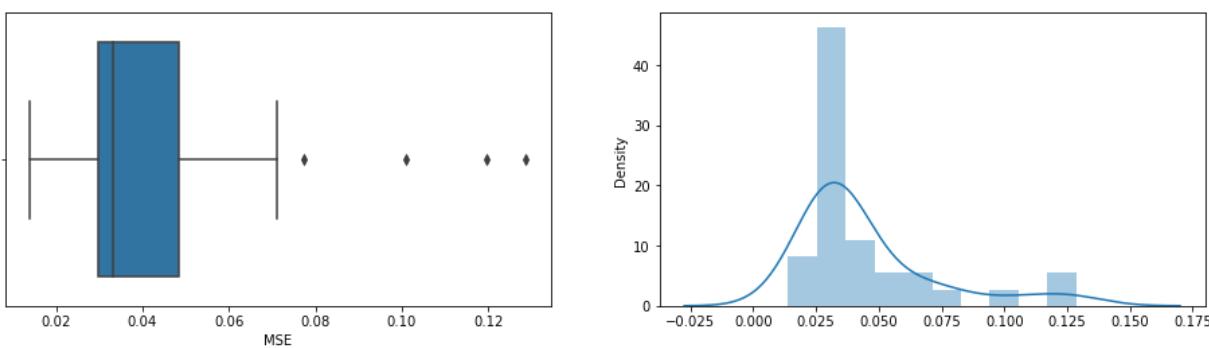
15.000: 0.523, data does not look normal (reject H0)  
 10.000: 0.596, data does not look normal (reject H0)  
 5.000: 0.715, data does not look normal (reject H0)  
 2.500: 0.834, data does not look normal (reject H0)  
 1.000: 0.992, data does not look normal (reject H0)

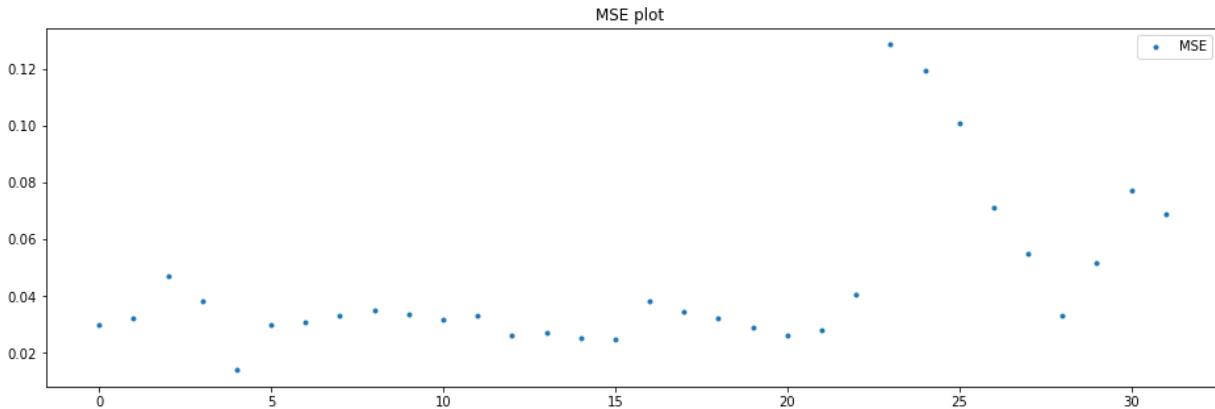
\*\*\*\*\*

Batch: 67

mean=0.044628125, median=0.033325 , max=0.12865, min=0.01394, variance=0.0007347335

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 3.406

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

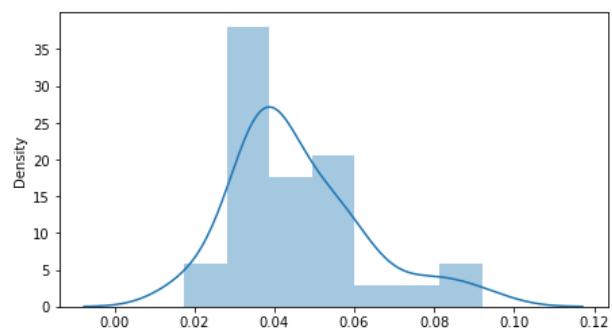
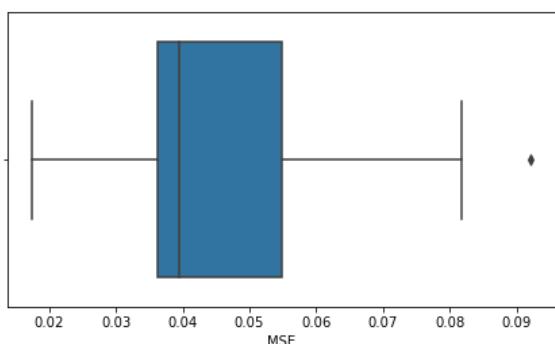
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

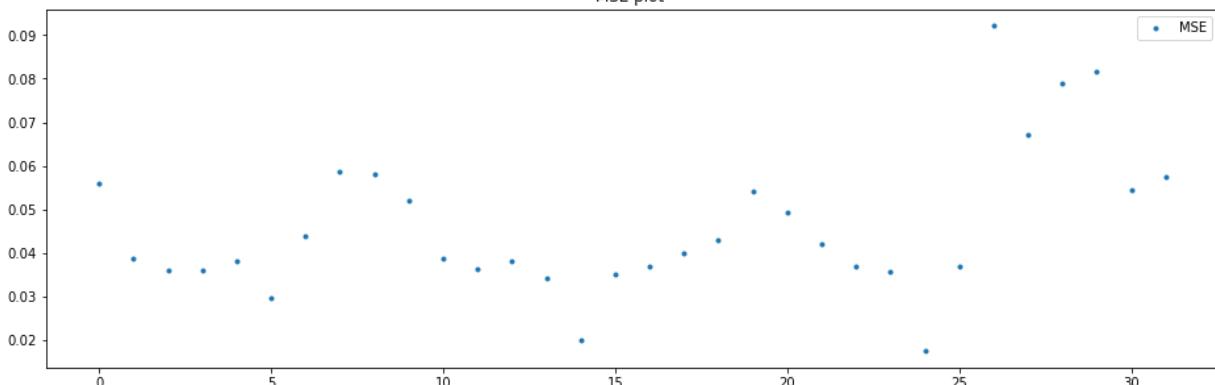
Batch: 68

mean=0.0460446875, median=0.03942 , max=0.09212, min=0.01745, variance=0.0002694629

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 1.294

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

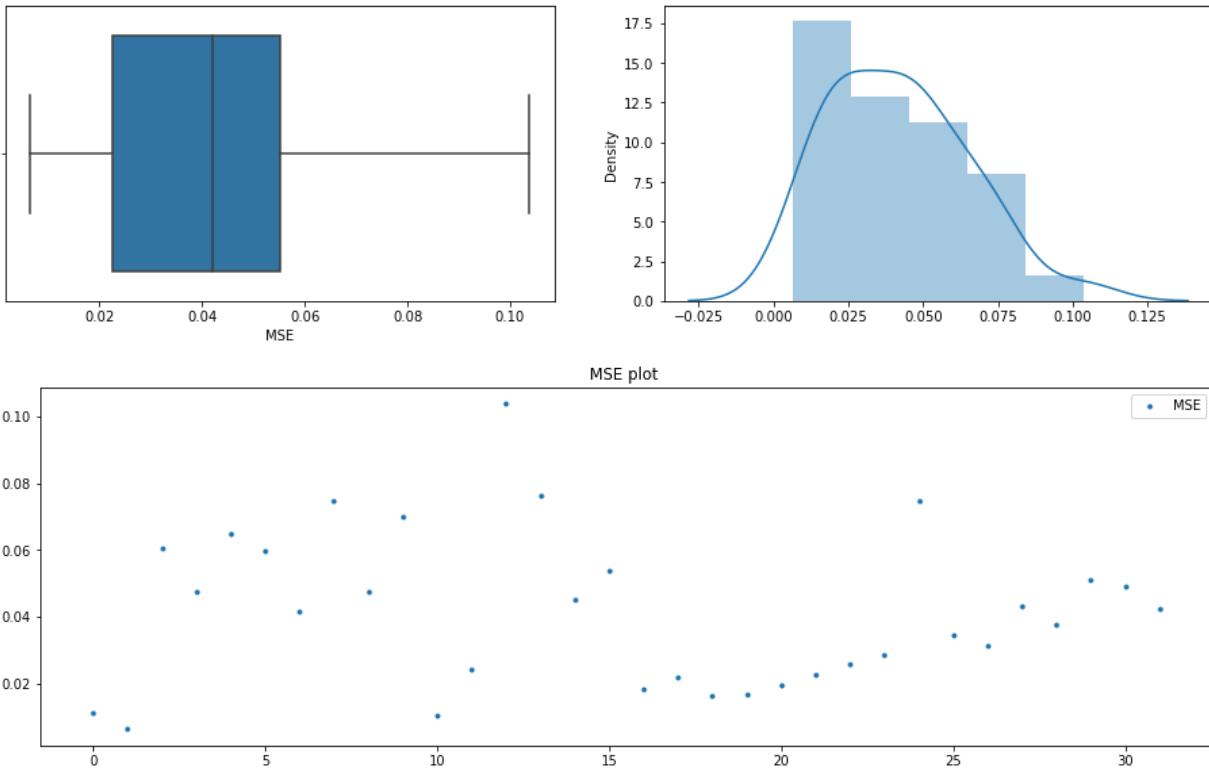
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 69

mean=0.041695625, median=0.042035 , max=0.10371, min=0.0065, variance=0.000521293

Boxplots and Distribution plot for Reconstruction Error



#### Anderson\_Darling Test

Statistic: 0.354

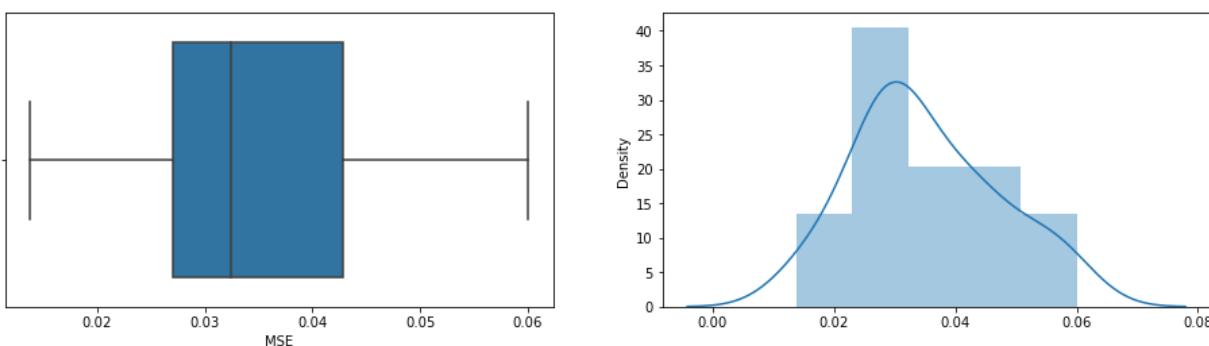
15.000: 0.523, data looks normal (fail to reject H0)  
 10.000: 0.596, data looks normal (fail to reject H0)  
 5.000: 0.715, data looks normal (fail to reject H0)  
 2.500: 0.834, data looks normal (fail to reject H0)  
 1.000: 0.992, data looks normal (fail to reject H0)

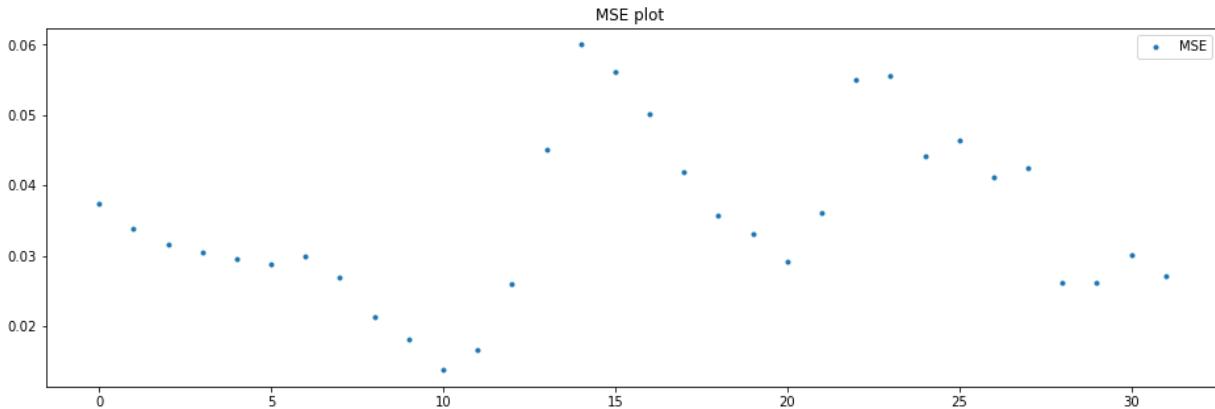
\*\*\*\*\*

Batch: 70

mean=0.0352175, median=0.03237 , max=0.06002, min=0.01376, variance=0.0001378672

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.479

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

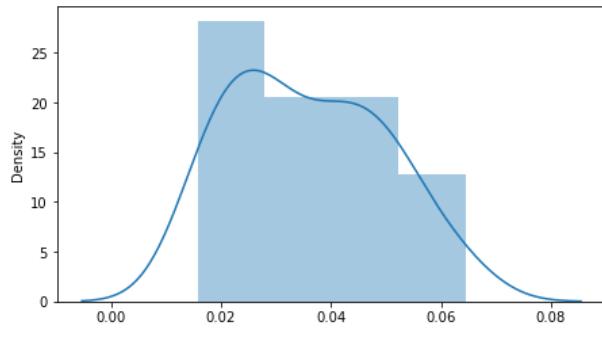
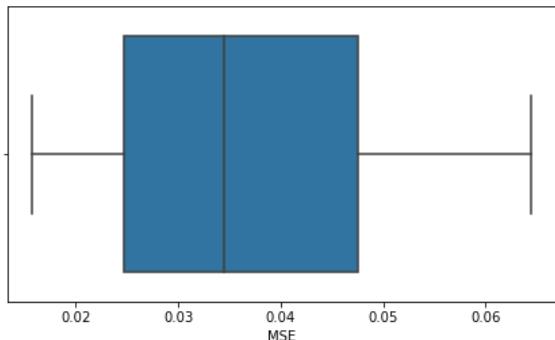
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

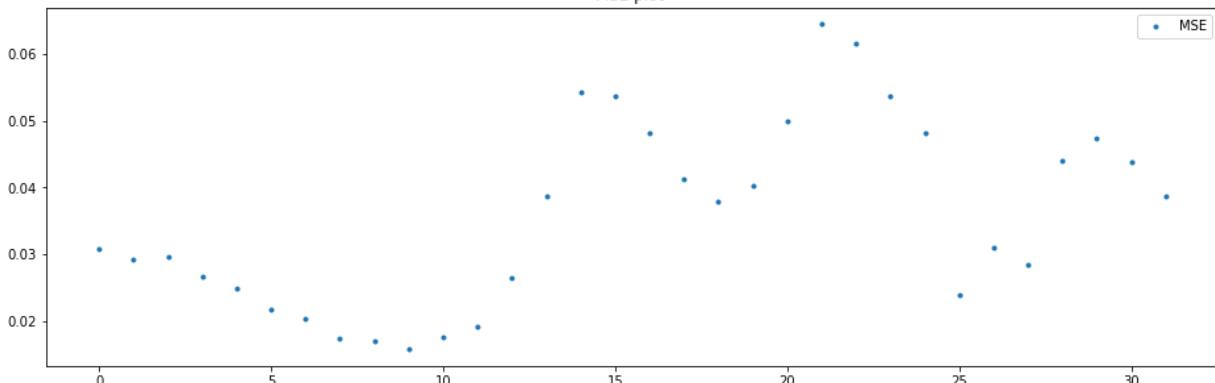
Batch: 71

mean=0.0358134375, median=0.03447 , max=0.06447, min=0.01573, variance=0.0001898045

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.482

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

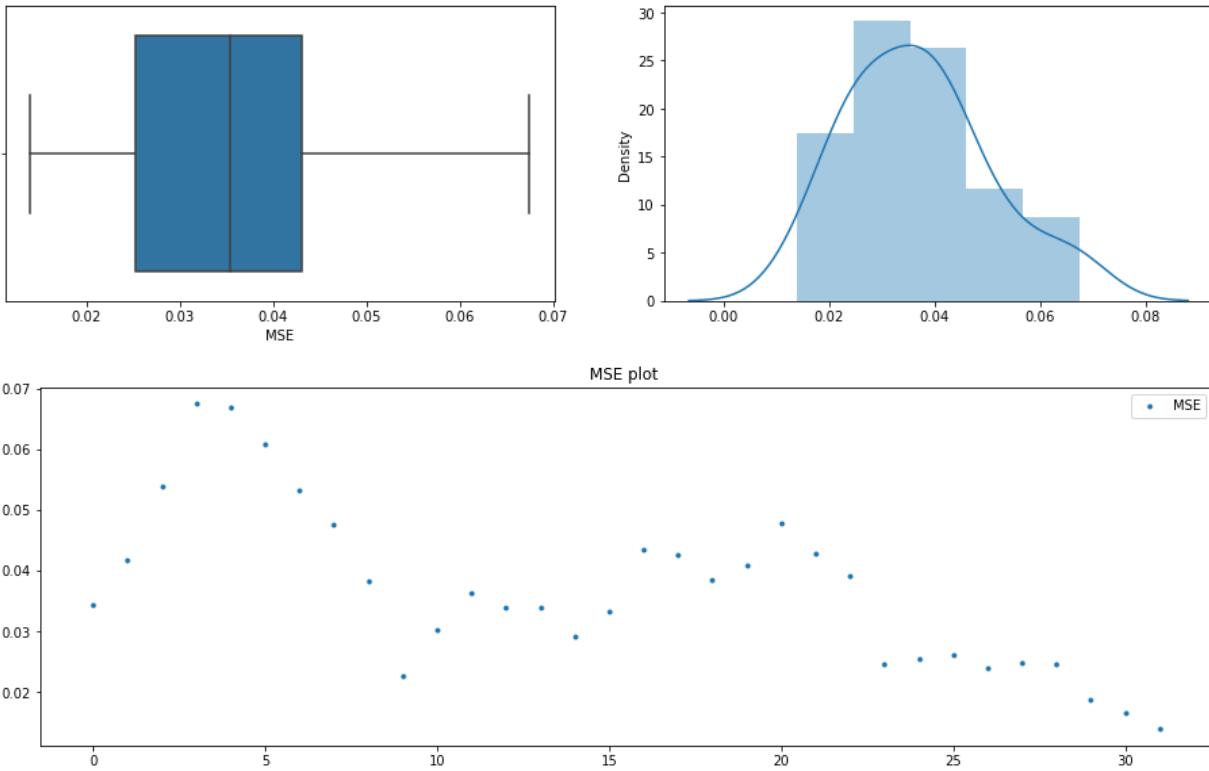
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 72

mean=0.03684875, median=0.03538 , max=0.06747, min=0.01394, variance=0.0001819237

Boxplots and Distribution plot for Reconstruction Error



#### Anderson\_Darling Test

Statistic: 0.375

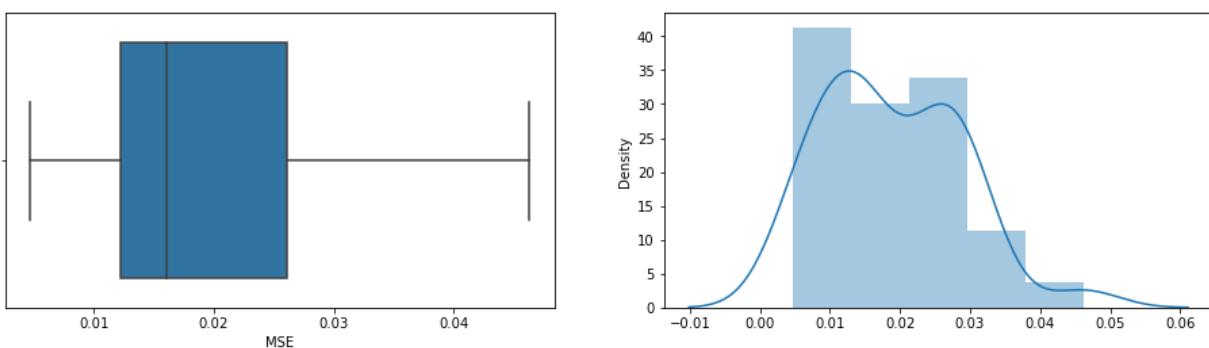
15.000: 0.523, data looks normal (fail to reject H0)  
 10.000: 0.596, data looks normal (fail to reject H0)  
 5.000: 0.715, data looks normal (fail to reject H0)  
 2.500: 0.834, data looks normal (fail to reject H0)  
 1.000: 0.992, data looks normal (fail to reject H0)

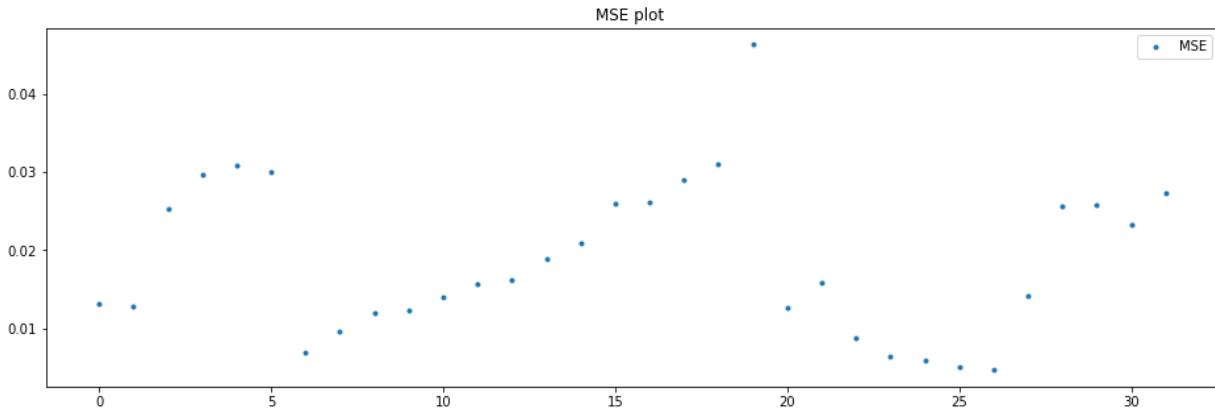
\*\*\*\*\*

Batch: 73

mean=0.018840625, median=0.01611 , max=0.04628, min=0.00469, variance=9.44875e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.616

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

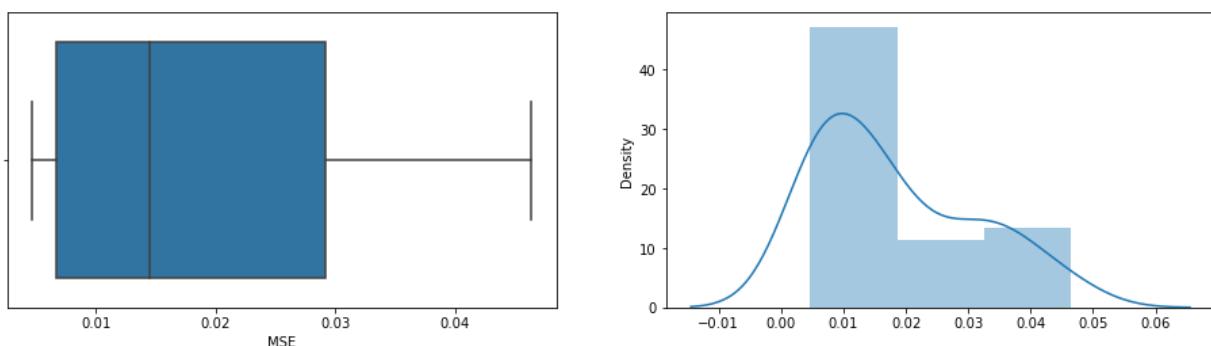
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

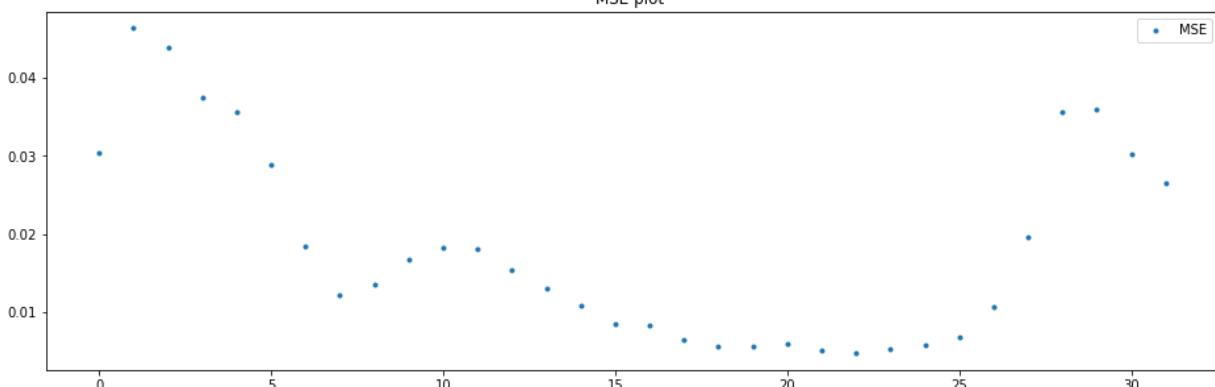
Batch: 74

mean=0.0183121875, median=0.014505 , max=0.04638, min=0.00467, variance=0.0001576508

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 1.347

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

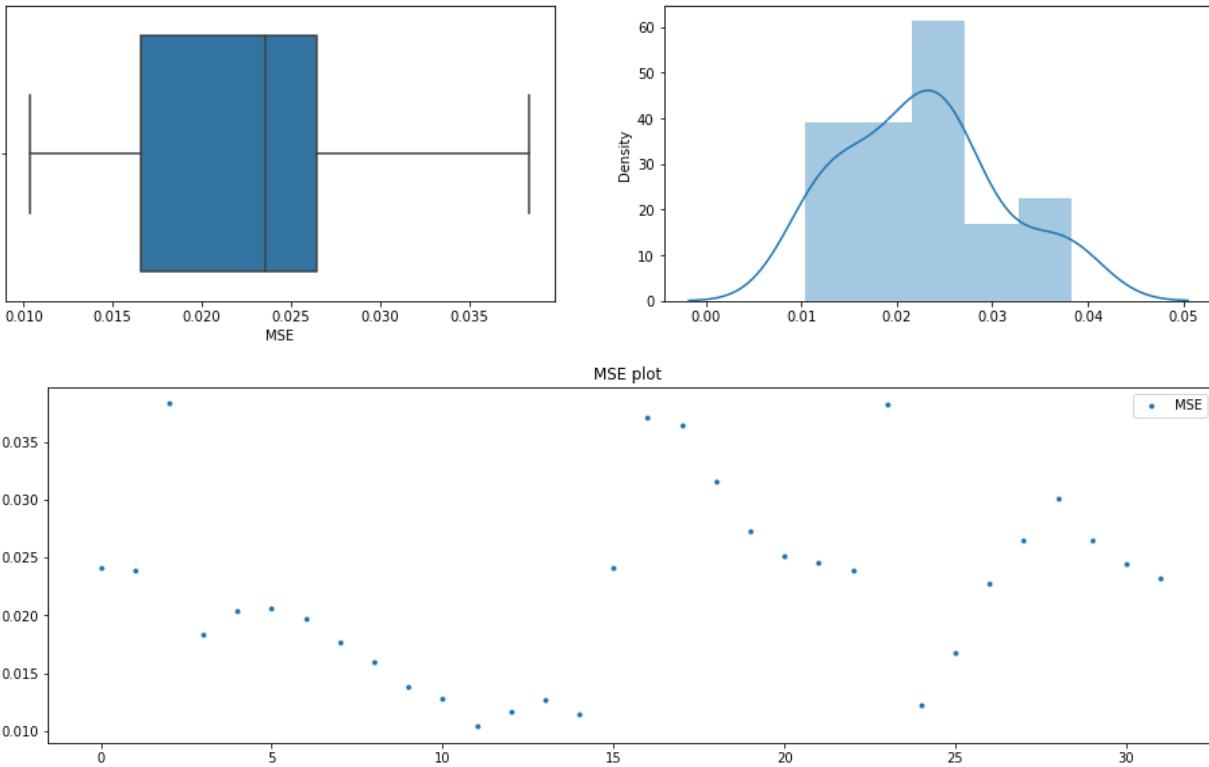
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 75

mean=0.0225996875, median=0.023555 , max=0.03835, min=0.01037, variance=6.32701e-05

Boxplots and Distribution plot for Reconstruction Error



## Anderson\_Darling Test

Statistic: 0.508

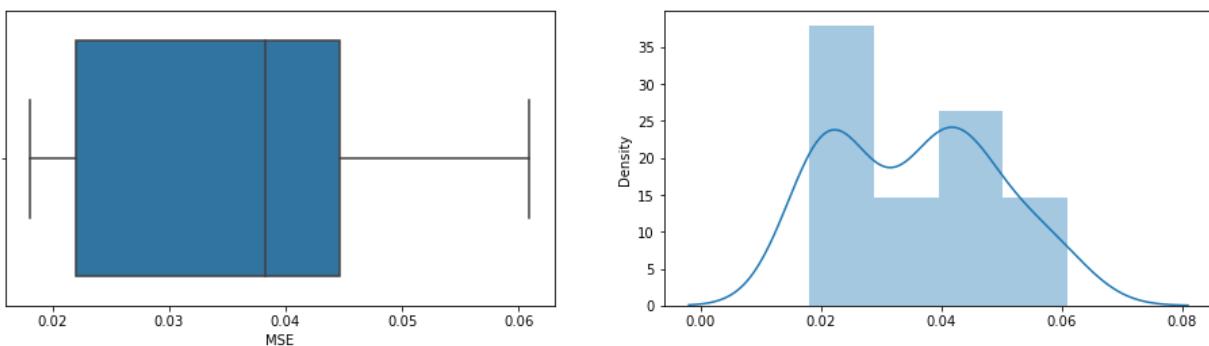
15.000: 0.523, data looks normal (fail to reject H0)  
 10.000: 0.596, data looks normal (fail to reject H0)  
 5.000: 0.715, data looks normal (fail to reject H0)  
 2.500: 0.834, data looks normal (fail to reject H0)  
 1.000: 0.992, data looks normal (fail to reject H0)

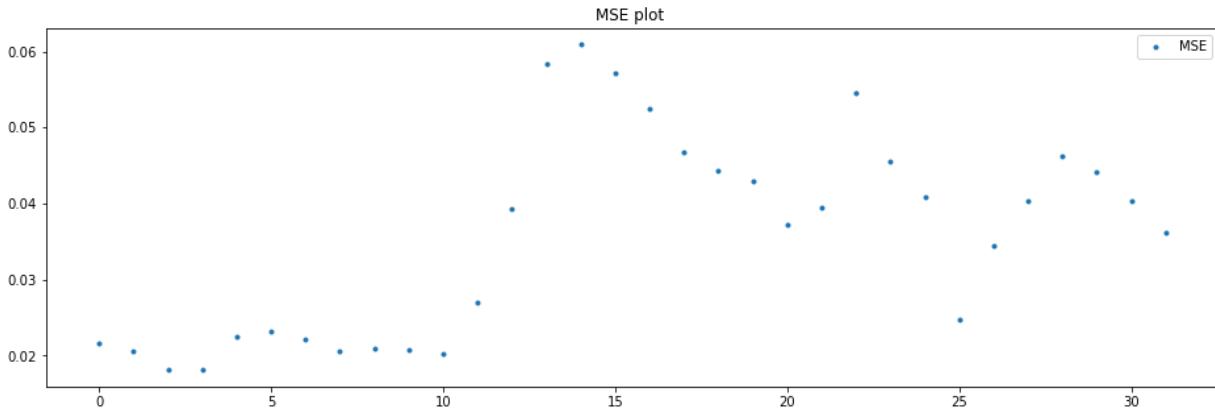
\*\*\*\*\*

Batch: 76

mean=0.0356834375, median=0.038245 , max=0.0609, min=0.01807, variance=0.0001729073

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 1.000

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

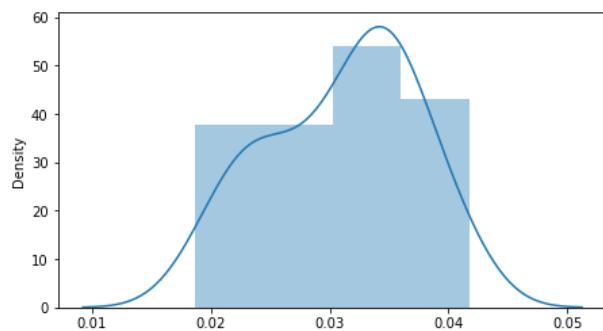
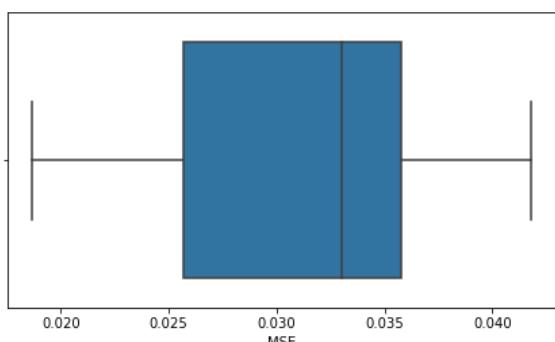
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

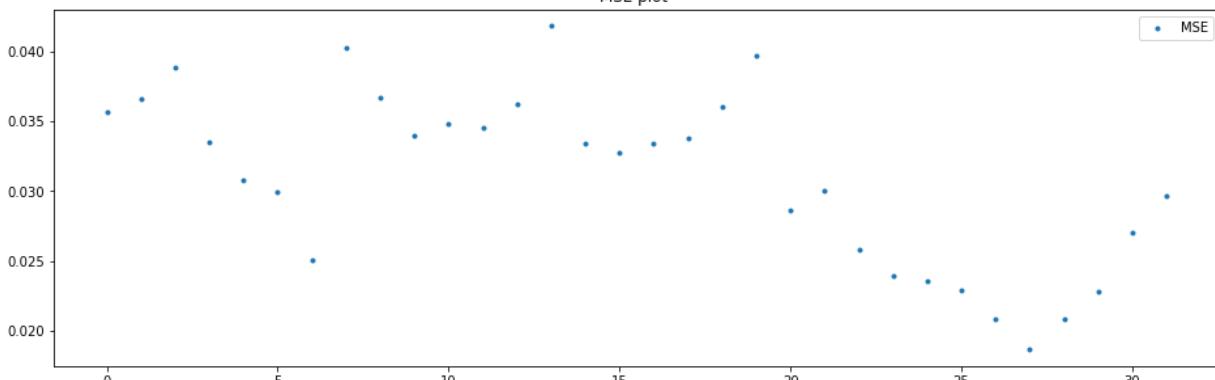
Batch: 77

mean=0.0310209375, median=0.03304 , max=0.0418, min=0.01867, variance=3.82084e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.507

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

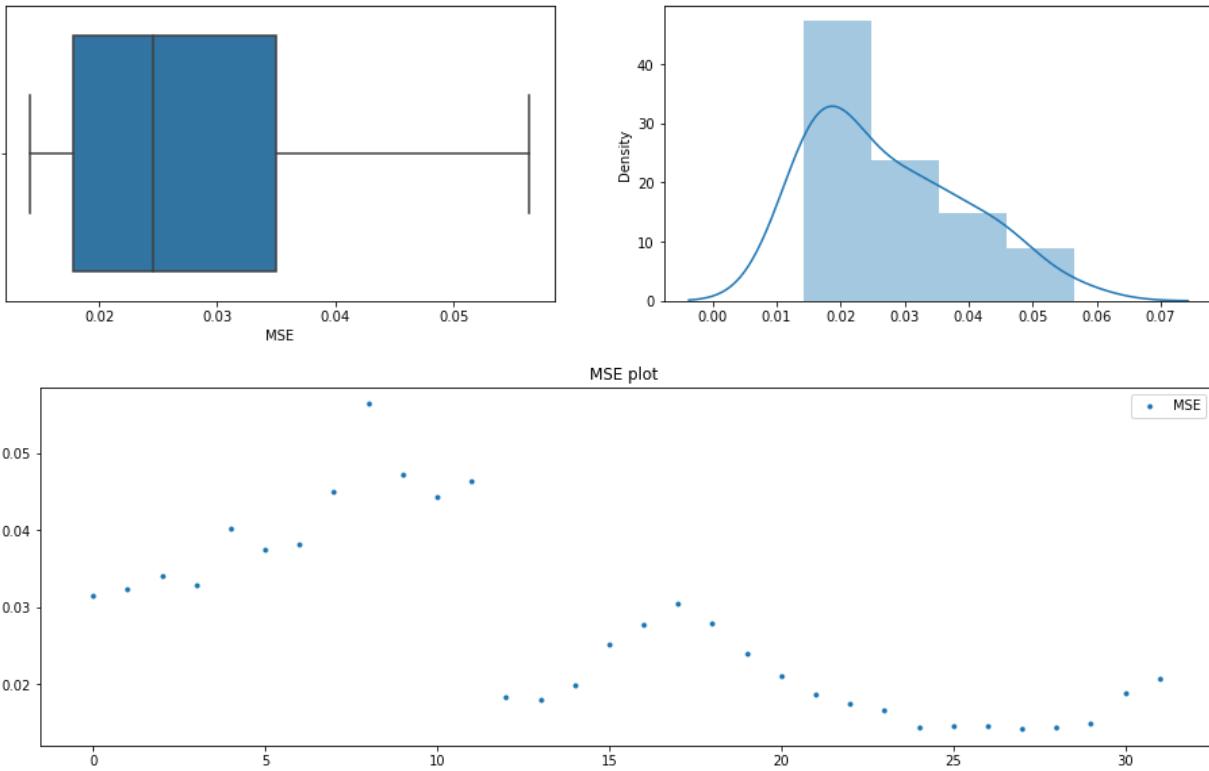
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 78

mean=0.027455625, median=0.024545 , max=0.0564, min=0.01417, variance=0.0001374289

Boxplots and Distribution plot for Reconstruction Error

**Anderson\_Darling Test**

Statistic: 0.994

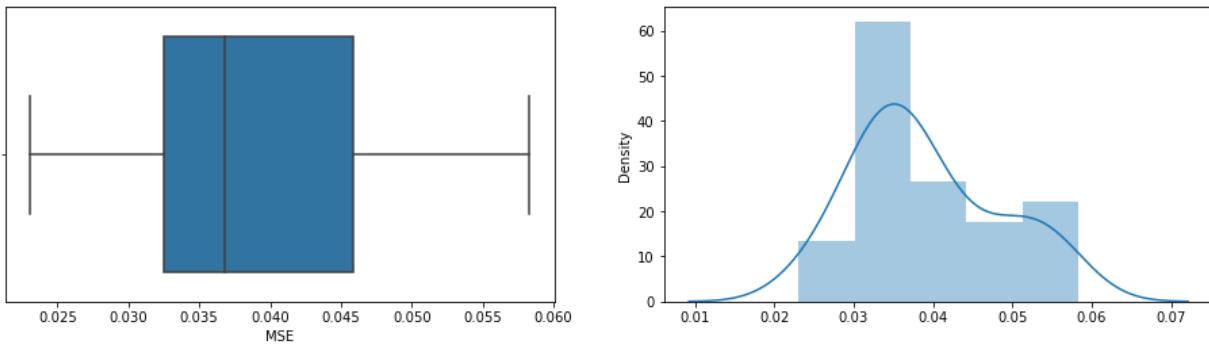
15.000: 0.523, data does not look normal (reject H<sub>0</sub>)  
 10.000: 0.596, data does not look normal (reject H<sub>0</sub>)  
 5.000: 0.715, data does not look normal (reject H<sub>0</sub>)  
 2.500: 0.834, data does not look normal (reject H<sub>0</sub>)  
 1.000: 0.992, data does not look normal (reject H<sub>0</sub>)

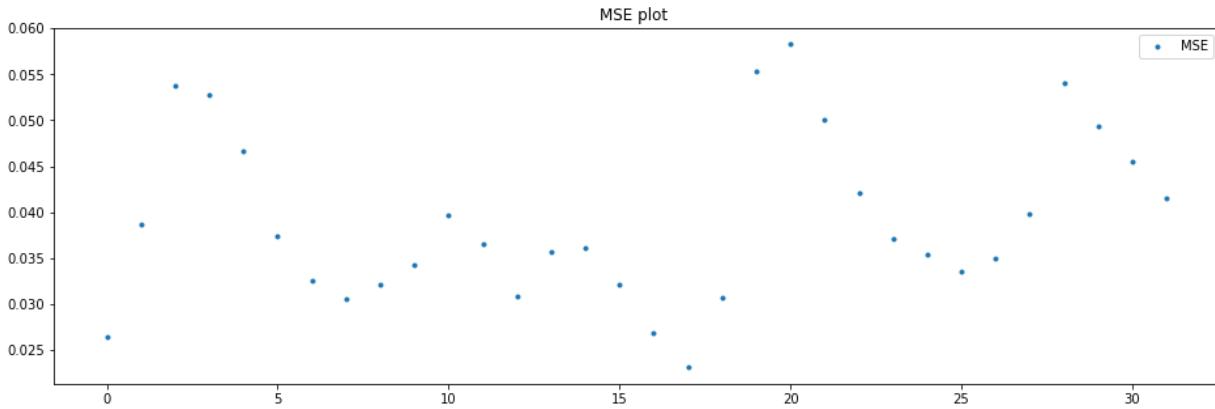
\*\*\*\*\*

Batch: 79

mean=0.0391625, median=0.0368 , max=0.05828, min=0.02307, variance=8.24746e-05

Boxplots and Distribution plot for Reconstruction Error





**Anderson\_Darling Test**

Statistic: 0.697

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

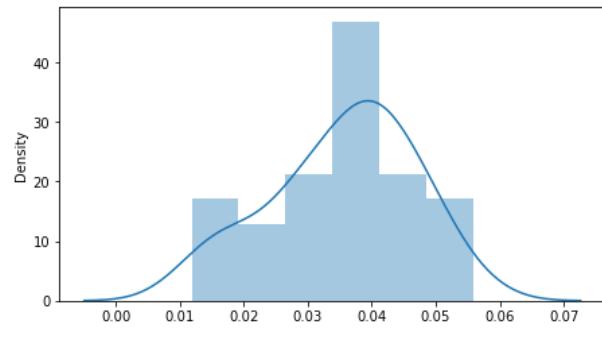
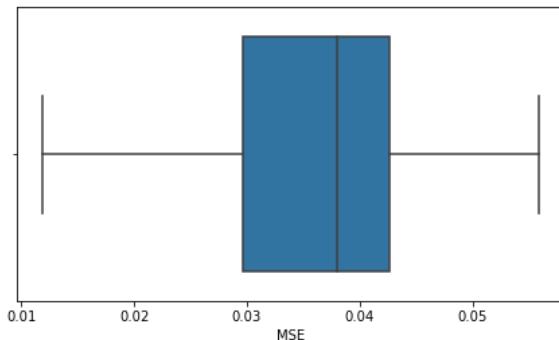
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

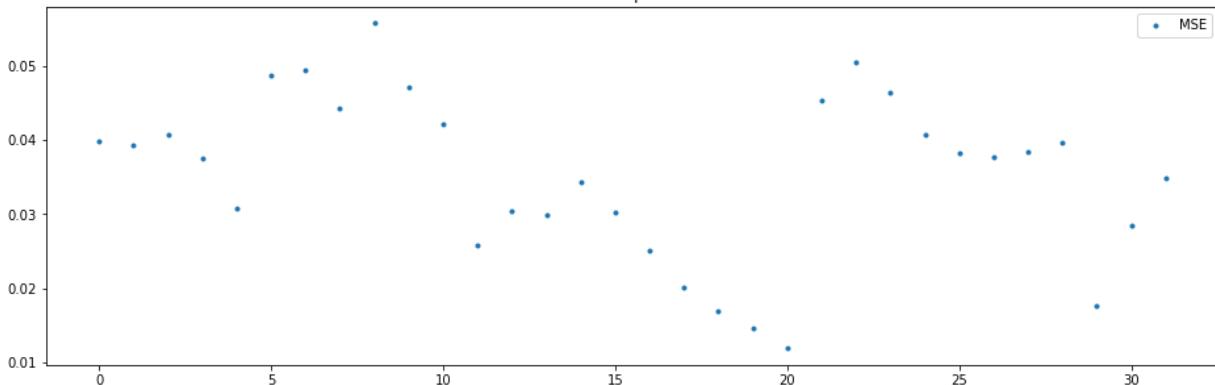
Batch: 80

mean=0.035435, median=0.037985 , max=0.05584, min=0.01183, variance=0.0001212226

Boxplots and Distribution plot for Reconstruction Error



MSE plot



**Anderson\_Darling Test**

Statistic: 0.403

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

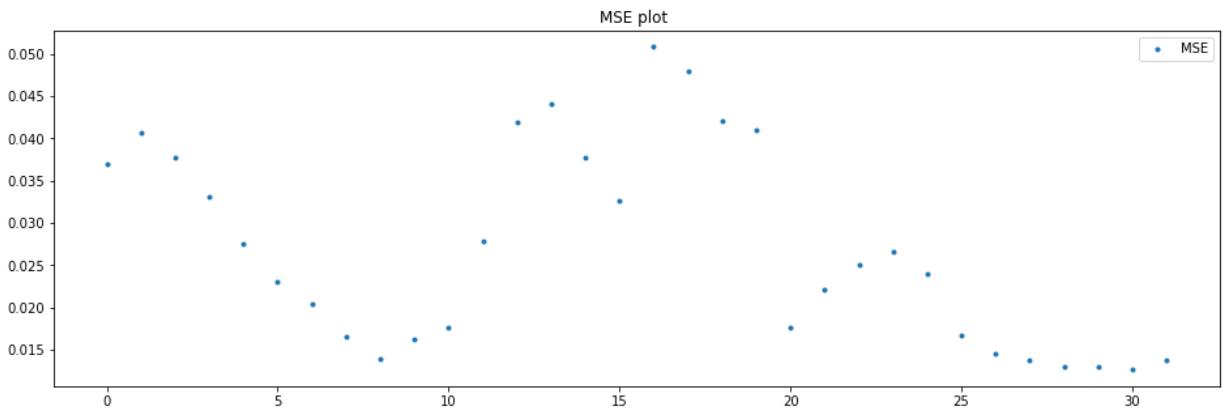
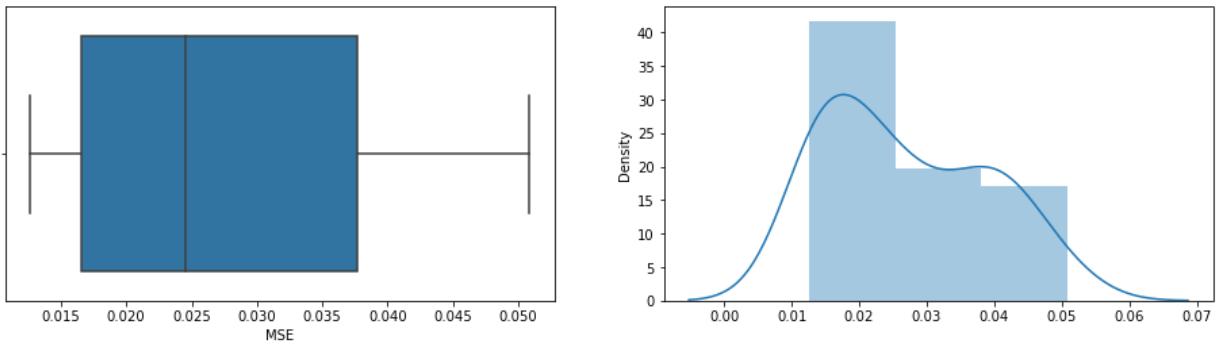
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 81

mean=0.0269665625, median=0.0245 , max=0.05083, min=0.01264, variance=0.000137381

Boxplots and Distribution plot for Reconstruction Error



## Anderson\_Darling Test

Statistic: 0.986

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

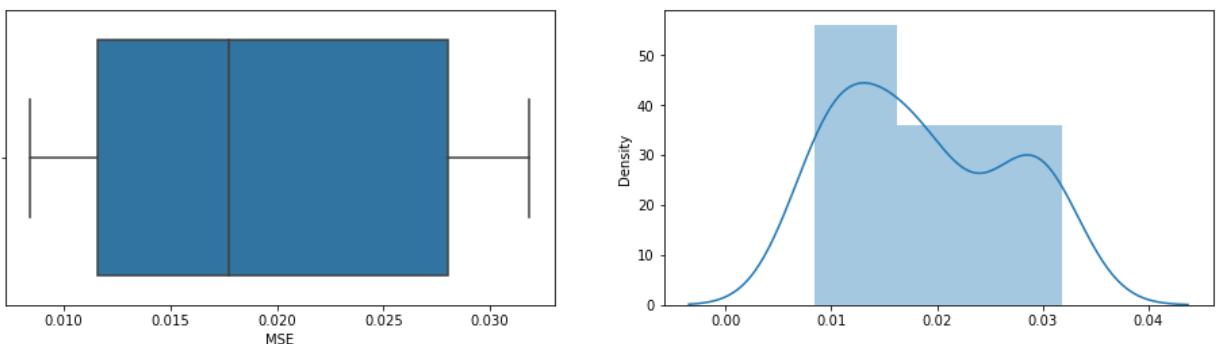
1.000: 0.992, data looks normal (fail to reject H0)

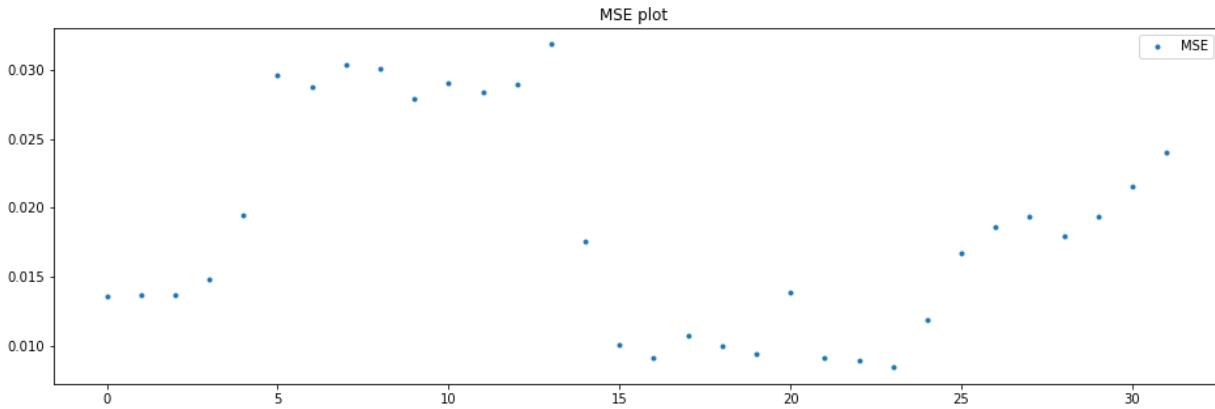
\*\*\*\*\*

Batch: 82

mean=0.0186475, median=0.01776 , max=0.03185, min=0.00841, variance=6.06319e-05

Boxplots and Distribution plot for Reconstruction Error





## Anderson\_Darling Test

Statistic: 1.118

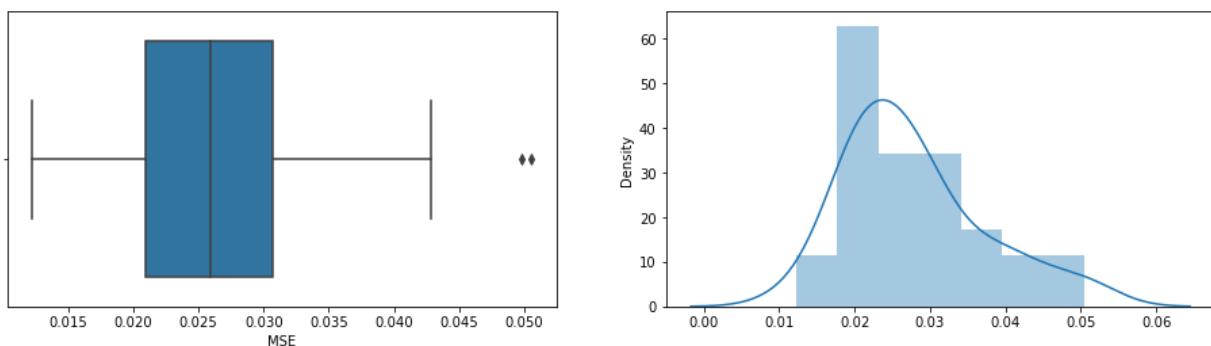
15.000: 0.523, data does not look normal (reject H0)  
 10.000: 0.596, data does not look normal (reject H0)  
 5.000: 0.715, data does not look normal (reject H0)  
 2.500: 0.834, data does not look normal (reject H0)  
 1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

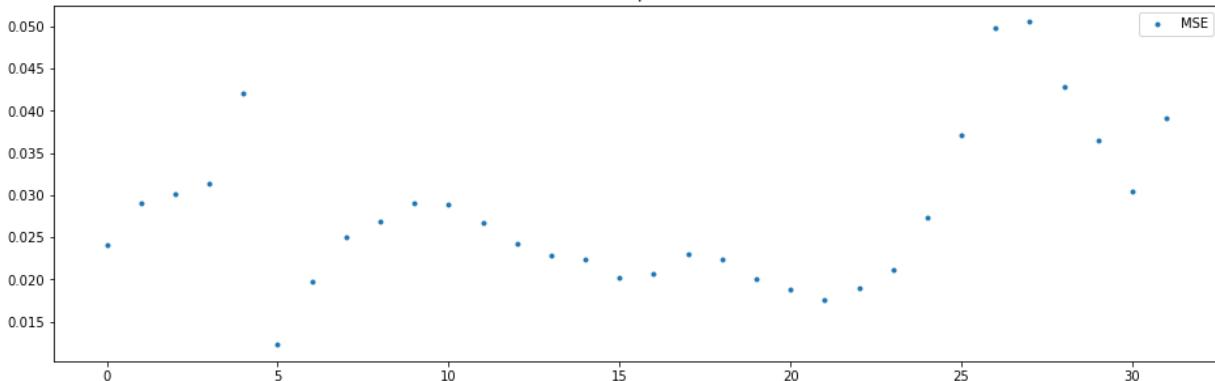
Batch: 83

mean=0.0278546875, median=0.025895 , max=0.05053, min=0.01224, variance=8.37257e-05

Boxplots and Distribution plot for Reconstruction Error



## MSE plot



## Anderson\_Darling Test

Statistic: 0.967

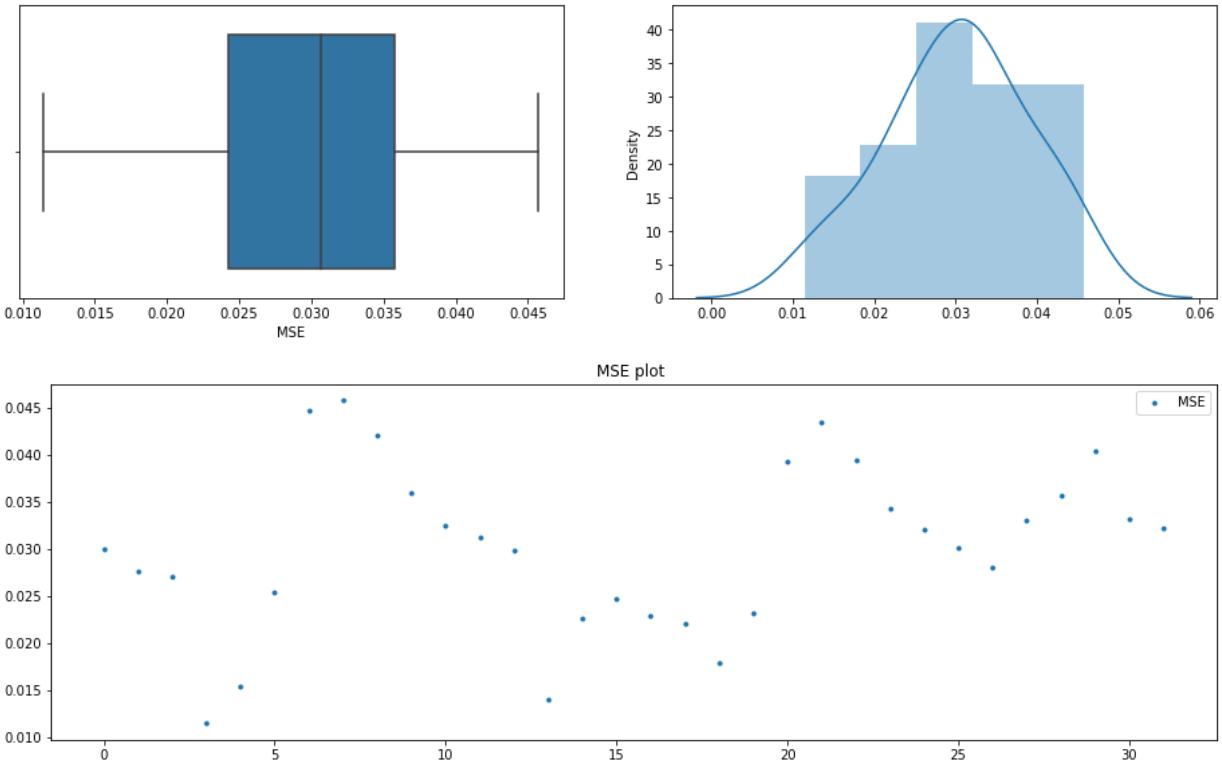
15.000: 0.523, data does not look normal (reject H0)  
 10.000: 0.596, data does not look normal (reject H0)  
 5.000: 0.715, data does not look normal (reject H0)  
 2.500: 0.834, data does not look normal (reject H0)  
 1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 84

mean=0.030226875, median=0.030695 , max=0.04573, min=0.01146, variance=7.59128e-05

Boxplots and Distribution plot for Reconstruction Error



## Anderson\_Darling Test

Statistic: 0.181

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

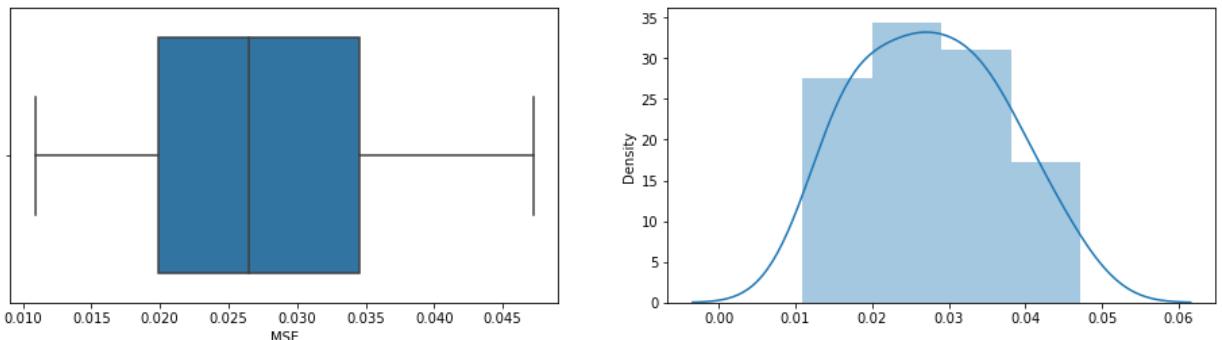
1.000: 0.992, data looks normal (fail to reject H0)

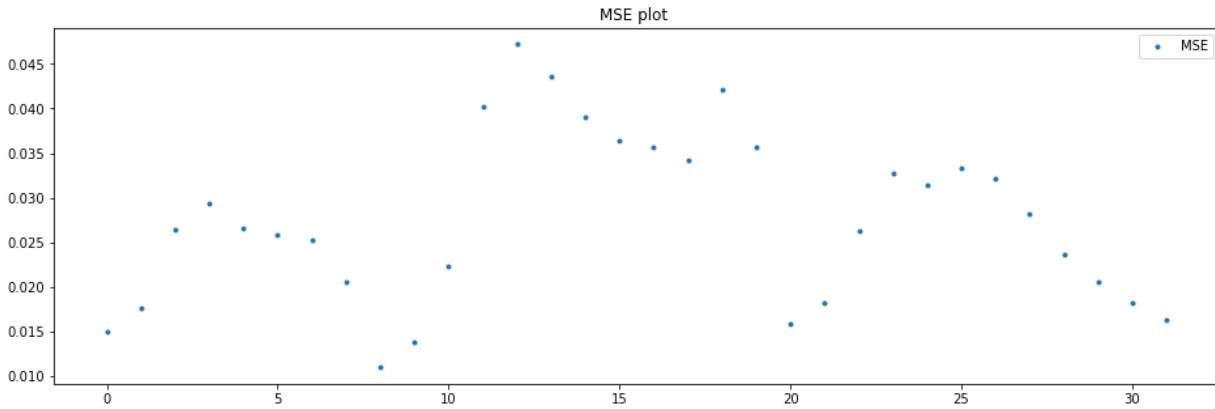
\*\*\*\*\*

Batch: 85

mean=0.0276265625, median=0.0265 , max=0.04722, min=0.01091, variance=8.82549e-05

Boxplots and Distribution plot for Reconstruction Error





**Anderson\_Darling Test**

Statistic: 0.229

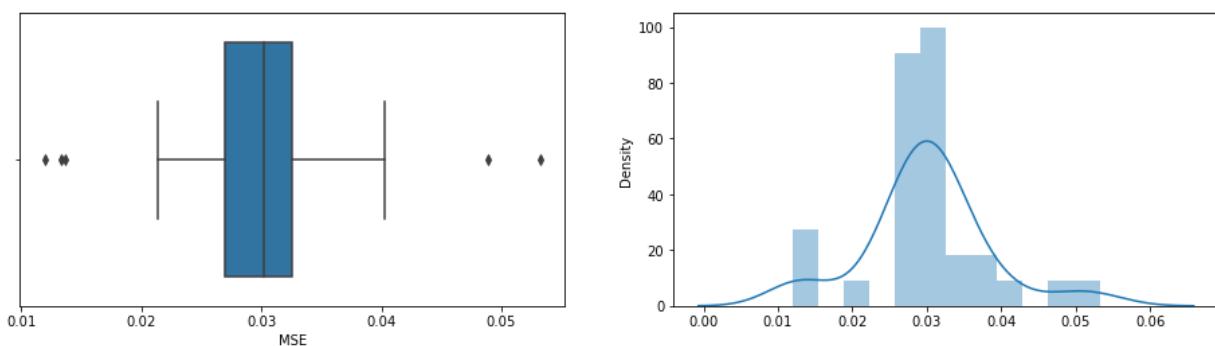
15.000: 0.523, data looks normal (fail to reject H<sub>0</sub>)  
 10.000: 0.596, data looks normal (fail to reject H<sub>0</sub>)  
 5.000: 0.715, data looks normal (fail to reject H<sub>0</sub>)  
 2.500: 0.834, data looks normal (fail to reject H<sub>0</sub>)  
 1.000: 0.992, data looks normal (fail to reject H<sub>0</sub>)

\*\*\*\*\*

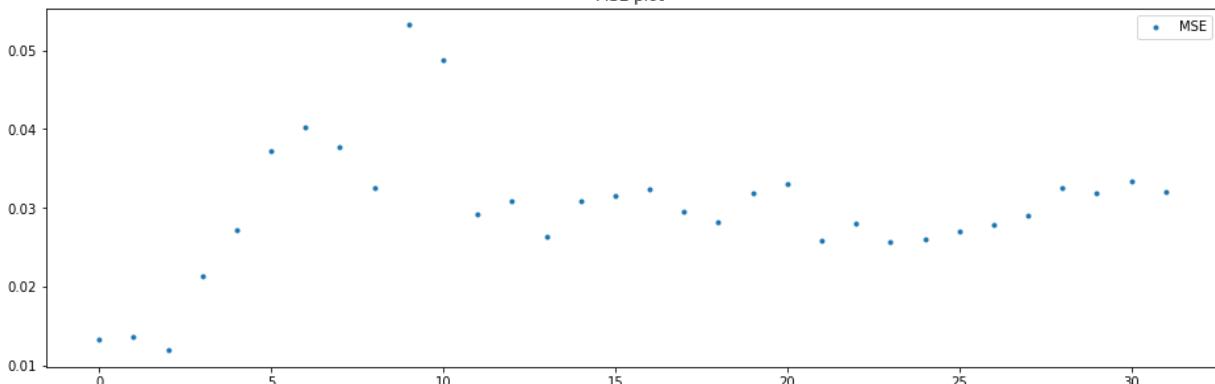
Batch: 86

mean=0.0300353125, median=0.030195 , max=0.05321, min=0.01194, variance=6.88586e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



**Anderson\_Darling Test**

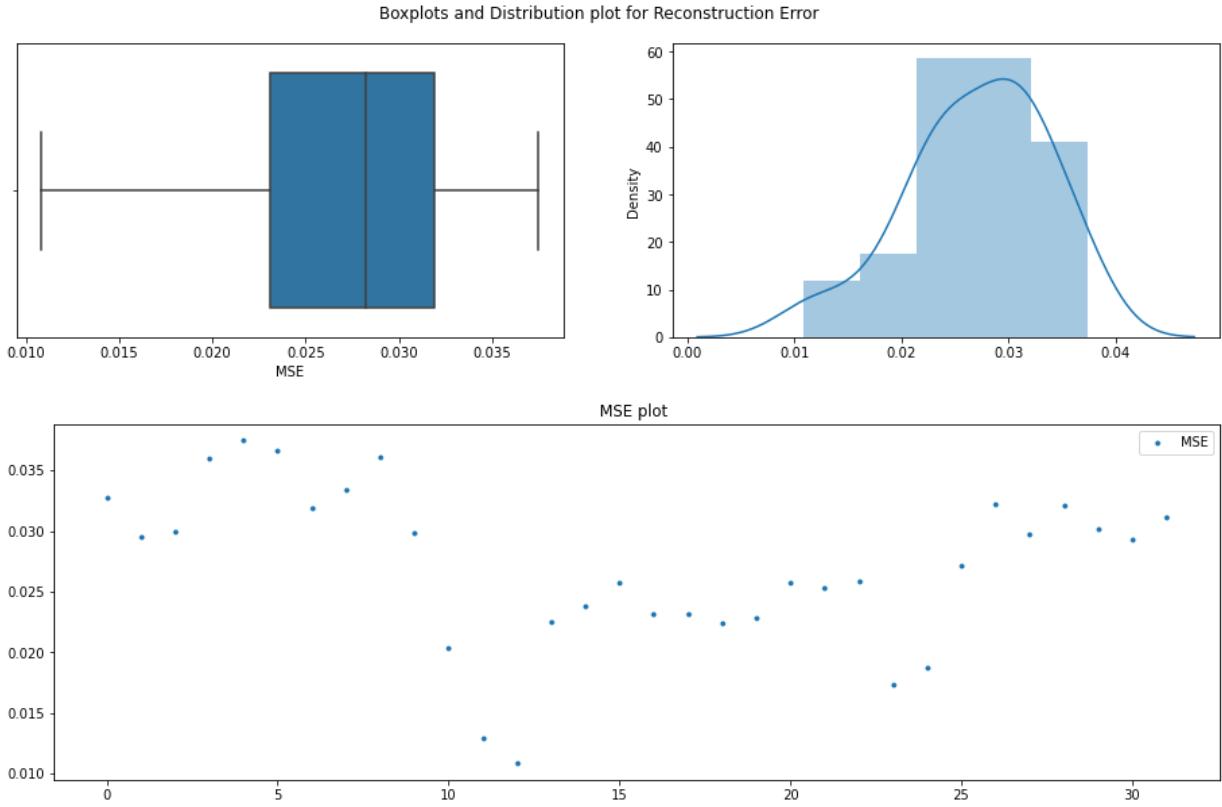
Statistic: 1.261

15.000: 0.523, data does not look normal (reject H<sub>0</sub>)  
 10.000: 0.596, data does not look normal (reject H<sub>0</sub>)  
 5.000: 0.715, data does not look normal (reject H<sub>0</sub>)  
 2.500: 0.834, data does not look normal (reject H<sub>0</sub>)  
 1.000: 0.992, data does not look normal (reject H<sub>0</sub>)

\*\*\*\*\*

Batch: 87

mean=0.0270740625, median=0.02823 , max=0.03747, min=0.01084, variance=4.21405e-05



#### Anderson\_Darling Test

Statistic: 0.364

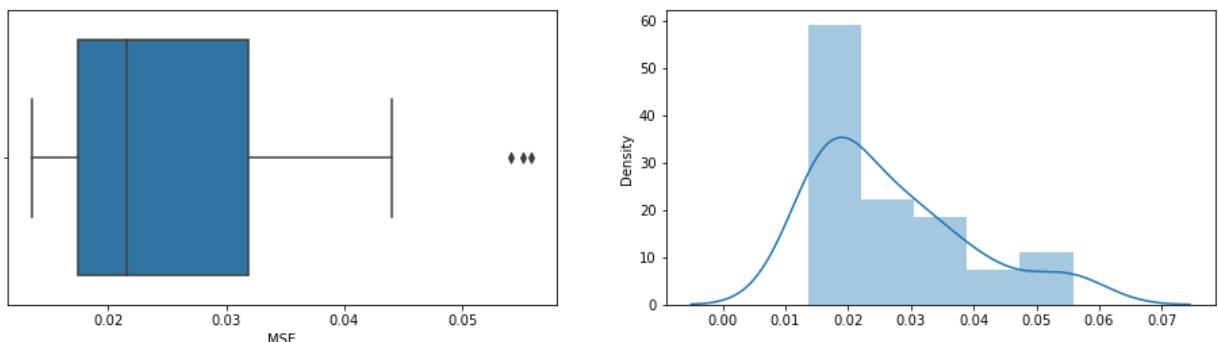
15.000: 0.523, data looks normal (fail to reject H0)  
 10.000: 0.596, data looks normal (fail to reject H0)  
 5.000: 0.715, data looks normal (fail to reject H0)  
 2.500: 0.834, data looks normal (fail to reject H0)  
 1.000: 0.992, data looks normal (fail to reject H0)

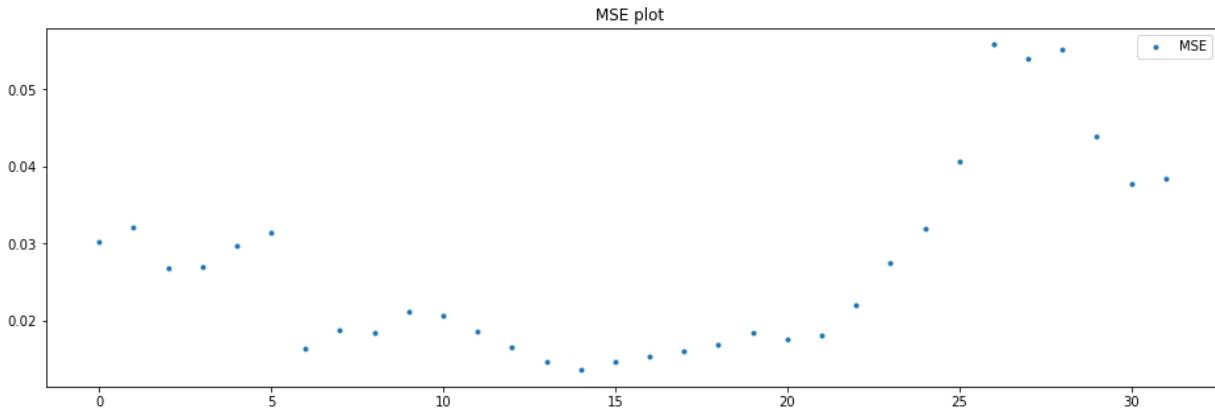
\*\*\*\*\*

Batch: 88

mean=0.026890625, median=0.021615 , max=0.05582, min=0.01356, variance=0.0001493342

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 1.554

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

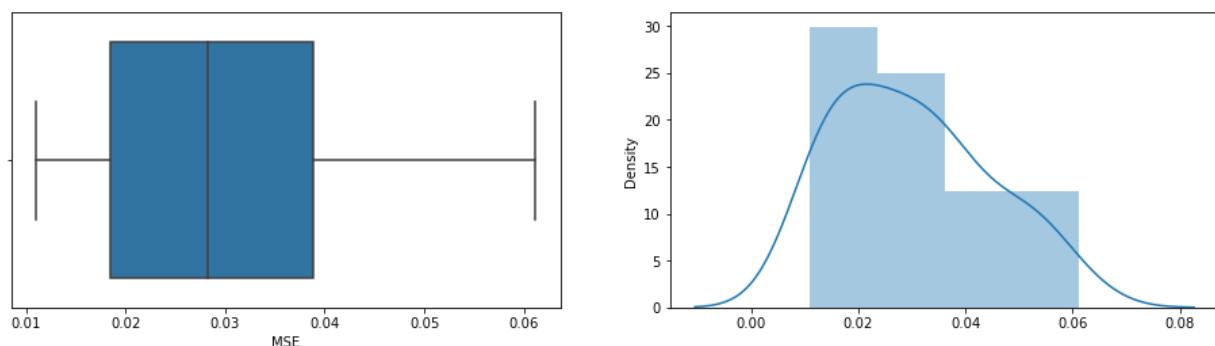
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

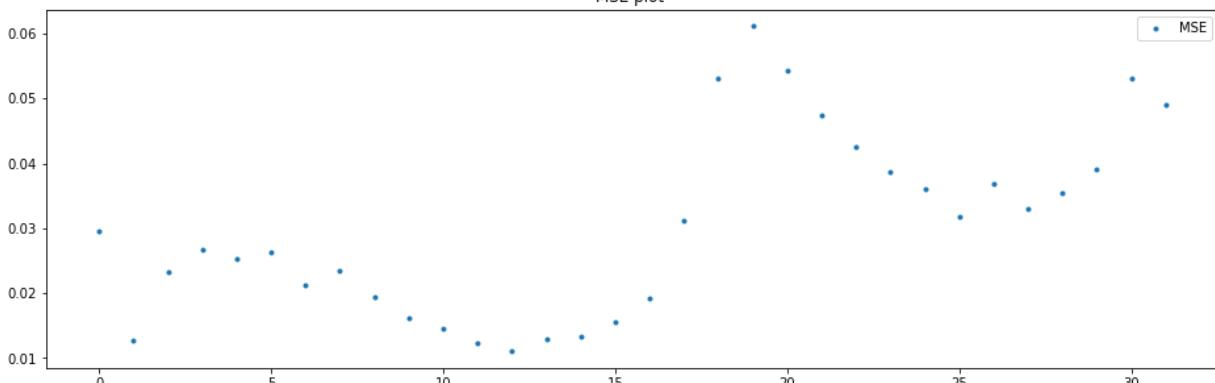
Batch: 89

mean=0.03021625, median=0.02823 , max=0.06114, min=0.01102, variance=0.0001987271

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.524

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

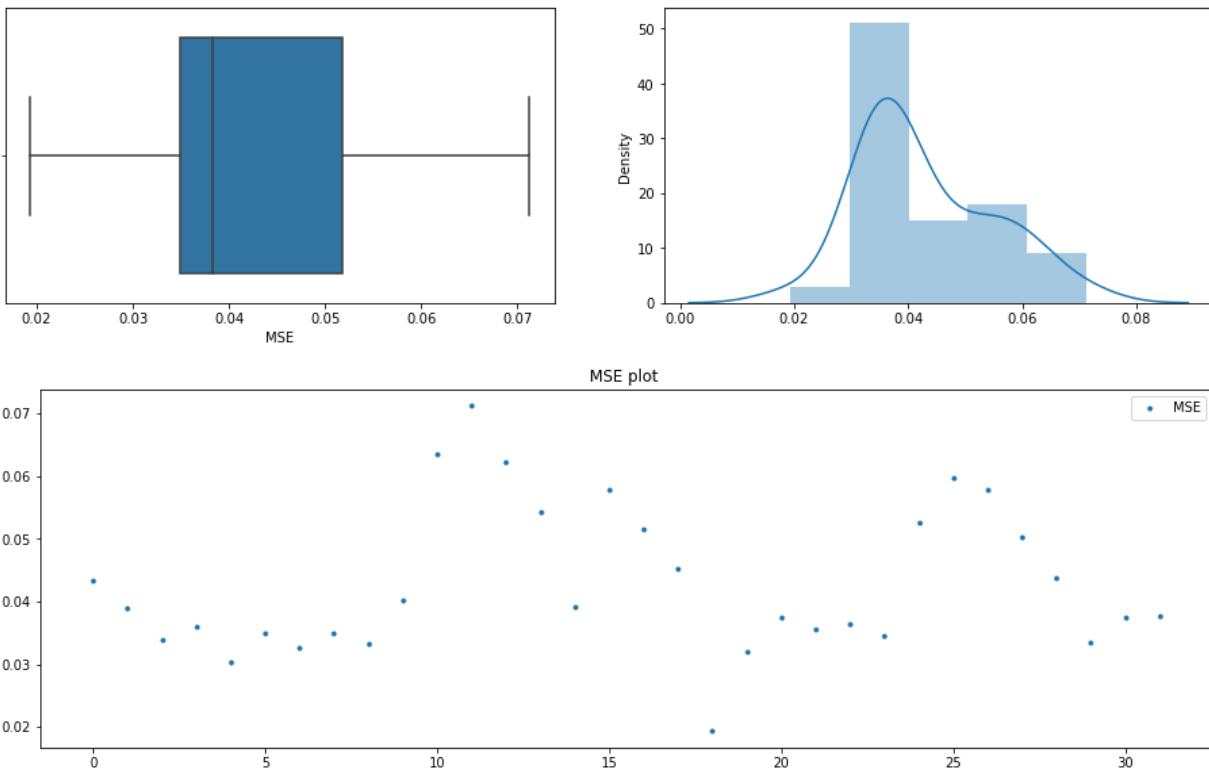
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 90

mean=0.04287, median=0.0383 , max=0.07123, min=0.01931, variance=0.0001362549

Boxplots and Distribution plot for Reconstruction Error



## Anderson\_Darling Test

Statistic: 1.190

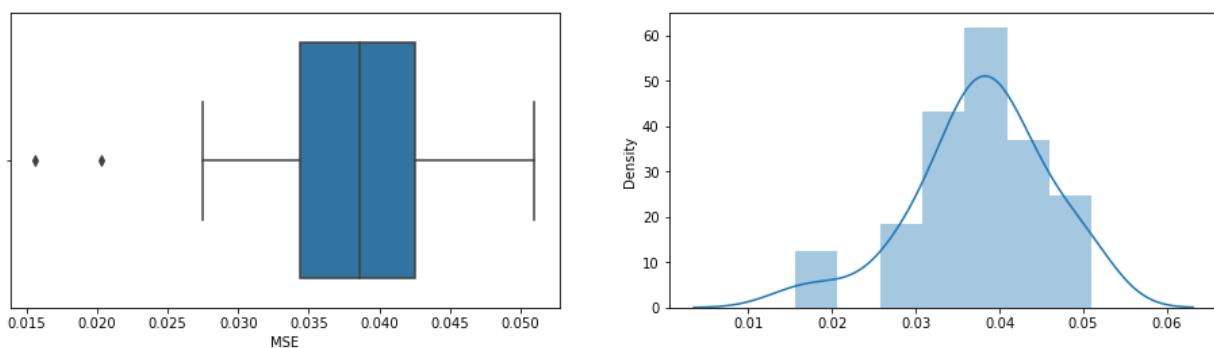
15.000: 0.523, data does not look normal (reject H0)  
 10.000: 0.596, data does not look normal (reject H0)  
 5.000: 0.715, data does not look normal (reject H0)  
 2.500: 0.834, data does not look normal (reject H0)  
 1.000: 0.992, data does not look normal (reject H0)

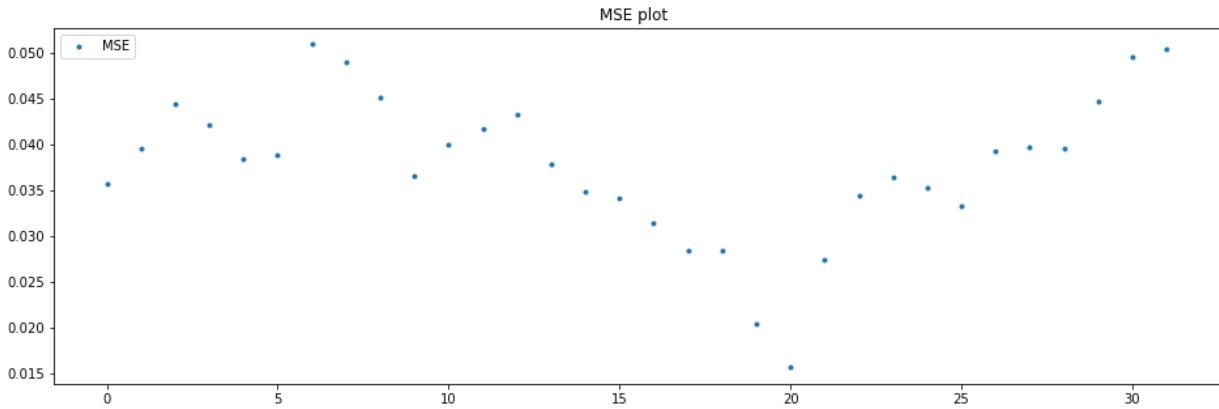
\*\*\*\*\*

Batch: 91

mean=0.0377265625, median=0.038625 , max=0.05098, min=0.01559, variance=6.31261e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.408

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

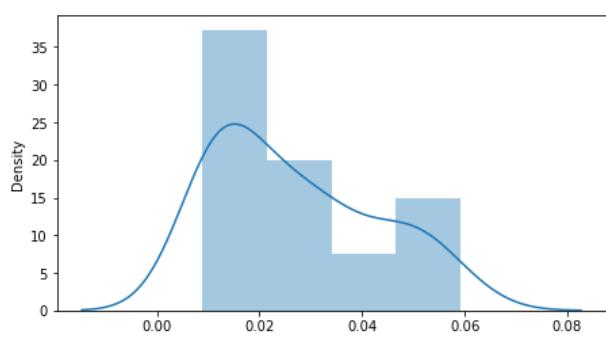
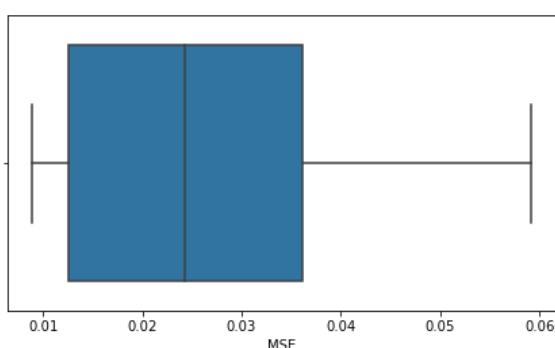
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

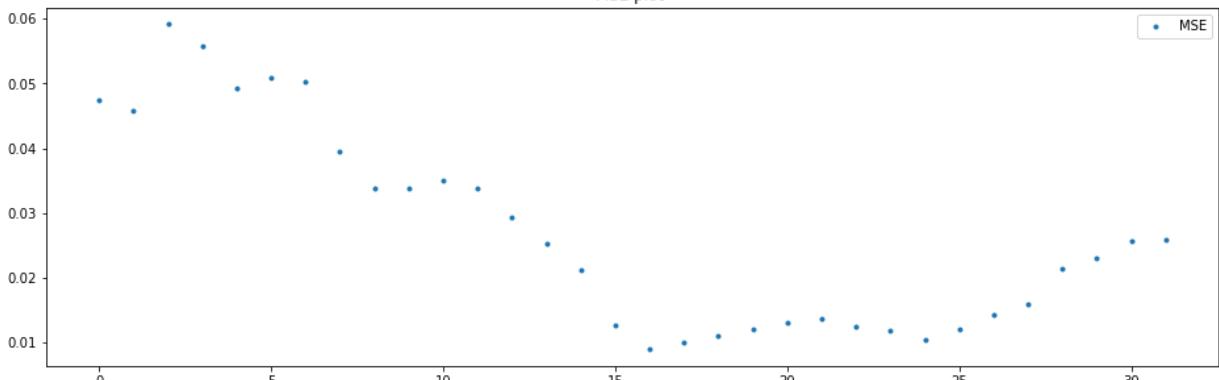
Batch: 92

mean=0.027025625, median=0.02421 , max=0.05917, min=0.00889, variance=0.0002375173

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 1.223

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

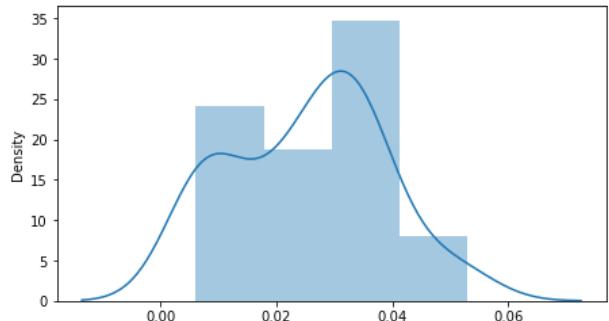
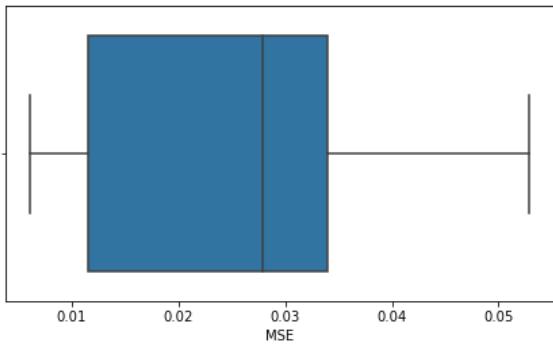
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

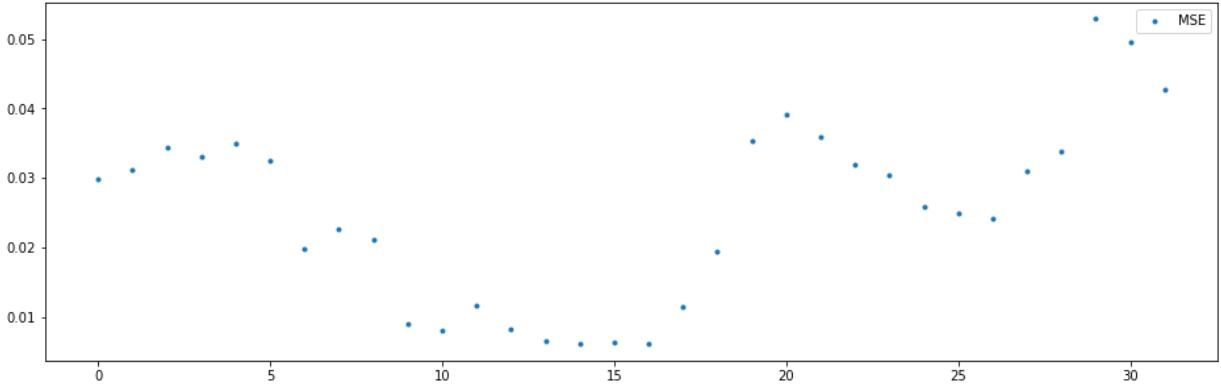
Batch: 93

mean=0.025310625, median=0.0279 , max=0.05288, min=0.00609, variance=0.0001673852

Boxplots and Distribution plot for Reconstruction Error



MSE plot



#### Anderson\_Darling Test

Statistic: 0.701

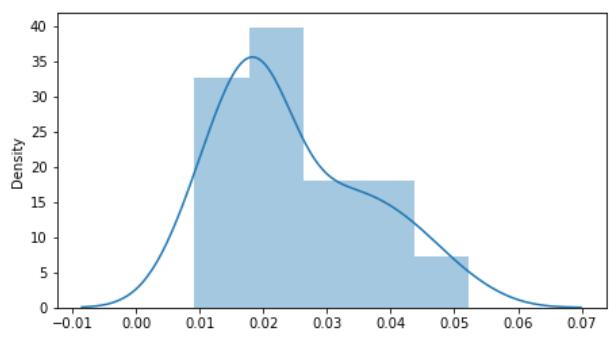
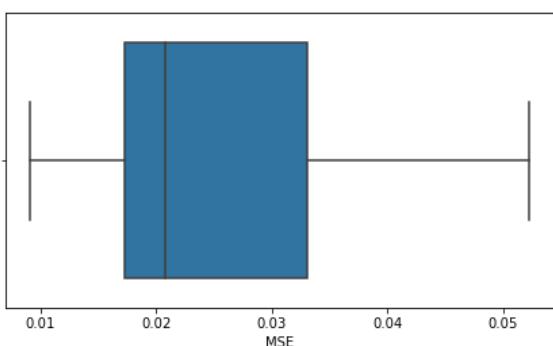
15.000: 0.523, data does not look normal (reject H0)  
 10.000: 0.596, data does not look normal (reject H0)  
 5.000: 0.715, data looks normal (fail to reject H0)  
 2.500: 0.834, data looks normal (fail to reject H0)  
 1.000: 0.992, data looks normal (fail to reject H0)

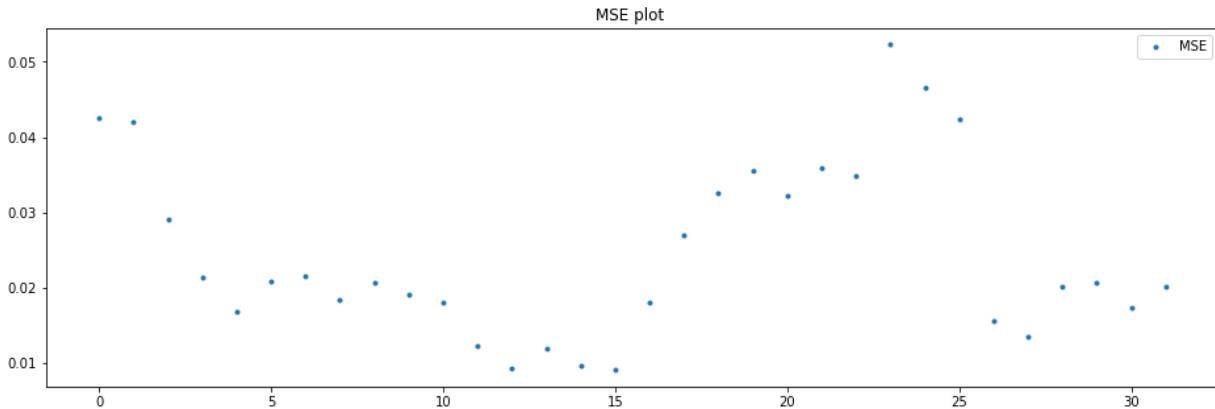
\*\*\*\*\*

Batch: 94

mean=0.0246465625, median=0.020745 , max=0.05229, min=0.0091, variance=0.0001331102

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 1.035

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

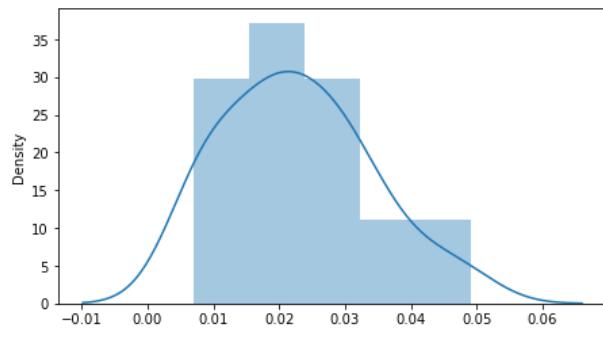
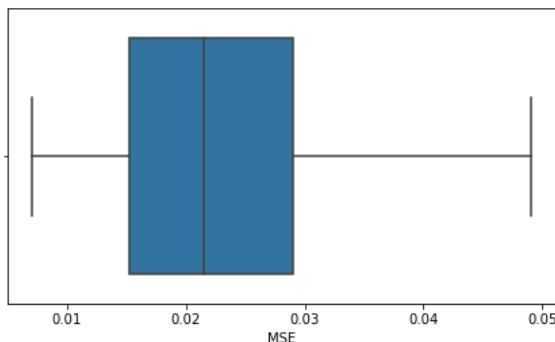
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

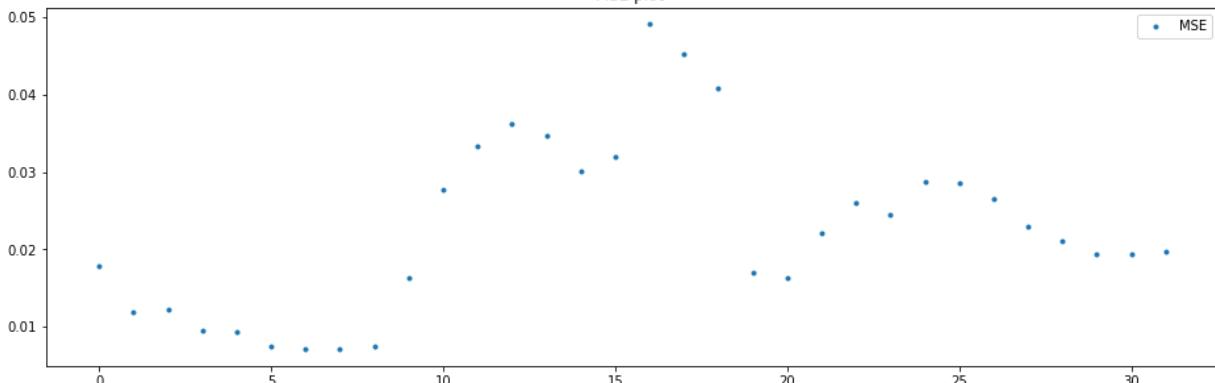
Batch: 95

mean=0.0227278125, median=0.02155 , max=0.04907, min=0.00708, variance=0.0001229785

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.292

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

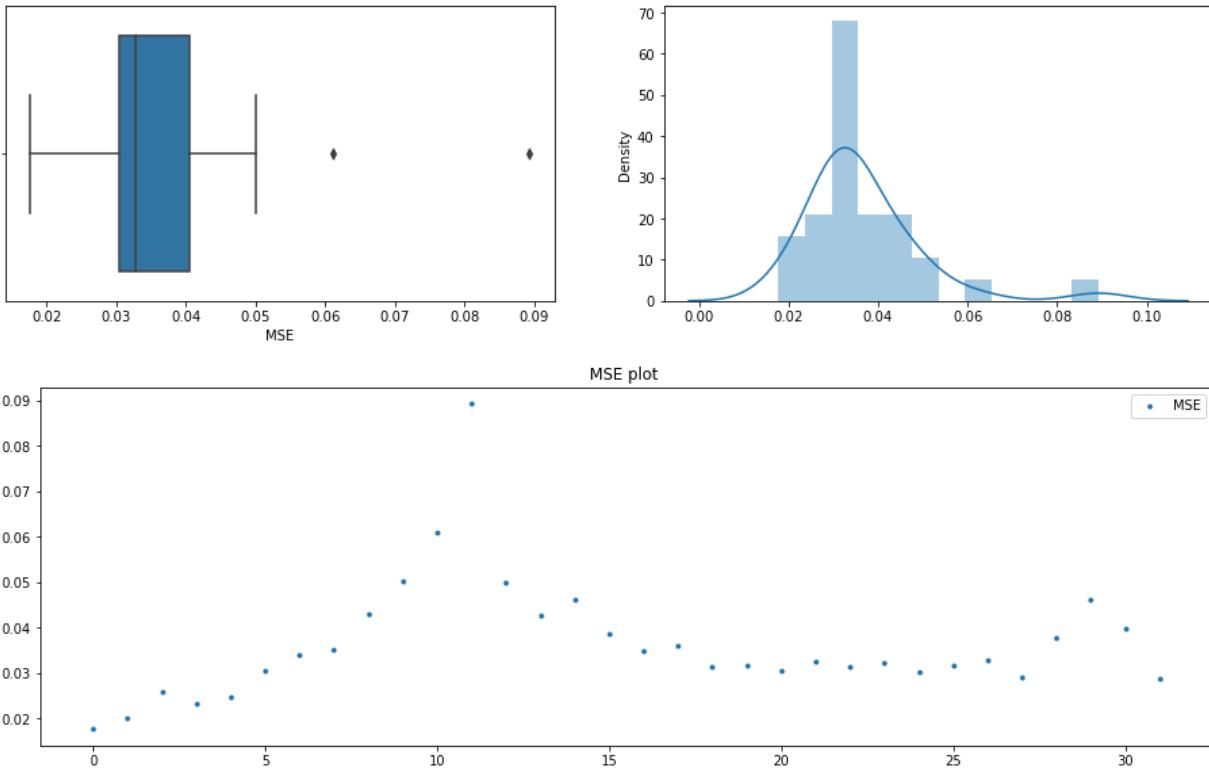
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 96

mean=0.0365625, median=0.032735 , max=0.08926, min=0.01767, variance=0.000170927

Boxplots and Distribution plot for Reconstruction Error



#### Anderson\_Darling Test

Statistic: 1.564

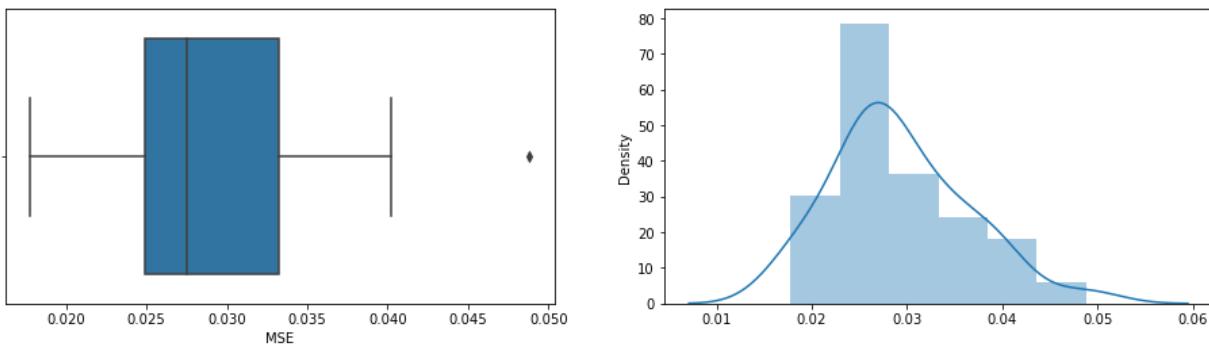
15.000: 0.523, data does not look normal (reject H0)  
 10.000: 0.596, data does not look normal (reject H0)  
 5.000: 0.715, data does not look normal (reject H0)  
 2.500: 0.834, data does not look normal (reject H0)  
 1.000: 0.992, data does not look normal (reject H0)

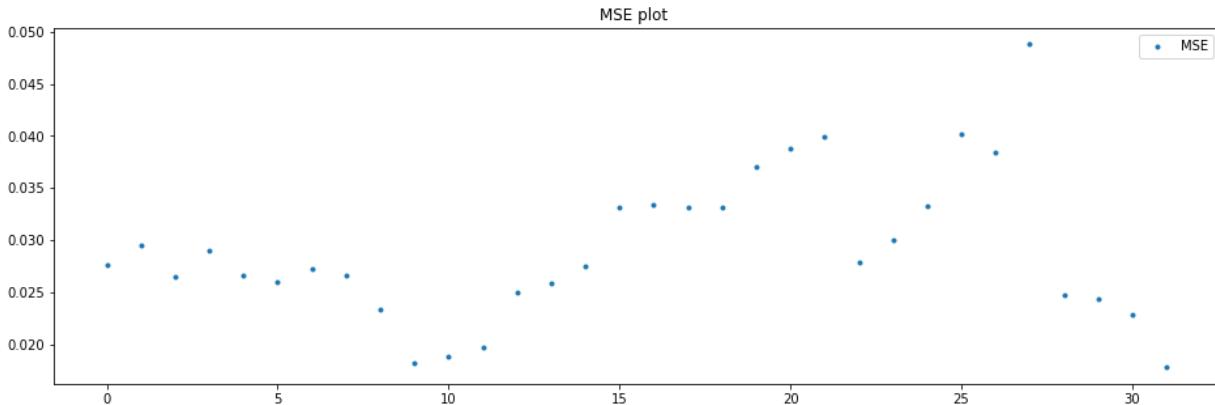
\*\*\*\*\*

Batch: 97

mean=0.02921125, median=0.027555 , max=0.04879, min=0.01778, variance=4.91977e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.503

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

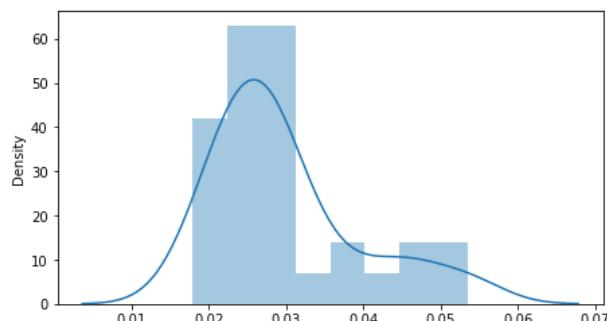
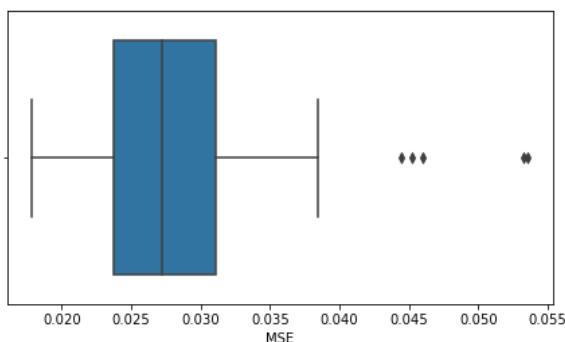
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 98

mean=0.029794375, median=0.027205 , max=0.05354, min=0.01784, variance=8.68393e-05

Boxplots and Distribution plot for Reconstruction Error



Anderson\_Darling Test

Statistic: 1.687

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

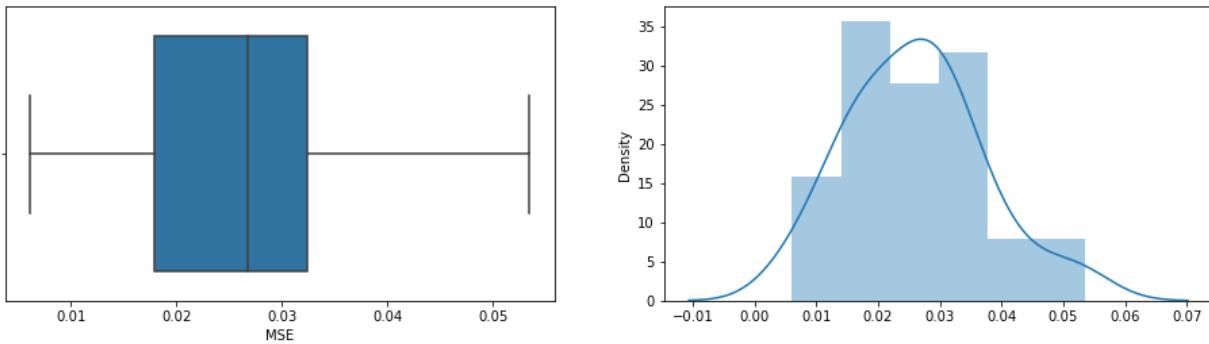
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

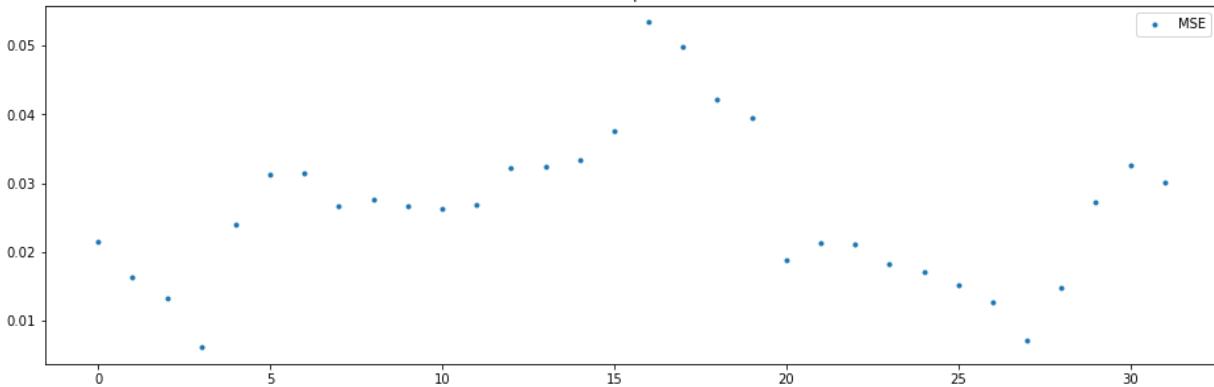
Batch: 99

mean=0.0260878125, median=0.026695 , max=0.05342, min=0.00611, variance=0.0001202295

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson\_Darling Test**

Statistic: 0.263

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

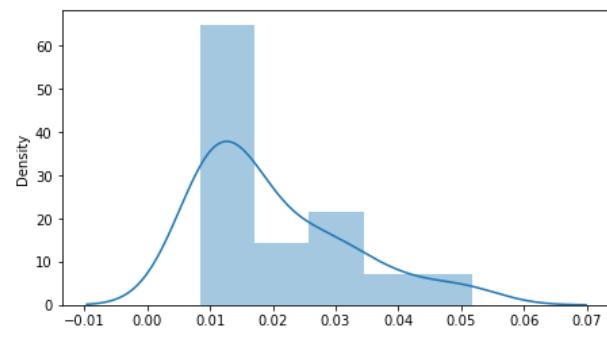
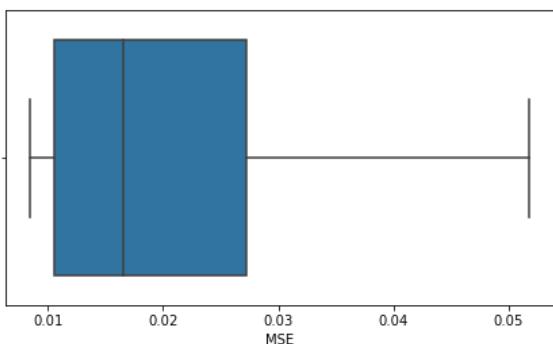
1.000: 0.992, data looks normal (fail to reject H0)

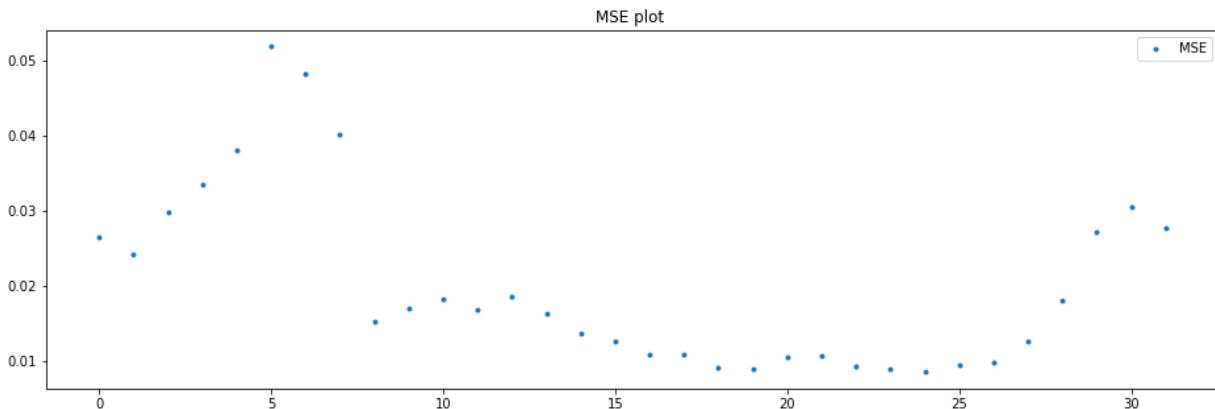
\*\*\*\*\*

Batch: 100

mean=0.0200625, median=0.016515 , max=0.05182, min=0.00844, variance=0.0001404281

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 1.618

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

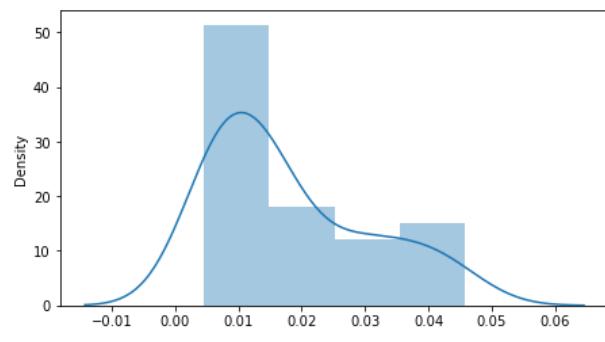
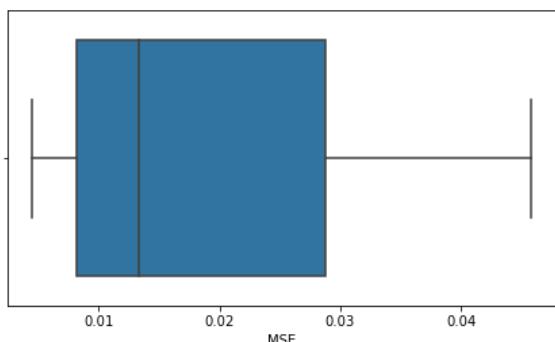
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

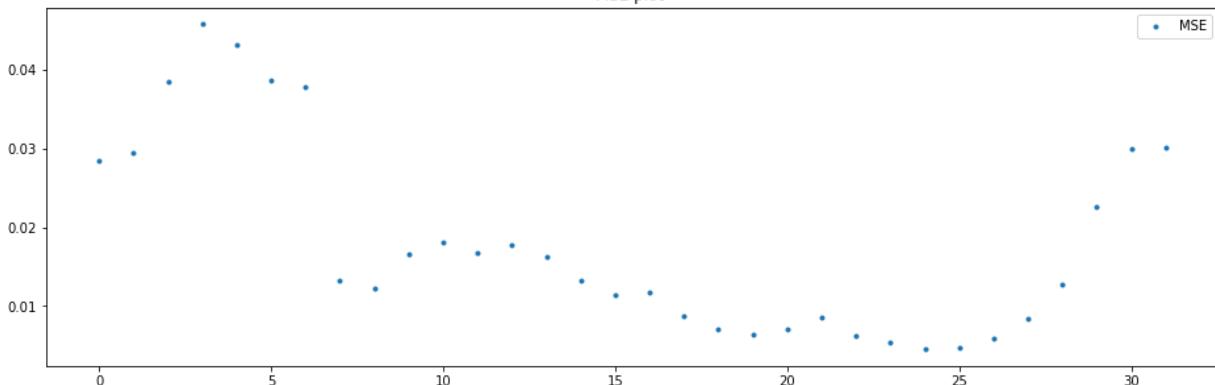
Batch: 101

mean=0.0180590625, median=0.01327 , max=0.04583, min=0.00447, variance=0.0001512395

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 1.518

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

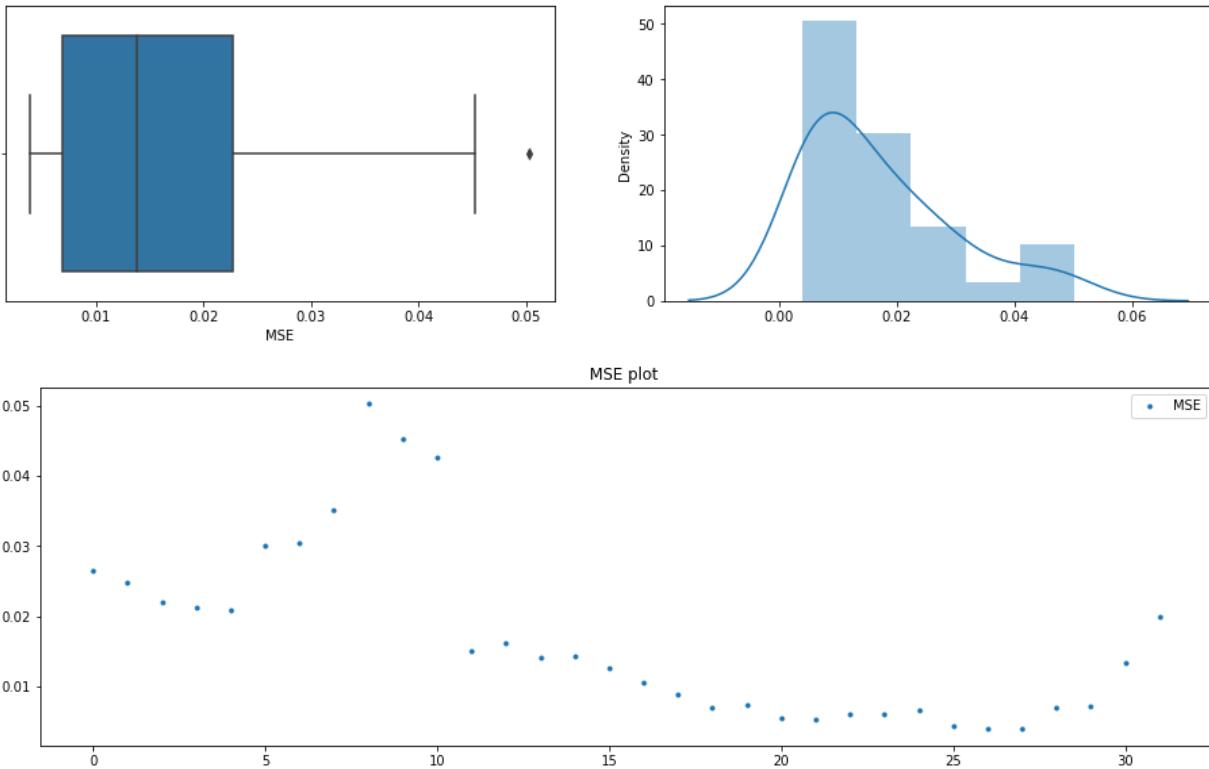
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 102

mean=0.0170065625, median=0.013765 , max=0.05026, min=0.00389, variance=0.0001604583

Boxplots and Distribution plot for Reconstruction Error



## Anderson\_Darling Test

Statistic: 1.403

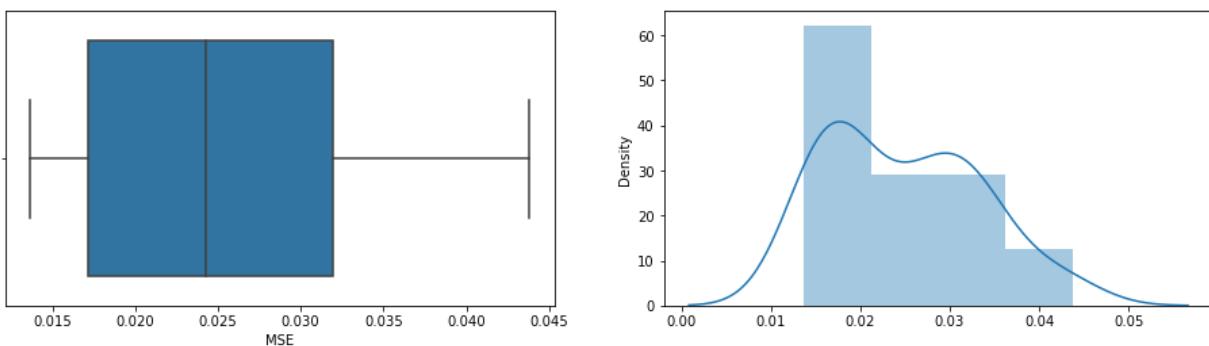
15.000: 0.523, data does not look normal (reject H0)  
 10.000: 0.596, data does not look normal (reject H0)  
 5.000: 0.715, data does not look normal (reject H0)  
 2.500: 0.834, data does not look normal (reject H0)  
 1.000: 0.992, data does not look normal (reject H0)

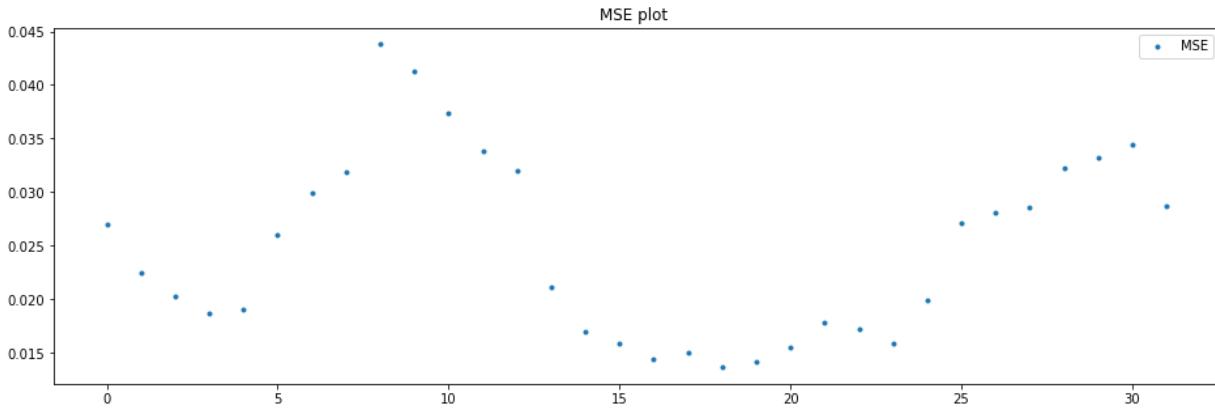
\*\*\*\*\*

Batch: 103

mean=0.0248134375, median=0.02427 , max=0.0438, min=0.01365, variance=7.05609e-05

Boxplots and Distribution plot for Reconstruction Error





**Anderson\_Darling Test**

Statistic: 0.733

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

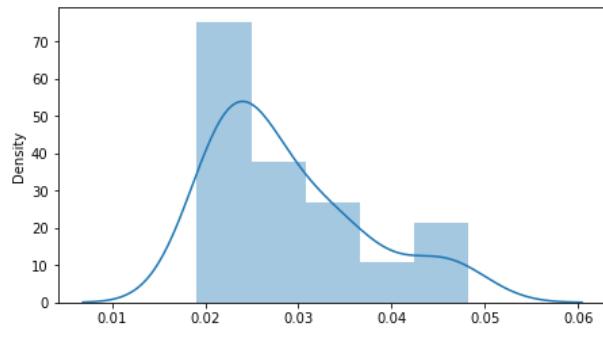
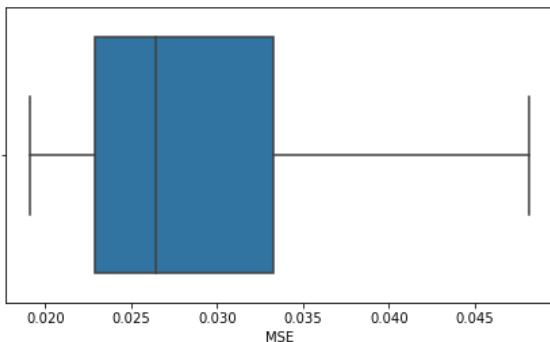
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

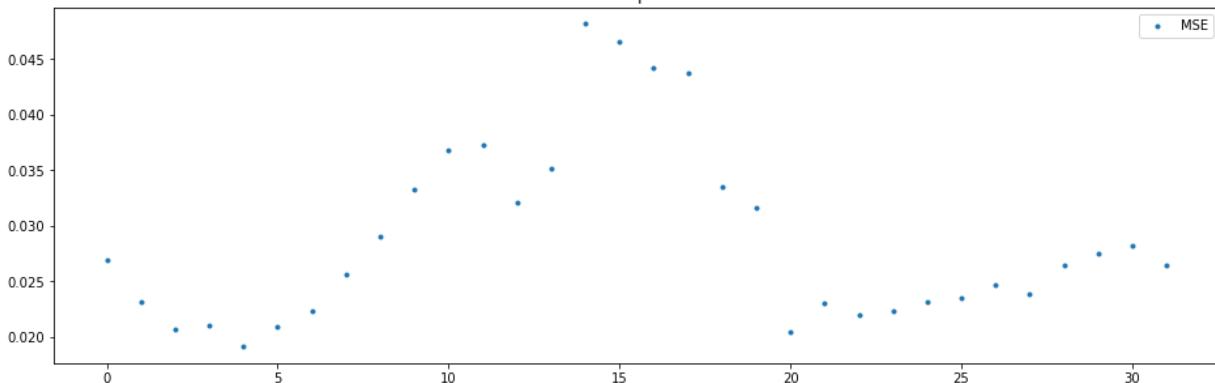
Batch: 104

mean=0.0288453125, median=0.026455 , max=0.04817, min=0.01912, variance=6.45423e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



**Anderson\_Darling Test**

Statistic: 1.353

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

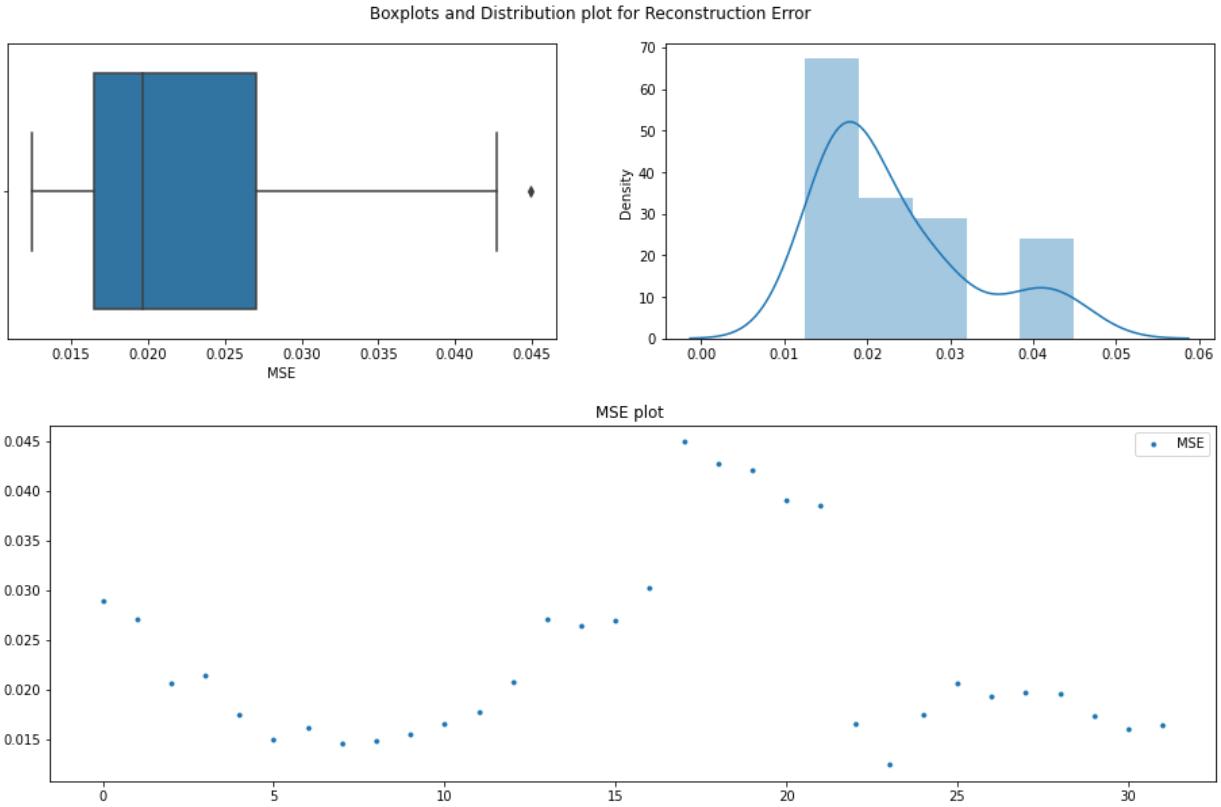
2.500: 0.834, data does not look normal (reject H0)

1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 105

mean=0.0231575, median=0.019675 , max=0.04491, min=0.01247, variance=8.23415e-05



#### Anderson\_Darling Test

Statistic: 2.084

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

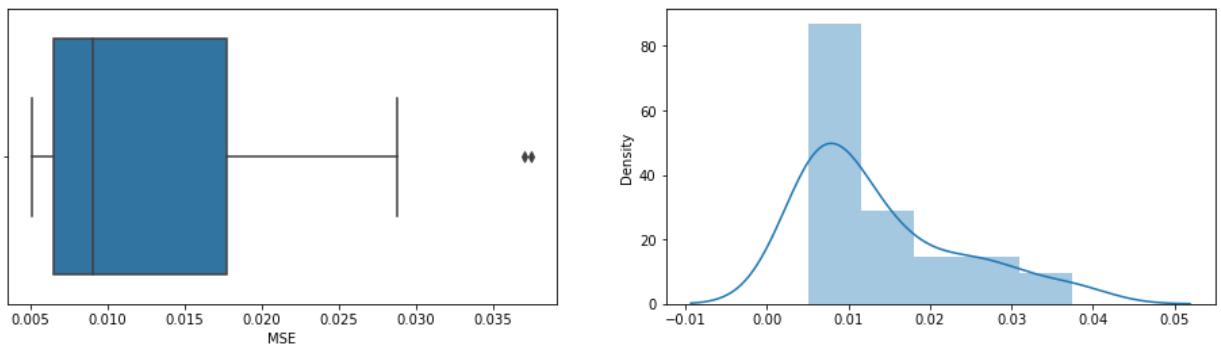
1.000: 0.992, data does not look normal (reject H0)

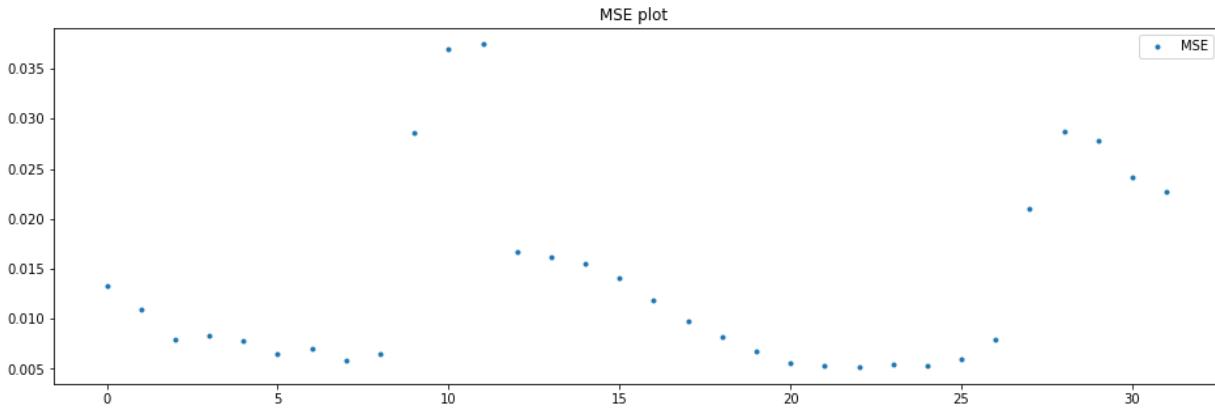
\*\*\*\*\*

Batch: 106

mean=0.013775, median=0.009015 , max=0.03745, min=0.00512, variance=8.98407e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 2.105

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

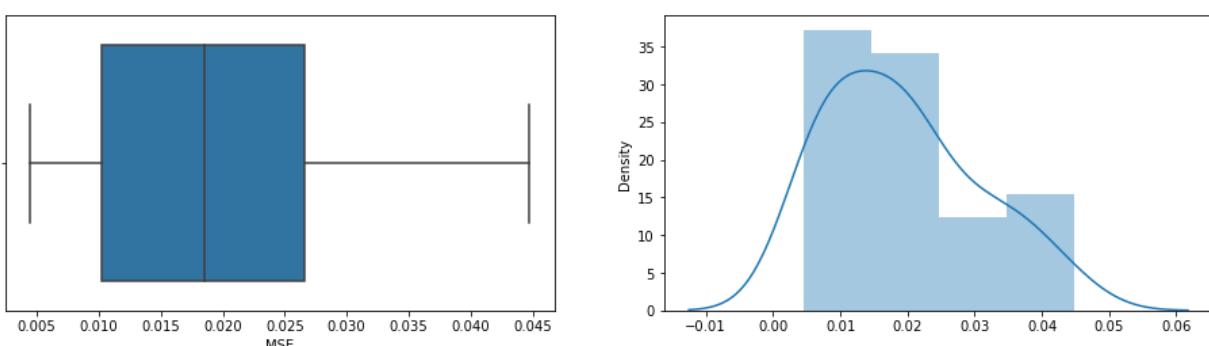
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

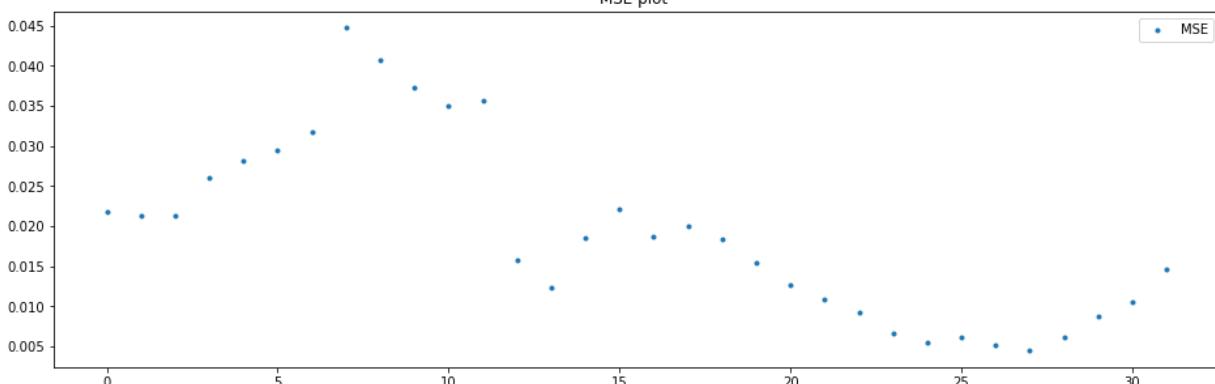
Batch: 107

mean=0.0192584375, median=0.018505 , max=0.04473, min=0.00446, variance=0.000124338

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.578

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

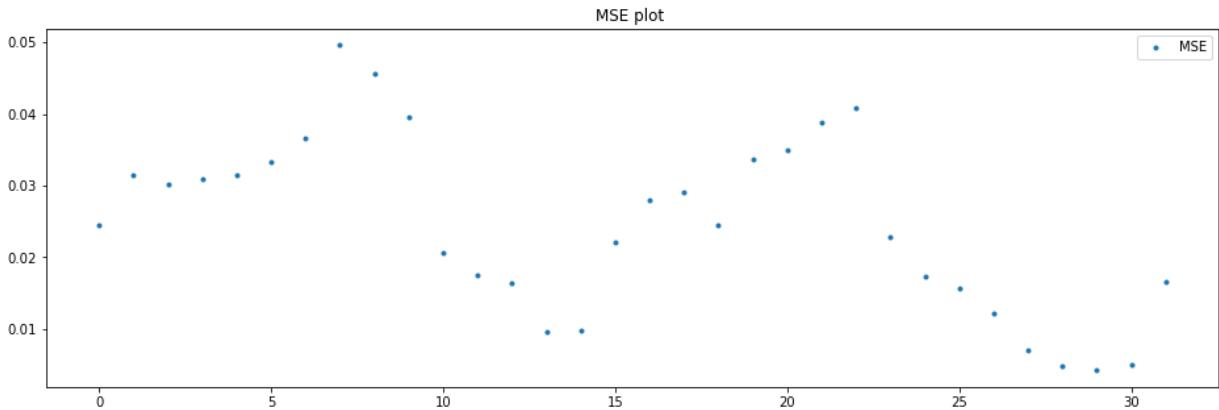
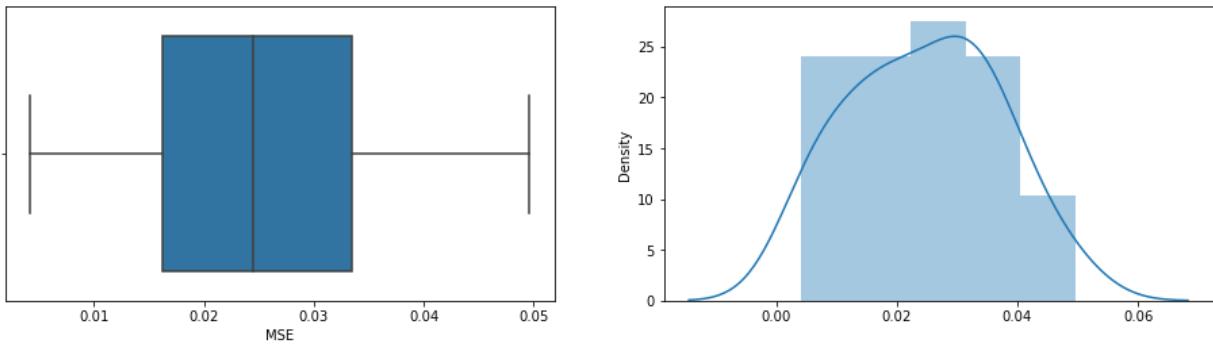
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 108

mean=0.02451, median=0.02448 , max=0.0496, min=0.00418, variance=0.000150102

Boxplots and Distribution plot for Reconstruction Error

**Anderson\_Darling Test**

Statistic: 0.260

15.000: 0.523, data looks normal (fail to reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

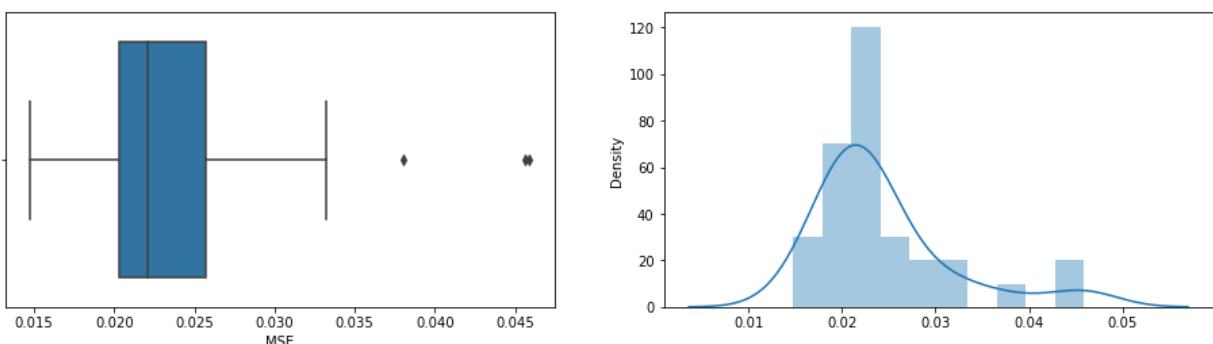
1.000: 0.992, data looks normal (fail to reject H0)

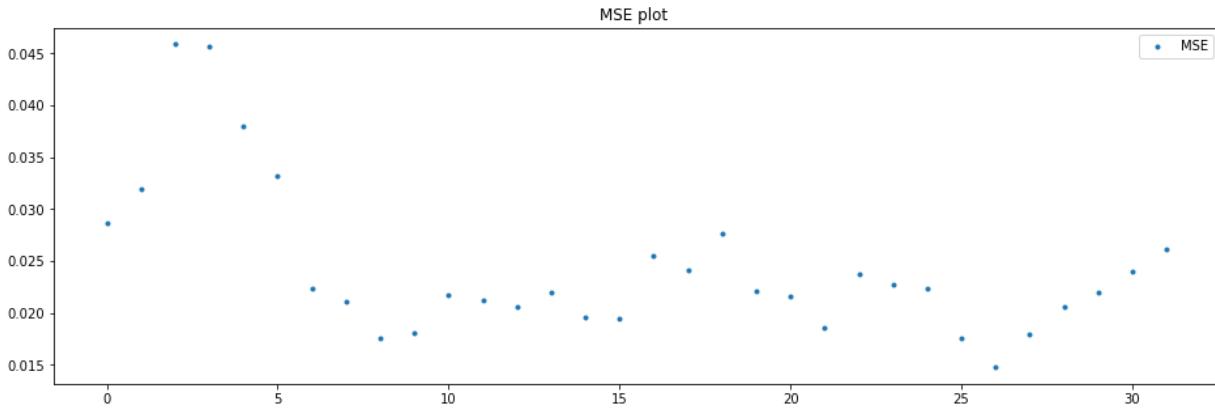
\*\*\*\*\*

Batch: 109

mean=0.0243265625, median=0.022065 , max=0.04588, min=0.01474, variance=5.34315e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 2.195

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

2.500: 0.834, data does not look normal (reject H0)

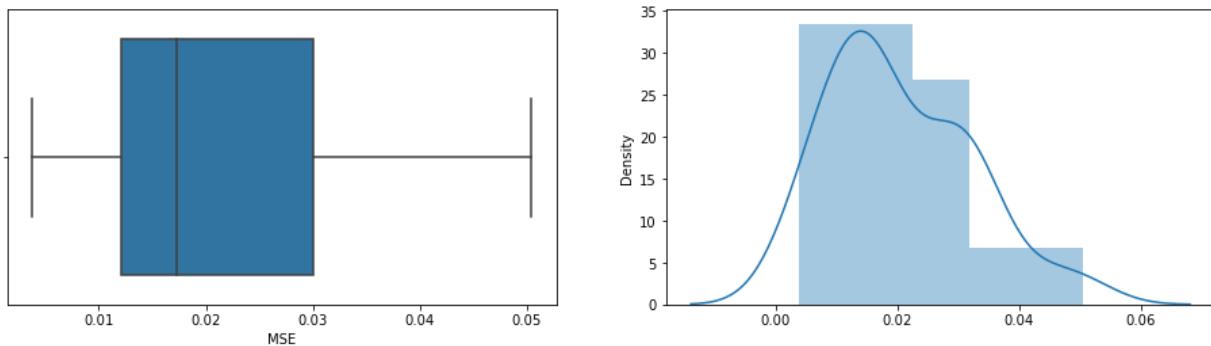
1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

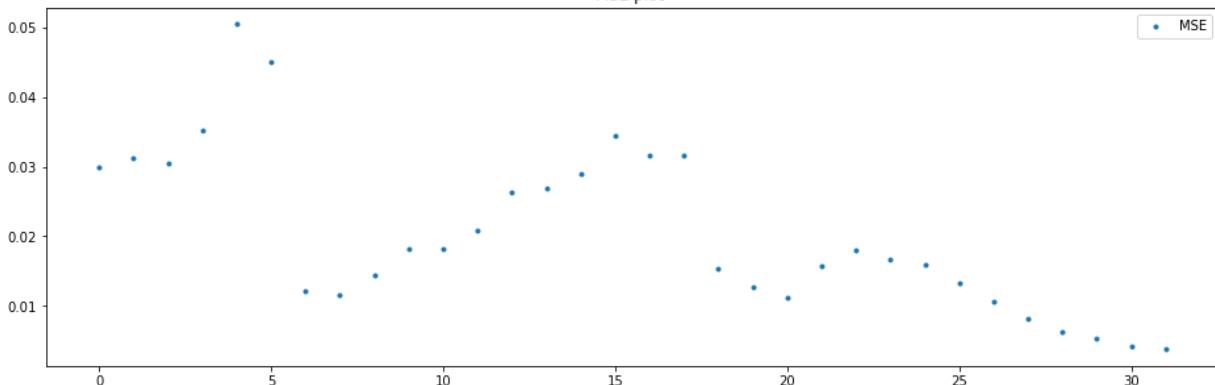
Batch: 110

mean=0.0204746875, median=0.01734 , max=0.05043, min=0.00376, variance=0.0001342629

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.671

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

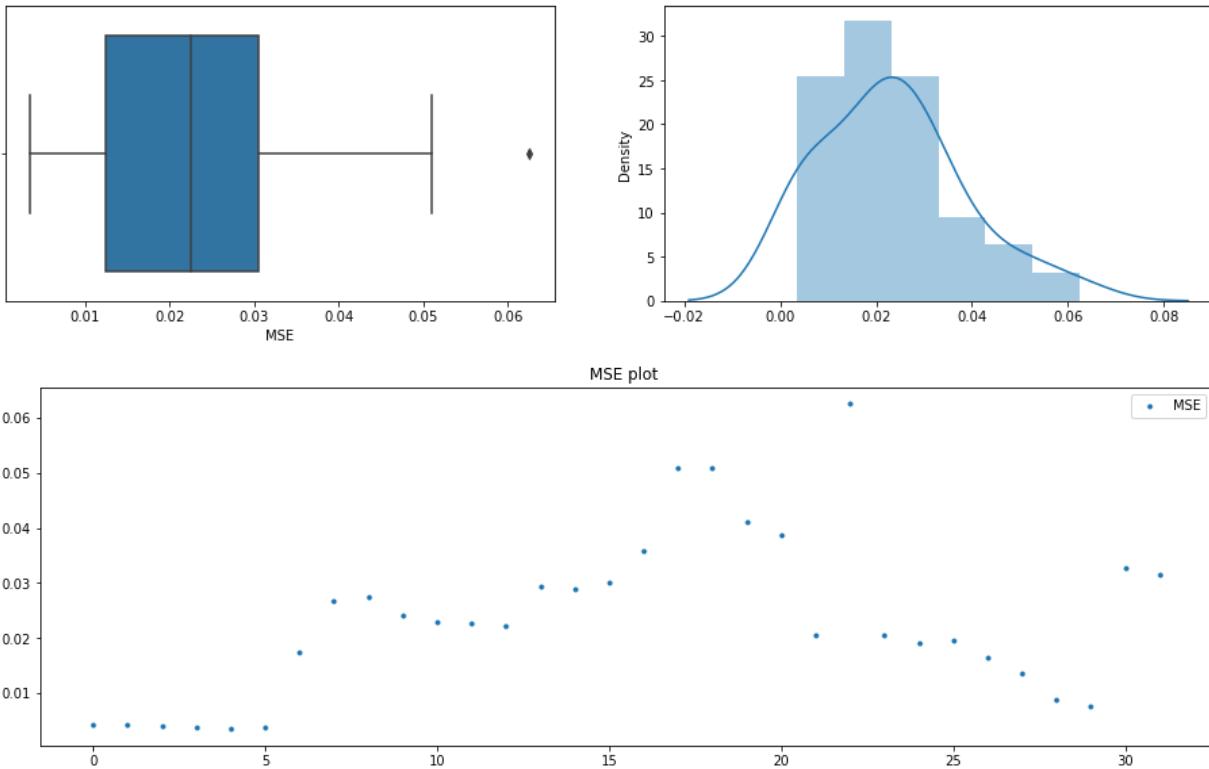
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

Batch: 111

mean=0.0233346875, median=0.02244 , max=0.0625, min=0.00349, variance=0.0002182104

Boxplots and Distribution plot for Reconstruction Error



## Anderson\_Darling Test

Statistic: 0.480

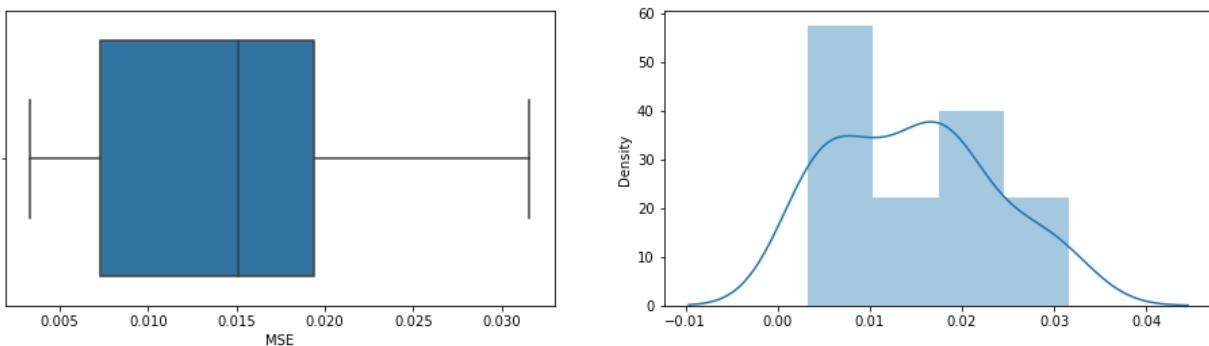
15.000: 0.523, data looks normal (fail to reject H0)  
 10.000: 0.596, data looks normal (fail to reject H0)  
 5.000: 0.715, data looks normal (fail to reject H0)  
 2.500: 0.834, data looks normal (fail to reject H0)  
 1.000: 0.992, data looks normal (fail to reject H0)

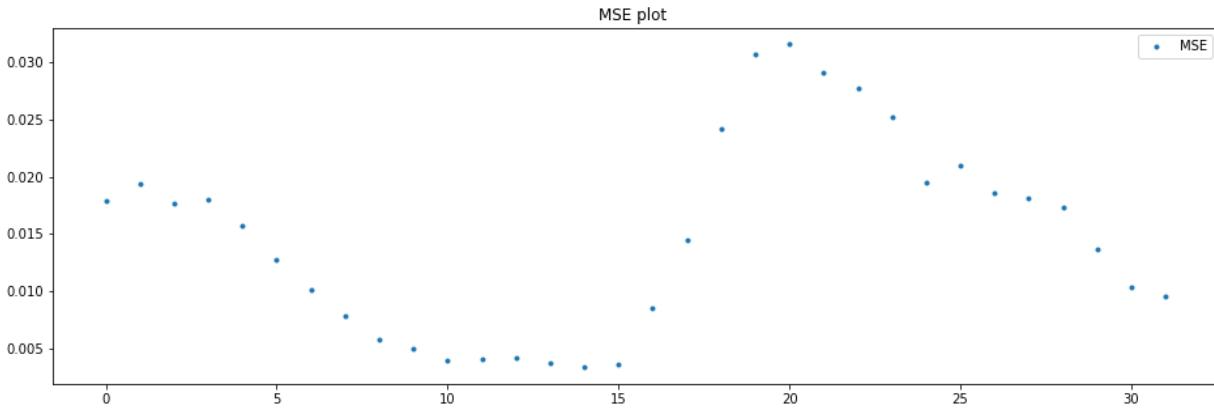
\*\*\*\*\*

Batch: 112

mean=0.0147559375, median=0.01509 , max=0.03157, min=0.00332, variance=7.2259e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.562

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data looks normal (fail to reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

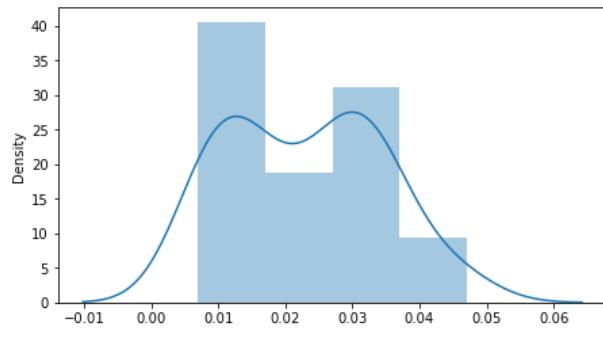
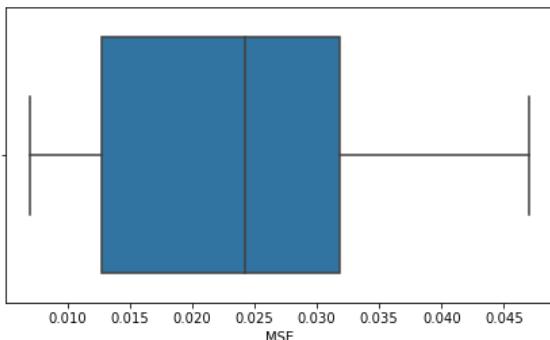
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

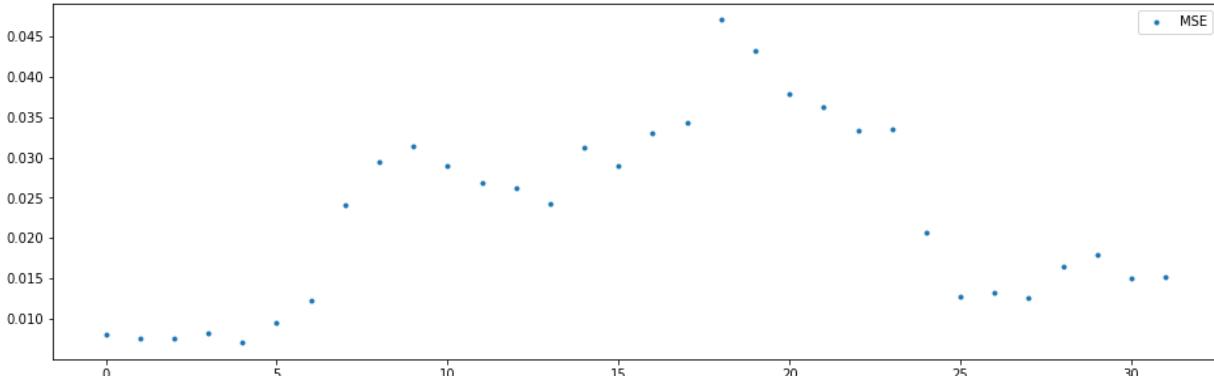
Batch: 113

mean=0.02294125, median=0.02424 , max=0.04703, min=0.00701, variance=0.0001273013

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 0.639

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

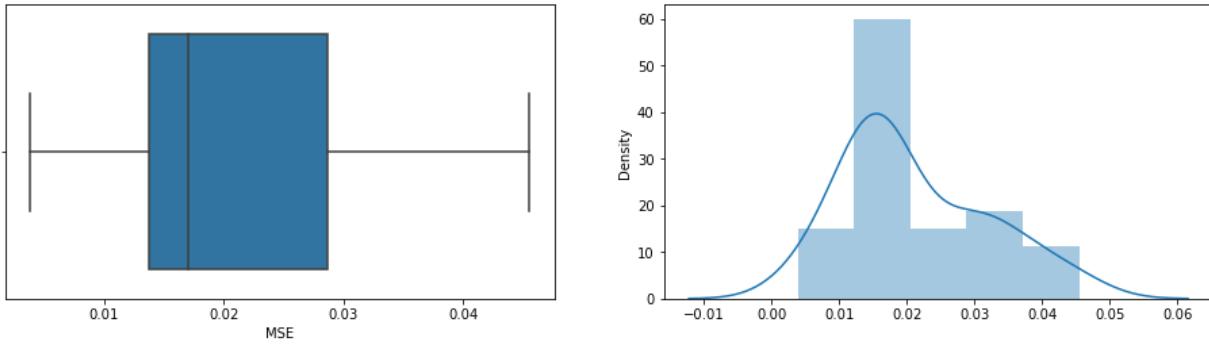
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

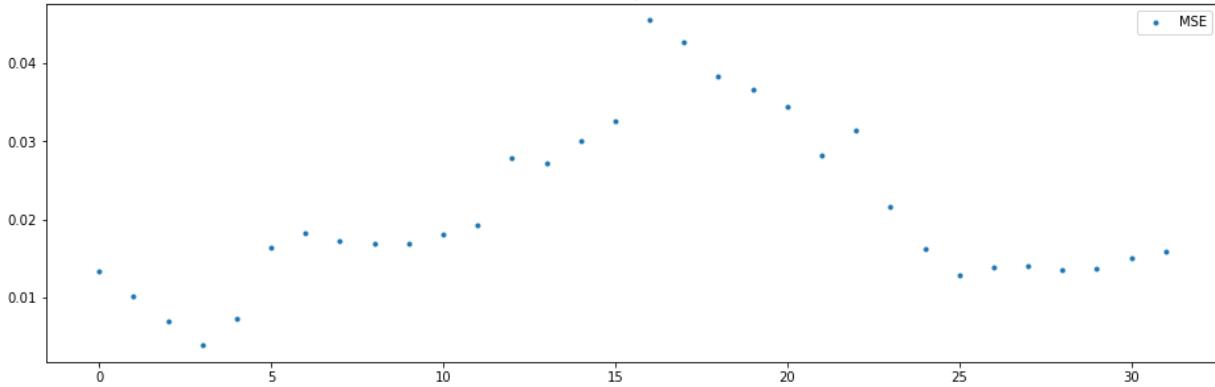
Batch: 114

mean=0.021140625, median=0.0171 , max=0.04551, min=0.00386, variance=0.0001113937

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson\_Darling Test**

Statistic: 1.027

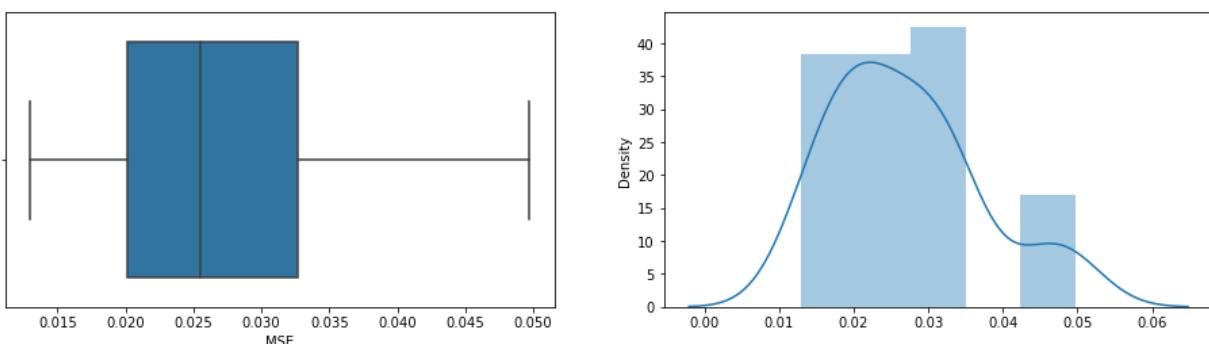
15.000: 0.523, data does not look normal (reject H<sub>0</sub>)  
 10.000: 0.596, data does not look normal (reject H<sub>0</sub>)  
 5.000: 0.715, data does not look normal (reject H<sub>0</sub>)  
 2.500: 0.834, data does not look normal (reject H<sub>0</sub>)  
 1.000: 0.992, data does not look normal (reject H<sub>0</sub>)

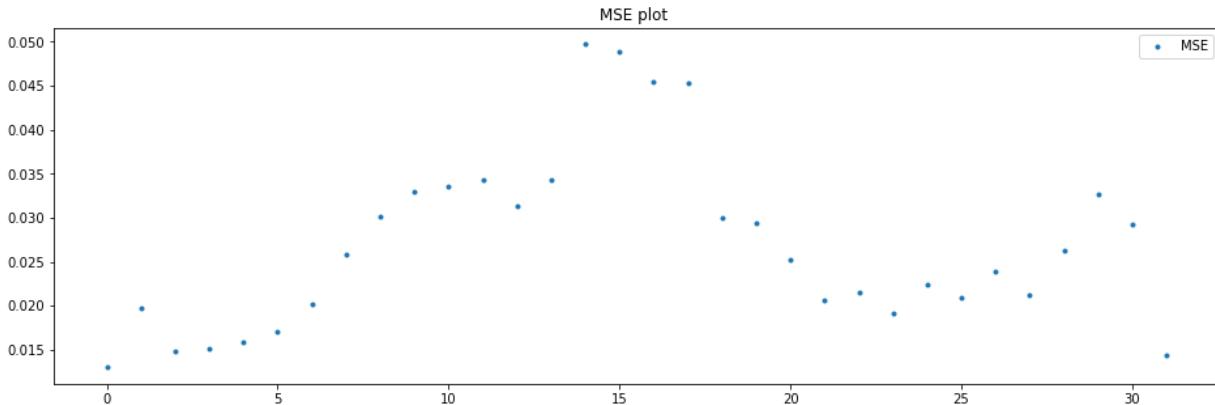
\*\*\*\*\*

Batch: 115

mean=0.027014375, median=0.02551 , max=0.04971, min=0.01298, variance=9.80684e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 0.713

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data looks normal (fail to reject H0)

2.500: 0.834, data looks normal (fail to reject H0)

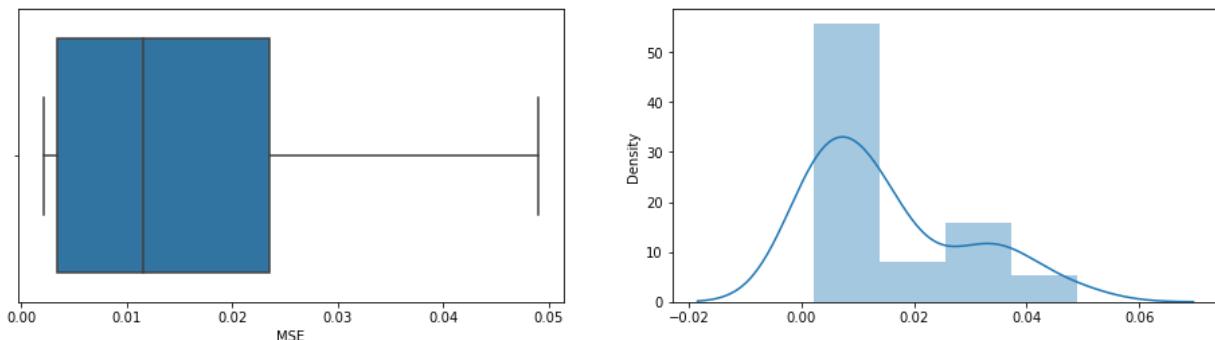
1.000: 0.992, data looks normal (fail to reject H0)

\*\*\*\*\*

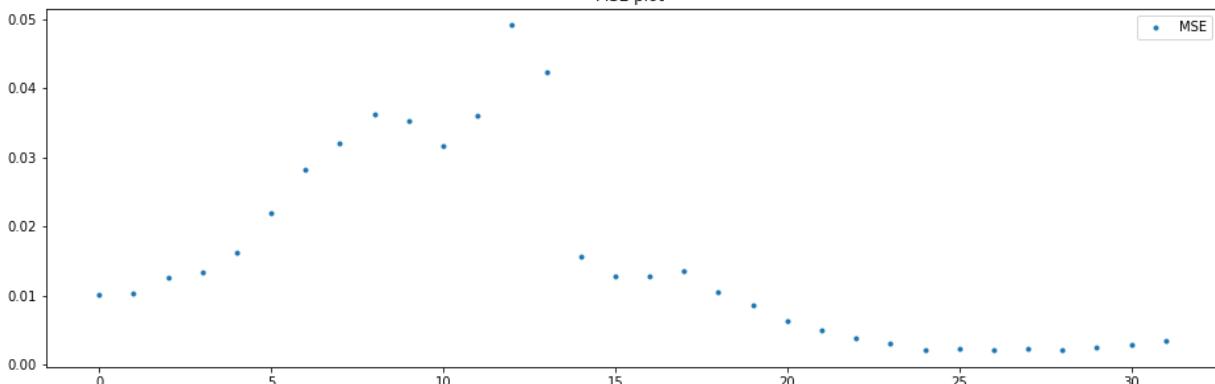
Batch: 116

mean=0.01524125, median=0.01159 , max=0.0491, min=0.00206, variance=0.0001815067

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson\_Darling Test

Statistic: 1.779

15.000: 0.523, data does not look normal (reject H0)

10.000: 0.596, data does not look normal (reject H0)

5.000: 0.715, data does not look normal (reject H0)

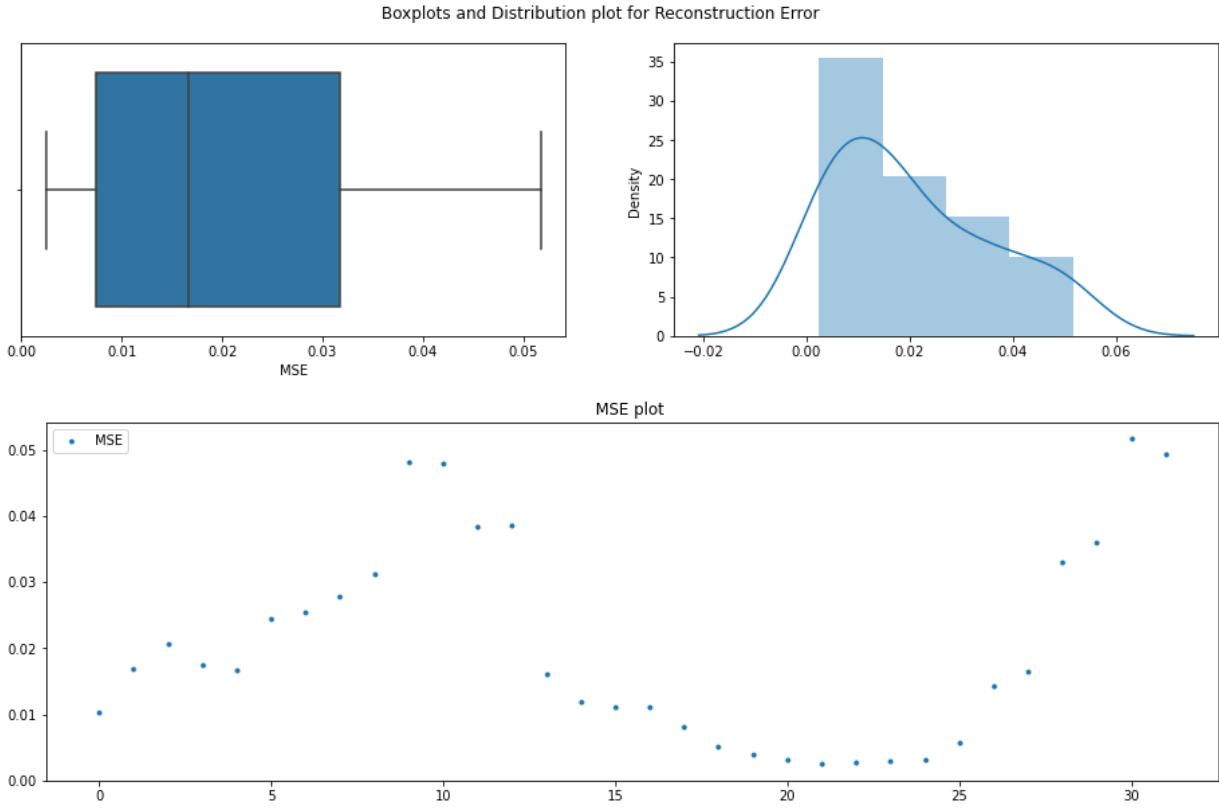
2.500: 0.834, data does not look normal (reject H0)

1.000: 0.992, data does not look normal (reject H0)

\*\*\*\*\*

Batch: 117

mean=0.02039625, median=0.01658 , max=0.05172, min=0.00244, variance=0.000234285



#### Anderson\_Darling Test

Statistic: 0.989

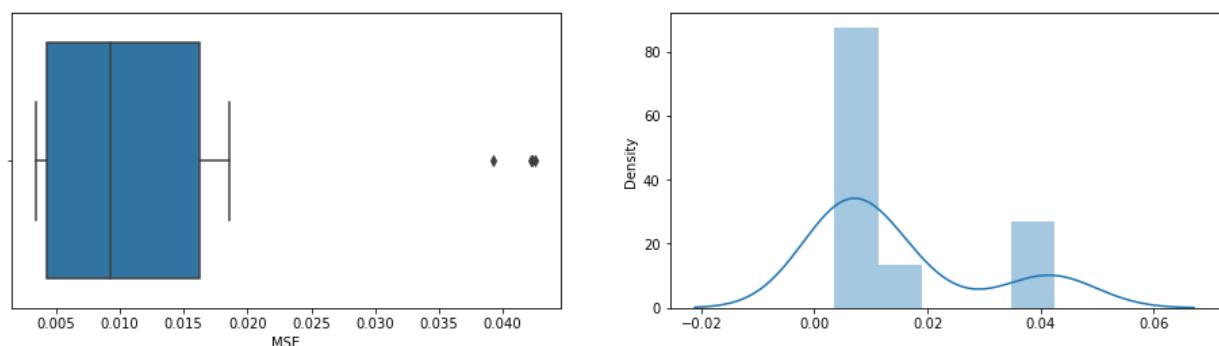
15.000: 0.523, data does not look normal (reject H<sub>0</sub>)  
 10.000: 0.596, data does not look normal (reject H<sub>0</sub>)  
 5.000: 0.715, data does not look normal (reject H<sub>0</sub>)  
 2.500: 0.834, data does not look normal (reject H<sub>0</sub>)  
 1.000: 0.992, data looks normal (fail to reject H<sub>0</sub>)

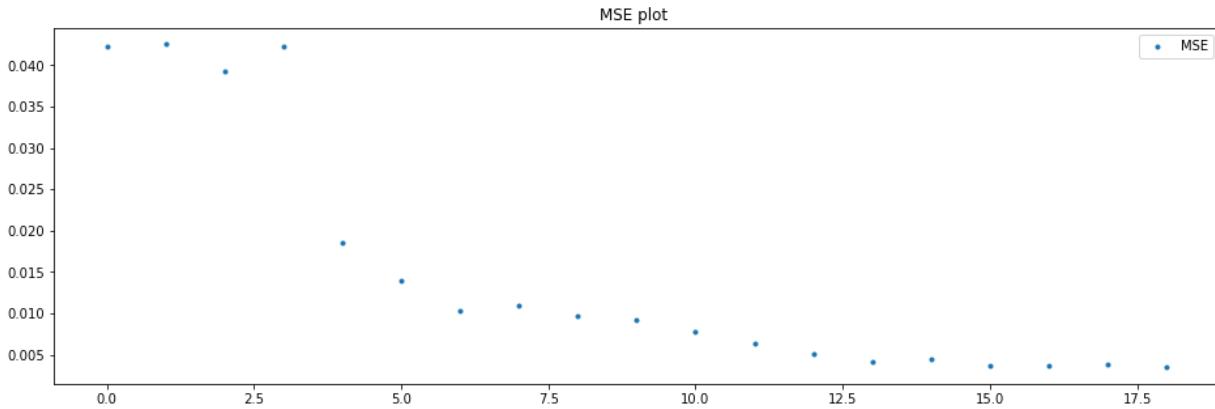
\*\*\*\*\*

Batch: 118

mean=0.0148110526, median=0.00928 , max=0.04253, min=0.00344, variance=0.0002060818

Boxplots and Distribution plot for Reconstruction Error





Anderson\_Darling Test

Statistic: 2.313

15.000: 0.505, data does not look normal (reject H<sub>0</sub>)  
 10.000: 0.575, data does not look normal (reject H<sub>0</sub>)  
 5.000: 0.690, data does not look normal (reject H<sub>0</sub>)  
 2.500: 0.804, data does not look normal (reject H<sub>0</sub>)  
 1.000: 0.957, data does not look normal (reject H<sub>0</sub>)

## Instance Threshold

```
In [57]: instance_thresh_pos,zscore_list_pos=compute_instance_threshold_firstN_batches(batch_r...
```

```
In [58]: instance_thresh_pos
```

```
Out[58]: 0.0629
```

## Batch Threshold

```
In [59]: thres_iqr_batch_pos, thres_zscore_batch_pos=compute_batch_threshold_testdata(batch_a...
```

```
In [60]: thres_zscore_batch_pos
```

```
Out[60]: 0.0525
```

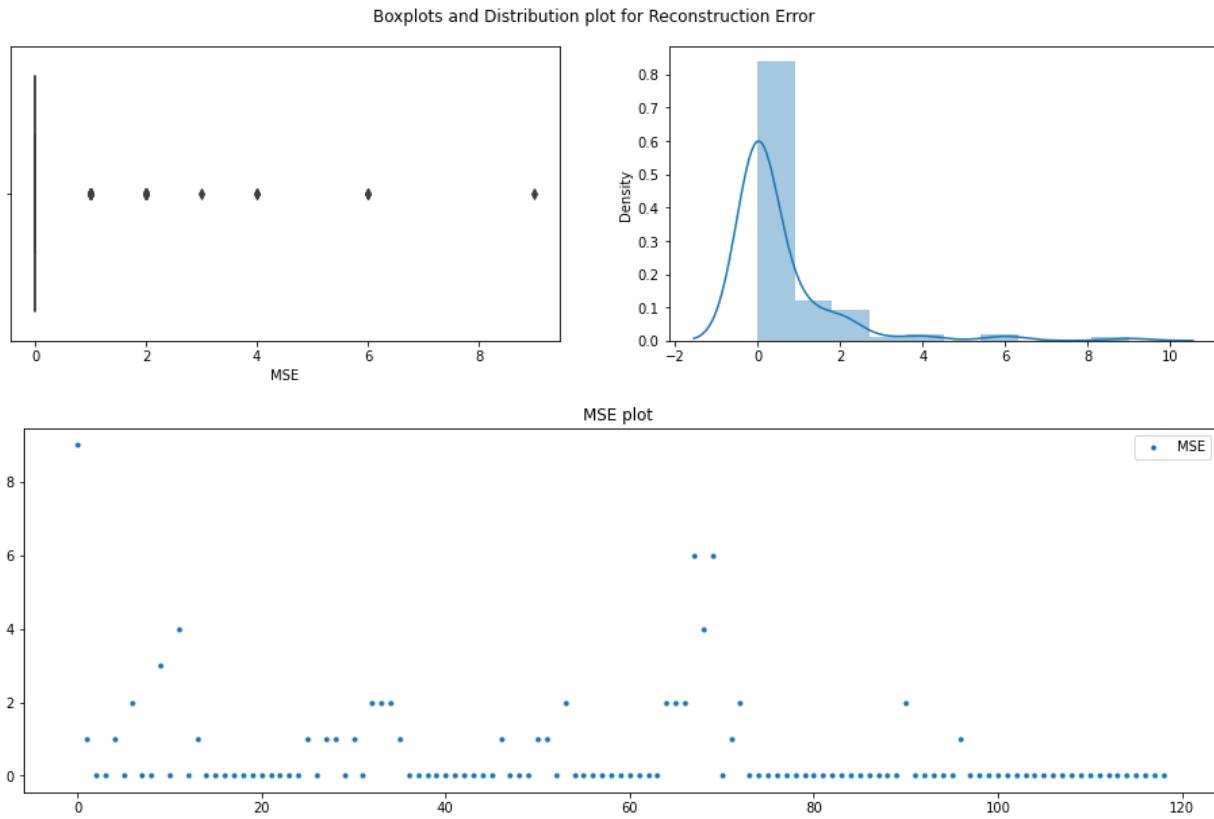
## Count Threshold

```
In [61]: # Counts the MSE values exceeding threshold in each batch
exceed_count_pos,total_pos=threshold_exceed_count(batch_mse_values_pos,instance_thresh...
```

```
In [62]: exceed_list_pos=[]
for key in exceed_count_pos.keys():
    exceed_list_pos.append(exceed_count_pos[key])
```

```
In [63]: plot_results(exceed_list_pos)
```

```
mean=0.5462184874,median=0.0 ,max=9,min=0,variance=1.7772756161
```



```
In [64]: exceed_list_pos;
```

```
In [65]: count_thresh_pos=np.median(exceed_list_pos)
```

```
In [66]: count_thresh_pos
```

```
Out[66]: 0.0
```

## 6. working on stream data without any drift introduced

```
In [67]: stream
```

	day	period	nswprice	nswdemand	vicprice	vicdemand	transfer	class
<b>40780</b>	0.5	0.596	0.073	0.465	0.005	0.570	0.478	UP
<b>40781</b>	0.5	0.617	0.072	0.459	0.005	0.557	0.476	UP
<b>40782</b>	0.5	0.638	0.054	0.452	0.004	0.542	0.495	DOWN
<b>40783</b>	0.5	0.660	0.049	0.456	0.003	0.531	0.518	DOWN
<b>40784</b>	0.5	0.681	0.051	0.461	0.003	0.532	0.504	DOWN
...	...	...	...	...	...	...	...	...
<b>45307</b>	1.0	0.915	0.044	0.341	0.003	0.255	0.405	DOWN

	day	period	nswprice	nswdemand	vicprice	vicdemand	transfer	class
<b>45308</b>	1.0	0.936	0.045	0.356	0.003	0.241	0.421	DOWN
<b>45309</b>	1.0	0.957	0.044	0.341	0.003	0.248	0.362	DOWN
<b>45310</b>	1.0	0.979	0.067	0.329	0.005	0.345	0.207	UP
<b>45311</b>	1.0	1.000	0.051	0.289	0.004	0.355	0.231	DOWN

4532 rows × 8 columns

```
In [68]: stream2=stream.copy()
del stream2['class']
```

```
In [69]: stream2
```

	day	period	nswprice	nswdemand	vicprice	vicdemand	transfer
<b>40780</b>	0.5	0.596	0.073	0.465	0.005	0.570	0.478
<b>40781</b>	0.5	0.617	0.072	0.459	0.005	0.557	0.476
<b>40782</b>	0.5	0.638	0.054	0.452	0.004	0.542	0.495
<b>40783</b>	0.5	0.660	0.049	0.456	0.003	0.531	0.518
<b>40784</b>	0.5	0.681	0.051	0.461	0.003	0.532	0.504
...	...	...	...	...	...	...	...
<b>45307</b>	1.0	0.915	0.044	0.341	0.003	0.255	0.405
<b>45308</b>	1.0	0.936	0.045	0.356	0.003	0.241	0.421
<b>45309</b>	1.0	0.957	0.044	0.341	0.003	0.248	0.362
<b>45310</b>	1.0	0.979	0.067	0.329	0.005	0.345	0.207
<b>45311</b>	1.0	1.000	0.051	0.289	0.004	0.355	0.231

4532 rows × 7 columns

```
In [70]: batches_n=make_batches(stream2)
```

```
# This function makes a list of dictionary values
def return_list_of_dict_values(d):
    values_list=[]
    for key in d.keys():
        values_list.append(d[key])
    return values_list
```

## 7. Drift Detection Framework

In [72]:

```
def detect_at_batch_level(test_batch,b,batch_thres_pos,batch_thres_neg,count_thresh_pos):

    # Layer 1 Variables
    mse_list_layer1=[]      # Holds the recon loss values predicted by Layer 1 Autoencoder
    exceed_count_layer1=0    # How many instances exceed layer one instance level threshold
    mse_sum=0                # sum of recon.error values from Layer 1 AE for this batch

    # Layer 2 Variables
    mse_list_layer2=[]      # Holds the recon.error values predicted by Layer 2 Autoencoder
    exceed_count_layer2=-1   # If a batch is not passed to the layer2 AE , then exceed_count_layer2 = -1
    mse_sum_layer2=0          # sum of recon.error values from Layer 2 AE for this batch

    layer1_excede_list=[]    # Holds the batch numbers of batches exceeding layer1 thresholds
    #all_excede_list=[]      # Hold the batch number of batches exceeding both Layer-1 and Layer-2 thresholds
    layer_one_instance_exceed_list=[] # Holds the indices of instances exceeding layer1 thresholds
    layer_two_instance_exceed_list=[] # Holds the indices of instances exceeding layer2 thresholds

    # Determine Layer 1 and Layer AE and their associated thresholds
    layer_one_batch_thres= batch_thres_pos if batch_thres_pos<batch_thres_neg else batch_thres_neg
    layer_two_batch_thres= batch_thres_pos if batch_thres_pos>batch_thres_neg else batch_thres_pos
    layer_one_encoder= encoder_pos_class if batch_thres_pos<batch_thres_neg else encoder_neg_class
    layer_two_encoder= encoder_pos_class if batch_thres_pos>batch_thres_neg else encoder_neg_class

    layer_one_count_threshold=count_thresh_pos if batch_thres_pos<batch_thres_neg else count_thresh_neg
    layer_two_count_threshold=count_thresh_pos if batch_thres_pos>batch_thres_neg else count_thresh_pos

    layer1_ins_thresh=instance_thresh_pos if batch_thres_pos<batch_thres_neg else instance_thresh_neg
    layer2_ins_thresh=instance_thresh_pos if batch_thres_pos>batch_thres_neg else instance_thresh_neg

    # Pass each instance of a batch to Layer 1 AE. Compute Batch MSE and Number of Instances Exceeding Layer 1 Threshold
    avg_mse_layer1=0
    for i in range(0,test_batch.shape[0]):
        ROW = np.array([test_batch[i]])
        pred= layer_one_encoder.predict(ROW)
        mse = np.round(np.mean(np.power(test_batch[i] - pred, 2)),5)
        mse_list_layer1.append(mse)
        if mse>layer1_ins_thresh:
            exceed_count_layer1+=1
            layer_one_instance_exceed_list.append(i)
        mse_sum+=mse
    avg_mse_layer1=(mse_sum)/len(test_batch)
    avg_mse_layer2=0
    # Check if This batch exceeds both Layer 1 batch and count thresholds
    if ((avg_mse_layer1>layer_one_batch_thres) and ( exceed_count_layer1 >layer_one_count_threshold)):
        layer1_excede_list.append(b)# Keep track of batches exceeding Layer 1 thresholds
        exceed_count_layer2=0
    # Pass each instance of this batch to Layer 2 AE. Compute Batch MSE and Number of Instances Exceeding Layer 2 Threshold
    for i in range(0,test_batch.shape[0]):
        ROW = np.array([test_batch[i]])
        pred= layer_two_encoder.predict(ROW)
        mse = np.round(np.mean(np.power(test_batch[i] - pred, 2)),5)
        mse_list_layer2.append(mse)
        if mse>layer2_ins_thresh:
            exceed_count_layer2+=1
```

```
        layer_two_instance_exceed_list.append(i)
        mse_sum_layer2+=mse
        avg_mse_layer2=(mse_sum_layer2)/len(test_batch)

    if (avg_mse_layer2 > layer_two_batch_thres) and (exceed_count_layer2>layer_1_count_threshold):
        all_excede_list.append(b)# Keep track of batches exceeding layer 2 threshold

return all_excede_list,mse_list_layer1 , exceed_count_layer1 ,avg_mse_layer2,exceed_count_layer2
```

In [73]:

```
def detect_stream_drift(batches,encoder_pos_class,encoder_neg_class,batch_thres_pos,batch_thres_neg,layer_one_count_threshold,layer_two_count_threshold,layer_one_instance_thresh={} # Holds Number of instances exceeding instance threshold for layer one
                           ,layer_two_instance_thresh={} # Holds Number of instances exceeding instance threshold for layer two):
    mse_dict_L1={}          # Holds batchwise recon.error values from Layer 1 AE
    exceed_count_L1={}      # Batchwise number of Instances exceeding Layer 1 count threshold
    layer_one_instance_exceed_list={} # batch wise list of instances ( indices ) exceeding layer one threshold
    avg_mse_l1={}

    mse_dict_L2={}          # Holds batchwise recon. error values from Layer 2 AE
    exceed_count_L2={}      # Batchwise number of Instances exceeding Layer 2 count threshold
    layer_two_instance_exceed_list={} # For each batch maintains the indices where reconstruction error exceeds layer two threshold
    avg_mse_l2={}           #
    all_excede_list=[]
    n=0
    for b in batches:
        print("\n\n")
        print("*****")
        print('\nBatch Number : {}'.format(b))
        all_excede_list,mse_dict_L1[b],exceed_count_L1[b],avg_mse_l1[b],exceed_count_L2[b],layer_two_instance_exceed_list[b],avg_mse_l2[b]=detect_drift(batches[b],encoder_pos_class,encoder_neg_class,batch_thres_pos,batch_thres_neg,layer_one_count_threshold,layer_two_count_threshold,layer_one_instance_thresh,layer_two_instance_thresh)

        print('\nData Points Exceeding Layer 1 Encoder Instance Threshold : {}'.format(exceed_count_L1[b]))
        print('\nData Points Exceeding Layer 2 Encoder Instance Threshold: {}'.format(exceed_count_L2[b]))
        print('\nNumber of Data Points Exceeding Layer 2 Encoder Instance thresholds: {}'.format(len(layer_two_instance_exceed_list[b])))

    mse_list_layer1=return_list_of_dict_values(avg_mse_l1)
    exceed_count_list_layer1=return_list_of_dict_values(exceed_count_L1)

## Detect Drift at Batch Level
print ("\n Drift Detection at Batch Level\n")
exceed_list=return_list_of_dict_values(exceed_count_L2)
mse_list=return_list_of_dict_values(avg_mse_l2)
detect_drift(mse_list,exceed_list,layer_two_batch_thres,layer_two_count_threshold,layer_one_instance_thresh,layer_two_instance_thresh)

return all_excede_list,exceed_count_layer2_instance_thresh ,exceed_count_L2,avg_mse_l2,exceed_count_L1,layer_one_instance_exceed_list,layer_two_instance_exceed_list
```

In [92]:

```
# This function takes two lists of Batch recon.error values and Exceed Counts along
# If three consecutive batches exceed both thresholds drift is detected , warning is
def detect_drift(batch_mse,exceed_list, Thresh,count_thresh):
    print("Hello")
    count=0 ## counts the number of consecutive batches exceeding threshold
    w_count=0 # Count of elements in Window. Windows contains batch number where batch
               #threshold
    w_index_list=[] # Contains indices of batches where batch recon. error exceeds threshold
    drift_batches=[]
    for i in range(0,len(batch_mse)):
        if(((batch_mse[i]>Thresh)) and (exceed_list[i]>count_thresh)):
            print(' Threshold exceeds at batch : {}'.format(i))

            if(len(w_index_list)==0 or (i-w_index_list[-1]==1)):
                # Check if w_index_list is empty or its last entry is the previous batch
                w_index_list.append(i)# then append this batch to w_index_list
            count+=1

            print(w_index_list)
            if (count>2):# if for more than two consecutive batches threshold are same
                # confirm drift
                drift_batch=i-2 # Drift starting point

                print( " Drift Confirmed at Batch No : % d" %drift_batch)
                drift_batches.append(drift_batch)
            if (len(w_index_list)>=1 and len(w_index_list)<=2):

                #w_Level=i-len(w_index_list)
                print("Warning Level at Batch",i)

            else :
                count=0 # reset count
                if len(w_index_list)<=3:
                    w_index_list=[]
    print(" Number of Drifted Batches" + str(len(drift_batches)))
    print(drift_batches)
```

In [75]:

```
all_excede_list_n,exceed_count_L2_instThresh_n ,exceed_count_L2_countThresh_n,avg_mse
```

\*\*\*\*\*

Batch Number : 0

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 1

```
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

\*\*\*\*\*

```
Batch Number : 2
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

\*\*\*\*\*

```
Batch Number : 3
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

\*\*\*\*\*

```
Batch Number : 4
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

\*\*\*\*\*

```
Batch Number : 5
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

\*\*\*\*\*

```
Batch Number : 6
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
```

```
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 7

Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 8

Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 9

Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 10

Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 11

Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
```

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 12

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 13

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 14

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 15

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 16

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 17

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 18

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 19

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 20

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 21

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 22

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 23

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 24

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 25

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 26

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 27

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 28

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 29

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 30

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 31

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 32

```
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

\*\*\*\*\*

```
Batch Number : 33
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

\*\*\*\*\*

```
Batch Number : 34
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

\*\*\*\*\*

```
Batch Number : 35
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

\*\*\*\*\*

```
Batch Number : 36
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

\*\*\*\*\*

```
Batch Number : 37
Data Points Exceeding Layer 1 Encoder Instance Threshold : [4, 5, 6, 7, 8, 9, 10, 11,
```

12, 13, 14, 15, 16, 17, 18, 19, 20, 21]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 4

\*\*\*\*\*

Batch Number : 38

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 39

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 40

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 41

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 42

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

```
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 43
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 44
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 45
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 46
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 47
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
```

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 48

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 49

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 50

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 51

Data Points Exceeding Layer 1 Encoder Instance Threshold : [6, 8, 9, 10, 11]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 52

Data Points Exceeding Layer 1 Encoder Instance Threshold : [23, 24, 25, 26, 27, 28]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 53

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 54

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 55

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 56

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 57

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 58

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 59

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 60

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 61

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 62

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 63

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 64

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 65

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 66

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 67

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 68

```
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
*****
```

```
Batch Number : 69
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
*****
```

```
Batch Number : 70
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
*****
```

```
Batch Number : 71
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
*****
```

```
Batch Number : 72
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
*****
```

```
Batch Number : 73
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
```

```
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 74

Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 75

Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 76

Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 77

Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 78

Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
```

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 79

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 80

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 81

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 82

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 83

Data Points Exceeding Layer 1 Encoder Instance Threshold : [17]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 84

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 85

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 86

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 87

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 88

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 89

Data Points Exceeding Layer 1 Encoder Instance Threshold : [31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 90

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 91

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 92

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 93

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 94

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 95

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 96

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 97

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 98

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 99

```
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
*****
```

```
Batch Number : 100
Data Points Exceeding Layer 1 Encoder Instance Threshold : [4, 5]
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
*****
```

```
Batch Number : 101
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
*****
```

```
Batch Number : 102
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
*****
```

```
Batch Number : 103
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
*****
```

```
Batch Number : 104
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
```

```
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 105
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 106
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 107
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 108
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 109
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
```

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 110

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 111

Data Points Exceeding Layer 1 Encoder Instance Threshold : [15, 16]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 112

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 113

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 114

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 115

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 116

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 117

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 118

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 119

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 120

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 121

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 122

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 123

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 124

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 125

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 126

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 127

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 128

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 129

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 130

```
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
*****
```

```
Batch Number : 131
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
*****
```

```
Batch Number : 132
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
*****
```

```
Batch Number : 133
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
*****
```

```
Batch Number : 134
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
*****
```

```
Batch Number : 135
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
```

```
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 136
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 137
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 138
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 139
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 140
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
```

```
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
*****
```

```
Batch Number : 141
```

```
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
```

```
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
```

```
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
Drift Detection at Batch Level
```

```
Number of Drifted Batches0
```

```
[]
```

```
Number of Warnings: 0
```

## 7. Working with Drifted Data

### Feature Ranking based on Mutual Information

```
In [76]:
```

```
def feature_rank(data,label_col):  
    from sklearn.model_selection import train_test_split  
    from sklearn.feature_selection import mutual_info_classif  
  
    X_train,X_test,y_train,y_test=train_test_split(data.drop(labels=[label_col], axis=1), data[label_col], random_state=0)  
  
    mutual_info = mutual_info_classif(X_train, y_train)  
    mutual_info = pd.Series(mutual_info)  
    mutual_info.index = X_train.columns  
    mutual_info.sort_values(ascending=False,inplace=True)  
  
    return mutual_info
```

```
In [ ]:
```

```
In [77]:
```

```
rank_list=feature_rank(data,'class')
```

```
In [78]:
```

```
rank_list
```

```
Out[78]: nswprice      0.165968  
          period        0.071101  
          vicprice      0.069512  
          nswdemand     0.068817  
          vicdemand     0.034556  
          transfer       0.013437  
          day            0.004599  
          dtype: float64
```

In [79]:

stream

Out[79]:

	day	period	nswprice	nswdemand	vicprice	vicdemand	transfer	class
<b>40780</b>	0.5	0.596	0.073	0.465	0.005	0.570	0.478	UP
<b>40781</b>	0.5	0.617	0.072	0.459	0.005	0.557	0.476	UP
<b>40782</b>	0.5	0.638	0.054	0.452	0.004	0.542	0.495	DOWN
<b>40783</b>	0.5	0.660	0.049	0.456	0.003	0.531	0.518	DOWN
<b>40784</b>	0.5	0.681	0.051	0.461	0.003	0.532	0.504	DOWN
...	...	...	...	...	...	...	...	...
<b>45307</b>	1.0	0.915	0.044	0.341	0.003	0.255	0.405	DOWN
<b>45308</b>	1.0	0.936	0.045	0.356	0.003	0.241	0.421	DOWN
<b>45309</b>	1.0	0.957	0.044	0.341	0.003	0.248	0.362	DOWN
<b>45310</b>	1.0	0.979	0.067	0.329	0.005	0.345	0.207	UP
<b>45311</b>	1.0	1.000	0.051	0.289	0.004	0.355	0.231	DOWN

4532 rows × 8 columns

In [80]:

```
def inject_sudden_drift(stream,rank_list,batch_size,fper):
    # fper is percentage of features
    #Labels=pd.DataFrame(stream['class'].reset_index(drop=True))
    # retain class labels for later use
    n=int(fper*len(rank_list))
    # Number of features ( top 25 % or top fper%)
    top25p_features=list(rank_list[0:int(n)].index) # List of top n features
    bottom25p_features=list(rank_list[-int(n):].index) # List of bottom n features
    all_features=list(rank_list.index) # features sorted ( descending order) by mutual
    unchanged_features_top25=set(all_features)-set(top25p_features)
    unchanged_features_bottom25=set(all_features)-set(bottom25p_features)
    unchanged_data_top25=stream[unchanged_features_top25].reset_index(drop=True)
    unchanged_data_bottom25=stream[unchanged_features_bottom25].reset_index(drop=True)
    data_for_drift_top25=stream[top25p_features].reset_index(drop=True)
    data_for_drift_bottom25=stream[bottom25p_features].reset_index(drop=True)

    # Injecting sudden drift starting from batch 20 for top 25% (fper) features

    first_20_batches_top25=data_for_drift_top25[0:(batch_size*20)]
    drifted_top25=data_for_drift_top25[batch_size*20:len(stream)]

    # This code swaps the values of columns so that col(i+1)values assigned to col(i)
    for i in range(0,len(drifted_top25.columns)-1) :
        drifted_top25['temp']=drifted_top25.iloc[:,i+1]
        drifted_top25.iloc[:,i+1]=drifted_top25.iloc[:,i]
        drifted_top25.iloc[:,i]=drifted_top25['temp']
    del drifted_top25['temp']

    stream_top25=pd.concat([first_20_batches_top25,drifted_top25],axis=0)
    stream_top25=pd.concat([stream_top25,unchanged_data_top25],axis=1)
    #stream_top25=stream_top25.reindex(columns=sorted(stream_top25.columns))
    stream2=stream.copy()
    del stream2['class']
    stream_top25=stream_top25.reindex(columns=(stream2.columns))

    # Injecting sudden drift starting from batch 20 for bottom 25% (fper) features

    first_20_batches_bottom25=data_for_drift_bottom25[0:(batch_size*20)]
    drifted_bottom25=data_for_drift_bottom25[batch_size*20:len(stream)]

    # This code swaps the values of columns so that col(i+1)values assigned to col(i)
    for i in range(0,len(drifted_bottom25.columns)-1) :
        drifted_bottom25['temp']=drifted_bottom25.iloc[:,i+1]
        drifted_bottom25.iloc[:,i+1]=drifted_bottom25.iloc[:,i]
        drifted_bottom25.iloc[:,i]=drifted_bottom25['temp']
    del drifted_bottom25['temp']

    stream_bottom25=pd.concat([first_20_batches_bottom25,drifted_bottom25],axis=0)
    stream_bottom25=pd.concat([stream_bottom25,unchanged_data_bottom25],axis=1)
    stream_bottom25=stream_bottom25.reindex(columns=(stream2.columns))

return stream_top25,stream_bottom25
```

## A) Sudden Drift Top 25 or Top x% ( Here Top 30%)

```
In [81]: stream_top25,stream_bottom25=inject_sudden_drift(stream,rank_list,batch_size=32,fper=0.05)  
  
In [82]: batches_d=make_batches(stream_top25)  
  
In [83]: #batches_d=dict(list(batches_d.items())[:30])
```

## Drift Detection through AE-DDM

```
In [93]: all_excede_list_d,exceed_count_L2_instThresh_d ,exceed_count_L2_countThresh_d,avg_mse
```

\*\*\*\*\*

Batch Number : 0

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 1

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 2

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 3

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

```
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 4

Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 5

Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 6

Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 7

Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 8

Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
```

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 9

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 10

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 11

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 12

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 13

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 14

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 15

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 16

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 17

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 18

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 19

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 20

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 7

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Batch Number : 21

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 28, 29]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 22

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Batch Number : 22

Data Points Exceeding Layer 1 Encoder Instance Threshold : [6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 19

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Batch Number : 23

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 12, 13, 30, 3

1]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 8

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Batch Number : 24

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 25

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Batch Number : 25

Data Points Exceeding Layer 1 Encoder Instance Threshold : [11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 21

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Batch Number : 26

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 24

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Batch Number : 27

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 27, 28, 29, 30]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 24

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Batch Number : 28

Data Points Exceeding Layer 1 Encoder Instance Threshold : [11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 18

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Batch Number : 29

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 12, 13, 14, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 9

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Batch Number : 30

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 26

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Batch Number : 31

Data Points Exceeding Layer 1 Encoder Instance Threshold : [10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 19

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Batch Number : 32

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 11, 12, 13, 14, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 11

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Batch Number : 33

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 27, 28, 29, 30]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 24

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Batch Number : 34

Data Points Exceeding Layer 1 Encoder Instance Threshold : [6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 35

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 26

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Batch Number : 36

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 28

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Batch Number : 37

Data Points Exceeding Layer 1 Encoder Instance Threshold : [5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 38

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 8, 9, 10, 11, 12, 13, 14, 15, 16, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 15

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Batch Number : 39

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 26

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Batch Number : 40

Data Points Exceeding Layer 1 Encoder Instance Threshold : [11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 18

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Batch Number : 41

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 9, 10, 11, 12, 13, 14, 15, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 14

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Batch Number : 42

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 26

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Batch Number : 43

Data Points Exceeding Layer 1 Encoder Instance Threshold : [9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 17

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Batch Number : 44

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 10, 11, 12, 13, 14, 15]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 10

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Batch Number : 45

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 26

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Batch Number : 46

Data Points Exceeding Layer 1 Encoder Instance Threshold : [9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 29

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Batch Number : 47

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 28

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Batch Number : 48

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 27

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Batch Number : 49

Data Points Exceeding Layer 1 Encoder Instance Threshold : [11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 2, 3, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 28

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Batch Number : 50

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 11, 12, 13, 14, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 11

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Batch Number : 51

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 52

Data Points Exceeding Layer 1 Encoder Instance Threshold : [3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 29

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Batch Number : 53

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 13

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Batch Number : 54

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 55

Data Points Exceeding Layer 1 Encoder Instance Threshold : [5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 19

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Batch Number : 56

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 12, 13, 14, 15, 16, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 13

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Batch Number : 57

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 26

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Batch Number : 58

Data Points Exceeding Layer 1 Encoder Instance Threshold : [7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 59

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 10, 11, 12, 13, 14, 15, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 11

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Batch Number : 60

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 25

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Batch Number : 61

Data Points Exceeding Layer 1 Encoder Instance Threshold : [8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 19

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Batch Number : 62

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 13, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 9

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Batch Number : 63

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 64

Data Points Exceeding Layer 1 Encoder Instance Threshold : [9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [10, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 19

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Batch Number : 65

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 6

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Batch Number : 66

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 23

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Batch Number : 67

Data Points Exceeding Layer 1 Encoder Instance Threshold : [12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 68

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 27

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Batch Number : 69

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 26, 27, 28, 29, 30]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 25

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Batch Number : 70

Data Points Exceeding Layer 1 Encoder Instance Threshold : [10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 19

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Batch Number : 71

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 12, 13, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 9

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Batch Number : 72

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 28]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 21

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Batch Number : 73

Data Points Exceeding Layer 1 Encoder Instance Threshold : [9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 74

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 9

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Batch Number : 75

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 29]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 21

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Batch Number : 76

Data Points Exceeding Layer 1 Encoder Instance Threshold : [10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 18

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Batch Number : 77

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 11, 12, 13, 14, 15, 16, 17, 18, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 18

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Batch Number : 78

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 27

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Batch Number : 79

Data Points Exceeding Layer 1 Encoder Instance Threshold : [8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 80

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 10, 11, 12, 13, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 11

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Batch Number : 81

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 82

Data Points Exceeding Layer 1 Encoder Instance Threshold : [4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 22

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Batch Number : 83

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 12

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Batch Number : 84

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 85

Data Points Exceeding Layer 1 Encoder Instance Threshold : [1, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [10, 11, 12, 13, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 86

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 8

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Batch Number : 87

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 28]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 21

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Batch Number : 88

Data Points Exceeding Layer 1 Encoder Instance Threshold : [12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 22

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Batch Number : 89

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 28

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Batch Number : 90

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 25, 26, 27, 28, 29]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 25

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Batch Number : 91

Data Points Exceeding Layer 1 Encoder Instance Threshold : [12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 21

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Batch Number : 92

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 9, 10, 11, 12, 13, 14, 15, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 21

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Batch Number : 93

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 25, 26, 27, 28, 29]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 25

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Batch Number : 94

Data Points Exceeding Layer 1 Encoder Instance Threshold : [9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 21

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Batch Number : 95

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 9, 10, 11, 12, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 13

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Batch Number : 96

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 26, 27, 28]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 23

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Batch Number : 97

Data Points Exceeding Layer 1 Encoder Instance Threshold : [9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 98

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 9, 10, 11, 12, 13, 14, 15, 20, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 99

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 29

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Batch Number : 100

Data Points Exceeding Layer 1 Encoder Instance Threshold : [5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 101

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 8, 9, 10, 11, 12, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 12

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Batch Number : 102

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 25, 26, 27, 28]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 24

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Batch Number : 103

Data Points Exceeding Layer 1 Encoder Instance Threshold : [10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 21

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Batch Number : 104

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 9, 10, 11, 12, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 10

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Batch Number : 105

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 106

Data Points Exceeding Layer 1 Encoder Instance Threshold : [7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 19

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Batch Number : 107

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 9

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Batch Number : 108

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 26

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Batch Number : 109

Data Points Exceeding Layer 1 Encoder Instance Threshold : [9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 24

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Batch Number : 110

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 29

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Batch Number : 111

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 24, 25, 26, 27, 28, 29]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 26

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Batch Number : 112

Data Points Exceeding Layer 1 Encoder Instance Threshold : [11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 113

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 10, 11, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 10

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Batch Number : 114

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 115

Data Points Exceeding Layer 1 Encoder Instance Threshold : [9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 116

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 25, 26, 27, 28, 29, 30, 31]

8, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 8

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Batch Number : 117

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 118

Data Points Exceeding Layer 1 Encoder Instance Threshold : [8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 19

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Batch Number : 119

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 10, 11, 12, 13, 14, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 15

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Batch Number : 120

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 28

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Batch Number : 121

Data Points Exceeding Layer 1 Encoder Instance Threshold : [9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 122

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 9, 10, 11, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 9

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Batch Number : 123

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 124

Data Points Exceeding Layer 1 Encoder Instance Threshold : [8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 125

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 9

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Batch Number : 126

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 127

Data Points Exceeding Layer 1 Encoder Instance Threshold : [6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 22

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Batch Number : 128

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 8

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Batch Number : 129

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8,

9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 27, 28, 29, 30]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 24

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Batch Number : 130

Data Points Exceeding Layer 1 Encoder Instance Threshold : [11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 22

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Batch Number : 131

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 27

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Batch Number : 132

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 25, 26, 27, 28]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 24

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Batch Number : 133

Data Points Exceeding Layer 1 Encoder Instance Threshold : [10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 19

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Batch Number : 134

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 24, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 8

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Batch Number : 135

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 136

Data Points Exceeding Layer 1 Encoder Instance Threshold : [7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 22

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Batch Number : 137

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 9

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Batch Number : 138

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 139

Data Points Exceeding Layer 1 Encoder Instance Threshold : [6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 19

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Batch Number : 140

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 8

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Batch Number : 141

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

Drift Detection at Batch Level

Hello

Threshold exceeds at batch : 20  
[20]

Warning Level at Batch 20  
Threshold exceeds at batch : 21

[20, 21]  
Warning Level at Batch 21  
Threshold exceeds at batch : 22

[20, 21, 22]  
Drift Confirmed at Batch No : 20

Threshold exceeds at batch : 23  
[20, 21, 22, 23]

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Drift Confirmed at Batch No : 21
Threshold exceeds at batch : 24
[20, 21, 22, 23, 24]
Drift Confirmed at Batch No : 22
Threshold exceeds at batch : 25
[20, 21, 22, 23, 24, 25]
Drift Confirmed at Batch No : 23
Threshold exceeds at batch : 26
[20, 21, 22, 23, 24, 25, 26]
Drift Confirmed at Batch No : 24
Threshold exceeds at batch : 27
[20, 21, 22, 23, 24, 25, 26, 27]
Drift Confirmed at Batch No : 25
Threshold exceeds at batch : 28
[20, 21, 22, 23, 24, 25, 26, 27, 28]
Drift Confirmed at Batch No : 26
Threshold exceeds at batch : 29
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29]
Drift Confirmed at Batch No : 27
Threshold exceeds at batch : 30
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30]
Drift Confirmed at Batch No : 28
Threshold exceeds at batch : 31
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]
Drift Confirmed at Batch No : 29
Threshold exceeds at batch : 32
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32]
Drift Confirmed at Batch No : 30
Threshold exceeds at batch : 33
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33]
Drift Confirmed at Batch No : 31
Threshold exceeds at batch : 34
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34]
Drift Confirmed at Batch No : 32
Threshold exceeds at batch : 35
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35]
Drift Confirmed at Batch No : 33
Threshold exceeds at batch : 36
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36]
Drift Confirmed at Batch No : 34
Threshold exceeds at batch : 37
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37]
Drift Confirmed at Batch No : 35
Threshold exceeds at batch : 38
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38]
Drift Confirmed at Batch No : 36
Threshold exceeds at batch : 39
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39]
Drift Confirmed at Batch No : 37
Threshold exceeds at batch : 40
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40]
Drift Confirmed at Batch No : 38
Threshold exceeds at batch : 41
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,
41]
Drift Confirmed at Batch No : 39
Threshold exceeds at batch : 42
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,
41, 42]
Drift Confirmed at Batch No : 40
Threshold exceeds at batch : 43
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,
```

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41, 42, 43]
Drift Confirmed at Batch No : 41
Threshold exceeds at batch : 44
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,
41, 42, 43, 44]
Drift Confirmed at Batch No : 42
Threshold exceeds at batch : 45
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,
41, 42, 43, 44, 45]
Drift Confirmed at Batch No : 43
Threshold exceeds at batch : 46
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,
41, 42, 43, 44, 45, 46]
Drift Confirmed at Batch No : 44
Threshold exceeds at batch : 47
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,
41, 42, 43, 44, 45, 46, 47]
Drift Confirmed at Batch No : 45
Threshold exceeds at batch : 48
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,
41, 42, 43, 44, 45, 46, 47, 48]
Drift Confirmed at Batch No : 46
Threshold exceeds at batch : 49
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,
41, 42, 43, 44, 45, 46, 47, 48, 49]
Drift Confirmed at Batch No : 47
Threshold exceeds at batch : 50
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,
41, 42, 43, 44, 45, 46, 47, 48, 49, 50]
Drift Confirmed at Batch No : 48
Threshold exceeds at batch : 51
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51]
Drift Confirmed at Batch No : 49
Threshold exceeds at batch : 52
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52]
Drift Confirmed at Batch No : 50
Threshold exceeds at batch : 53
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53]
Drift Confirmed at Batch No : 51
Threshold exceeds at batch : 54
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54]
Drift Confirmed at Batch No : 52
Threshold exceeds at batch : 55
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55]
Drift Confirmed at Batch No : 53
Threshold exceeds at batch : 56
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56]
Drift Confirmed at Batch No : 54
Threshold exceeds at batch : 57
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57]
Drift Confirmed at Batch No : 55
Threshold exceeds at batch : 58
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58]
Drift Confirmed at Batch No : 56
```

Threshold exceeds at batch : 59  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59]  
Drift Confirmed at Batch No : 57  
Threshold exceeds at batch : 60  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60]  
Drift Confirmed at Batch No : 58  
Threshold exceeds at batch : 61  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61]  
Drift Confirmed at Batch No : 59  
Threshold exceeds at batch : 62  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62]  
Drift Confirmed at Batch No : 60  
Threshold exceeds at batch : 63  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63]  
Drift Confirmed at Batch No : 61  
Threshold exceeds at batch : 64  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64]  
Drift Confirmed at Batch No : 62  
Threshold exceeds at batch : 65  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65]  
Drift Confirmed at Batch No : 63  
Threshold exceeds at batch : 66  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66]  
Drift Confirmed at Batch No : 64  
Threshold exceeds at batch : 67  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67]  
Drift Confirmed at Batch No : 65  
Threshold exceeds at batch : 68  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68]  
Drift Confirmed at Batch No : 66  
Threshold exceeds at batch : 69  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69]  
Drift Confirmed at Batch No : 67  
Threshold exceeds at batch : 70  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70]  
Drift Confirmed at Batch No : 68  
Threshold exceeds at batch : 71  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71]  
Drift Confirmed at Batch No : 69

Threshold exceeds at batch : 72  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72]  
Drift Confirmed at Batch No : 70  
Threshold exceeds at batch : 73  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73]  
Drift Confirmed at Batch No : 71  
Threshold exceeds at batch : 74  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74]  
Drift Confirmed at Batch No : 72  
Threshold exceeds at batch : 75  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75]  
Drift Confirmed at Batch No : 73  
Threshold exceeds at batch : 76  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76]  
Drift Confirmed at Batch No : 74  
Threshold exceeds at batch : 77  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77]  
Drift Confirmed at Batch No : 75  
Threshold exceeds at batch : 78  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78]  
Drift Confirmed at Batch No : 76  
Threshold exceeds at batch : 79  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79]  
Drift Confirmed at Batch No : 77  
Threshold exceeds at batch : 80  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80]  
Drift Confirmed at Batch No : 78  
Threshold exceeds at batch : 81  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81]  
Drift Confirmed at Batch No : 79  
Threshold exceeds at batch : 82  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82]  
Drift Confirmed at Batch No : 80  
Threshold exceeds at batch : 83  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83]  
Drift Confirmed at Batch No : 81  
Threshold exceeds at batch : 84

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84]  
Drift Confirmed at Batch No : 82  
Threshold exceeds at batch : 85  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85]  
Drift Confirmed at Batch No : 83  
Threshold exceeds at batch : 86  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86]  
Drift Confirmed at Batch No : 84  
Threshold exceeds at batch : 87  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87]  
Drift Confirmed at Batch No : 85  
Threshold exceeds at batch : 88  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88]  
Drift Confirmed at Batch No : 86  
Threshold exceeds at batch : 89  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89]  
Drift Confirmed at Batch No : 87  
Threshold exceeds at batch : 90  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90]  
Drift Confirmed at Batch No : 88  
Threshold exceeds at batch : 91  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91]  
Drift Confirmed at Batch No : 89  
Threshold exceeds at batch : 92  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92]  
Drift Confirmed at Batch No : 90  
Threshold exceeds at batch : 93  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93]  
Drift Confirmed at Batch No : 91  
Threshold exceeds at batch : 94  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93]

2, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83  
, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94]  
Drift Confirmed at Batch No : 92  
Threshold exceeds at batch : 95  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,  
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 6  
2, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83  
, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95]  
Drift Confirmed at Batch No : 93  
Threshold exceeds at batch : 96  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,  
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 6  
2, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83  
, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96]  
Drift Confirmed at Batch No : 94  
Threshold exceeds at batch : 97  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,  
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 6  
2, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83  
, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97]  
Drift Confirmed at Batch No : 95  
Threshold exceeds at batch : 98  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,  
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 6  
2, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83  
, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98]  
Drift Confirmed at Batch No : 96  
Threshold exceeds at batch : 99  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,  
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 6  
2, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83  
, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99]  
Drift Confirmed at Batch No : 97  
Threshold exceeds at batch : 100  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,  
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 6  
2, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83  
, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100]  
Drift Confirmed at Batch No : 98  
Threshold exceeds at batch : 101  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,  
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 6  
2, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83  
, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101]  
Drift Confirmed at Batch No : 99  
Threshold exceeds at batch : 102  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,  
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 6  
2, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83  
, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102]  
Drift Confirmed at Batch No : 100  
Threshold exceeds at batch : 103  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,  
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 6  
2, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83  
, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103]  
Drift Confirmed at Batch No : 101  
Threshold exceeds at batch : 104  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,  
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 6  
2, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83  
, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103,

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Drift Confirmed at Batch No : 102

Threshold exceeds at batch : 105

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105]

Drift Confirmed at Batch No : 103

Threshold exceeds at batch : 106

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106]

Drift Confirmed at Batch No : 104

Threshold exceeds at batch : 107

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107]

Drift Confirmed at Batch No : 105

Threshold exceeds at batch : 108

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108]

Drift Confirmed at Batch No : 106

Threshold exceeds at batch : 109

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109]

Drift Confirmed at Batch No : 107

Threshold exceeds at batch : 110

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110]

Drift Confirmed at Batch No : 108

Threshold exceeds at batch : 111

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111]

Drift Confirmed at Batch No : 109

Threshold exceeds at batch : 112

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112]

Drift Confirmed at Batch No : 110

Threshold exceeds at batch : 113

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83]

, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113]

Drift Confirmed at Batch No : 111

Threshold exceeds at batch : 114

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114]

Drift Confirmed at Batch No : 112

Threshold exceeds at batch : 115

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115]

Drift Confirmed at Batch No : 113

Threshold exceeds at batch : 116

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116]

Drift Confirmed at Batch No : 114

Threshold exceeds at batch : 117

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117]

Drift Confirmed at Batch No : 115

Threshold exceeds at batch : 118

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118]

Drift Confirmed at Batch No : 116

Threshold exceeds at batch : 119

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119]

Drift Confirmed at Batch No : 117

Threshold exceeds at batch : 120

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120]

Drift Confirmed at Batch No : 118

Threshold exceeds at batch : 121

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121]

Drift Confirmed at Batch No : 119

Threshold exceeds at batch : 122

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,

41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 6  
2, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83  
, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103,  
104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120,  
121, 122]

Drift Confirmed at Batch No : 120

Threshold exceeds at batch : 123

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,  
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 6  
2, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83  
, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103,  
104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120,  
121, 122, 123]

Drift Confirmed at Batch No : 121

Threshold exceeds at batch : 124

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,  
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 6  
2, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83  
, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103,  
104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120,  
121, 122, 123, 124]

Drift Confirmed at Batch No : 122

Threshold exceeds at batch : 125

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,  
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 6  
2, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83  
, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103,  
104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120,  
121, 122, 123, 124, 125]

Drift Confirmed at Batch No : 123

Threshold exceeds at batch : 126

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,  
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 6  
2, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83  
, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103,  
104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120,  
121, 122, 123, 124, 125]

Drift Confirmed at Batch No : 124

Threshold exceeds at batch : 127

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,  
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 6  
2, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83  
, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103,  
104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120,  
121, 122, 123, 124, 125]

Drift Confirmed at Batch No : 125

Threshold exceeds at batch : 128

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,  
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 6  
2, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83  
, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103,  
104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120,  
121, 122, 123, 124, 125]

Drift Confirmed at Batch No : 126

Threshold exceeds at batch : 129

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,  
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 6  
2, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83  
, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103,  
104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120,  
121, 122, 123, 124, 125]

Drift Confirmed at Batch No : 127

Threshold exceeds at batch : 130

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130]

Drift Confirmed at Batch No : 128

Threshold exceeds at batch : 131

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131]

Drift Confirmed at Batch No : 129

Threshold exceeds at batch : 132

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132]

Drift Confirmed at Batch No : 130

Threshold exceeds at batch : 133

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133]

Drift Confirmed at Batch No : 131

Threshold exceeds at batch : 134

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134]

Drift Confirmed at Batch No : 132

Threshold exceeds at batch : 135

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135]

Drift Confirmed at Batch No : 133

Threshold exceeds at batch : 136

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136]

Drift Confirmed at Batch No : 134

Threshold exceeds at batch : 137

[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120,

121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137]  
Drift Confirmed at Batch No : 135  
Threshold exceeds at batch : 138  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,  
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 6  
2, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83  
, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103,  
104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120,  
121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137,  
138]  
Drift Confirmed at Batch No : 136  
Threshold exceeds at batch : 139  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,  
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 6  
2, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83  
, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103,  
104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120,  
121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137,  
138, 139]  
Drift Confirmed at Batch No : 137  
Threshold exceeds at batch : 140  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,  
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 6  
2, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83  
, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103,  
104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120,  
121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137,  
138, 139, 140]  
Drift Confirmed at Batch No : 138  
Threshold exceeds at batch : 141  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,  
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 6  
2, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83  
, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103,  
104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120,  
121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137,  
138, 139, 140, 141]  
Drift Confirmed at Batch No : 139  
Number of Drifted Batches120  
[20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,  
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 6  
2, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83  
, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103,  
104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120,  
121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137,  
138, 139]

## Students t Test

In [94]:

```
# t-Test

#H0: MSE Means of Normal and Drifted Data are not significantly different
#H1: MSE Means of Normal and Drifted Data are significantly different

def two_sample_tTest(sample1, sample2, alpha) :
    t_value, p_value = stats.ttest_ind(sample1, sample2)
    print('Test statistic is %f' % float(" {:.6f} ".format(t_value)))
    print('p-value for two tailed test is %f' % p_value)
    if p_value <= alpha:
        print('Conclusion : \n' 'Since p-value(=%f)' % p_value, '<', 'alpha(=%f)' % alpha,
    else:
        print('Accept H0: There is no drift in the dataset')
```

In [95]:

```
def perform_t_test():

    print("Layer 1 Reconstruction Error Values for Normal and Drifted Data")
    two_sample_tTest(mse_list_layer1_d, mse_list_layer1_n, alpha=0.05)

    print("\nLayer 1 Exceed Count Values for Normal and Drifted Data")
    two_sample_tTest(exceed_count_list_layer1_n, exceed_count_list_layer1_d, alpha=0.05)

    print("\nLayer 2 Reconstruction Error Values for Normal and Drifted Data")
    avg_mse_l2_list_d2 = return_list_of_dict_values(avg_mse_l2_list_d) # Preserve original
    avg_mse_l2_list_n2 = return_list_of_dict_values(avg_mse_l2_list_n)

    two_sample_tTest(avg_mse_l2_list_d2, avg_mse_l2_list_n2, alpha=0.05)

    print("\nLayer 2 Exceed Count Values for Normal and Drifted Data")
    exceed_count_L2_instThresh_d_values = return_list_of_dict_values(exceed_count_L2_instThresh_d)
    exceed_count_L2_instThresh_n_values = return_list_of_dict_values(exceed_count_L2_instThresh_n)
    two_sample_tTest(exceed_count_L2_instThresh_d_values, exceed_count_L2_instThresh_n_values, alpha=0.05)
```

In [96]:

```
perform_t_test()
```

```
Layer 1 Reconstruction Error Values for Normal and Drifted Data
Test statistic is 22.392264
p-value for two tailed test is 0.000000
Conclusion :
Since p-value(=0.000000) < alpha(=0.05) We reject the null hypothesis H0 and Accept H1 . So we conclude that
There is a drift in the dataset at 0.05 level of significance.

Layer 1 Exceed Count Values for Normal and Drifted Data
Test statistic is -22.153730
p-value for two tailed test is 0.000000
Conclusion :
Since p-value(=0.000000) < alpha(=0.05) We reject the null hypothesis H0 and Accept H1 . So we conclude that
There is a drift in the dataset at 0.05 level of significance.

Layer 2 Reconstruction Error Values for Normal and Drifted Data
Test statistic is 26.748749
p-value for two tailed test is 0.000000
```

Conclusion :

Since p-value(=0.000000) < alpha(=0.05) We reject the null hypothesis H<sub>0</sub> and Accept H<sub>1</sub> . So we conclude that  
There is a drift in the dataset at 0.05 level of significance.

Layer 2 Exceed Count Values for Normal and Drifted Data

Test statistic is 21.805124

p-value for two tailed test is 0.000000

Conclusion :

Since p-value(=0.000000) < alpha(=0.05) We reject the null hypothesis H<sub>0</sub> and Accept H<sub>1</sub> . So we conclude that  
There is a drift in the dataset at 0.05 level of significance.

## Drift Analysis Through Plots

In [97]:

```
def visual_analysis():
    df_plotting=pd.DataFrame()
    df_plotting['Layer 1: Non-drifted Data']=mse_list_layer1_n
    df_plotting['Layer 1: Drifted Data']=mse_list_layer1_d
    df_plotting['Layer 2: Non-Drifted Data']=list(avg_mse_12_list_n.values())
    df_plotting['Layer 2: Drifted Data']=list(avg_mse_12_list_d.values())

    df_plotting_counts=pd.DataFrame()

    df_plotting_counts['Layer 1: Non-drifted Data']=exceed_count_list_layer1_n
    df_plotting_counts['Layer 1: Drifted Data']=exceed_count_list_layer1_d
    df_plotting_counts['Layer 2: Non-Drifted Data']=list(exceed_count_L2_countThresh_n)
    df_plotting_counts['Layer 2: Drifted Data']=list(exceed_count_L2_countThresh_d)

    from plotly import express as px

    config = {
        'toImageButtonOptions': {
            'format': 'png', # one of png, svg, jpeg, webp
            'filename': 'custom_image',
            'height': 500,
            'width': 800,
            'scale':9 # Multiply title/legend/axis/canvas sizes by this factor
        }
    }

    fig = px.scatter(df_plotting, x=df_plotting.index, y=[df_plotting['Layer 1: Non-drifted Data'], df_plotting['Layer 2: Non-Drifted Data']])
    fig.update_layout(showlegend=True,
                      legend=dict(
                          yanchor='top',
                          y=.95,
                          xanchor='left',
                          x=0.01), xaxis_title="Batch Number ", yaxis_title="Reconstruction Error" , legend_xpos="left", legend_ypos="top")
    fig.show(config=config)

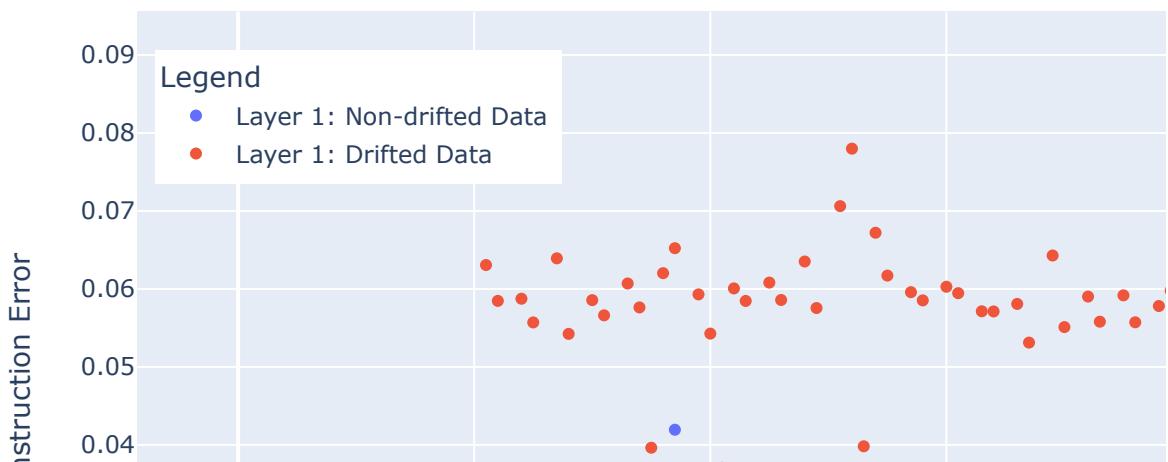
    fig2 = px.scatter(df_plotting, x=df_plotting.index, y=[df_plotting['Layer 1: Drifted Data'], df_plotting['Layer 2: Drifted Data']])
    fig2.update_layout(showlegend=True,
                      legend=dict(
                          yanchor='top',
                          y=.95,
                          xanchor='left',
                          x=0.01), xaxis_title="Batch Number ", yaxis_title="Reconstruction Error" , legend_xpos="left", legend_ypos="top")
    fig2.show(config=config)

    fig3 = px.scatter(df_plotting_counts, x=df_plotting_counts.index, y=[df_plotting_counts['Layer 1: Non-drifted Data'], df_plotting_counts['Layer 2: Non-Drifted Data']])
    fig3.update_layout(showlegend=True,
                      legend=dict(
                          yanchor='top', y=.95,xanchor='left', x=0.01),
                          xaxis_title="Batch Number ", yaxis_title="Exceed Counts" , legend_xpos="left", legend_ypos="top")
    fig3.show(config=config)

    fig4 = px.scatter(df_plotting_counts, x=df_plotting_counts.index, y=[df_plotting_counts['Layer 1: Drifted Data'], df_plotting_counts['Layer 2: Drifted Data']])
    fig4.update_layout(showlegend=True,
                      legend=dict(
```

In [98]:

```
df_plotting=visual_analysis()
```





## Effect on Classification Performance

In [99]:

train

Out[99]:

	day	period	nswprice	nswdemand	vicprice	vicdemand	transfer	class
<b>0</b>	0.167	0.000	0.056	0.439	0.003	0.423	0.415	UP
<b>1</b>	0.167	0.021	0.052	0.415	0.003	0.423	0.415	UP
<b>2</b>	0.167	0.043	0.051	0.385	0.003	0.423	0.415	UP
<b>3</b>	0.167	0.064	0.045	0.315	0.003	0.423	0.415	UP
<b>4</b>	0.167	0.085	0.042	0.251	0.003	0.423	0.415	DOWN
...	...	...	...	...	...	...	...	...
<b>31713</b>	0.500	0.702	0.091	0.716	0.006	0.828	0.155	UP
<b>31714</b>	0.500	0.723	0.040	0.671	0.003	0.758	0.297	DOWN
<b>31715</b>	0.500	0.745	0.039	0.639	0.003	0.715	0.378	DOWN
<b>31716</b>	0.500	0.766	0.035	0.599	0.002	0.658	0.410	DOWN
<b>31717</b>	0.500	0.787	0.045	0.599	0.003	0.627	0.416	DOWN

31718 rows × 8 columns

In [100...]

```
train["class"] = np.where(train["class"] == 'UP', 1, 0)
test["class"] = np.where(test["class"] == 'UP', 1, 0)
stream["class"] = np.where(stream["class"] == 'UP', 1, 0)
```

In [101...]

```
def train_classifiers(train,test,class_col):

    # Necessary Imports

    from sklearn.naive_bayes import GaussianNB
    from sklearn.linear_model import LogisticRegression
    from sklearn.tree import DecisionTreeClassifier # , plot_tree
    from sklearn.neighbors import KNeighborsClassifier
    from sklearn.svm import SVC
    from sklearn.ensemble import RandomForestClassifier
    from sklearn.ensemble import GradientBoostingClassifier
    from sklearn.neural_network import MLPClassifier
    from sklearn import metrics

    # Classification models : a List of tuples
    models = [
        ('LogReg', LogisticRegression()),
        ('RF', RandomForestClassifier()),
        ('KNN', KNeighborsClassifier()),
        ('SVM', SVC()),
        ('GNB', GaussianNB()),
        ('XGB', GradientBoostingClassifier()),
        ('DT', DecisionTreeClassifier()),
        ('MLP', MLPClassifier())]

    # Creating a DataFrame with columns for accuracy , precision and recall for each model
    # Separating features and class from train and test data
    train_data=train.copy()
    test_data=test.copy()

    y_train=train_data[class_col].values
    del train_data[class_col]
    x_train=train_data.values

    y_test=test_data[class_col].values
    del test_data[class_col]
    x_test=test_data.values

    # Model training on the available labelled data ( 80% of te datasets is used for training )
    for name,model in models:
        print ("Training " + name+":")
        clf=model.fit(x_train,y_train)
        y_predict_train=clf.predict(x_train)
        accuracy_train = metrics.accuracy_score(y_train,y_predict_train)
        recall_train=metrics.recall_score(y_train,y_predict_train)
        precision_train=metrics.precision_score(y_train,y_predict_train)
        fscore_train=metrics.f1_score(y_train,y_predict_train)

        y_predict_test=clf.predict(x_test)
```

In [102...]

```
models=train_classifiers(train,test,'class')
```

Training LogReg:  
Train Accuracy : 0.7536414654139605 , Test Accuracy :0.7030456852791879  
Train Recall Score : 0.5932064203060844 , Test Recall Score :0.5778656126482213  
Train Precision Score: 0.7706333042381922 , Test Precision score: 0.6197541331072489  
Train f1 Score: 0.6703788070530667 , Test f1 socre score: 0.6681901279707495  
Training RF:  
Train Accuracy : 0.9997793051264267 , Test Accuracy :0.6872655043036857  
Train Recall Score : 0.9997760358342666 , Test Recall Score :0.7125164690382082  
Train Precision Score: 0.9997014034040012 , Test Precision score: 0.6561514195583598  
Train f1 Score: 0.99973871822627 , Test f1 socre score: 0.6080503710366539  
Training KNN:  
Train Accuracy : 0.8709565546377451 , Test Accuracy :0.6470977709114986  
Train Recall Score : 0.8193355729749907 , Test Recall Score :0.5670619235836627  
Train Precision Score: 0.8677261227071473 , Test Precision score: 0.5737136763529724  
Train f1 Score: 0.8428368467534462 , Test f1 socre score: 0.580523334232533  
Training SVM:  
Train Accuracy : 0.7866826407718015 , Test Accuracy :0.7070183182520415  
Train Recall Score : 0.658454647256439 , Test Recall Score :0.6295125164690382  
Train Precision Score: 0.8010171646535282 , Test Precision score: 0.6428090945782321  
Train f1 Score: 0.7227730885847742 , Test f1 socre score: 0.6566794942275975  
Training GNB:  
Train Accuracy : 0.6897660634340123 , Test Accuracy :0.7263297285367468  
Train Recall Score : 0.29369167599850693 , Test Recall Score :0.48089591567852435  
Train Precision Score: 0.9121261303037329 , Test Precision score: 0.5954323001631322  
Train f1 Score: 0.44431895188615317 , Test f1 socre score: 0.7815845824411135  
Training XGB:  
Train Accuracy : 0.8113058830947727 , Test Accuracy :0.7031560361951004  
Train Recall Score : 0.7205673758865249 , Test Recall Score :0.6945981554677206  
Train Precision Score: 0.8115015974440895 , Test Precision score: 0.6621451896508415  
Train f1 Score: 0.7633358377160031 , Test f1 socre score: 0.6325893928485721  
Training DT:  
Train Accuracy : 0.9997793051264267 , Test Accuracy :0.6370558375634517  
Train Recall Score : 0.9994774169466218 , Test Recall Score :0.689064558629776  
Train Precision Score: 1.0 , Test Precision score: 0.6139218218100716  
Train f1 Score: 0.9997386401822052 , Test f1 socre score: 0.5535563082133785  
Training MLP:  
Train Accuracy : 0.7951005738066713 , Test Accuracy :0.7031560361951004  
Train Recall Score : 0.6742067935796939 , Test Recall Score :0.6563899868247695  
Train Precision Score: 0.8087945548987999 , Test Precision score: 0.6493743482794577  
Train f1 Score: 0.7353935100362363 , Test f1 socre score: 0.6425070931132318

In [103...]

```
def classify_batches(models,drift_stream,stream,class_col,batch_size):  
  
    # Creating a DataFrame with columns for accuracy , precision and recall for each model  
  
    df=pd.DataFrame()  
    for name,model in models:  
        df[name+"_accuracy"]=[ ]  
        df[name+"_precision"]=[ ]  
        df[name+"_recall"]=[ ]  
        df[name+""]=[ ]  
  
    batches_data=make_batches(drift_stream)  
    labels=stream['class']  
    data=np.array(labels)  
    #batch_size=32  
    batches={}  
    count=0  
    shift=batch_size  
    for index in range(0,data.shape[0],batch_size):  
        batches[count]=data[index:shift]  
        count+=1  
        shift+=batch_size  
  
    for i in range(0,len(batches)):  
        for name,model in models:  
            clf=model  
            x_test=batches_data[i]  
            y_test=batches[i]  
            print ("Batch " +str(i) +": "+name)  
            y_predict=clf.predict(x_test)  
            accuracy = metrics.accuracy_score(y_test, y_predict).round(3)  
            recall=metrics.recall_score(y_test, y_predict).round(3)  
            precision=metrics.precision_score(y_test, y_predict).round(3)  
            f1score=metrics.f1_score(y_test, y_predict).round(3)  
            df.loc[i,name+"_accuracy"]=accuracy  
            df.loc[i,name+"_recall"]=recall  
            df.loc[i,name+"_precision"]=precision  
            df.loc[i,name+""]的文化  
  
            print("Accuracy :{}".format(accuracy))  
            print("Recall: {}".format(recall))  
            print("Precision:{}".format(precision))  
            print("F1_Score:{}".format(f1score))  
  
    # df2 contains the average of every 5 batches  
    df2=df.groupby(np.arange(len(df))//5).mean()  
  
    return df,df2
```

In [104...]

```
df,df2=classify_batches(models,stream_top25 ,stream,'class',batch_size=32)
```

Batch 0:LogReg

Accuracy :0.781  
Recall: 0.769  
Precision:0.714  
F1\_Score:0.741  
Batch 0:RF  
Accuracy :0.844  
Recall: 0.846  
Precision:0.786  
F1\_Score:0.815  
Batch 0:KNN  
Accuracy :0.688  
Recall: 0.308  
Precision:0.8  
F1\_Score:0.444  
Batch 0:SVM  
Accuracy :0.812  
Recall: 0.692  
Precision:0.818  
F1\_Score:0.75  
Batch 0:GNB  
Accuracy :0.938  
Recall: 0.846  
Precision:1.0  
F1\_Score:0.917  
Batch 0:XGB  
Accuracy :0.656  
Recall: 0.923  
Precision:0.545  
F1\_Score:0.686  
Batch 0:DT  
Accuracy :0.656  
Recall: 0.615  
Precision:0.571  
F1\_Score:0.593  
Batch 0:MLP  
Accuracy :0.781  
Recall: 0.769  
Precision:0.714  
F1\_Score:0.741  
Batch 1:LogReg  
Accuracy :0.969  
Recall: 1.0  
Precision:0.964  
F1\_Score:0.982  
Batch 1:RF  
Accuracy :0.969  
Recall: 1.0  
Precision:0.964  
F1\_Score:0.982  
Batch 1:KNN  
Accuracy :0.688  
Recall: 0.63  
Precision:1.0  
F1\_Score:0.773  
Batch 1:SVM  
Accuracy :0.969  
Recall: 1.0  
Precision:0.964  
F1\_Score:0.982  
Batch 1:GNB  
Accuracy :1.0  
Recall: 1.0

```
Precision:1.0
F1_Score:1.0
Batch 1:XGB
Accuracy :0.938
Recall: 1.0
Precision:0.931
F1_Score:0.964
Batch 1:DT
Accuracy :0.906
Recall: 0.963
Precision:0.929
F1_Score:0.945
Batch 1:MLP
Accuracy :0.969
Recall: 1.0
Precision:0.964
F1_Score:0.982
Batch 2:LogReg
Accuracy :0.812
Recall: 1.0
Precision:0.714
F1_Score:0.833
Batch 2:RF
Accuracy :0.75
Recall: 1.0
Precision:0.652
F1_Score:0.789
Batch 2:KNN
Accuracy :0.625
Recall: 0.4
Precision:0.667
F1_Score:0.5
Batch 2:SVM
Accuracy :0.781
Recall: 0.933
Precision:0.7
F1_Score:0.8
Batch 2:GNB
Accuracy :0.812
Recall: 1.0
Precision:0.714
F1_Score:0.833
Batch 2:XGB
Accuracy :0.688
Recall: 1.0
Precision:0.6
F1_Score:0.75
Batch 2:DT
Accuracy :0.625
Recall: 0.867
Precision:0.565
F1_Score:0.684
Batch 2:MLP
Accuracy :0.781
Recall: 1.0
Precision:0.682
F1_Score:0.811
Batch 3:LogReg
Accuracy :0.906
Recall: 1.0
Precision:0.812
F1_Score:0.897
```

```
Batch 3:RF
Accuracy :0.75
Recall: 1.0
Precision:0.619
F1_Score:0.765
Batch 3:KNN
Accuracy :0.75
Recall: 0.462
Precision:0.857
F1_Score:0.6
Batch 3:SVM
Accuracy :0.844
Recall: 1.0
Precision:0.722
F1_Score:0.839
Batch 3:GNB
Accuracy :0.844
Recall: 1.0
Precision:0.722
F1_Score:0.839
Batch 3:XGB
Accuracy :0.719
Recall: 1.0
Precision:0.591
F1_Score:0.743
Batch 3:DT
Accuracy :0.75
Recall: 0.769
Precision:0.667
F1_Score:0.714
Batch 3:MLP
Accuracy :0.812
Recall: 1.0
Precision:0.684
F1_Score:0.813
Batch 4:LogReg
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 4:RF
Accuracy :0.938
Recall: 1.0
Precision:0.931
F1_Score:0.964
Batch 4:KNN
Accuracy :0.625
Recall: 0.593
Precision:0.941
F1_Score:0.727
Batch 4:SVM
Accuracy :0.969
Recall: 1.0
Precision:0.964
F1_Score:0.982
Batch 4:GNB
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 4:XGB
Accuracy :0.969
```

Recall: 1.0  
Precision:0.964  
F1\_Score:0.982  
Batch 4:DT  
Accuracy :0.938  
Recall: 0.963  
Precision:0.963  
F1\_Score:0.963  
Batch 4:MLP  
Accuracy :0.969  
Recall: 1.0  
Precision:0.964  
F1\_Score:0.982  
Batch 5:LogReg  
Accuracy :0.875  
Recall: 0.778  
Precision:0.778  
F1\_Score:0.778  
Batch 5:RF  
Accuracy :0.656  
Recall: 0.889  
Precision:0.444  
F1\_Score:0.593  
Batch 5:KNN  
Accuracy :0.656  
Recall: 0.778  
Precision:0.438  
F1\_Score:0.56  
Batch 5:SVM  
Accuracy :0.625  
Recall: 0.667  
Precision:0.4  
F1\_Score:0.5  
Batch 5:GNB  
Accuracy :0.875  
Recall: 1.0  
Precision:0.692  
F1\_Score:0.818  
Batch 5:XGB  
Accuracy :0.625  
Recall: 1.0  
Precision:0.429  
F1\_Score:0.6  
Batch 5:DT  
Accuracy :0.656  
Recall: 0.556  
Precision:0.417  
F1\_Score:0.476  
Batch 5:MLP  
Accuracy :0.625  
Recall: 0.889  
Precision:0.421  
F1\_Score:0.571  
Batch 6:LogReg  
Accuracy :0.812  
Recall: 0.647  
Precision:1.0  
F1\_Score:0.786  
Batch 6:RF  
Accuracy :0.688  
Recall: 0.765  
Precision:0.684

F1\_Score:0.722  
Batch 6:KNN  
Accuracy :0.562  
Recall: 0.647  
Precision:0.579  
F1\_Score:0.611  
Batch 6:SVM  
Accuracy :0.531  
Recall: 0.647  
Precision:0.55  
F1\_Score:0.595  
Batch 6:GNB  
Accuracy :0.844  
Recall: 0.706  
Precision:1.0  
F1\_Score:0.828  
Batch 6:XGB  
Accuracy :0.781  
Recall: 1.0  
Precision:0.708  
F1\_Score:0.829  
Batch 6:DT  
Accuracy :0.688  
Recall: 0.824  
Precision:0.667  
F1\_Score:0.737  
Batch 6:MLP  
Accuracy :0.562  
Recall: 0.706  
Precision:0.571  
F1\_Score:0.632  
Batch 7:LogReg  
Accuracy :0.969  
Recall: 1.0  
Precision:0.968  
F1\_Score:0.984  
Batch 7:RF  
Accuracy :0.969  
Recall: 1.0  
Precision:0.968  
F1\_Score:0.984  
Batch 7:KNN  
Accuracy :0.875  
Recall: 0.867  
Precision:1.0  
F1\_Score:0.929  
Batch 7:SVM  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 7:GNB  
Accuracy :0.969  
Recall: 1.0  
Precision:0.968  
F1\_Score:0.984  
Batch 7:XGB  
Accuracy :0.969  
Recall: 1.0  
Precision:0.968  
F1\_Score:0.984  
Batch 7:DT

Accuracy :0.906  
Recall: 0.933  
Precision:0.966  
F1\_Score:0.949  
Batch 7:MLP  
Accuracy :0.969  
Recall: 1.0  
Precision:0.968  
F1\_Score:0.984  
Batch 8:LogReg  
Accuracy :0.969  
Recall: 1.0  
Precision:0.962  
F1\_Score:0.98  
Batch 8:RF  
Accuracy :0.969  
Recall: 1.0  
Precision:0.962  
F1\_Score:0.98  
Batch 8:KNN  
Accuracy :0.469  
Recall: 0.36  
Precision:0.9  
F1\_Score:0.514  
Batch 8:SVM  
Accuracy :0.969  
Recall: 1.0  
Precision:0.962  
F1\_Score:0.98  
Batch 8:GNB  
Accuracy :0.969  
Recall: 1.0  
Precision:0.962  
F1\_Score:0.98  
Batch 8:XGB  
Accuracy :0.906  
Recall: 1.0  
Precision:0.893  
F1\_Score:0.943  
Batch 8:DT  
Accuracy :0.812  
Recall: 0.8  
Precision:0.952  
F1\_Score:0.87  
Batch 8:MLP  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 9:LogReg  
Accuracy :0.5  
Recall: 1.0  
Precision:0.273  
F1\_Score:0.429  
Batch 9:RF  
Accuracy :0.5  
Recall: 1.0  
Precision:0.273  
F1\_Score:0.429  
Batch 9:KNN  
Accuracy :0.562  
Recall: 0.667

```
Precision:0.25
F1_Score:0.364
Batch 9:SVM
Accuracy :0.594
Recall: 1.0
Precision:0.316
F1_Score:0.48
Batch 9:GNB
Accuracy :0.562
Recall: 1.0
Precision:0.3
F1_Score:0.462
Batch 9:XGB
Accuracy :0.531
Recall: 1.0
Precision:0.286
F1_Score:0.444
Batch 9:DT
Accuracy :0.562
Recall: 0.833
Precision:0.278
F1_Score:0.417
Batch 9:MLP
Accuracy :0.5
Recall: 1.0
Precision:0.273
F1_Score:0.429
Batch 10:LogReg
Accuracy :0.906
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 10:RF
Accuracy :0.906
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 10:KNN
Accuracy :0.812
Recall: 0.769
Precision:0.769
F1_Score:0.769
Batch 10:SVM
Accuracy :0.969
Recall: 1.0
Precision:0.929
F1_Score:0.963
Batch 10:GNB
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 10:XGB
Accuracy :0.812
Recall: 1.0
Precision:0.684
F1_Score:0.813
Batch 10:DT
Accuracy :0.688
Recall: 0.846
Precision:0.579
F1_Score:0.688
```

```
Batch 10:MLP
Accuracy :0.969
Recall: 1.0
Precision:0.929
F1_Score:0.963
Batch 11:LogReg
Accuracy :0.969
Recall: 1.0
Precision:0.952
F1_Score:0.976
Batch 11:RF
Accuracy :0.969
Recall: 1.0
Precision:0.952
F1_Score:0.976
Batch 11:KNN
Accuracy :0.719
Recall: 0.55
Precision:1.0
F1_Score:0.71
Batch 11:SVM
Accuracy :0.906
Recall: 0.85
Precision:1.0
F1_Score:0.919
Batch 11:GNB
Accuracy :0.938
Recall: 0.9
Precision:1.0
F1_Score:0.947
Batch 11:XGB
Accuracy :0.906
Recall: 1.0
Precision:0.87
F1_Score:0.93
Batch 11:DT
Accuracy :0.844
Recall: 0.85
Precision:0.895
F1_Score:0.872
Batch 11:MLP
Accuracy :0.969
Recall: 1.0
Precision:0.952
F1_Score:0.976
Batch 12:LogReg
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 12:RF
Accuracy :0.906
Recall: 0.923
Precision:0.857
F1_Score:0.889
Batch 12:KNN
Accuracy :0.844
Recall: 0.692
Precision:0.9
F1_Score:0.783
Batch 12:SVM
Accuracy :0.938
```

```
Recall: 0.923
Precision:0.923
F1_Score:0.923
Batch 12:GNB
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 12:XGB
Accuracy :0.906
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 12:DT
Accuracy :0.812
Recall: 0.923
Precision:0.706
F1_Score:0.8
Batch 12:MLP
Accuracy :0.969
Recall: 1.0
Precision:0.929
F1_Score:0.963
Batch 13:LogReg
Accuracy :0.938
Recall: 1.0
Precision:0.923
F1_Score:0.96
Batch 13:RF
Accuracy :0.844
Recall: 1.0
Precision:0.828
F1_Score:0.906
Batch 13:KNN
Accuracy :0.469
Recall: 0.458
Precision:0.733
F1_Score:0.564
Batch 13:SVM
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 13:GNB
Accuracy :0.969
Recall: 0.958
Precision:1.0
F1_Score:0.979
Batch 13:XGB
Accuracy :0.906
Recall: 1.0
Precision:0.889
F1_Score:0.941
Batch 13:DT
Accuracy :0.844
Recall: 1.0
Precision:0.828
F1_Score:0.906
Batch 13:MLP
Accuracy :0.938
Recall: 1.0
Precision:0.923
```

```
F1_Score:0.96
Batch 14:LogReg
Accuracy :0.906
Recall: 0.947
Precision:0.9
F1_Score:0.923
Batch 14:RF
Accuracy :0.938
Recall: 0.947
Precision:0.947
F1_Score:0.947
Batch 14:KNN
Accuracy :0.656
Recall: 0.421
Precision:1.0
F1_Score:0.593
Batch 14:SVM
Accuracy :0.969
Recall: 0.947
Precision:1.0
F1_Score:0.973
Batch 14:GNB
Accuracy :0.938
Recall: 0.895
Precision:1.0
F1_Score:0.944
Batch 14:XGB
Accuracy :0.875
Recall: 1.0
Precision:0.826
F1_Score:0.905
Batch 14:DT
Accuracy :0.656
Recall: 0.632
Precision:0.75
F1_Score:0.686
Batch 14:MLP
Accuracy :0.875
Recall: 0.947
Precision:0.857
F1_Score:0.9
Batch 15:LogReg
Accuracy :0.969
Recall: 1.0
Precision:0.9
F1_Score:0.947
Batch 15:RF
Accuracy :0.656
Recall: 1.0
Precision:0.45
F1_Score:0.621
Batch 15:KNN
Accuracy :0.75
Recall: 0.556
Precision:0.556
F1_Score:0.556
Batch 15:SVM
Accuracy :0.812
Recall: 1.0
Precision:0.6
F1_Score:0.75
Batch 15:GNB
```

Accuracy :0.969  
Recall: 0.889  
Precision:1.0  
F1\_Score:0.941  
Batch 15:XGB  
Accuracy :0.75  
Recall: 1.0  
Precision:0.529  
F1\_Score:0.692  
Batch 15:DT  
Accuracy :0.562  
Recall: 0.556  
Precision:0.333  
F1\_Score:0.417  
Batch 15:MLP  
Accuracy :0.719  
Recall: 1.0  
Precision:0.5  
F1\_Score:0.667  
Batch 16:LogReg  
Accuracy :0.656  
Recall: 0.421  
Precision:1.0  
F1\_Score:0.593  
Batch 16:RF  
Accuracy :0.781  
Recall: 1.0  
Precision:0.731  
F1\_Score:0.844  
Batch 16:KNN  
Accuracy :0.625  
Recall: 0.579  
Precision:0.733  
F1\_Score:0.647  
Batch 16:SVM  
Accuracy :0.781  
Recall: 1.0  
Precision:0.731  
F1\_Score:0.844  
Batch 16:GNB  
Accuracy :0.531  
Recall: 0.211  
Precision:1.0  
F1\_Score:0.348  
Batch 16:XGB  
Accuracy :0.719  
Recall: 1.0  
Precision:0.679  
F1\_Score:0.809  
Batch 16:DT  
Accuracy :0.469  
Recall: 0.421  
Precision:0.571  
F1\_Score:0.485  
Batch 16:MLP  
Accuracy :0.75  
Recall: 1.0  
Precision:0.704  
F1\_Score:0.826  
Batch 17:LogReg  
Accuracy :0.875  
Recall: 0.789

```
Precision:1.0
F1_Score:0.882
Batch 17:RF
Accuracy :0.906
Recall: 0.947
Precision:0.9
F1_Score:0.923
Batch 17:KNN
Accuracy :0.844
Recall: 0.789
Precision:0.938
F1_Score:0.857
Batch 17:SVM
Accuracy :0.906
Recall: 0.895
Precision:0.944
F1_Score:0.919
Batch 17:GNB
Accuracy :0.875
Recall: 0.789
Precision:1.0
F1_Score:0.882
Batch 17:XGB
Accuracy :0.938
Recall: 0.947
Precision:0.947
F1_Score:0.947
Batch 17:DT
Accuracy :0.812
Recall: 0.842
Precision:0.842
F1_Score:0.842
Batch 17:MLP
Accuracy :0.938
Recall: 0.947
Precision:0.947
F1_Score:0.947
Batch 18:LogReg
Accuracy :0.938
Recall: 1.0
Precision:0.905
F1_Score:0.95
Batch 18:RF
Accuracy :0.938
Recall: 1.0
Precision:0.905
F1_Score:0.95
Batch 18:KNN
Accuracy :0.844
Recall: 0.789
Precision:0.938
F1_Score:0.857
Batch 18:SVM
Accuracy :0.969
Recall: 0.947
Precision:1.0
F1_Score:0.973
Batch 18:GNB
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
```

```
Batch 18:XGB
Accuracy :0.875
Recall: 1.0
Precision:0.826
F1_Score:0.905
Batch 18:DT
Accuracy :0.781
Recall: 0.895
Precision:0.773
F1_Score:0.829
Batch 18:MLP
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 19:LogReg
Accuracy :0.969
Recall: 1.0
Precision:0.967
F1_Score:0.983
Batch 19:RF
Accuracy :0.906
Recall: 0.966
Precision:0.933
F1_Score:0.949
Batch 19:KNN
Accuracy :0.625
Recall: 0.69
Precision:0.87
F1_Score:0.769
Batch 19:SVM
Accuracy :0.938
Recall: 1.0
Precision:0.935
F1_Score:0.967
Batch 19:GNB
Accuracy :0.969
Recall: 1.0
Precision:0.967
F1_Score:0.983
Batch 19:XGB
Accuracy :0.906
Recall: 1.0
Precision:0.906
F1_Score:0.951
Batch 19:DT
Accuracy :0.906
Recall: 0.931
Precision:0.964
F1_Score:0.947
Batch 19:MLP
Accuracy :0.938
Recall: 1.0
Precision:0.935
F1_Score:0.967
Batch 20:LogReg
Accuracy :0.156
Recall: 0.556
Precision:0.179
F1_Score:0.27
Batch 20:RF
Accuracy :0.25
```

Recall: 0.889  
Precision:0.258  
F1\_Score:0.4  
Batch 20:KNN  
Accuracy :0.5  
Recall: 0.444  
Precision:0.267  
F1\_Score:0.333  
Batch 20:SVM  
Accuracy :0.156  
Recall: 0.556  
Precision:0.179  
F1\_Score:0.27  
Batch 20:GNB  
Accuracy :0.281  
Recall: 1.0  
Precision:0.281  
F1\_Score:0.439  
Batch 20:XGB  
Accuracy :0.531  
Recall: 0.667  
Precision:0.333  
F1\_Score:0.444  
Batch 20:DT  
Accuracy :0.562  
Recall: 0.667  
Precision:0.353  
F1\_Score:0.462  
Batch 20:MLP  
Accuracy :0.156  
Recall: 0.556  
Precision:0.179  
F1\_Score:0.27  
Batch 21:LogReg  
Accuracy :0.281  
Recall: 0.75  
Precision:0.31  
F1\_Score:0.439  
Batch 21:RF  
Accuracy :0.281  
Recall: 0.75  
Precision:0.31  
F1\_Score:0.439  
Batch 21:KNN  
Accuracy :0.656  
Recall: 1.0  
Precision:0.522  
F1\_Score:0.686  
Batch 21:SVM  
Accuracy :0.312  
Recall: 0.75  
Precision:0.321  
F1\_Score:0.45  
Batch 21:GNB  
Accuracy :0.375  
Recall: 1.0  
Precision:0.375  
F1\_Score:0.545  
Batch 21:XGB  
Accuracy :0.312  
Recall: 0.417  
Precision:0.25

```
F1_Score:0.312
Batch 21:DT
Accuracy :0.375
Recall: 0.083
Precision:0.1
F1_Score:0.091
Batch 21:MLP
Accuracy :0.281
Recall: 0.75
Precision:0.31
F1_Score:0.439
Batch 22:LogReg
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 22:RF
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 22:KNN
Accuracy :0.375
Recall: 1.0
Precision:0.355
F1_Score:0.524
Batch 22:SVM
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 22:GNB
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 22:XGB
Accuracy :0.438
Recall: 0.727
Precision:0.348
F1_Score:0.471
Batch 22:DT
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 22:MLP
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 23:LogReg
Accuracy :0.469
Recall: 0.789
Precision:0.536
F1_Score:0.638
Batch 23:RF
Accuracy :0.5
Recall: 0.842
Precision:0.552
F1_Score:0.667
Batch 23:KNN
```

Accuracy :0.75  
Recall: 0.789  
Precision:0.789  
F1\_Score:0.789  
Batch 23:SVM  
Accuracy :0.469  
Recall: 0.789  
Precision:0.536  
F1\_Score:0.638  
Batch 23:GNB  
Accuracy :0.625  
Recall: 1.0  
Precision:0.613  
F1\_Score:0.76  
Batch 23:XGB  
Accuracy :0.531  
Recall: 0.895  
Precision:0.567  
F1\_Score:0.694  
Batch 23:DT  
Accuracy :0.344  
Recall: 0.368  
Precision:0.438  
F1\_Score:0.4  
Batch 23:MLP  
Accuracy :0.469  
Recall: 0.789  
Precision:0.536  
F1\_Score:0.638  
Batch 24:LogReg  
Accuracy :0.094  
Recall: 0.429  
Precision:0.107  
F1\_Score:0.171  
Batch 24:RF  
Accuracy :0.312  
Recall: 0.429  
Precision:0.143  
F1\_Score:0.214  
Batch 24:KNN  
Accuracy :0.375  
Recall: 0.571  
Precision:0.19  
F1\_Score:0.286  
Batch 24:SVM  
Accuracy :0.125  
Recall: 0.429  
Precision:0.111  
F1\_Score:0.176  
Batch 24:GNB  
Accuracy :0.281  
Recall: 1.0  
Precision:0.233  
F1\_Score:0.378  
Batch 24:XGB  
Accuracy :0.094  
Recall: 0.429  
Precision:0.107  
F1\_Score:0.171  
Batch 24:DT  
Accuracy :0.344  
Recall: 0.571

Precision:0.182  
F1\_Score:0.276  
Batch 24:MLP  
Accuracy :0.125  
Recall: 0.429  
Precision:0.111  
F1\_Score:0.176  
Batch 25:LogReg  
Accuracy :0.688  
Recall: 1.0  
Precision:0.688  
F1\_Score:0.815  
Batch 25:RF  
Accuracy :0.781  
Recall: 1.0  
Precision:0.759  
F1\_Score:0.863  
Batch 25:KNN  
Accuracy :0.531  
Recall: 0.636  
Precision:0.667  
F1\_Score:0.651  
Batch 25:SVM  
Accuracy :0.688  
Recall: 1.0  
Precision:0.688  
F1\_Score:0.815  
Batch 25:GNB  
Accuracy :0.688  
Recall: 1.0  
Precision:0.688  
F1\_Score:0.815  
Batch 25:XGB  
Accuracy :0.688  
Recall: 1.0  
Precision:0.688  
F1\_Score:0.815  
Batch 25:DT  
Accuracy :0.656  
Recall: 0.955  
Precision:0.677  
F1\_Score:0.792  
Batch 25:MLP  
Accuracy :0.688  
Recall: 1.0  
Precision:0.688  
F1\_Score:0.815  
Batch 26:LogReg  
Accuracy :0.438  
Recall: 0.765  
Precision:0.481  
F1\_Score:0.591  
Batch 26:RF  
Accuracy :0.562  
Recall: 0.765  
Precision:0.565  
F1\_Score:0.65  
Batch 26:KNN  
Accuracy :0.781  
Recall: 0.647  
Precision:0.917  
F1\_Score:0.759

```
Batch 26:SVM
Accuracy :0.5
Recall: 0.765
Precision:0.52
F1_Score:0.619
Batch 26:GNB
Accuracy :0.594
Recall: 1.0
Precision:0.567
F1_Score:0.723
Batch 26:XGB
Accuracy :0.438
Recall: 0.765
Precision:0.481
F1_Score:0.591
Batch 26:DT
Accuracy :0.438
Recall: 0.765
Precision:0.481
F1_Score:0.591
Batch 26:MLP
Accuracy :0.438
Recall: 0.765
Precision:0.481
F1_Score:0.591
Batch 27:LogReg
Accuracy :0.5
Recall: 0.923
Precision:0.444
F1_Score:0.6
Batch 27:RF
Accuracy :0.656
Recall: 0.923
Precision:0.545
F1_Score:0.686
Batch 27:KNN
Accuracy :0.844
Recall: 0.923
Precision:0.75
F1_Score:0.828
Batch 27:SVM
Accuracy :0.531
Recall: 0.923
Precision:0.462
F1_Score:0.615
Batch 27:GNB
Accuracy :0.531
Recall: 0.923
Precision:0.462
F1_Score:0.615
Batch 27:XGB
Accuracy :0.5
Recall: 0.923
Precision:0.444
F1_Score:0.6
Batch 27:DT
Accuracy :0.375
Recall: 0.769
Precision:0.37
F1_Score:0.5
Batch 27:MLP
Accuracy :0.5
```

```
Recall: 0.923
Precision:0.444
F1_Score:0.6
Batch 28:LogReg
Accuracy :0.75
Recall: 1.0
Precision:0.75
F1_Score:0.857
Batch 28:RF
Accuracy :0.75
Recall: 1.0
Precision:0.75
F1_Score:0.857
Batch 28:KNN
Accuracy :0.781
Recall: 1.0
Precision:0.774
F1_Score:0.873
Batch 28:SVM
Accuracy :0.75
Recall: 1.0
Precision:0.75
F1_Score:0.857
Batch 28:GNB
Accuracy :0.75
Recall: 1.0
Precision:0.75
F1_Score:0.857
Batch 28:XGB
Accuracy :0.75
Recall: 1.0
Precision:0.75
F1_Score:0.857
Batch 28:DT
Accuracy :0.812
Recall: 1.0
Precision:0.8
F1_Score:0.889
Batch 28:MLP
Accuracy :0.75
Recall: 1.0
Precision:0.75
F1_Score:0.857
Batch 29:LogReg
Accuracy :0.5
Recall: 0.833
Precision:0.536
F1_Score:0.652
Batch 29:RF
Accuracy :0.5
Recall: 0.833
Precision:0.536
F1_Score:0.652
Batch 29:KNN
Accuracy :0.719
Recall: 0.833
Precision:0.714
F1_Score:0.769
Batch 29:SVM
Accuracy :0.531
Recall: 0.833
Precision:0.556
```

F1\_Score:0.667  
Batch 29:GNB  
Accuracy :0.594  
Recall: 1.0  
Precision:0.581  
F1\_Score:0.735  
Batch 29:XGB  
Accuracy :0.344  
Recall: 0.611  
Precision:0.44  
F1\_Score:0.512  
Batch 29:DT  
Accuracy :0.625  
Recall: 0.944  
Precision:0.607  
F1\_Score:0.739  
Batch 29:MLP  
Accuracy :0.531  
Recall: 0.833  
Precision:0.556  
F1\_Score:0.667  
Batch 30:LogReg  
Accuracy :0.469  
Recall: 0.923  
Precision:0.429  
F1\_Score:0.585  
Batch 30:RF  
Accuracy :0.5  
Recall: 0.923  
Precision:0.444  
F1\_Score:0.6  
Batch 30:KNN  
Accuracy :0.719  
Recall: 0.923  
Precision:0.6  
F1\_Score:0.727  
Batch 30:SVM  
Accuracy :0.5  
Recall: 0.923  
Precision:0.444  
F1\_Score:0.6  
Batch 30:GNB  
Accuracy :0.562  
Recall: 1.0  
Precision:0.481  
F1\_Score:0.65  
Batch 30:XGB  
Accuracy :0.375  
Recall: 0.692  
Precision:0.36  
F1\_Score:0.474  
Batch 30:DT  
Accuracy :0.5  
Recall: 0.846  
Precision:0.44  
F1\_Score:0.579  
Batch 30:MLP  
Accuracy :0.469  
Recall: 0.923  
Precision:0.429  
F1\_Score:0.585  
Batch 31:LogReg

Accuracy :0.5  
Recall: 1.0  
Precision:0.5  
F1\_Score:0.667  
Batch 31:RF  
Accuracy :0.5  
Recall: 1.0  
Precision:0.5  
F1\_Score:0.667  
Batch 31:KNN  
Accuracy :0.562  
Recall: 1.0  
Precision:0.533  
F1\_Score:0.696  
Batch 31:SVM  
Accuracy :0.5  
Recall: 1.0  
Precision:0.5  
F1\_Score:0.667  
Batch 31:GNB  
Accuracy :0.5  
Recall: 1.0  
Precision:0.5  
F1\_Score:0.667  
Batch 31:XGB  
Accuracy :0.406  
Recall: 0.812  
Precision:0.448  
F1\_Score:0.578  
Batch 31:DT  
Accuracy :0.656  
Recall: 0.5  
Precision:0.727  
F1\_Score:0.593  
Batch 31:MLP  
Accuracy :0.5  
Recall: 1.0  
Precision:0.5  
F1\_Score:0.667  
Batch 32:LogReg  
Accuracy :0.562  
Recall: 0.85  
Precision:0.607  
F1\_Score:0.708  
Batch 32:RF  
Accuracy :0.562  
Recall: 0.85  
Precision:0.607  
F1\_Score:0.708  
Batch 32:KNN  
Accuracy :0.875  
Recall: 0.9  
Precision:0.9  
F1\_Score:0.9  
Batch 32:SVM  
Accuracy :0.594  
Recall: 0.85  
Precision:0.63  
F1\_Score:0.723  
Batch 32:GNB  
Accuracy :0.688  
Recall: 0.95

```
Precision:0.679
F1_Score:0.792
Batch 32:XGB
Accuracy :0.562
Recall: 0.85
Precision:0.607
F1_Score:0.708
Batch 32:DT
Accuracy :0.531
Recall: 0.75
Precision:0.6
F1_Score:0.667
Batch 32:MLP
Accuracy :0.594
Recall: 0.85
Precision:0.63
F1_Score:0.723
Batch 33:LogReg
Accuracy :0.219
Recall: 0.667
Precision:0.214
F1_Score:0.324
Batch 33:RF
Accuracy :0.219
Recall: 0.667
Precision:0.214
F1_Score:0.324
Batch 33:KNN
Accuracy :0.469
Recall: 0.667
Precision:0.3
F1_Score:0.414
Batch 33:SVM
Accuracy :0.25
Recall: 0.667
Precision:0.222
F1_Score:0.333
Batch 33:GNB
Accuracy :0.375
Recall: 1.0
Precision:0.31
F1_Score:0.474
Batch 33:XGB
Accuracy :0.219
Recall: 0.778
Precision:0.233
F1_Score:0.359
Batch 33:DT
Accuracy :0.312
Recall: 1.0
Precision:0.29
F1_Score:0.45
Batch 33:MLP
Accuracy :0.219
Recall: 0.667
Precision:0.214
F1_Score:0.324
Batch 34:LogReg
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
```

```
Batch 34:RF
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 34:KNN
Accuracy :0.5
Recall: 0.938
Precision:0.5
F1_Score:0.652
Batch 34:SVM
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 34:GNB
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 34:XGB
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 34:DT
Accuracy :0.406
Recall: 0.062
Precision:0.2
F1_Score:0.095
Batch 34:MLP
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 35:LogReg
Accuracy :0.375
Recall: 0.786
Precision:0.393
F1_Score:0.524
Batch 35:RF
Accuracy :0.5
Recall: 0.786
Precision:0.458
F1_Score:0.579
Batch 35:KNN
Accuracy :0.656
Recall: 0.643
Precision:0.6
F1_Score:0.621
Batch 35:SVM
Accuracy :0.406
Recall: 0.786
Precision:0.407
F1_Score:0.537
Batch 35:GNB
Accuracy :0.531
Recall: 1.0
Precision:0.483
F1_Score:0.651
Batch 35:XGB
Accuracy :0.344
```

Recall: 0.786  
Precision:0.379  
F1\_Score:0.512  
Batch 35:DT  
Accuracy :0.312  
Recall: 0.571  
Precision:0.333  
F1\_Score:0.421  
Batch 35:MLP  
Accuracy :0.375  
Recall: 0.786  
Precision:0.393  
F1\_Score:0.524  
Batch 36:LogReg  
Accuracy :0.219  
Recall: 0.75  
Precision:0.111  
F1\_Score:0.194  
Batch 36:RF  
Accuracy :0.438  
Recall: 0.75  
Precision:0.15  
F1\_Score:0.25  
Batch 36:KNN  
Accuracy :0.469  
Recall: 0.75  
Precision:0.158  
F1\_Score:0.261  
Batch 36:SVM  
Accuracy :0.281  
Recall: 0.75  
Precision:0.12  
F1\_Score:0.207  
Batch 36:GNB  
Accuracy :0.25  
Recall: 0.75  
Precision:0.115  
F1\_Score:0.2  
Batch 36:XGB  
Accuracy :0.219  
Recall: 0.75  
Precision:0.111  
F1\_Score:0.194  
Batch 36:DT  
Accuracy :0.188  
Recall: 0.75  
Precision:0.107  
F1\_Score:0.188  
Batch 36:MLP  
Accuracy :0.188  
Recall: 0.75  
Precision:0.107  
F1\_Score:0.188  
Batch 37:LogReg  
Accuracy :0.469  
Recall: 1.0  
Precision:0.469  
F1\_Score:0.638  
Batch 37:RF  
Accuracy :0.469  
Recall: 1.0  
Precision:0.469

F1\_Score:0.638  
Batch 37:KNN  
Accuracy :0.625  
Recall: 0.467  
Precision:0.636  
F1\_Score:0.538  
Batch 37:SVM  
Accuracy :0.469  
Recall: 1.0  
Precision:0.469  
F1\_Score:0.638  
Batch 37:GNB  
Accuracy :0.469  
Recall: 1.0  
Precision:0.469  
F1\_Score:0.638  
Batch 37:XGB  
Accuracy :0.469  
Recall: 1.0  
Precision:0.469  
F1\_Score:0.638  
Batch 37:DT  
Accuracy :0.312  
Recall: 0.667  
Precision:0.37  
F1\_Score:0.476  
Batch 37:MLP  
Accuracy :0.469  
Recall: 1.0  
Precision:0.469  
F1\_Score:0.638  
Batch 38:LogReg  
Accuracy :0.656  
Recall: 0.84  
Precision:0.75  
F1\_Score:0.792  
Batch 38:RF  
Accuracy :0.594  
Recall: 0.76  
Precision:0.731  
F1\_Score:0.745  
Batch 38:KNN  
Accuracy :0.5  
Recall: 0.56  
Precision:0.737  
F1\_Score:0.636  
Batch 38:SVM  
Accuracy :0.625  
Recall: 0.8  
Precision:0.741  
F1\_Score:0.769  
Batch 38:GNB  
Accuracy :0.594  
Recall: 0.76  
Precision:0.731  
F1\_Score:0.745  
Batch 38:XGB  
Accuracy :0.656  
Recall: 0.84  
Precision:0.75  
F1\_Score:0.792  
Batch 38:DT

Accuracy :0.719  
Recall: 0.88  
Precision:0.786  
F1\_Score:0.83  
Batch 38:MLP  
Accuracy :0.656  
Recall: 0.84  
Precision:0.75  
F1\_Score:0.792  
Batch 39:LogReg  
Accuracy :0.375  
Recall: 0.786  
Precision:0.393  
F1\_Score:0.524  
Batch 39:RF  
Accuracy :0.375  
Recall: 0.786  
Precision:0.393  
F1\_Score:0.524  
Batch 39:KNN  
Accuracy :0.594  
Recall: 0.786  
Precision:0.524  
F1\_Score:0.629  
Batch 39:SVM  
Accuracy :0.406  
Recall: 0.786  
Precision:0.407  
F1\_Score:0.537  
Batch 39:GNB  
Accuracy :0.469  
Recall: 0.857  
Precision:0.444  
F1\_Score:0.585  
Batch 39:XGB  
Accuracy :0.375  
Recall: 0.786  
Precision:0.393  
F1\_Score:0.524  
Batch 39:DT  
Accuracy :0.5  
Recall: 0.714  
Precision:0.455  
F1\_Score:0.556  
Batch 39:MLP  
Accuracy :0.375  
Recall: 0.786  
Precision:0.393  
F1\_Score:0.524  
Batch 40:LogReg  
Accuracy :0.688  
Recall: 1.0  
Precision:0.688  
F1\_Score:0.815  
Batch 40:RF  
Accuracy :0.688  
Recall: 1.0  
Precision:0.688  
F1\_Score:0.815  
Batch 40:KNN  
Accuracy :0.656  
Recall: 0.909

```
Precision:0.69
F1_Score:0.784
Batch 40:SVM
Accuracy :0.688
Recall: 1.0
Precision:0.688
F1_Score:0.815
Batch 40:GNB
Accuracy :0.688
Recall: 1.0
Precision:0.688
F1_Score:0.815
Batch 40:XGB
Accuracy :0.688
Recall: 1.0
Precision:0.688
F1_Score:0.815
Batch 40:DT
Accuracy :0.812
Recall: 1.0
Precision:0.786
F1_Score:0.88
Batch 40:MLP
Accuracy :0.688
Recall: 1.0
Precision:0.688
F1_Score:0.815
Batch 41:LogReg
Accuracy :0.469
Recall: 1.0
Precision:0.393
F1_Score:0.564
Batch 41:RF
Accuracy :0.469
Recall: 1.0
Precision:0.393
F1_Score:0.564
Batch 41:KNN
Accuracy :0.812
Recall: 1.0
Precision:0.647
F1_Score:0.786
Batch 41:SVM
Accuracy :0.469
Recall: 1.0
Precision:0.393
F1_Score:0.564
Batch 41:GNB
Accuracy :0.531
Recall: 1.0
Precision:0.423
F1_Score:0.595
Batch 41:XGB
Accuracy :0.469
Recall: 1.0
Precision:0.393
F1_Score:0.564
Batch 41:DT
Accuracy :0.281
Recall: 0.0
Precision:0.0
F1_Score:0.0
```

```
Batch 41:MLP
Accuracy :0.469
Recall: 1.0
Precision:0.393
F1_Score:0.564
Batch 42:LogReg
Accuracy :0.406
Recall: 1.0
Precision:0.296
F1_Score:0.457
Batch 42:RF
Accuracy :0.406
Recall: 1.0
Precision:0.296
F1_Score:0.457
Batch 42:KNN
Accuracy :0.625
Recall: 1.0
Precision:0.4
F1_Score:0.571
Batch 42:SVM
Accuracy :0.406
Recall: 1.0
Precision:0.296
F1_Score:0.457
Batch 42:GNB
Accuracy :0.438
Recall: 1.0
Precision:0.308
F1_Score:0.471
Batch 42:XGB
Accuracy :0.375
Recall: 1.0
Precision:0.286
F1_Score:0.444
Batch 42:DT
Accuracy :0.375
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 42:MLP
Accuracy :0.406
Recall: 1.0
Precision:0.296
F1_Score:0.457
Batch 43:LogReg
Accuracy :0.719
Recall: 1.0
Precision:0.719
F1_Score:0.836
Batch 43:RF
Accuracy :0.719
Recall: 1.0
Precision:0.719
F1_Score:0.836
Batch 43:KNN
Accuracy :0.812
Recall: 1.0
Precision:0.793
F1_Score:0.885
Batch 43:SVM
Accuracy :0.719
```

Recall: 1.0  
Precision:0.719  
F1\_Score:0.836  
Batch 43:GNB  
Accuracy :0.719  
Recall: 1.0  
Precision:0.719  
F1\_Score:0.836  
Batch 43:XGB  
Accuracy :0.562  
Recall: 0.783  
Precision:0.667  
F1\_Score:0.72  
Batch 43:DT  
Accuracy :0.719  
Recall: 1.0  
Precision:0.719  
F1\_Score:0.836  
Batch 43:MLP  
Accuracy :0.719  
Recall: 1.0  
Precision:0.719  
F1\_Score:0.836  
Batch 44:LogReg  
Accuracy :0.469  
Recall: 1.0  
Precision:0.37  
F1\_Score:0.541  
Batch 44:RF  
Accuracy :0.438  
Recall: 1.0  
Precision:0.357  
F1\_Score:0.526  
Batch 44:KNN  
Accuracy :0.719  
Recall: 1.0  
Precision:0.526  
F1\_Score:0.69  
Batch 44:SVM  
Accuracy :0.469  
Recall: 1.0  
Precision:0.37  
F1\_Score:0.541  
Batch 44:GNB  
Accuracy :0.5  
Recall: 1.0  
Precision:0.385  
F1\_Score:0.556  
Batch 44:XGB  
Accuracy :0.438  
Recall: 1.0  
Precision:0.357  
F1\_Score:0.526  
Batch 44:DT  
Accuracy :0.188  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 44:MLP  
Accuracy :0.469  
Recall: 1.0  
Precision:0.37

```
F1_Score:0.541
Batch 45:LogReg
Accuracy :0.281
Recall: 1.0
Precision:0.148
F1_Score:0.258
Batch 45:RF
Accuracy :0.375
Recall: 1.0
Precision:0.167
F1_Score:0.286
Batch 45:KNN
Accuracy :0.5
Recall: 1.0
Precision:0.2
F1_Score:0.333
Batch 45:SVM
Accuracy :0.281
Recall: 1.0
Precision:0.148
F1_Score:0.258
Batch 45:GNB
Accuracy :0.312
Recall: 1.0
Precision:0.154
F1_Score:0.267
Batch 45:XGB
Accuracy :0.25
Recall: 1.0
Precision:0.143
F1_Score:0.25
Batch 45:DT
Accuracy :0.375
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 45:MLP
Accuracy :0.281
Recall: 1.0
Precision:0.148
F1_Score:0.258
Batch 46:LogReg
Accuracy :0.156
Recall: 1.0
Precision:0.156
F1_Score:0.27
Batch 46:RF
Accuracy :0.25
Recall: 1.0
Precision:0.172
F1_Score:0.294
Batch 46:KNN
Accuracy :0.469
Recall: 1.0
Precision:0.227
F1_Score:0.37
Batch 46:SVM
Accuracy :0.156
Recall: 1.0
Precision:0.156
F1_Score:0.27
Batch 46:GNB
```

Accuracy :0.156  
Recall: 1.0  
Precision:0.156  
F1\_Score:0.27  
Batch 46:XGB  
Accuracy :0.156  
Recall: 1.0  
Precision:0.156  
F1\_Score:0.27  
Batch 46:DT  
Accuracy :0.156  
Recall: 1.0  
Precision:0.156  
F1\_Score:0.27  
Batch 46:MLP  
Accuracy :0.156  
Recall: 1.0  
Precision:0.156  
F1\_Score:0.27  
Batch 47:LogReg  
Accuracy :0.25  
Recall: 1.0  
Precision:0.111  
F1\_Score:0.2  
Batch 47:RF  
Accuracy :0.25  
Recall: 0.333  
Precision:0.043  
F1\_Score:0.077  
Batch 47:KNN  
Accuracy :0.969  
Recall: 1.0  
Precision:0.75  
F1\_Score:0.857  
Batch 47:SVM  
Accuracy :0.312  
Recall: 1.0  
Precision:0.12  
F1\_Score:0.214  
Batch 47:GNB  
Accuracy :0.281  
Recall: 1.0  
Precision:0.115  
F1\_Score:0.207  
Batch 47:XGB  
Accuracy :0.219  
Recall: 1.0  
Precision:0.107  
F1\_Score:0.194  
Batch 47:DT  
Accuracy :0.188  
Recall: 1.0  
Precision:0.103  
F1\_Score:0.188  
Batch 47:MLP  
Accuracy :0.25  
Recall: 1.0  
Precision:0.111  
F1\_Score:0.2  
Batch 48:LogReg  
Accuracy :0.438  
Recall: 1.0

Precision:0.333  
F1\_Score:0.5  
Batch 48:RF  
Accuracy :0.406  
Recall: 0.778  
Precision:0.292  
F1\_Score:0.424  
Batch 48:KNN  
Accuracy :0.781  
Recall: 1.0  
Precision:0.562  
F1\_Score:0.72  
Batch 48:SVM  
Accuracy :0.469  
Recall: 1.0  
Precision:0.346  
F1\_Score:0.514  
Batch 48:GNB  
Accuracy :0.469  
Recall: 1.0  
Precision:0.346  
F1\_Score:0.514  
Batch 48:XGB  
Accuracy :0.438  
Recall: 1.0  
Precision:0.333  
F1\_Score:0.5  
Batch 48:DT  
Accuracy :0.375  
Recall: 1.0  
Precision:0.31  
F1\_Score:0.474  
Batch 48:MLP  
Accuracy :0.469  
Recall: 1.0  
Precision:0.346  
F1\_Score:0.514  
Batch 49:LogReg  
Accuracy :0.906  
Recall: 1.0  
Precision:0.906  
F1\_Score:0.951  
Batch 49:RF  
Accuracy :0.781  
Recall: 0.862  
Precision:0.893  
F1\_Score:0.877  
Batch 49:KNN  
Accuracy :0.719  
Recall: 0.793  
Precision:0.885  
F1\_Score:0.836  
Batch 49:SVM  
Accuracy :0.906  
Recall: 1.0  
Precision:0.906  
F1\_Score:0.951  
Batch 49:GNB  
Accuracy :0.906  
Recall: 1.0  
Precision:0.906  
F1\_Score:0.951

```
Batch 49:XGB
Accuracy :0.844
Recall: 0.931
Precision:0.9
F1_Score:0.915
Batch 49:DT
Accuracy :0.844
Recall: 0.931
Precision:0.9
F1_Score:0.915
Batch 49:MLP
Accuracy :0.906
Recall: 1.0
Precision:0.906
F1_Score:0.951
Batch 50:LogReg
Accuracy :0.688
Recall: 0.947
Precision:0.667
F1_Score:0.783
Batch 50:RF
Accuracy :0.656
Recall: 0.947
Precision:0.643
F1_Score:0.766
Batch 50:KNN
Accuracy :0.812
Recall: 0.789
Precision:0.882
F1_Score:0.833
Batch 50:SVM
Accuracy :0.719
Recall: 0.947
Precision:0.692
F1_Score:0.8
Batch 50:GNB
Accuracy :0.719
Recall: 0.947
Precision:0.692
F1_Score:0.8
Batch 50:XGB
Accuracy :0.25
Recall: 0.263
Precision:0.333
F1_Score:0.294
Batch 50:DT
Accuracy :0.688
Recall: 1.0
Precision:0.655
F1_Score:0.792
Batch 50:MLP
Accuracy :0.719
Recall: 0.947
Precision:0.692
F1_Score:0.8
Batch 51:LogReg
Accuracy :0.406
Recall: 1.0
Precision:0.296
F1_Score:0.457
Batch 51:RF
Accuracy :0.375
```

Recall: 1.0  
Precision:0.286  
F1\_Score:0.444  
Batch 51:KNN  
Accuracy :0.625  
Recall: 1.0  
Precision:0.4  
F1\_Score:0.571  
Batch 51:SVM  
Accuracy :0.438  
Recall: 1.0  
Precision:0.308  
F1\_Score:0.471  
Batch 51:GNB  
Accuracy :0.438  
Recall: 1.0  
Precision:0.308  
F1\_Score:0.471  
Batch 51:XGB  
Accuracy :0.281  
Recall: 0.125  
Precision:0.059  
F1\_Score:0.08  
Batch 51:DT  
Accuracy :0.406  
Recall: 0.75  
Precision:0.261  
F1\_Score:0.387  
Batch 51:MLP  
Accuracy :0.406  
Recall: 1.0  
Precision:0.296  
F1\_Score:0.457  
Batch 52:LogReg  
Accuracy :0.781  
Recall: 1.0  
Precision:0.781  
F1\_Score:0.877  
Batch 52:RF  
Accuracy :0.781  
Recall: 1.0  
Precision:0.781  
F1\_Score:0.877  
Batch 52:KNN  
Accuracy :0.688  
Recall: 0.68  
Precision:0.895  
F1\_Score:0.773  
Batch 52:SVM  
Accuracy :0.781  
Recall: 1.0  
Precision:0.781  
F1\_Score:0.877  
Batch 52:GNB  
Accuracy :0.781  
Recall: 1.0  
Precision:0.781  
F1\_Score:0.877  
Batch 52:XGB  
Accuracy :0.156  
Recall: 0.04  
Precision:0.25

```
F1_Score:0.069
Batch 52:DT
Accuracy :0.312
Recall: 0.2
Precision:0.714
F1_Score:0.312
Batch 52:MLP
Accuracy :0.781
Recall: 1.0
Precision:0.781
F1_Score:0.877
Batch 53:LogReg
Accuracy :0.469
Recall: 0.824
Precision:0.5
F1_Score:0.622
Batch 53:RF
Accuracy :0.469
Recall: 0.824
Precision:0.5
F1_Score:0.622
Batch 53:KNN
Accuracy :0.656
Recall: 0.529
Precision:0.75
F1_Score:0.621
Batch 53:SVM
Accuracy :0.5
Recall: 0.824
Precision:0.519
F1_Score:0.636
Batch 53:GNB
Accuracy :0.625
Recall: 1.0
Precision:0.586
F1_Score:0.739
Batch 53:XGB
Accuracy :0.25
Recall: 0.235
Precision:0.267
F1_Score:0.25
Batch 53:DT
Accuracy :0.406
Recall: 0.706
Precision:0.462
F1_Score:0.558
Batch 53:MLP
Accuracy :0.5
Recall: 0.824
Precision:0.519
F1_Score:0.636
Batch 54:LogReg
Accuracy :0.5
Recall: 0.875
Precision:0.5
F1_Score:0.636
Batch 54:RF
Accuracy :0.531
Recall: 0.875
Precision:0.519
F1_Score:0.651
Batch 54:KNN
```

Accuracy :0.75  
Recall: 0.875  
Precision:0.7  
F1\_Score:0.778  
Batch 54:SVM  
Accuracy :0.5  
Recall: 0.875  
Precision:0.5  
F1\_Score:0.636  
Batch 54:GNB  
Accuracy :0.562  
Recall: 1.0  
Precision:0.533  
F1\_Score:0.696  
Batch 54:XGB  
Accuracy :0.094  
Recall: 0.062  
Precision:0.067  
F1\_Score:0.065  
Batch 54:DT  
Accuracy :0.5  
Recall: 0.875  
Precision:0.5  
F1\_Score:0.636  
Batch 54:MLP  
Accuracy :0.531  
Recall: 0.875  
Precision:0.519  
F1\_Score:0.651  
Batch 55:LogReg  
Accuracy :0.844  
Recall: 1.0  
Precision:0.844  
F1\_Score:0.915  
Batch 55:RF  
Accuracy :0.844  
Recall: 1.0  
Precision:0.844  
F1\_Score:0.915  
Batch 55:KNN  
Accuracy :0.844  
Recall: 1.0  
Precision:0.844  
F1\_Score:0.915  
Batch 55:SVM  
Accuracy :0.844  
Recall: 1.0  
Precision:0.844  
F1\_Score:0.915  
Batch 55:GNB  
Accuracy :0.844  
Recall: 1.0  
Precision:0.844  
F1\_Score:0.915  
Batch 55:XGB  
Accuracy :0.406  
Recall: 0.481  
Precision:0.722  
F1\_Score:0.578  
Batch 55:DT  
Accuracy :0.094  
Recall: 0.074

```
Precision:0.333
F1_Score:0.121
Batch 55:MLP
Accuracy :0.844
Recall: 1.0
Precision:0.844
F1_Score:0.915
Batch 56:LogReg
Accuracy :0.5
Recall: 1.0
Precision:0.429
F1_Score:0.6
Batch 56:RF
Accuracy :0.656
Recall: 1.0
Precision:0.522
F1_Score:0.686
Batch 56:KNN
Accuracy :0.688
Recall: 0.833
Precision:0.556
F1_Score:0.667
Batch 56:SVM
Accuracy :0.5
Recall: 1.0
Precision:0.429
F1_Score:0.6
Batch 56:GNB
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 56:XGB
Accuracy :0.438
Recall: 1.0
Precision:0.4
F1_Score:0.571
Batch 56:DT
Accuracy :0.438
Recall: 0.667
Precision:0.364
F1_Score:0.471
Batch 56:MLP
Accuracy :0.5
Recall: 1.0
Precision:0.429
F1_Score:0.6
Batch 57:LogReg
Accuracy :0.406
Recall: 0.8
Precision:0.429
F1_Score:0.558
Batch 57:RF
Accuracy :0.688
Recall: 0.867
Precision:0.619
F1_Score:0.722
Batch 57:KNN
Accuracy :0.656
Recall: 0.8
Precision:0.6
F1_Score:0.686
```

```
Batch 57:SVM
Accuracy :0.469
Recall: 0.8
Precision:0.462
F1_Score:0.585
Batch 57:GNB
Accuracy :0.562
Recall: 1.0
Precision:0.517
F1_Score:0.682
Batch 57:XGB
Accuracy :0.406
Recall: 0.867
Precision:0.433
F1_Score:0.578
Batch 57:DT
Accuracy :0.375
Recall: 0.733
Precision:0.407
F1_Score:0.524
Batch 57:MLP
Accuracy :0.438
Recall: 0.8
Precision:0.444
F1_Score:0.571
Batch 58:LogReg
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 58:RF
Accuracy :0.531
Recall: 1.0
Precision:0.444
F1_Score:0.615
Batch 58:KNN
Accuracy :0.594
Recall: 0.833
Precision:0.476
F1_Score:0.606
Batch 58:SVM
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 58:GNB
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 58:XGB
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 58:DT
Accuracy :0.281
Recall: 0.583
Precision:0.28
F1_Score:0.378
Batch 58:MLP
Accuracy :0.375
```

Recall: 1.0  
Precision:0.375  
F1\_Score:0.545  
Batch 59:LogReg  
Accuracy :0.625  
Recall: 0.833  
Precision:0.714  
F1\_Score:0.769  
Batch 59:RF  
Accuracy :0.844  
Recall: 0.833  
Precision:0.952  
F1\_Score:0.889  
Batch 59:KNN  
Accuracy :0.875  
Recall: 0.833  
Precision:1.0  
F1\_Score:0.909  
Batch 59:SVM  
Accuracy :0.656  
Recall: 0.833  
Precision:0.741  
F1\_Score:0.784  
Batch 59:GNB  
Accuracy :0.719  
Recall: 0.875  
Precision:0.778  
F1\_Score:0.824  
Batch 59:XGB  
Accuracy :0.656  
Recall: 0.875  
Precision:0.724  
F1\_Score:0.792  
Batch 59:DT  
Accuracy :0.75  
Recall: 0.958  
Precision:0.767  
F1\_Score:0.852  
Batch 59:MLP  
Accuracy :0.656  
Recall: 0.833  
Precision:0.741  
F1\_Score:0.784  
Batch 60:LogReg  
Accuracy :0.531  
Recall: 1.0  
Precision:0.464  
F1\_Score:0.634  
Batch 60:RF  
Accuracy :0.5  
Recall: 1.0  
Precision:0.448  
F1\_Score:0.619  
Batch 60:KNN  
Accuracy :0.781  
Recall: 1.0  
Precision:0.65  
F1\_Score:0.788  
Batch 60:SVM  
Accuracy :0.531  
Recall: 1.0  
Precision:0.464

```
F1_Score:0.634
Batch 60:GNB
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 60:XGB
Accuracy :0.469
Recall: 1.0
Precision:0.433
F1_Score:0.605
Batch 60:DT
Accuracy :0.5
Recall: 0.769
Precision:0.435
F1_Score:0.556
Batch 60:MLP
Accuracy :0.531
Recall: 1.0
Precision:0.464
F1_Score:0.634
Batch 61:LogReg
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 61:RF
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 61:KNN
Accuracy :0.438
Recall: 1.0
Precision:0.379
F1_Score:0.55
Batch 61:SVM
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 61:GNB
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 61:XGB
Accuracy :0.375
Recall: 0.091
Precision:0.091
F1_Score:0.091
Batch 61:DT
Accuracy :0.5
Recall: 1.0
Precision:0.407
F1_Score:0.579
Batch 61:MLP
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 62:LogReg
```

Accuracy :0.125  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 62:RF  
Accuracy :0.125  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 62:KNN  
Accuracy :0.406  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 62:SVM  
Accuracy :0.156  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 62:GNB  
Accuracy :0.031  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 62:XGB  
Accuracy :0.125  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 62:DT  
Accuracy :0.531  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 62:MLP  
Accuracy :0.156  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 63:LogReg  
Accuracy :0.156  
Recall: 0.556  
Precision:0.179  
F1\_Score:0.27  
Batch 63:RF  
Accuracy :0.281  
Recall: 0.778  
Precision:0.25  
F1\_Score:0.378  
Batch 63:KNN  
Accuracy :0.406  
Recall: 0.556  
Precision:0.25  
F1\_Score:0.345  
Batch 63:SVM  
Accuracy :0.188  
Recall: 0.556  
Precision:0.185  
F1\_Score:0.278  
Batch 63:GNB  
Accuracy :0.312  
Recall: 0.889

Precision:0.276  
F1\_Score:0.421  
Batch 63:XGB  
Accuracy :0.156  
Recall: 0.556  
Precision:0.179  
F1\_Score:0.27  
Batch 63:DT  
Accuracy :0.438  
Recall: 0.111  
Precision:0.091  
F1\_Score:0.1  
Batch 63:MLP  
Accuracy :0.188  
Recall: 0.556  
Precision:0.185  
F1\_Score:0.278  
Batch 64:LogReg  
Accuracy :0.938  
Recall: 1.0  
Precision:0.938  
F1\_Score:0.968  
Batch 64:RF  
Accuracy :0.938  
Recall: 1.0  
Precision:0.938  
F1\_Score:0.968  
Batch 64:KNN  
Accuracy :0.906  
Recall: 0.967  
Precision:0.935  
F1\_Score:0.951  
Batch 64:SVM  
Accuracy :0.938  
Recall: 1.0  
Precision:0.938  
F1\_Score:0.968  
Batch 64:GNB  
Accuracy :0.938  
Recall: 1.0  
Precision:0.938  
F1\_Score:0.968  
Batch 64:XGB  
Accuracy :0.469  
Recall: 0.5  
Precision:0.882  
F1\_Score:0.638  
Batch 64:DT  
Accuracy :0.938  
Recall: 1.0  
Precision:0.938  
F1\_Score:0.968  
Batch 64:MLP  
Accuracy :0.938  
Recall: 1.0  
Precision:0.938  
F1\_Score:0.968  
Batch 65:LogReg  
Accuracy :0.594  
Recall: 0.857  
Precision:0.643  
F1\_Score:0.735

```
Batch 65:RF
Accuracy :0.656
Recall: 0.857
Precision:0.692
F1_Score:0.766
Batch 65:KNN
Accuracy :0.844
Recall: 0.857
Precision:0.9
F1_Score:0.878
Batch 65:SVM
Accuracy :0.625
Recall: 0.857
Precision:0.667
F1_Score:0.75
Batch 65:GNB
Accuracy :0.719
Recall: 1.0
Precision:0.7
F1_Score:0.824
Batch 65:XGB
Accuracy :0.219
Recall: 0.333
Precision:0.389
F1_Score:0.359
Batch 65:DT
Accuracy :0.219
Recall: 0.286
Precision:0.375
F1_Score:0.324
Batch 65:MLP
Accuracy :0.625
Recall: 0.857
Precision:0.667
F1_Score:0.75
Batch 66:LogReg
Accuracy :0.562
Recall: 0.842
Precision:0.593
F1_Score:0.696
Batch 66:RF
Accuracy :0.75
Recall: 0.842
Precision:0.762
F1_Score:0.8
Batch 66:KNN
Accuracy :0.812
Recall: 0.895
Precision:0.81
F1_Score:0.85
Batch 66:SVM
Accuracy :0.562
Recall: 0.842
Precision:0.593
F1_Score:0.696
Batch 66:GNB
Accuracy :0.688
Recall: 1.0
Precision:0.655
F1_Score:0.792
Batch 66:XGB
Accuracy :0.219
```

Recall: 0.368  
Precision:0.35  
F1\_Score:0.359  
Batch 66:DT  
Accuracy :0.438  
Recall: 0.632  
Precision:0.522  
F1\_Score:0.571  
Batch 66:MLP  
Accuracy :0.562  
Recall: 0.842  
Precision:0.593  
F1\_Score:0.696  
Batch 67:LogReg  
Accuracy :0.531  
Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 67:RF  
Accuracy :0.594  
Recall: 1.0  
Precision:0.567  
F1\_Score:0.723  
Batch 67:KNN  
Accuracy :0.5  
Recall: 0.471  
Precision:0.533  
F1\_Score:0.5  
Batch 67:SVM  
Accuracy :0.531  
Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 67:GNB  
Accuracy :0.531  
Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 67:XGB  
Accuracy :0.531  
Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 67:DT  
Accuracy :0.531  
Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 67:MLP  
Accuracy :0.531  
Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 68:LogReg  
Accuracy :0.25  
Recall: 1.0  
Precision:0.111  
F1\_Score:0.2  
Batch 68:RF  
Accuracy :0.469  
Recall: 1.0  
Precision:0.15

```
F1_Score:0.261
Batch 68:KNN
Accuracy :0.656
Recall: 1.0
Precision:0.214
F1_Score:0.353
Batch 68:SVM
Accuracy :0.281
Recall: 1.0
Precision:0.115
F1_Score:0.207
Batch 68:GNB
Accuracy :0.281
Recall: 1.0
Precision:0.115
F1_Score:0.207
Batch 68:XGB
Accuracy :0.219
Recall: 1.0
Precision:0.107
F1_Score:0.194
Batch 68:DT
Accuracy :0.312
Recall: 0.333
Precision:0.048
F1_Score:0.083
Batch 68:MLP
Accuracy :0.25
Recall: 1.0
Precision:0.111
F1_Score:0.2
Batch 69:LogReg
Accuracy :0.375
Recall: 0.889
Precision:0.296
F1_Score:0.444
Batch 69:RF
Accuracy :0.406
Recall: 0.889
Precision:0.308
F1_Score:0.457
Batch 69:KNN
Accuracy :0.594
Recall: 0.778
Precision:0.389
F1_Score:0.519
Batch 69:SVM
Accuracy :0.406
Recall: 0.889
Precision:0.308
F1_Score:0.457
Batch 69:GNB
Accuracy :0.406
Recall: 0.889
Precision:0.308
F1_Score:0.457
Batch 69:XGB
Accuracy :0.344
Recall: 0.889
Precision:0.286
F1_Score:0.432
Batch 69:DT
```

Accuracy :0.531  
Recall: 0.556  
Precision:0.312  
F1\_Score:0.4  
Batch 69:MLP  
Accuracy :0.375  
Recall: 0.889  
Precision:0.296  
F1\_Score:0.444  
Batch 70:LogReg  
Accuracy :0.844  
Recall: 1.0  
Precision:0.844  
F1\_Score:0.915  
Batch 70:RF  
Accuracy :0.844  
Recall: 1.0  
Precision:0.844  
F1\_Score:0.915  
Batch 70:KNN  
Accuracy :0.812  
Recall: 0.963  
Precision:0.839  
F1\_Score:0.897  
Batch 70:SVM  
Accuracy :0.844  
Recall: 1.0  
Precision:0.844  
F1\_Score:0.915  
Batch 70:GNB  
Accuracy :0.844  
Recall: 1.0  
Precision:0.844  
F1\_Score:0.915  
Batch 70:XGB  
Accuracy :0.844  
Recall: 1.0  
Precision:0.844  
F1\_Score:0.915  
Batch 70:DT  
Accuracy :0.875  
Recall: 0.963  
Precision:0.897  
F1\_Score:0.929  
Batch 70:MLP  
Accuracy :0.844  
Recall: 1.0  
Precision:0.844  
F1\_Score:0.915  
Batch 71:LogReg  
Accuracy :0.5  
Recall: 0.833  
Precision:0.536  
F1\_Score:0.652  
Batch 71:RF  
Accuracy :0.531  
Recall: 0.889  
Precision:0.552  
F1\_Score:0.681  
Batch 71:KNN  
Accuracy :0.688  
Recall: 0.833

```
Precision:0.682
F1_Score:0.75
Batch 71:SVM
Accuracy :0.562
Recall: 0.833
Precision:0.577
F1_Score:0.682
Batch 71:GNB
Accuracy :0.656
Recall: 1.0
Precision:0.621
F1_Score:0.766
Batch 71:XGB
Accuracy :0.406
Recall: 0.611
Precision:0.478
F1_Score:0.537
Batch 71:DT
Accuracy :0.562
Recall: 0.833
Precision:0.577
F1_Score:0.682
Batch 71:MLP
Accuracy :0.562
Recall: 0.833
Precision:0.577
F1_Score:0.682
Batch 72:LogReg
Accuracy :0.375
Recall: 0.833
Precision:0.357
F1_Score:0.5
Batch 72:RF
Accuracy :0.406
Recall: 0.833
Precision:0.37
F1_Score:0.513
Batch 72:KNN
Accuracy :0.625
Recall: 0.833
Precision:0.5
F1_Score:0.625
Batch 72:SVM
Accuracy :0.375
Recall: 0.833
Precision:0.357
F1_Score:0.5
Batch 72:GNB
Accuracy :0.5
Recall: 1.0
Precision:0.429
F1_Score:0.6
Batch 72:XGB
Accuracy :0.25
Recall: 0.25
Precision:0.167
F1_Score:0.2
Batch 72:DT
Accuracy :0.469
Recall: 0.75
Precision:0.391
F1_Score:0.514
```

```
Batch 72:MLP
Accuracy :0.375
Recall: 0.833
Precision:0.357
F1_Score:0.5
Batch 73:LogReg
Accuracy :0.094
Recall: 1.0
Precision:0.094
F1_Score:0.171
Batch 73:RF
Accuracy :0.094
Recall: 1.0
Precision:0.094
F1_Score:0.171
Batch 73:KNN
Accuracy :0.125
Recall: 1.0
Precision:0.097
F1_Score:0.176
Batch 73:SVM
Accuracy :0.094
Recall: 1.0
Precision:0.094
F1_Score:0.171
Batch 73:GNB
Accuracy :0.094
Recall: 1.0
Precision:0.094
F1_Score:0.171
Batch 73:XGB
Accuracy :0.094
Recall: 1.0
Precision:0.094
F1_Score:0.171
Batch 73:DT
Accuracy :0.688
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 73:MLP
Accuracy :0.094
Recall: 1.0
Precision:0.094
F1_Score:0.171
Batch 74:LogReg
Accuracy :0.406
Recall: 0.846
Precision:0.393
F1_Score:0.537
Batch 74:RF
Accuracy :0.438
Recall: 0.846
Precision:0.407
F1_Score:0.55
Batch 74:KNN
Accuracy :0.625
Recall: 0.769
Precision:0.526
F1_Score:0.625
Batch 74:SVM
Accuracy :0.438
```

```
Recall: 0.846
Precision:0.407
F1_Score:0.55
Batch 74:GNB
Accuracy :0.469
Recall: 0.846
Precision:0.423
F1_Score:0.564
Batch 74:XGB
Accuracy :0.375
Recall: 0.846
Precision:0.379
F1_Score:0.524
Batch 74:DT
Accuracy :0.375
Recall: 0.692
Precision:0.36
F1_Score:0.474
Batch 74:MLP
Accuracy :0.438
Recall: 0.846
Precision:0.407
F1_Score:0.55
Batch 75:LogReg
Accuracy :0.188
Recall: 0.6
Precision:0.214
F1_Score:0.316
Batch 75:RF
Accuracy :0.281
Recall: 0.7
Precision:0.259
F1_Score:0.378
Batch 75:KNN
Accuracy :0.438
Recall: 0.6
Precision:0.3
F1_Score:0.4
Batch 75:SVM
Accuracy :0.219
Recall: 0.6
Precision:0.222
F1_Score:0.324
Batch 75:GNB
Accuracy :0.312
Recall: 0.8
Precision:0.286
F1_Score:0.421
Batch 75:XGB
Accuracy :0.156
Recall: 0.5
Precision:0.185
F1_Score:0.27
Batch 75:DT
Accuracy :0.25
Recall: 0.7
Precision:0.25
F1_Score:0.368
Batch 75:MLP
Accuracy :0.219
Recall: 0.6
Precision:0.222
```

```
F1_Score:0.324
Batch 76:LogReg
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 76:RF
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 76:KNN
Accuracy :0.562
Recall: 0.947
Precision:0.581
F1_Score:0.72
Batch 76:SVM
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 76:GNB
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 76:XGB
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 76:DT
Accuracy :0.219
Recall: 0.211
Precision:0.286
F1_Score:0.242
Batch 76:MLP
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 77:LogReg
Accuracy :0.25
Recall: 1.0
Precision:0.111
F1_Score:0.2
Batch 77:RF
Accuracy :0.375
Recall: 1.0
Precision:0.13
F1_Score:0.231
Batch 77:KNN
Accuracy :0.812
Recall: 0.667
Precision:0.286
F1_Score:0.4
Batch 77:SVM
Accuracy :0.25
Recall: 1.0
Precision:0.111
F1_Score:0.2
Batch 77:GNB
```

Accuracy :0.281  
Recall: 1.0  
Precision:0.115  
F1\_Score:0.207  
Batch 77:XGB  
Accuracy :0.188  
Recall: 0.667  
Precision:0.074  
F1\_Score:0.133  
Batch 77:DT  
Accuracy :0.188  
Recall: 0.667  
Precision:0.074  
F1\_Score:0.133  
Batch 77:MLP  
Accuracy :0.25  
Recall: 1.0  
Precision:0.111  
F1\_Score:0.2  
Batch 78:LogReg  
Accuracy :0.312  
Recall: 0.667  
Precision:0.37  
F1\_Score:0.476  
Batch 78:RF  
Accuracy :0.562  
Recall: 0.467  
Precision:0.538  
F1\_Score:0.5  
Batch 78:KNN  
Accuracy :0.625  
Recall: 0.533  
Precision:0.615  
F1\_Score:0.571  
Batch 78:SVM  
Accuracy :0.281  
Recall: 0.6  
Precision:0.346  
F1\_Score:0.439  
Batch 78:GNB  
Accuracy :0.281  
Recall: 0.6  
Precision:0.346  
F1\_Score:0.439  
Batch 78:XGB  
Accuracy :0.344  
Recall: 0.733  
Precision:0.393  
F1\_Score:0.512  
Batch 78:DT  
Accuracy :0.406  
Recall: 0.867  
Precision:0.433  
F1\_Score:0.578  
Batch 78:MLP  
Accuracy :0.312  
Recall: 0.667  
Precision:0.37  
F1\_Score:0.476  
Batch 79:LogReg  
Accuracy :0.594  
Recall: 1.0

```
Precision:0.594
F1_Score:0.745
Batch 79:RF
Accuracy :0.594
Recall: 0.842
Precision:0.615
F1_Score:0.711
Batch 79:KNN
Accuracy :0.625
Recall: 0.684
Precision:0.684
F1_Score:0.684
Batch 79:SVM
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 79:GNB
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 79:XGB
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 79:DT
Accuracy :0.5
Recall: 0.842
Precision:0.552
F1_Score:0.667
Batch 79:MLP
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 80:LogReg
Accuracy :0.812
Recall: 0.957
Precision:0.815
F1_Score:0.88
Batch 80:RF
Accuracy :0.719
Recall: 0.826
Precision:0.792
F1_Score:0.809
Batch 80:KNN
Accuracy :0.688
Recall: 0.783
Precision:0.783
F1_Score:0.783
Batch 80:SVM
Accuracy :0.781
Recall: 0.913
Precision:0.808
F1_Score:0.857
Batch 80:GNB
Accuracy :0.781
Recall: 0.913
Precision:0.808
F1_Score:0.857
```

```
Batch 80:XGB
Accuracy :0.781
Recall: 0.957
Precision:0.786
F1_Score:0.863
Batch 80:DT
Accuracy :0.719
Recall: 0.87
Precision:0.769
F1_Score:0.816
Batch 80:MLP
Accuracy :0.781
Recall: 0.913
Precision:0.808
F1_Score:0.857
Batch 81:LogReg
Accuracy :0.5
Recall: 1.0
Precision:0.407
F1_Score:0.579
Batch 81:RF
Accuracy :0.469
Recall: 1.0
Precision:0.393
F1_Score:0.564
Batch 81:KNN
Accuracy :0.562
Recall: 0.818
Precision:0.429
F1_Score:0.562
Batch 81:SVM
Accuracy :0.531
Recall: 1.0
Precision:0.423
F1_Score:0.595
Batch 81:GNB
Accuracy :0.531
Recall: 1.0
Precision:0.423
F1_Score:0.595
Batch 81:XGB
Accuracy :0.469
Recall: 1.0
Precision:0.393
F1_Score:0.564
Batch 81:DT
Accuracy :0.531
Recall: 0.818
Precision:0.409
F1_Score:0.545
Batch 81:MLP
Accuracy :0.5
Recall: 1.0
Precision:0.407
F1_Score:0.579
Batch 82:LogReg
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 82:RF
Accuracy :0.406
```

Recall: 1.0  
Precision:0.406  
F1\_Score:0.578  
Batch 82:KNN  
Accuracy :0.156  
Recall: 0.385  
Precision:0.208  
F1\_Score:0.27  
Batch 82:SVM  
Accuracy :0.406  
Recall: 1.0  
Precision:0.406  
F1\_Score:0.578  
Batch 82:GNB  
Accuracy :0.406  
Recall: 1.0  
Precision:0.406  
F1\_Score:0.578  
Batch 82:XGB  
Accuracy :0.094  
Recall: 0.231  
Precision:0.136  
F1\_Score:0.171  
Batch 82:DT  
Accuracy :0.438  
Recall: 0.923  
Precision:0.414  
F1\_Score:0.571  
Batch 82:MLP  
Accuracy :0.406  
Recall: 1.0  
Precision:0.406  
F1\_Score:0.578  
Batch 83:LogReg  
Accuracy :0.406  
Recall: 0.786  
Precision:0.407  
F1\_Score:0.537  
Batch 83:RF  
Accuracy :0.406  
Recall: 0.857  
Precision:0.414  
F1\_Score:0.558  
Batch 83:KNN  
Accuracy :0.406  
Recall: 0.286  
Precision:0.308  
F1\_Score:0.296  
Batch 83:SVM  
Accuracy :0.406  
Recall: 0.786  
Precision:0.407  
F1\_Score:0.537  
Batch 83:GNB  
Accuracy :0.531  
Recall: 1.0  
Precision:0.483  
F1\_Score:0.651  
Batch 83:XGB  
Accuracy :0.25  
Recall: 0.5  
Precision:0.292

F1\_Score:0.368  
Batch 83:DT  
Accuracy :0.438  
Recall: 0.286  
Precision:0.333  
F1\_Score:0.308  
Batch 83:MLP  
Accuracy :0.438  
Recall: 0.786  
Precision:0.423  
F1\_Score:0.55  
Batch 84:LogReg  
Accuracy :0.344  
Recall: 1.0  
Precision:0.222  
F1\_Score:0.364  
Batch 84:RF  
Accuracy :0.344  
Recall: 1.0  
Precision:0.222  
F1\_Score:0.364  
Batch 84:KNN  
Accuracy :0.406  
Recall: 0.667  
Precision:0.19  
F1\_Score:0.296  
Batch 84:SVM  
Accuracy :0.344  
Recall: 1.0  
Precision:0.222  
F1\_Score:0.364  
Batch 84:GNB  
Accuracy :0.375  
Recall: 1.0  
Precision:0.231  
F1\_Score:0.375  
Batch 84:XGB  
Accuracy :0.281  
Recall: 1.0  
Precision:0.207  
F1\_Score:0.343  
Batch 84:DT  
Accuracy :0.656  
Recall: 0.5  
Precision:0.273  
F1\_Score:0.353  
Batch 84:MLP  
Accuracy :0.375  
Recall: 1.0  
Precision:0.231  
F1\_Score:0.375  
Batch 85:LogReg  
Accuracy :0.375  
Recall: 1.0  
Precision:0.375  
F1\_Score:0.545  
Batch 85:RF  
Accuracy :0.375  
Recall: 1.0  
Precision:0.375  
F1\_Score:0.545  
Batch 85:KNN

Accuracy :0.281  
Recall: 0.75  
Precision:0.31  
F1\_Score:0.439  
Batch 85:SVM  
Accuracy :0.375  
Recall: 1.0  
Precision:0.375  
F1\_Score:0.545  
Batch 85:GNB  
Accuracy :0.375  
Recall: 1.0  
Precision:0.375  
F1\_Score:0.545  
Batch 85:XGB  
Accuracy :0.312  
Recall: 0.833  
Precision:0.333  
F1\_Score:0.476  
Batch 85:DT  
Accuracy :0.375  
Recall: 1.0  
Precision:0.375  
F1\_Score:0.545  
Batch 85:MLP  
Accuracy :0.375  
Recall: 1.0  
Precision:0.375  
F1\_Score:0.545  
Batch 86:LogReg  
Accuracy :0.406  
Recall: 0.9  
Precision:0.333  
F1\_Score:0.486  
Batch 86:RF  
Accuracy :0.469  
Recall: 0.9  
Precision:0.36  
F1\_Score:0.514  
Batch 86:KNN  
Accuracy :0.5  
Recall: 0.7  
Precision:0.35  
F1\_Score:0.467  
Batch 86:SVM  
Accuracy :0.406  
Recall: 0.9  
Precision:0.333  
F1\_Score:0.486  
Batch 86:GNB  
Accuracy :0.438  
Recall: 0.9  
Precision:0.346  
F1\_Score:0.5  
Batch 86:XGB  
Accuracy :0.344  
Recall: 0.8  
Precision:0.296  
F1\_Score:0.432  
Batch 86:DT  
Accuracy :0.594  
Recall: 0.5

Precision:0.385  
F1\_Score:0.435  
Batch 86:MLP  
Accuracy :0.406  
Recall: 0.9  
Precision:0.333  
F1\_Score:0.486  
Batch 87:LogReg  
Accuracy :0.281  
Recall: 1.0  
Precision:0.148  
F1\_Score:0.258  
Batch 87:RF  
Accuracy :0.5  
Recall: 1.0  
Precision:0.2  
F1\_Score:0.333  
Batch 87:KNN  
Accuracy :0.5  
Recall: 1.0  
Precision:0.2  
F1\_Score:0.333  
Batch 87:SVM  
Accuracy :0.281  
Recall: 1.0  
Precision:0.148  
F1\_Score:0.258  
Batch 87:GNB  
Accuracy :0.312  
Recall: 1.0  
Precision:0.154  
F1\_Score:0.267  
Batch 87:XGB  
Accuracy :0.25  
Recall: 1.0  
Precision:0.143  
F1\_Score:0.25  
Batch 87:DT  
Accuracy :0.5  
Recall: 0.75  
Precision:0.167  
F1\_Score:0.273  
Batch 87:MLP  
Accuracy :0.281  
Recall: 1.0  
Precision:0.148  
F1\_Score:0.258  
Batch 88:LogReg  
Accuracy :0.625  
Recall: 1.0  
Precision:0.625  
F1\_Score:0.769  
Batch 88:RF  
Accuracy :0.781  
Recall: 1.0  
Precision:0.741  
F1\_Score:0.851  
Batch 88:KNN  
Accuracy :0.625  
Recall: 0.6  
Precision:0.75  
F1\_Score:0.667

```
Batch 88:SVM
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 88:GNB
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 88:XGB
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 88:DT
Accuracy :0.562
Recall: 0.9
Precision:0.6
F1_Score:0.72
Batch 88:MLP
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 89:LogReg
Accuracy :0.188
Recall: 1.0
Precision:0.037
F1_Score:0.071
Batch 89:RF
Accuracy :0.406
Recall: 1.0
Precision:0.05
F1_Score:0.095
Batch 89:KNN
Accuracy :0.562
Recall: 1.0
Precision:0.067
F1_Score:0.125
Batch 89:SVM
Accuracy :0.219
Recall: 1.0
Precision:0.038
F1_Score:0.074
Batch 89:GNB
Accuracy :0.219
Recall: 1.0
Precision:0.038
F1_Score:0.074
Batch 89:XGB
Accuracy :0.156
Recall: 1.0
Precision:0.036
F1_Score:0.069
Batch 89:DT
Accuracy :0.219
Recall: 1.0
Precision:0.038
F1_Score:0.074
Batch 89:MLP
Accuracy :0.188
```

Recall: 1.0  
Precision:0.037  
F1\_Score:0.071  
Batch 90:LogReg  
Accuracy :0.562  
Recall: 0.81  
Precision:0.63  
F1\_Score:0.708  
Batch 90:RF  
Accuracy :0.562  
Recall: 0.762  
Precision:0.64  
F1\_Score:0.696  
Batch 90:KNN  
Accuracy :0.625  
Recall: 0.667  
Precision:0.737  
F1\_Score:0.7  
Batch 90:SVM  
Accuracy :0.562  
Recall: 0.81  
Precision:0.63  
F1\_Score:0.708  
Batch 90:GNB  
Accuracy :0.594  
Recall: 0.81  
Precision:0.654  
F1\_Score:0.723  
Batch 90:XGB  
Accuracy :0.562  
Recall: 0.81  
Precision:0.63  
F1\_Score:0.708  
Batch 90:DT  
Accuracy :0.406  
Recall: 0.571  
Precision:0.545  
F1\_Score:0.558  
Batch 90:MLP  
Accuracy :0.562  
Recall: 0.81  
Precision:0.63  
F1\_Score:0.708  
Batch 91:LogReg  
Accuracy :0.156  
Recall: 1.0  
Precision:0.156  
F1\_Score:0.27  
Batch 91:RF  
Accuracy :0.156  
Recall: 1.0  
Precision:0.156  
F1\_Score:0.27  
Batch 91:KNN  
Accuracy :0.156  
Recall: 1.0  
Precision:0.156  
F1\_Score:0.27  
Batch 91:SVM  
Accuracy :0.156  
Recall: 1.0  
Precision:0.156

```
F1_Score:0.27
Batch 91:GNB
Accuracy :0.156
Recall: 1.0
Precision:0.156
F1_Score:0.27
Batch 91:XGB
Accuracy :0.156
Recall: 1.0
Precision:0.156
F1_Score:0.27
Batch 91:DT
Accuracy :0.188
Recall: 0.8
Precision:0.138
F1_Score:0.235
Batch 91:MLP
Accuracy :0.156
Recall: 1.0
Precision:0.156
F1_Score:0.27
Batch 92:LogReg
Accuracy :0.25
Recall: 0.75
Precision:0.214
F1_Score:0.333
Batch 92:RF
Accuracy :0.25
Recall: 0.75
Precision:0.214
F1_Score:0.333
Batch 92:KNN
Accuracy :0.812
Recall: 0.5
Precision:0.667
F1_Score:0.571
Batch 92:SVM
Accuracy :0.25
Recall: 0.75
Precision:0.214
F1_Score:0.333
Batch 92:GNB
Accuracy :0.312
Recall: 0.75
Precision:0.231
F1_Score:0.353
Batch 92:XGB
Accuracy :0.25
Recall: 0.75
Precision:0.214
F1_Score:0.333
Batch 92:DT
Accuracy :0.312
Recall: 0.75
Precision:0.231
F1_Score:0.353
Batch 92:MLP
Accuracy :0.25
Recall: 0.75
Precision:0.214
F1_Score:0.333
Batch 93:LogReg
```

Accuracy :0.188  
Recall: 0.6  
Precision:0.214  
F1\_Score:0.316  
Batch 93:RF  
Accuracy :0.188  
Recall: 0.6  
Precision:0.214  
F1\_Score:0.316  
Batch 93:KNN  
Accuracy :0.312  
Recall: 0.4  
Precision:0.2  
F1\_Score:0.267  
Batch 93:SVM  
Accuracy :0.188  
Recall: 0.6  
Precision:0.214  
F1\_Score:0.316  
Batch 93:GNB  
Accuracy :0.25  
Recall: 0.6  
Precision:0.231  
F1\_Score:0.333  
Batch 93:XGB  
Accuracy :0.188  
Recall: 0.6  
Precision:0.214  
F1\_Score:0.316  
Batch 93:DT  
Accuracy :0.469  
Recall: 0.5  
Precision:0.294  
F1\_Score:0.37  
Batch 93:MLP  
Accuracy :0.188  
Recall: 0.6  
Precision:0.214  
F1\_Score:0.316  
Batch 94:LogReg  
Accuracy :0.656  
Recall: 1.0  
Precision:0.656  
F1\_Score:0.792  
Batch 94:RF  
Accuracy :0.656  
Recall: 1.0  
Precision:0.656  
F1\_Score:0.792  
Batch 94:KNN  
Accuracy :0.656  
Recall: 1.0  
Precision:0.656  
F1\_Score:0.792  
Batch 94:SVM  
Accuracy :0.656  
Recall: 1.0  
Precision:0.656  
F1\_Score:0.792  
Batch 94:GNB  
Accuracy :0.656  
Recall: 1.0

Precision:0.656  
F1\_Score:0.792  
Batch 94:XGB  
Accuracy :0.625  
Recall: 0.952  
Precision:0.645  
F1\_Score:0.769  
Batch 94:DT  
Accuracy :0.562  
Recall: 0.476  
Precision:0.769  
F1\_Score:0.588  
Batch 94:MLP  
Accuracy :0.656  
Recall: 1.0  
Precision:0.656  
F1\_Score:0.792  
Batch 95:LogReg  
Accuracy :0.312  
Recall: 1.0  
Precision:0.214  
F1\_Score:0.353  
Batch 95:RF  
Accuracy :0.344  
Recall: 1.0  
Precision:0.222  
F1\_Score:0.364  
Batch 95:KNN  
Accuracy :0.469  
Recall: 0.833  
Precision:0.238  
F1\_Score:0.37  
Batch 95:SVM  
Accuracy :0.344  
Recall: 1.0  
Precision:0.222  
F1\_Score:0.364  
Batch 95:GNB  
Accuracy :0.375  
Recall: 1.0  
Precision:0.231  
F1\_Score:0.375  
Batch 95:XGB  
Accuracy :0.312  
Recall: 1.0  
Precision:0.214  
F1\_Score:0.353  
Batch 95:DT  
Accuracy :0.406  
Recall: 0.833  
Precision:0.217  
F1\_Score:0.345  
Batch 95:MLP  
Accuracy :0.344  
Recall: 1.0  
Precision:0.222  
F1\_Score:0.364  
Batch 96:LogReg  
Accuracy :0.188  
Recall: 1.0  
Precision:0.071  
F1\_Score:0.133

```
Batch 96:RF
Accuracy :0.219
Recall: 1.0
Precision:0.074
F1_Score:0.138
Batch 96:KNN
Accuracy :0.375
Recall: 0.5
Precision:0.05
F1_Score:0.091
Batch 96:SVM
Accuracy :0.219
Recall: 1.0
Precision:0.074
F1_Score:0.138
Batch 96:GNB
Accuracy :0.25
Recall: 1.0
Precision:0.077
F1_Score:0.143
Batch 96:XGB
Accuracy :0.188
Recall: 1.0
Precision:0.071
F1_Score:0.133
Batch 96:DT
Accuracy :0.219
Recall: 1.0
Precision:0.074
F1_Score:0.138
Batch 96:MLP
Accuracy :0.219
Recall: 1.0
Precision:0.074
F1_Score:0.138
Batch 97:LogReg
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 97:RF
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 97:KNN
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 97:SVM
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 97:GNB
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 97:XGB
Accuracy :0.281
```

Recall: 1.0  
Precision:0.281  
F1\_Score:0.439  
Batch 97:DT  
Accuracy :0.375  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 97:MLP  
Accuracy :0.281  
Recall: 1.0  
Precision:0.281  
F1\_Score:0.439  
Batch 98:LogReg  
Accuracy :0.625  
Recall: 0.895  
Precision:0.63  
F1\_Score:0.739  
Batch 98:RF  
Accuracy :0.656  
Recall: 0.895  
Precision:0.654  
F1\_Score:0.756  
Batch 98:KNN  
Accuracy :0.625  
Recall: 0.526  
Precision:0.769  
F1\_Score:0.625  
Batch 98:SVM  
Accuracy :0.625  
Recall: 0.895  
Precision:0.63  
F1\_Score:0.739  
Batch 98:GNB  
Accuracy :0.656  
Recall: 0.895  
Precision:0.654  
F1\_Score:0.756  
Batch 98:XGB  
Accuracy :0.562  
Recall: 0.895  
Precision:0.586  
F1\_Score:0.708  
Batch 98:DT  
Accuracy :0.562  
Recall: 0.842  
Precision:0.593  
F1\_Score:0.696  
Batch 98:MLP  
Accuracy :0.625  
Recall: 0.895  
Precision:0.63  
F1\_Score:0.739  
Batch 99:LogReg  
Accuracy :0.312  
Recall: 1.0  
Precision:0.185  
F1\_Score:0.312  
Batch 99:RF  
Accuracy :0.438  
Recall: 1.0  
Precision:0.217

```
F1_Score:0.357
Batch 99:KNN
Accuracy :0.531
Recall: 1.0
Precision:0.25
F1_Score:0.4
Batch 99:SVM
Accuracy :0.375
Recall: 1.0
Precision:0.2
F1_Score:0.333
Batch 99:GNB
Accuracy :0.344
Recall: 1.0
Precision:0.192
F1_Score:0.323
Batch 99:XGB
Accuracy :0.281
Recall: 1.0
Precision:0.179
F1_Score:0.303
Batch 99:DT
Accuracy :0.25
Recall: 1.0
Precision:0.172
F1_Score:0.294
Batch 99:MLP
Accuracy :0.281
Recall: 1.0
Precision:0.179
F1_Score:0.303
Batch 100:LogReg
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 100:RF
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 100:KNN
Accuracy :0.875
Recall: 0.875
Precision:0.875
F1_Score:0.875
Batch 100:SVM
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 100:GNB
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 100:XGB
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 100:DT
```

Accuracy :0.25  
Recall: 0.375  
Precision:0.3  
F1\_Score:0.333  
Batch 100:MLP  
Accuracy :0.5  
Recall: 1.0  
Precision:0.5  
F1\_Score:0.667  
Batch 101:LogReg  
Accuracy :0.75  
Recall: 0.852  
Precision:0.852  
F1\_Score:0.852  
Batch 101:RF  
Accuracy :0.688  
Recall: 0.778  
Precision:0.84  
F1\_Score:0.808  
Batch 101:KNN  
Accuracy :0.75  
Recall: 0.741  
Precision:0.952  
F1\_Score:0.833  
Batch 101:SVM  
Accuracy :0.781  
Recall: 0.852  
Precision:0.885  
F1\_Score:0.868  
Batch 101:GNB  
Accuracy :0.781  
Recall: 0.852  
Precision:0.885  
F1\_Score:0.868  
Batch 101:XGB  
Accuracy :0.719  
Recall: 0.852  
Precision:0.821  
F1\_Score:0.836  
Batch 101:DT  
Accuracy :0.719  
Recall: 0.815  
Precision:0.846  
F1\_Score:0.83  
Batch 101:MLP  
Accuracy :0.719  
Recall: 0.852  
Precision:0.821  
F1\_Score:0.836  
Batch 102:LogReg  
Accuracy :0.375  
Recall: 0.889  
Precision:0.296  
F1\_Score:0.444  
Batch 102:RF  
Accuracy :0.344  
Recall: 0.889  
Precision:0.286  
F1\_Score:0.432  
Batch 102:KNN  
Accuracy :0.469  
Recall: 0.667

```
Precision:0.3
F1_Score:0.414
Batch 102:SVM
Accuracy :0.375
Recall: 0.889
Precision:0.296
F1_Score:0.444
Batch 102:GNB
Accuracy :0.406
Recall: 0.889
Precision:0.308
F1_Score:0.457
Batch 102:XGB
Accuracy :0.344
Recall: 0.889
Precision:0.286
F1_Score:0.432
Batch 102:DT
Accuracy :0.531
Recall: 0.778
Precision:0.35
F1_Score:0.483
Batch 102:MLP
Accuracy :0.375
Recall: 0.889
Precision:0.296
F1_Score:0.444
Batch 103:LogReg
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 103:RF
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 103:KNN
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 103:SVM
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 103:GNB
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 103:XGB
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 103:DT
Accuracy :0.656
Recall: 1.0
Precision:0.577
F1_Score:0.732
```

```
Batch 103:MLP
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 104:LogReg
Accuracy :0.625
Recall: 1.0
Precision:0.556
F1_Score:0.714
Batch 104:RF
Accuracy :0.625
Recall: 1.0
Precision:0.556
F1_Score:0.714
Batch 104:KNN
Accuracy :0.812
Recall: 1.0
Precision:0.714
F1_Score:0.833
Batch 104:SVM
Accuracy :0.625
Recall: 1.0
Precision:0.556
F1_Score:0.714
Batch 104:GNB
Accuracy :0.656
Recall: 1.0
Precision:0.577
F1_Score:0.732
Batch 104:XGB
Accuracy :0.375
Recall: 0.533
Precision:0.381
F1_Score:0.444
Batch 104:DT
Accuracy :0.344
Recall: 0.133
Precision:0.2
F1_Score:0.16
Batch 104:MLP
Accuracy :0.625
Recall: 1.0
Precision:0.556
F1_Score:0.714
Batch 105:LogReg
Accuracy :0.438
Recall: 1.0
Precision:0.333
F1_Score:0.5
Batch 105:RF
Accuracy :0.438
Recall: 1.0
Precision:0.333
F1_Score:0.5
Batch 105:KNN
Accuracy :0.531
Recall: 0.778
Precision:0.35
F1_Score:0.483
Batch 105:SVM
Accuracy :0.469
```

Recall: 1.0  
Precision:0.346  
F1\_Score:0.514  
Batch 105:GNB  
Accuracy :0.469  
Recall: 1.0  
Precision:0.346  
F1\_Score:0.514  
Batch 105:XGB  
Accuracy :0.406  
Recall: 0.889  
Precision:0.308  
F1\_Score:0.457  
Batch 105:DT  
Accuracy :0.719  
Recall: 0.778  
Precision:0.5  
F1\_Score:0.609  
Batch 105:MLP  
Accuracy :0.469  
Recall: 1.0  
Precision:0.346  
F1\_Score:0.514  
Batch 106:LogReg  
Accuracy :0.5  
Recall: 1.0  
Precision:0.5  
F1\_Score:0.667  
Batch 106:RF  
Accuracy :0.5  
Recall: 1.0  
Precision:0.5  
F1\_Score:0.667  
Batch 106:KNN  
Accuracy :0.438  
Recall: 0.875  
Precision:0.467  
F1\_Score:0.609  
Batch 106:SVM  
Accuracy :0.5  
Recall: 1.0  
Precision:0.5  
F1\_Score:0.667  
Batch 106:GNB  
Accuracy :0.5  
Recall: 1.0  
Precision:0.5  
F1\_Score:0.667  
Batch 106:XGB  
Accuracy :0.406  
Recall: 0.688  
Precision:0.44  
F1\_Score:0.537  
Batch 106:DT  
Accuracy :0.5  
Recall: 1.0  
Precision:0.5  
F1\_Score:0.667  
Batch 106:MLP  
Accuracy :0.5  
Recall: 1.0  
Precision:0.5

```
F1_Score:0.667
Batch 107:LogReg
Accuracy :0.531
Recall: 1.0
Precision:0.444
F1_Score:0.615
Batch 107:RF
Accuracy :0.531
Recall: 1.0
Precision:0.444
F1_Score:0.615
Batch 107:KNN
Accuracy :0.688
Recall: 0.917
Precision:0.55
F1_Score:0.687
Batch 107:SVM
Accuracy :0.531
Recall: 1.0
Precision:0.444
F1_Score:0.615
Batch 107:GNB
Accuracy :0.562
Recall: 1.0
Precision:0.462
F1_Score:0.632
Batch 107:XGB
Accuracy :0.531
Recall: 1.0
Precision:0.444
F1_Score:0.615
Batch 107:DT
Accuracy :0.406
Recall: 0.25
Precision:0.231
F1_Score:0.24
Batch 107:MLP
Accuracy :0.531
Recall: 1.0
Precision:0.444
F1_Score:0.615
Batch 108:LogReg
Accuracy :0.219
Recall: 1.0
Precision:0.074
F1_Score:0.138
Batch 108:RF
Accuracy :0.375
Recall: 1.0
Precision:0.091
F1_Score:0.167
Batch 108:KNN
Accuracy :0.438
Recall: 1.0
Precision:0.1
F1_Score:0.182
Batch 108:SVM
Accuracy :0.219
Recall: 1.0
Precision:0.074
F1_Score:0.138
Batch 108:GNB
```

Accuracy :0.25  
Recall: 1.0  
Precision:0.077  
F1\_Score:0.143  
Batch 108:XGB  
Accuracy :0.188  
Recall: 1.0  
Precision:0.071  
F1\_Score:0.133  
Batch 108:DT  
Accuracy :0.375  
Recall: 1.0  
Precision:0.091  
F1\_Score:0.167  
Batch 108:MLP  
Accuracy :0.219  
Recall: 1.0  
Precision:0.074  
F1\_Score:0.138  
Batch 109:LogReg  
Accuracy :0.125  
Recall: 1.0  
Precision:0.125  
F1\_Score:0.222  
Batch 109:RF  
Accuracy :0.281  
Recall: 1.0  
Precision:0.148  
F1\_Score:0.258  
Batch 109:KNN  
Accuracy :0.281  
Recall: 0.25  
Precision:0.048  
F1\_Score:0.08  
Batch 109:SVM  
Accuracy :0.125  
Recall: 1.0  
Precision:0.125  
F1\_Score:0.222  
Batch 109:GNB  
Accuracy :0.125  
Recall: 1.0  
Precision:0.125  
F1\_Score:0.222  
Batch 109:XGB  
Accuracy :0.125  
Recall: 1.0  
Precision:0.125  
F1\_Score:0.222  
Batch 109:DT  
Accuracy :0.062  
Recall: 0.5  
Precision:0.067  
F1\_Score:0.118  
Batch 109:MLP  
Accuracy :0.125  
Recall: 1.0  
Precision:0.125  
F1\_Score:0.222  
Batch 110:LogReg  
Accuracy :0.594  
Recall: 1.0

```
Precision:0.519
F1_Score:0.683
Batch 110:RF
Accuracy :0.719
Recall: 0.929
Precision:0.619
F1_Score:0.743
Batch 110:KNN
Accuracy :0.781
Recall: 0.714
Precision:0.769
F1_Score:0.741
Batch 110:SVM
Accuracy :0.656
Recall: 1.0
Precision:0.56
F1_Score:0.718
Batch 110:GNB
Accuracy :0.625
Recall: 1.0
Precision:0.538
F1_Score:0.7
Batch 110:XGB
Accuracy :0.562
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 110:DT
Accuracy :0.469
Recall: 0.857
Precision:0.444
F1_Score:0.585
Batch 110:MLP
Accuracy :0.594
Recall: 1.0
Precision:0.519
F1_Score:0.683
Batch 111:LogReg
Accuracy :0.75
Recall: 0.852
Precision:0.852
F1_Score:0.852
Batch 111:RF
Accuracy :0.781
Recall: 0.852
Precision:0.885
F1_Score:0.868
Batch 111:KNN
Accuracy :0.75
Recall: 0.704
Precision:1.0
F1_Score:0.826
Batch 111:SVM
Accuracy :0.781
Recall: 0.852
Precision:0.885
F1_Score:0.868
Batch 111:GNB
Accuracy :0.781
Recall: 0.852
Precision:0.885
F1_Score:0.868
```

```
Batch 111:XGB
Accuracy :0.75
Recall: 0.852
Precision:0.852
F1_Score:0.852
Batch 111:DT
Accuracy :0.719
Recall: 0.815
Precision:0.846
F1_Score:0.83
Batch 111:MLP
Accuracy :0.75
Recall: 0.852
Precision:0.852
F1_Score:0.852
Batch 112:LogReg
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 112:RF
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 112:KNN
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 112:SVM
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 112:GNB
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 112:XGB
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 112:DT
Accuracy :0.781
Recall: 0.952
Precision:0.769
F1_Score:0.851
Batch 112:MLP
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 113:LogReg
Accuracy :0.594
Recall: 0.941
Precision:0.571
F1_Score:0.711
Batch 113:RF
Accuracy :0.594
```

```
Recall: 0.941
Precision:0.571
F1_Score:0.711
Batch 113:KNN
Accuracy :0.625
Recall: 0.706
Precision:0.632
F1_Score:0.667
Batch 113:SVM
Accuracy :0.625
Recall: 0.941
Precision:0.593
F1_Score:0.727
Batch 113:GNB
Accuracy :0.656
Recall: 0.941
Precision:0.615
F1_Score:0.744
Batch 113:XGB
Accuracy :0.594
Recall: 0.941
Precision:0.571
F1_Score:0.711
Batch 113:DT
Accuracy :0.469
Recall: 0.647
Precision:0.5
F1_Score:0.564
Batch 113:MLP
Accuracy :0.625
Recall: 0.941
Precision:0.593
F1_Score:0.727
Batch 114:LogReg
Accuracy :0.219
Recall: 0.75
Precision:0.111
F1_Score:0.194
Batch 114:RF
Accuracy :0.188
Recall: 0.75
Precision:0.107
F1_Score:0.188
Batch 114:KNN
Accuracy :0.375
Recall: 0.5
Precision:0.1
F1_Score:0.167
Batch 114:SVM
Accuracy :0.219
Recall: 0.75
Precision:0.111
F1_Score:0.194
Batch 114:GNB
Accuracy :0.25
Recall: 0.75
Precision:0.115
F1_Score:0.2
Batch 114:XGB
Accuracy :0.219
Recall: 0.75
Precision:0.111
```

```
F1_Score:0.194
Batch 114:DT
Accuracy :0.281
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 114:MLP
Accuracy :0.219
Recall: 0.75
Precision:0.111
F1_Score:0.194
Batch 115:LogReg
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 115:RF
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 115:KNN
Accuracy :0.25
Recall: 0.889
Precision:0.258
F1_Score:0.4
Batch 115:SVM
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 115:GNB
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 115:XGB
Accuracy :0.156
Recall: 0.444
Precision:0.154
F1_Score:0.229
Batch 115:DT
Accuracy :0.375
Recall: 0.111
Precision:0.077
F1_Score:0.091
Batch 115:MLP
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 116:LogReg
Accuracy :0.5
Recall: 0.824
Precision:0.519
F1_Score:0.636
Batch 116:RF
Accuracy :0.5
Recall: 0.824
Precision:0.519
F1_Score:0.636
Batch 116:KNN
```

Accuracy :0.625  
Recall: 0.765  
Precision:0.619  
F1\_Score:0.684  
Batch 116:SVM  
Accuracy :0.5  
Recall: 0.824  
Precision:0.519  
F1\_Score:0.636  
Batch 116:GNB  
Accuracy :0.625  
Recall: 1.0  
Precision:0.586  
F1\_Score:0.739  
Batch 116:XGB  
Accuracy :0.312  
Recall: 0.412  
Precision:0.368  
F1\_Score:0.389  
Batch 116:DT  
Accuracy :0.375  
Recall: 0.588  
Precision:0.435  
F1\_Score:0.5  
Batch 116:MLP  
Accuracy :0.5  
Recall: 0.824  
Precision:0.519  
F1\_Score:0.636  
Batch 117:LogReg  
Accuracy :0.281  
Recall: 0.75  
Precision:0.222  
F1\_Score:0.343  
Batch 117:RF  
Accuracy :0.312  
Recall: 0.75  
Precision:0.231  
F1\_Score:0.353  
Batch 117:KNN  
Accuracy :0.406  
Recall: 0.625  
Precision:0.238  
F1\_Score:0.345  
Batch 117:SVM  
Accuracy :0.281  
Recall: 0.75  
Precision:0.222  
F1\_Score:0.343  
Batch 117:GNB  
Accuracy :0.312  
Recall: 0.75  
Precision:0.231  
F1\_Score:0.353  
Batch 117:XGB  
Accuracy :0.25  
Recall: 0.75  
Precision:0.214  
F1\_Score:0.333  
Batch 117:DT  
Accuracy :0.281  
Recall: 0.75

```
Precision:0.222
F1_Score:0.343
Batch 117:MLP
Accuracy :0.281
Recall: 0.75
Precision:0.222
F1_Score:0.343
Batch 118:LogReg
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 118:RF
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 118:KNN
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 118:SVM
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 118:GNB
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 118:XGB
Accuracy :0.344
Recall: 0.846
Precision:0.367
F1_Score:0.512
Batch 118:DT
Accuracy :0.188
Recall: 0.077
Precision:0.067
F1_Score:0.071
Batch 118:MLP
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 119:LogReg
Accuracy :0.531
Recall: 0.833
Precision:0.556
F1_Score:0.667
Batch 119:RF
Accuracy :0.875
Recall: 0.833
Precision:0.938
F1_Score:0.882
Batch 119:KNN
Accuracy :0.594
Recall: 0.333
Precision:0.857
F1_Score:0.48
```

```
Batch 119:SVM
Accuracy :0.531
Recall: 0.833
Precision:0.556
F1_Score:0.667
Batch 119:GNB
Accuracy :0.625
Recall: 0.944
Precision:0.607
F1_Score:0.739
Batch 119:XGB
Accuracy :0.469
Recall: 0.833
Precision:0.517
F1_Score:0.638
Batch 119:DT
Accuracy :0.5
Recall: 0.778
Precision:0.538
F1_Score:0.636
Batch 119:MLP
Accuracy :0.531
Recall: 0.833
Precision:0.556
F1_Score:0.667
Batch 120:LogReg
Accuracy :0.188
Recall: 1.0
Precision:0.037
F1_Score:0.071
Batch 120:RF
Accuracy :0.781
Recall: 1.0
Precision:0.125
F1_Score:0.222
Batch 120:KNN
Accuracy :0.625
Recall: 1.0
Precision:0.077
F1_Score:0.143
Batch 120:SVM
Accuracy :0.25
Recall: 1.0
Precision:0.04
F1_Score:0.077
Batch 120:GNB
Accuracy :0.219
Recall: 1.0
Precision:0.038
F1_Score:0.074
Batch 120:XGB
Accuracy :0.156
Recall: 1.0
Precision:0.036
F1_Score:0.069
Batch 120:DT
Accuracy :0.094
Recall: 1.0
Precision:0.033
F1_Score:0.065
Batch 120:MLP
Accuracy :0.188
```

```
Recall: 1.0
Precision:0.037
F1_Score:0.071
Batch 121:LogReg
Accuracy :0.812
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 121:RF
Accuracy :0.875
Recall: 1.0
Precision:0.867
F1_Score:0.929
Batch 121:KNN
Accuracy :0.938
Recall: 1.0
Precision:0.929
F1_Score:0.963
Batch 121:SVM
Accuracy :0.812
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 121:GNB
Accuracy :0.812
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 121:XGB
Accuracy :0.812
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 121:DT
Accuracy :0.75
Recall: 0.923
Precision:0.8
F1_Score:0.857
Batch 121:MLP
Accuracy :0.812
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 122:LogReg
Accuracy :0.75
Recall: 0.852
Precision:0.852
F1_Score:0.852
Batch 122:RF
Accuracy :0.812
Recall: 0.852
Precision:0.92
F1_Score:0.885
Batch 122:KNN
Accuracy :0.844
Recall: 0.815
Precision:1.0
F1_Score:0.898
Batch 122:SVM
Accuracy :0.781
Recall: 0.852
Precision:0.885
```

F1\_Score:0.868  
Batch 122:GNB  
Accuracy :0.781  
Recall: 0.852  
Precision:0.885  
F1\_Score:0.868  
Batch 122:XGB  
Accuracy :0.719  
Recall: 0.815  
Precision:0.846  
F1\_Score:0.83  
Batch 122:DT  
Accuracy :0.688  
Recall: 0.778  
Precision:0.84  
F1\_Score:0.808  
Batch 122:MLP  
Accuracy :0.75  
Recall: 0.852  
Precision:0.852  
F1\_Score:0.852  
Batch 123:LogReg  
Accuracy :0.438  
Recall: 1.0  
Precision:0.333  
F1\_Score:0.5  
Batch 123:RF  
Accuracy :0.438  
Recall: 1.0  
Precision:0.333  
F1\_Score:0.5  
Batch 123:KNN  
Accuracy :0.656  
Recall: 1.0  
Precision:0.45  
F1\_Score:0.621  
Batch 123:SVM  
Accuracy :0.469  
Recall: 1.0  
Precision:0.346  
F1\_Score:0.514  
Batch 123:GNB  
Accuracy :0.438  
Recall: 1.0  
Precision:0.333  
F1\_Score:0.5  
Batch 123:XGB  
Accuracy :0.406  
Recall: 1.0  
Precision:0.321  
F1\_Score:0.486  
Batch 123:DT  
Accuracy :0.531  
Recall: 0.778  
Precision:0.35  
F1\_Score:0.483  
Batch 123:MLP  
Accuracy :0.469  
Recall: 1.0  
Precision:0.346  
F1\_Score:0.514  
Batch 124:LogReg

Accuracy :0.531  
Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 124:RF  
Accuracy :0.531  
Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 124:KNN  
Accuracy :0.531  
Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 124:SVM  
Accuracy :0.531  
Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 124:GNB  
Accuracy :0.531  
Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 124:XGB  
Accuracy :0.188  
Recall: 0.235  
Precision:0.235  
F1\_Score:0.235  
Batch 124:DT  
Accuracy :0.781  
Recall: 1.0  
Precision:0.708  
F1\_Score:0.829  
Batch 124:MLP  
Accuracy :0.531  
Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 125:LogReg  
Accuracy :0.719  
Recall: 1.0  
Precision:0.667  
F1\_Score:0.8  
Batch 125:RF  
Accuracy :0.719  
Recall: 1.0  
Precision:0.667  
F1\_Score:0.8  
Batch 125:KNN  
Accuracy :0.719  
Recall: 0.722  
Precision:0.765  
F1\_Score:0.743  
Batch 125:SVM  
Accuracy :0.75  
Recall: 1.0  
Precision:0.692  
F1\_Score:0.818  
Batch 125:GNB  
Accuracy :0.719  
Recall: 1.0

Precision:0.667  
F1\_Score:0.8  
Batch 125:XGB  
Accuracy :0.5  
Recall: 0.667  
Precision:0.545  
F1\_Score:0.6  
Batch 125:DT  
Accuracy :0.25  
Recall: 0.111  
Precision:0.2  
F1\_Score:0.143  
Batch 125:MLP  
Accuracy :0.75  
Recall: 1.0  
Precision:0.692  
F1\_Score:0.818  
Batch 126:LogReg  
Accuracy :0.469  
Recall: 1.0  
Precision:0.37  
F1\_Score:0.541  
Batch 126:RF  
Accuracy :0.5  
Recall: 1.0  
Precision:0.385  
F1\_Score:0.556  
Batch 126:KNN  
Accuracy :0.594  
Recall: 0.9  
Precision:0.429  
F1\_Score:0.581  
Batch 126:SVM  
Accuracy :0.469  
Recall: 1.0  
Precision:0.37  
F1\_Score:0.541  
Batch 126:GNB  
Accuracy :0.469  
Recall: 1.0  
Precision:0.37  
F1\_Score:0.541  
Batch 126:XGB  
Accuracy :0.406  
Recall: 0.9  
Precision:0.333  
F1\_Score:0.486  
Batch 126:DT  
Accuracy :0.562  
Recall: 0.5  
Precision:0.357  
F1\_Score:0.417  
Batch 126:MLP  
Accuracy :0.5  
Recall: 1.0  
Precision:0.385  
F1\_Score:0.556  
Batch 127:LogReg  
Accuracy :0.625  
Recall: 1.0  
Precision:0.625  
F1\_Score:0.769

```
Batch 127:RF
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 127:KNN
Accuracy :0.594
Recall: 0.95
Precision:0.613
F1_Score:0.745
Batch 127:SVM
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 127:GNB
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 127:XGB
Accuracy :0.25
Recall: 0.4
Precision:0.4
F1_Score:0.4
Batch 127:DT
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 127:MLP
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 128:LogReg
Accuracy :0.594
Recall: 1.0
Precision:0.519
F1_Score:0.683
Batch 128:RF
Accuracy :0.656
Recall: 1.0
Precision:0.56
F1_Score:0.718
Batch 128:KNN
Accuracy :0.75
Recall: 1.0
Precision:0.636
F1_Score:0.778
Batch 128:SVM
Accuracy :0.594
Recall: 1.0
Precision:0.519
F1_Score:0.683
Batch 128:GNB
Accuracy :0.625
Recall: 1.0
Precision:0.538
F1_Score:0.7
Batch 128:XGB
Accuracy :0.469
```

```
Recall: 0.857
Precision:0.444
F1_Score:0.585
Batch 128:DT
Accuracy :0.438
Recall: 0.357
Precision:0.357
F1_Score:0.357
Batch 128:MLP
Accuracy :0.625
Recall: 1.0
Precision:0.538
F1_Score:0.7
Batch 129:LogReg
Accuracy :0.25
Recall: 1.0
Precision:0.111
F1_Score:0.2
Batch 129:RF
Accuracy :0.469
Recall: 1.0
Precision:0.15
F1_Score:0.261
Batch 129:KNN
Accuracy :0.469
Recall: 1.0
Precision:0.15
F1_Score:0.261
Batch 129:SVM
Accuracy :0.281
Recall: 1.0
Precision:0.115
F1_Score:0.207
Batch 129:GNB
Accuracy :0.281
Recall: 1.0
Precision:0.115
F1_Score:0.207
Batch 129:XGB
Accuracy :0.188
Recall: 1.0
Precision:0.103
F1_Score:0.188
Batch 129:DT
Accuracy :0.375
Recall: 1.0
Precision:0.13
F1_Score:0.231
Batch 129:MLP
Accuracy :0.25
Recall: 1.0
Precision:0.111
F1_Score:0.2
Batch 130:LogReg
Accuracy :0.031
Recall: 1.0
Precision:0.031
F1_Score:0.061
Batch 130:RF
Accuracy :0.438
Recall: 1.0
Precision:0.053
```

```
F1_Score:0.1
Batch 130:KNN
Accuracy :0.562
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 130:SVM
Accuracy :0.031
Recall: 1.0
Precision:0.031
F1_Score:0.061
Batch 130:GNB
Accuracy :0.031
Recall: 1.0
Precision:0.031
F1_Score:0.061
Batch 130:XGB
Accuracy :0.031
Recall: 1.0
Precision:0.031
F1_Score:0.061
Batch 130:DT
Accuracy :0.062
Recall: 1.0
Precision:0.032
F1_Score:0.062
Batch 130:MLP
Accuracy :0.031
Recall: 1.0
Precision:0.031
F1_Score:0.061
Batch 131:LogReg
Accuracy :0.594
Recall: 1.0
Precision:0.519
F1_Score:0.683
Batch 131:RF
Accuracy :0.781
Recall: 1.0
Precision:0.667
F1_Score:0.8
Batch 131:KNN
Accuracy :0.844
Recall: 0.929
Precision:0.765
F1_Score:0.839
Batch 131:SVM
Accuracy :0.656
Recall: 1.0
Precision:0.56
F1_Score:0.718
Batch 131:GNB
Accuracy :0.625
Recall: 1.0
Precision:0.538
F1_Score:0.7
Batch 131:XGB
Accuracy :0.562
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 131:DT
```

Accuracy :0.438  
Recall: 0.857  
Precision:0.429  
F1\_Score:0.571  
Batch 131:MLP  
Accuracy :0.594  
Recall: 1.0  
Precision:0.519  
F1\_Score:0.683  
Batch 132:LogReg  
Accuracy :0.781  
Recall: 0.885  
Precision:0.852  
F1\_Score:0.868  
Batch 132:RF  
Accuracy :0.844  
Recall: 0.846  
Precision:0.957  
F1\_Score:0.898  
Batch 132:KNN  
Accuracy :0.75  
Recall: 0.731  
Precision:0.95  
F1\_Score:0.826  
Batch 132:SVM  
Accuracy :0.812  
Recall: 0.885  
Precision:0.885  
F1\_Score:0.885  
Batch 132:GNB  
Accuracy :0.812  
Recall: 0.885  
Precision:0.885  
F1\_Score:0.885  
Batch 132:XGB  
Accuracy :0.781  
Recall: 0.885  
Precision:0.852  
F1\_Score:0.868  
Batch 132:DT  
Accuracy :0.688  
Recall: 0.808  
Precision:0.808  
F1\_Score:0.808  
Batch 132:MLP  
Accuracy :0.781  
Recall: 0.885  
Precision:0.852  
F1\_Score:0.868  
Batch 133:LogReg  
Accuracy :0.656  
Recall: 1.0  
Precision:0.656  
F1\_Score:0.792  
Batch 133:RF  
Accuracy :0.656  
Recall: 1.0  
Precision:0.656  
F1\_Score:0.792  
Batch 133:KNN  
Accuracy :0.656  
Recall: 1.0

```
Precision:0.656
F1_Score:0.792
Batch 133:SVM
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 133:GNB
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 133:XGB
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 133:DT
Accuracy :0.812
Recall: 0.952
Precision:0.8
F1_Score:0.87
Batch 133:MLP
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 134:LogReg
Accuracy :0.562
Recall: 0.842
Precision:0.593
F1_Score:0.696
Batch 134:RF
Accuracy :0.594
Recall: 0.895
Precision:0.607
F1_Score:0.723
Batch 134:KNN
Accuracy :0.625
Recall: 0.684
Precision:0.684
F1_Score:0.684
Batch 134:SVM
Accuracy :0.594
Recall: 0.842
Precision:0.615
F1_Score:0.711
Batch 134:GNB
Accuracy :0.656
Recall: 0.947
Precision:0.643
F1_Score:0.766
Batch 134:XGB
Accuracy :0.312
Recall: 0.474
Precision:0.429
F1_Score:0.45
Batch 134:DT
Accuracy :0.562
Recall: 0.789
Precision:0.6
F1_Score:0.682
```

```
Batch 134:MLP
Accuracy :0.594
Recall: 0.842
Precision:0.615
F1_Score:0.711
Batch 135:LogReg
Accuracy :0.312
Recall: 0.692
Precision:0.333
F1_Score:0.45
Batch 135:RF
Accuracy :0.312
Recall: 0.692
Precision:0.333
F1_Score:0.45
Batch 135:KNN
Accuracy :0.469
Recall: 0.615
Precision:0.4
F1_Score:0.485
Batch 135:SVM
Accuracy :0.312
Recall: 0.692
Precision:0.333
F1_Score:0.45
Batch 135:GNB
Accuracy :0.406
Recall: 0.846
Precision:0.393
F1_Score:0.537
Batch 135:XGB
Accuracy :0.188
Recall: 0.462
Precision:0.24
F1_Score:0.316
Batch 135:DT
Accuracy :0.375
Recall: 0.385
Precision:0.294
F1_Score:0.333
Batch 135:MLP
Accuracy :0.344
Recall: 0.692
Precision:0.346
F1_Score:0.462
Batch 136:LogReg
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 136:RF
Accuracy :0.656
Recall: 1.0
Precision:0.633
F1_Score:0.776
Batch 136:KNN
Accuracy :0.438
Recall: 0.737
Precision:0.519
F1_Score:0.609
Batch 136:SVM
Accuracy :0.594
```

Recall: 1.0  
Precision:0.594  
F1\_Score:0.745  
Batch 136:GNB  
Accuracy :0.594  
Recall: 1.0  
Precision:0.594  
F1\_Score:0.745  
Batch 136:XGB  
Accuracy :0.156  
Recall: 0.211  
Precision:0.25  
F1\_Score:0.229  
Batch 136:DT  
Accuracy :0.312  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 136:MLP  
Accuracy :0.594  
Recall: 1.0  
Precision:0.594  
F1\_Score:0.745  
Batch 137:LogReg  
Accuracy :0.656  
Recall: 0.9  
Precision:0.667  
F1\_Score:0.766  
Batch 137:RF  
Accuracy :0.656  
Recall: 0.9  
Precision:0.667  
F1\_Score:0.766  
Batch 137:KNN  
Accuracy :0.844  
Recall: 0.9  
Precision:0.857  
F1\_Score:0.878  
Batch 137:SVM  
Accuracy :0.656  
Recall: 0.9  
Precision:0.667  
F1\_Score:0.766  
Batch 137:GNB  
Accuracy :0.719  
Recall: 0.95  
Precision:0.704  
F1\_Score:0.809  
Batch 137:XGB  
Accuracy :0.438  
Recall: 0.65  
Precision:0.542  
F1\_Score:0.591  
Batch 137:DT  
Accuracy :0.625  
Recall: 0.8  
Precision:0.667  
F1\_Score:0.727  
Batch 137:MLP  
Accuracy :0.688  
Recall: 0.9  
Precision:0.692

```
F1_Score:0.783
Batch 138:LogReg
Accuracy :0.438
Recall: 1.0
Precision:0.333
F1_Score:0.5
Batch 138:RF
Accuracy :0.469
Recall: 1.0
Precision:0.346
F1_Score:0.514
Batch 138:KNN
Accuracy :0.594
Recall: 1.0
Precision:0.409
F1_Score:0.581
Batch 138:SVM
Accuracy :0.438
Recall: 1.0
Precision:0.333
F1_Score:0.5
Batch 138:GNB
Accuracy :0.438
Recall: 1.0
Precision:0.333
F1_Score:0.5
Batch 138:XGB
Accuracy :0.375
Recall: 0.889
Precision:0.296
F1_Score:0.444
Batch 138:DT
Accuracy :0.406
Recall: 1.0
Precision:0.321
F1_Score:0.486
Batch 138:MLP
Accuracy :0.438
Recall: 1.0
Precision:0.333
F1_Score:0.5
Batch 139:LogReg
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 139:RF
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 139:KNN
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 139:SVM
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 139:GNB
```

Accuracy :0.625  
Recall: 1.0  
Precision:0.625  
F1\_Score:0.769  
Batch 139:XGB  
Accuracy :0.531  
Recall: 0.8  
Precision:0.593  
F1\_Score:0.681  
Batch 139:DT  
Accuracy :0.188  
Recall: 0.1  
Precision:0.2  
F1\_Score:0.133  
Batch 139:MLP  
Accuracy :0.625  
Recall: 1.0  
Precision:0.625  
F1\_Score:0.769  
Batch 140:LogReg  
Accuracy :0.438  
Recall: 0.909  
Precision:0.37  
F1\_Score:0.526  
Batch 140:RF  
Accuracy :0.656  
Recall: 0.909  
Precision:0.5  
F1\_Score:0.645  
Batch 140:KNN  
Accuracy :0.844  
Recall: 1.0  
Precision:0.688  
F1\_Score:0.815  
Batch 140:SVM  
Accuracy :0.438  
Recall: 0.909  
Precision:0.37  
F1\_Score:0.526  
Batch 140:GNB  
Accuracy :0.406  
Recall: 0.909  
Precision:0.357  
F1\_Score:0.513  
Batch 140:XGB  
Accuracy :0.438  
Recall: 0.909  
Precision:0.37  
F1\_Score:0.526  
Batch 140:DT  
Accuracy :0.375  
Recall: 0.727  
Precision:0.32  
F1\_Score:0.444  
Batch 140:MLP  
Accuracy :0.438  
Recall: 0.909  
Precision:0.37  
F1\_Score:0.526  
Batch 141:LogReg  
Accuracy :0.1  
Recall: 1.0

```
Precision:0.1
F1_Score:0.182
Batch 141:RF
Accuracy :0.3
Recall: 1.0
Precision:0.125
F1_Score:0.222
Batch 141:KNN
Accuracy :0.35
Recall: 1.0
Precision:0.133
F1_Score:0.235
Batch 141:SVM
Accuracy :0.1
Recall: 1.0
Precision:0.1
F1_Score:0.182
Batch 141:GNB
Accuracy :0.1
Recall: 1.0
Precision:0.1
F1_Score:0.182
Batch 141:XGB
Accuracy :0.3
Recall: 1.0
Precision:0.125
F1_Score:0.222
Batch 141:DT
Accuracy :0.1
Recall: 1.0
Precision:0.1
F1_Score:0.182
Batch 141:MLP
Accuracy :0.1
Recall: 1.0
Precision:0.1
F1_Score:0.182
```

## Perfromance Analysis using Graphs

In [105...]

```

## df : accuracy , recall and precision measures for all 8 classifiers for each batch
## df2 : accuracy , recall and precision measures for all 8 classifiers averaged over
def plt_classification_results(df,df2):
    from plotly import express as px
    #fig = px.line(df, x=df.index, y=[df['LogReg_accuracy'],df['RF_accuracy'],df['KNN_accuracy'],df['SVM_accuracy'],df['LR_accuracy'],df['DT_accuracy'],df['NB_accuracy'],df['GB_accuracy']])
    #fig.show()
    #fig2 = px.line(df2, x=df2.index, y=[df2['LogReg_accuracy'],df2['RF_accuracy'],df2['KNN_accuracy'],df2['SVM_accuracy'],df2['LR_accuracy'],df2['DT_accuracy'],df2['NB_accuracy'],df2['GB_accuracy']])
    #fig2.show()

    #fig3 = px.line(df, x=df.index, y=[df['LogReg_recall'],df['RF_recall'],df['KNN_recall'],df['SVM_recall'],df['LR_recall'],df['DT_recall'],df['NB_recall'],df['GB_recall']])
    # fig3.show()
    #fig4 = px.line(df2, x=df2.index,y=[df2['LogReg_recall'],df2['RF_recall'],df2['KNN_recall'],df2['SVM_recall'],df2['LR_recall'],df2['DT_recall'],df2['NB_recall'],df2['GB_recall']])

    # fig4.update_layout(showLegend=True,
    # xaxis_title="Batch Stream ", yaxis_title="Recall", legend_title="Legend")

    config = {
        'toImageButtonOptions': {
            'format': 'png', # one of png, svg, jpeg, webp
            'filename': 'custom_image',
            'height': 500,
            'width': 800,
            'scale':9 # Multiply title/legend/axis(canvas) sizes by this factor
        }
    }

    fig5 = px.line(df2, x=df2.index,y=[df2['LogReg'],df2['RF'],df2['KNN'],df2['SVM'],df2['LR'],df2['DT'],df2['NB'],df2['GB']])
    fig5.update_layout(showlegend=True,
        xaxis_title="Batch Stream ", yaxis_title="F1 Score", legend_title="Legend")

    fig5.show(config=config)

    # fig6 = px.line(df, x=df.index,y=[df['LogReg_f1score'],df['RF_f1score'],df['KNN_f1score'],df['SVM_f1score'],df['LR_f1score'],df['DT_f1score'],df['NB_f1score'],df['GB_f1score']])
    #fig6.show()

```

In [106...]

df2

Out[106...]

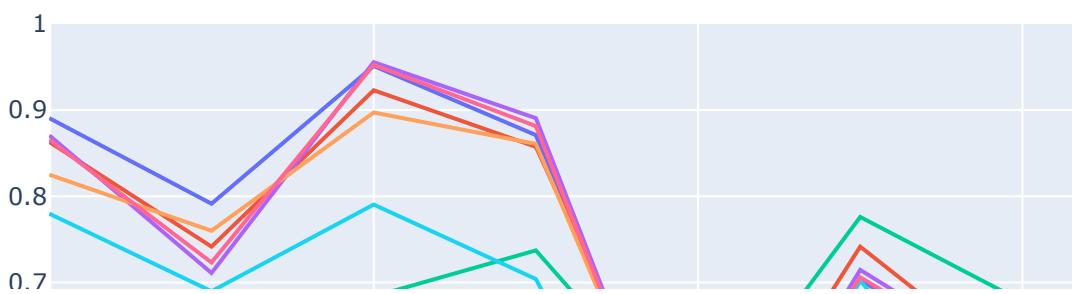
	LogReg_accuracy	LogReg_precision	LogReg_recall	LogReg	RF_accuracy	RF_precision	RF_recall
0	0.8936	0.8408	0.9538	0.8906	0.8502	0.7904	0.9692
1	0.8250	0.7962	0.8850	0.7914	0.7564	0.6662	0.9308
2	0.9438	0.9174	0.9894	0.9512	0.9126	0.8792	0.9740
3	0.8814	0.9544	0.8420	0.8710	0.8374	0.7838	0.9826
4	0.2688	0.2952	0.7048	0.4060	0.3374	0.3214	0.7820
5	0.5752	0.5798	0.9042	0.7030	0.6498	0.6310	0.9042
6	0.4500	0.4500	0.8880	0.5902	0.4562	0.4530	0.8880

	<b>LogReg_accuracy</b>	<b>LogReg_precision</b>	<b>LogReg_recall</b>	<b>LogReg</b>	<b>RF_accuracy</b>	<b>RF_precision</b>	<b>RF_recall</b>
<b>7</b>	0.4188	0.4232	0.8324	0.5344	0.4752	0.4402	0.8164
<b>8</b>	0.5502	0.4932	1.0000	0.6426	0.5440	0.4906	1.0000
<b>9</b>	0.4062	0.3308	1.0000	0.4358	0.4124	0.3134	0.7946
<b>10</b>	0.5688	0.5488	0.9292	0.6750	0.5624	0.5458	0.9292
<b>11</b>	0.5500	0.5582	0.9266	0.6774	0.7126	0.6762	0.9400
<b>12</b>	0.4188	0.3850	0.7112	0.4768	0.4376	0.3960	0.7556
<b>13</b>	0.4624	0.4348	0.9176	0.5538	0.5750	0.4958	0.9176
<b>14</b>	0.4438	0.4448	0.9024	0.5550	0.4626	0.4534	0.9136
<b>15</b>	0.3876	0.3766	0.8534	0.4964	0.4812	0.4272	0.8018
<b>16</b>	0.4936	0.4514	0.9486	0.5876	0.4688	0.4454	0.9366
<b>17</b>	0.3750	0.3036	0.9800	0.4258	0.5062	0.3452	0.9800
<b>18</b>	0.3624	0.3740	0.8320	0.4838	0.3624	0.3760	0.8224
<b>19</b>	0.3436	0.2762	0.9790	0.3952	0.3876	0.2896	0.9790
<b>20</b>	0.5438	0.5346	0.9482	0.6630	0.5252	0.5302	0.9334
<b>21</b>	0.3626	0.2952	1.0000	0.4284	0.4250	0.3032	1.0000
<b>22</b>	0.5626	0.5418	0.9086	0.6464	0.5876	0.5676	0.8944
<b>23</b>	0.3998	0.3968	0.8814	0.5326	0.4748	0.4750	0.8814
<b>24</b>	0.5438	0.5130	0.9704	0.6028	0.6874	0.5552	0.9704
<b>25</b>	0.5314	0.4584	1.0000	0.5986	0.5938	0.4774	1.0000
<b>26</b>	0.5248	0.5302	0.9454	0.6200	0.6626	0.5880	0.9482
<b>27</b>	0.5250	0.5104	0.9184	0.6460	0.5436	0.5208	0.9184
<b>28</b>	0.2690	0.2350	0.9545	0.3540	0.4780	0.3125	0.9545

29 rows × 32 columns

In [107...]

```
df2=df2[0:12]
plt_classification_results(df,df2)
```



## B. Bottom 25 Sudden Drift

```
In [108...]: #stream_top25, stream_bottom25=inject_sudden_drift(stream, rank_list, batch_size=32, fper...  
In [109...]: batches_d=make_batches(stream_bottom25)  
In [110...]: all_excede_list_d,exceed_count_L2_instThresh_d ,exceed_count_L2_countThresh_d,avg_mse
```

\*\*\*\*\*

Batch Number : 0

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 1

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 2

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 3

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 4

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 5

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 6

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 7

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 8

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 9

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 10

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 11

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 12

```
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
*****
```

```
Batch Number : 13
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
*****
```

```
Batch Number : 14
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
*****
```

```
Batch Number : 15
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
*****
```

```
Batch Number : 16
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
*****
```

```
Batch Number : 17
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
```

```
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 18

Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 19

Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 20

Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 21

Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 22

Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
```

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 23

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 24

Data Points Exceeding Layer 1 Encoder Instance Threshold : [20, 21, 22, 23]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 25

Data Points Exceeding Layer 1 Encoder Instance Threshold : [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 6

\*\*\*\*\*

Batch Number : 26

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 18

\*\*\*\*\*

Batch Number : 27

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5]

```
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 28
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 29
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 30
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 31
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 32
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
```

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 33

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 34

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 35

Data Points Exceeding Layer 1 Encoder Instance Threshold : [4, 5, 6, 7, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 16

\*\*\*\*\*

Batch Number : 36

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [3, 4, 5, 6, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 23

\*\*\*\*\*

Batch Number : 37

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 2]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 2

\*\*\*\*\*

Batch Number : 38

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 3]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 39

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 40

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 41

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 42

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

```
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
*****
```

```
Batch Number : 43
```

```
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
*****
```

```
Batch Number : 44
```

```
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
*****
```

```
Batch Number : 45
```

```
Data Points Exceeding Layer 1 Encoder Instance Threshold : [20, 21]
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
*****
```

```
Batch Number : 46
```

```
Data Points Exceeding Layer 1 Encoder Instance Threshold : [2, 3, 4, 5, 6, 7, 8, 9, 1
0, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 3
0, 31]
Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 29, 30, 31]
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 7
```

```
*****
```

```
Batch Number : 47
```

```
Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8
```

, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 19

\*\*\*\*\*

Batch Number : 48

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 14, 15, 16, 17, 18, 19, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [19, 20, 21, 25, 26, 27, 28, 29]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 8

\*\*\*\*\*

Batch Number : 49

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 50

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 51

Data Points Exceeding Layer 1 Encoder Instance Threshold : [8]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 52

Data Points Exceeding Layer 1 Encoder Instance Threshold : [25]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 53

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 54

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 55

Data Points Exceeding Layer 1 Encoder Instance Threshold : [6, 7, 25, 26, 27]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 56

Data Points Exceeding Layer 1 Encoder Instance Threshold : [4, 5, 6, 7, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 15

\*\*\*\*\*

Batch Number : 57

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 18

\*\*\*\*\*

Batch Number : 58

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 15, 16, 17, 18, 19, 20]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 59

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 60

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 61

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 62

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 63

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 64

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 65

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 66

Data Points Exceeding Layer 1 Encoder Instance Threshold : [20, 21, 22]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 67

Data Points Exceeding Layer 1 Encoder Instance Threshold : [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 6

\*\*\*\*\*

Batch Number : 68

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 18

\*\*\*\*\*

Batch Number : 69

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 70

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 71

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 72

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 73

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 74

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 75

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 76

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 77

Data Points Exceeding Layer 1 Encoder Instance Threshold : [4, 5, 6, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 15

\*\*\*\*\*

Batch Number : 78

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 19

\*\*\*\*\*

Batch Number : 79

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 14, 15, 16, 17, 18, 19, 20, 21, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 1

\*\*\*\*\*

Batch Number : 80

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 81

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 82

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 83

Data Points Exceeding Layer 1 Encoder Instance Threshold : [17]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 84

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 85

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 86

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 87

Data Points Exceeding Layer 1 Encoder Instance Threshold : [20]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 88

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 4

\*\*\*\*\*

Batch Number : 89

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 16

\*\*\*\*\*

Batch Number : 90

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 17]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 91

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 92

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 93

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 94

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 95

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 96

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 97

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 98

Data Points Exceeding Layer 1 Encoder Instance Threshold : [4, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 13

\*\*\*\*\*

Batch Number : 99

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

\*\*\*\*\*

Batch Number : 100

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 15, 16, 17, 18]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 101

Data Points Exceeding Layer 1 Encoder Instance Threshold : [3]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 102

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 103

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 104

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 105

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 106

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 107

Data Points Exceeding Layer 1 Encoder Instance Threshold : [20, 21, 22]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 108

Data Points Exceeding Layer 1 Encoder Instance Threshold : [20]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 109

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 5

\*\*\*\*\*

Batch Number : 110

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 16

\*\*\*\*\*

Batch Number : 111

Data Points Exceeding Layer 1 Encoder Instance Threshold : [2, 16, 17, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 112

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 113

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 114

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 115

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 116

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 117

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 118

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 119

Data Points Exceeding Layer 1 Encoder Instance Threshold : [4, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 13

\*\*\*\*\*

Batch Number : 120

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

\*\*\*\*\*

Batch Number : 121

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 13, 14, 15, 16, 17, 18, 19, 20]

```
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 122
Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 3]
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 123
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 124
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 125
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 126
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
```

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 127

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 128

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 129

Data Points Exceeding Layer 1 Encoder Instance Threshold : [20]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 130

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 5

\*\*\*\*\*

Batch Number : 131

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8,

9, 10, 11, 12, 13, 14, 15]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 16

\*\*\*\*\*

Batch Number : 132

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 15, 16, 17, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 133

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 134

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 135

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 136

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 137

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 138

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 139

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 140

Data Points Exceeding Layer 1 Encoder Instance Threshold : [4, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 13

\*\*\*\*\*

Batch Number : 141

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [12, 13, 14, 15, 16, 17, 18, 19]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 8

Drift Detection at Batch Level

Hello

Threshold exceeds at batch : 25  
[25]

Warning Level at Batch 25  
Threshold exceeds at batch : 26  
[25, 26]

Warning Level at Batch 26  
Threshold exceeds at batch : 35  
[35]

Warning Level at Batch 35  
Threshold exceeds at batch : 36  
[35, 36]

Warning Level at Batch 36  
Threshold exceeds at batch : 46  
[46]

Warning Level at Batch 46  
Threshold exceeds at batch : 47  
[46, 47]

Warning Level at Batch 47  
Threshold exceeds at batch : 48  
[46, 47, 48]

Drift Confirmed at Batch No : 46  
Threshold exceeds at batch : 56  
[56]

Warning Level at Batch 56  
Threshold exceeds at batch : 57  
[56, 57]

Warning Level at Batch 57  
Threshold exceeds at batch : 67  
[67]

Warning Level at Batch 67  
Threshold exceeds at batch : 68  
[67, 68]

Warning Level at Batch 68  
Threshold exceeds at batch : 77  
[77]

Warning Level at Batch 77  
Threshold exceeds at batch : 78  
[77, 78]

Warning Level at Batch 78  
Threshold exceeds at batch : 88  
[88]

Warning Level at Batch 88  
Threshold exceeds at batch : 89  
[88, 89]

Warning Level at Batch 89  
Threshold exceeds at batch : 98  
[98]

Warning Level at Batch 98  
Threshold exceeds at batch : 99  
[98, 99]

Warning Level at Batch 99  
Threshold exceeds at batch : 109  
[109]

Warning Level at Batch 109

```
Threshold exceeds at batch : 110
[109, 110]
Warning Level at Batch 110
    Threshold exceeds at batch : 119
[119]
Warning Level at Batch 119
    Threshold exceeds at batch : 120
[119, 120]
Warning Level at Batch 120
    Threshold exceeds at batch : 130
[130]
Warning Level at Batch 130
    Threshold exceeds at batch : 131
[130, 131]
Warning Level at Batch 131
    Threshold exceeds at batch : 140
[140]
Warning Level at Batch 140
    Threshold exceeds at batch : 141
[140, 141]
Warning Level at Batch 141
    Number of Drifted Batches1
[46]
```

In [111...]

```
# Apply the t -test for firts 55 batches , it is H0
perform_t_test()
```

```
Layer 1 Reconstruction Error Values for Normal and Drifted Data
Test statistic is 8.510695
p-value for two tailed test is 0.000000
Conclusion :
Since p-value(=0.000000) < alpha(=0.05) We reject the null hypothesis H0 and Accept H
1 . So we conclude that
There is a drift in the dataset at 0.05 level of significance.
```

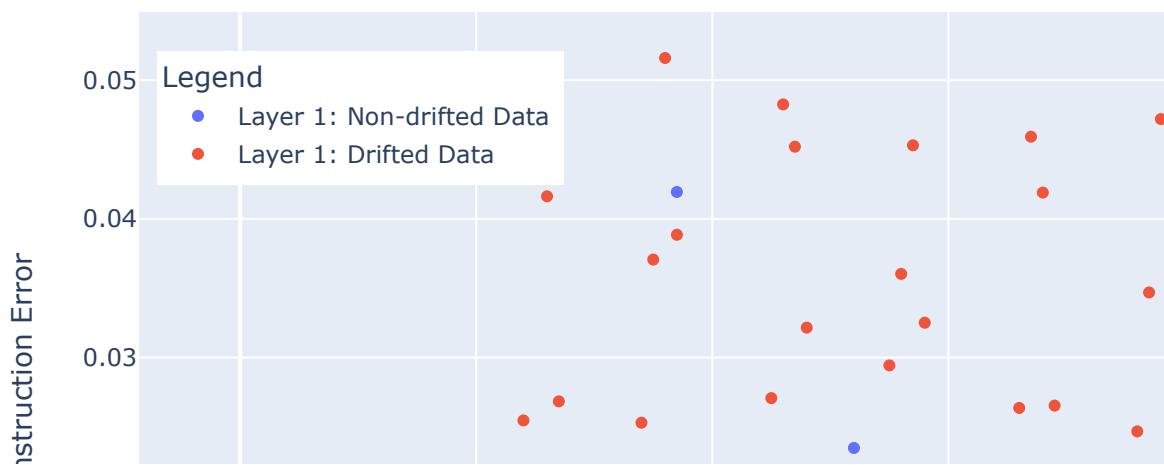
```
Layer 1 Exceed Count Values for Normal and Drifted Data
Test statistic is -5.989898
p-value for two tailed test is 0.000000
Conclusion :
Since p-value(=0.000000) < alpha(=0.05) We reject the null hypothesis H0 and Accept H
1 . So we conclude that
There is a drift in the dataset at 0.05 level of significance.
```

```
Layer 2 Reconstruction Error Values for Normal and Drifted Data
Test statistic is 5.950699
p-value for two tailed test is 0.000000
Conclusion :
Since p-value(=0.000000) < alpha(=0.05) We reject the null hypothesis H0 and Accept H
1 . So we conclude that
There is a drift in the dataset at 0.05 level of significance.
```

```
Layer 2 Exceed Count Values for Normal and Drifted Data
Test statistic is 4.976876
p-value for two tailed test is 0.000001
Conclusion :
Since p-value(=0.000001) < alpha(=0.05) We reject the null hypothesis H0 and Accept H
1 . So we conclude that
There is a drift in the dataset at 0.05 level of significance.
```

In [112...]

```
df_plotting=visual_analysis()
```





In [113...]

```
df,df2=classify_batches(models,stream_bottom25 ,stream,'class',batch_size=32)
```

```
Batch 0:LogReg
Accuracy :0.781
Recall: 0.769
Precision:0.714
F1_Score:0.741
Batch 0:RF
Accuracy :0.844
Recall: 0.846
Precision:0.786
F1_Score:0.815
Batch 0:KNN
Accuracy :0.688
Recall: 0.308
Precision:0.8
F1_Score:0.444
Batch 0:SVM
Accuracy :0.812
Recall: 0.692
Precision:0.818
F1_Score:0.75
Batch 0:GNB
Accuracy :0.938
Recall: 0.846
Precision:1.0
F1_Score:0.917
Batch 0:XGB
Accuracy :0.656
Recall: 0.923
Precision:0.545
F1_Score:0.686
Batch 0:DT
Accuracy :0.656
Recall: 0.615
Precision:0.571
F1_Score:0.593
Batch 0:MLP
Accuracy :0.781
Recall: 0.769
Precision:0.714
F1_Score:0.741
Batch 1:LogReg
Accuracy :0.969
Recall: 1.0
Precision:0.964
F1_Score:0.982
```

```
Batch 1:RF
Accuracy :0.969
Recall: 1.0
Precision:0.964
F1_Score:0.982
Batch 1:KNN
Accuracy :0.688
Recall: 0.63
Precision:1.0
F1_Score:0.773
Batch 1:SVM
Accuracy :0.969
Recall: 1.0
Precision:0.964
F1_Score:0.982
Batch 1:GNB
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 1:XGB
Accuracy :0.938
Recall: 1.0
Precision:0.931
F1_Score:0.964
Batch 1:DT
Accuracy :0.906
Recall: 0.963
Precision:0.929
F1_Score:0.945
Batch 1:MLP
Accuracy :0.969
Recall: 1.0
Precision:0.964
F1_Score:0.982
Batch 2:LogReg
Accuracy :0.812
Recall: 1.0
Precision:0.714
F1_Score:0.833
Batch 2:RF
Accuracy :0.75
Recall: 1.0
Precision:0.652
F1_Score:0.789
Batch 2:KNN
Accuracy :0.625
Recall: 0.4
Precision:0.667
F1_Score:0.5
Batch 2:SVM
Accuracy :0.781
Recall: 0.933
Precision:0.7
F1_Score:0.8
Batch 2:GNB
Accuracy :0.812
Recall: 1.0
Precision:0.714
F1_Score:0.833
Batch 2:XGB
Accuracy :0.688
```

Recall: 1.0  
Precision:0.6  
F1\_Score:0.75  
Batch 2:DT  
Accuracy :0.625  
Recall: 0.867  
Precision:0.565  
F1\_Score:0.684  
Batch 2:MLP  
Accuracy :0.781  
Recall: 1.0  
Precision:0.682  
F1\_Score:0.811  
Batch 3:LogReg  
Accuracy :0.906  
Recall: 1.0  
Precision:0.812  
F1\_Score:0.897  
Batch 3:RF  
Accuracy :0.75  
Recall: 1.0  
Precision:0.619  
F1\_Score:0.765  
Batch 3:KNN  
Accuracy :0.75  
Recall: 0.462  
Precision:0.857  
F1\_Score:0.6  
Batch 3:SVM  
Accuracy :0.844  
Recall: 1.0  
Precision:0.722  
F1\_Score:0.839  
Batch 3:GNB  
Accuracy :0.844  
Recall: 1.0  
Precision:0.722  
F1\_Score:0.839  
Batch 3:XGB  
Accuracy :0.719  
Recall: 1.0  
Precision:0.591  
F1\_Score:0.743  
Batch 3:DT  
Accuracy :0.75  
Recall: 0.769  
Precision:0.667  
F1\_Score:0.714  
Batch 3:MLP  
Accuracy :0.812  
Recall: 1.0  
Precision:0.684  
F1\_Score:0.813  
Batch 4:LogReg  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 4:RF  
Accuracy :0.938  
Recall: 1.0  
Precision:0.931

F1\_Score:0.964  
Batch 4:KNN  
Accuracy :0.625  
Recall: 0.593  
Precision:0.941  
F1\_Score:0.727  
Batch 4:SVM  
Accuracy :0.969  
Recall: 1.0  
Precision:0.964  
F1\_Score:0.982  
Batch 4:GNB  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 4:XGB  
Accuracy :0.969  
Recall: 1.0  
Precision:0.964  
F1\_Score:0.982  
Batch 4:DT  
Accuracy :0.938  
Recall: 0.963  
Precision:0.963  
F1\_Score:0.963  
Batch 4:MLP  
Accuracy :0.969  
Recall: 1.0  
Precision:0.964  
F1\_Score:0.982  
Batch 5:LogReg  
Accuracy :0.875  
Recall: 0.778  
Precision:0.778  
F1\_Score:0.778  
Batch 5:RF  
Accuracy :0.656  
Recall: 0.889  
Precision:0.444  
F1\_Score:0.593  
Batch 5:KNN  
Accuracy :0.656  
Recall: 0.778  
Precision:0.438  
F1\_Score:0.56  
Batch 5:SVM  
Accuracy :0.625  
Recall: 0.667  
Precision:0.4  
F1\_Score:0.5  
Batch 5:GNB  
Accuracy :0.875  
Recall: 1.0  
Precision:0.692  
F1\_Score:0.818  
Batch 5:XGB  
Accuracy :0.625  
Recall: 1.0  
Precision:0.429  
F1\_Score:0.6  
Batch 5:DT

Accuracy :0.656  
Recall: 0.556  
Precision:0.417  
F1\_Score:0.476  
Batch 5:MLP  
Accuracy :0.625  
Recall: 0.889  
Precision:0.421  
F1\_Score:0.571  
Batch 6:LogReg  
Accuracy :0.812  
Recall: 0.647  
Precision:1.0  
F1\_Score:0.786  
Batch 6:RF  
Accuracy :0.688  
Recall: 0.765  
Precision:0.684  
F1\_Score:0.722  
Batch 6:KNN  
Accuracy :0.562  
Recall: 0.647  
Precision:0.579  
F1\_Score:0.611  
Batch 6:SVM  
Accuracy :0.531  
Recall: 0.647  
Precision:0.55  
F1\_Score:0.595  
Batch 6:GNB  
Accuracy :0.844  
Recall: 0.706  
Precision:1.0  
F1\_Score:0.828  
Batch 6:XGB  
Accuracy :0.781  
Recall: 1.0  
Precision:0.708  
F1\_Score:0.829  
Batch 6:DT  
Accuracy :0.688  
Recall: 0.824  
Precision:0.667  
F1\_Score:0.737  
Batch 6:MLP  
Accuracy :0.562  
Recall: 0.706  
Precision:0.571  
F1\_Score:0.632  
Batch 7:LogReg  
Accuracy :0.969  
Recall: 1.0  
Precision:0.968  
F1\_Score:0.984  
Batch 7:RF  
Accuracy :0.969  
Recall: 1.0  
Precision:0.968  
F1\_Score:0.984  
Batch 7:KNN  
Accuracy :0.875  
Recall: 0.867

```
Precision:1.0
F1_Score:0.929
Batch 7:SVM
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 7:GNB
Accuracy :0.969
Recall: 1.0
Precision:0.968
F1_Score:0.984
Batch 7:XGB
Accuracy :0.969
Recall: 1.0
Precision:0.968
F1_Score:0.984
Batch 7:DT
Accuracy :0.906
Recall: 0.933
Precision:0.966
F1_Score:0.949
Batch 7:MLP
Accuracy :0.969
Recall: 1.0
Precision:0.968
F1_Score:0.984
Batch 8:LogReg
Accuracy :0.969
Recall: 1.0
Precision:0.962
F1_Score:0.98
Batch 8:RF
Accuracy :0.969
Recall: 1.0
Precision:0.962
F1_Score:0.98
Batch 8:KNN
Accuracy :0.469
Recall: 0.36
Precision:0.9
F1_Score:0.514
Batch 8:SVM
Accuracy :0.969
Recall: 1.0
Precision:0.962
F1_Score:0.98
Batch 8:GNB
Accuracy :0.969
Recall: 1.0
Precision:0.962
F1_Score:0.98
Batch 8:XGB
Accuracy :0.906
Recall: 1.0
Precision:0.893
F1_Score:0.943
Batch 8:DT
Accuracy :0.812
Recall: 0.8
Precision:0.952
F1_Score:0.87
```

```
Batch 8:MLP
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 9:LogReg
Accuracy :0.5
Recall: 1.0
Precision:0.273
F1_Score:0.429
Batch 9:RF
Accuracy :0.5
Recall: 1.0
Precision:0.273
F1_Score:0.429
Batch 9:KNN
Accuracy :0.562
Recall: 0.667
Precision:0.25
F1_Score:0.364
Batch 9:SVM
Accuracy :0.594
Recall: 1.0
Precision:0.316
F1_Score:0.48
Batch 9:GNB
Accuracy :0.562
Recall: 1.0
Precision:0.3
F1_Score:0.462
Batch 9:XGB
Accuracy :0.531
Recall: 1.0
Precision:0.286
F1_Score:0.444
Batch 9:DT
Accuracy :0.562
Recall: 0.833
Precision:0.278
F1_Score:0.417
Batch 9:MLP
Accuracy :0.5
Recall: 1.0
Precision:0.273
F1_Score:0.429
Batch 10:LogReg
Accuracy :0.906
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 10:RF
Accuracy :0.906
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 10:KNN
Accuracy :0.812
Recall: 0.769
Precision:0.769
F1_Score:0.769
Batch 10:SVM
Accuracy :0.969
```

Recall: 1.0  
Precision:0.929  
F1\_Score:0.963  
Batch 10:GNB  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 10:XGB  
Accuracy :0.812  
Recall: 1.0  
Precision:0.684  
F1\_Score:0.813  
Batch 10:DT  
Accuracy :0.688  
Recall: 0.846  
Precision:0.579  
F1\_Score:0.688  
Batch 10:MLP  
Accuracy :0.969  
Recall: 1.0  
Precision:0.929  
F1\_Score:0.963  
Batch 11:LogReg  
Accuracy :0.969  
Recall: 1.0  
Precision:0.952  
F1\_Score:0.976  
Batch 11:RF  
Accuracy :0.969  
Recall: 1.0  
Precision:0.952  
F1\_Score:0.976  
Batch 11:KNN  
Accuracy :0.719  
Recall: 0.55  
Precision:1.0  
F1\_Score:0.71  
Batch 11:SVM  
Accuracy :0.906  
Recall: 0.85  
Precision:1.0  
F1\_Score:0.919  
Batch 11:GNB  
Accuracy :0.938  
Recall: 0.9  
Precision:1.0  
F1\_Score:0.947  
Batch 11:XGB  
Accuracy :0.906  
Recall: 1.0  
Precision:0.87  
F1\_Score:0.93  
Batch 11:DT  
Accuracy :0.844  
Recall: 0.85  
Precision:0.895  
F1\_Score:0.872  
Batch 11:MLP  
Accuracy :0.969  
Recall: 1.0  
Precision:0.952

```
F1_Score:0.976
Batch 12:LogReg
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 12:RF
Accuracy :0.906
Recall: 0.923
Precision:0.857
F1_Score:0.889
Batch 12:KNN
Accuracy :0.844
Recall: 0.692
Precision:0.9
F1_Score:0.783
Batch 12:SVM
Accuracy :0.938
Recall: 0.923
Precision:0.923
F1_Score:0.923
Batch 12:GNB
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 12:XGB
Accuracy :0.906
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 12:DT
Accuracy :0.812
Recall: 0.923
Precision:0.706
F1_Score:0.8
Batch 12:MLP
Accuracy :0.969
Recall: 1.0
Precision:0.929
F1_Score:0.963
Batch 13:LogReg
Accuracy :0.938
Recall: 1.0
Precision:0.923
F1_Score:0.96
Batch 13:RF
Accuracy :0.844
Recall: 1.0
Precision:0.828
F1_Score:0.906
Batch 13:KNN
Accuracy :0.469
Recall: 0.458
Precision:0.733
F1_Score:0.564
Batch 13:SVM
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 13:GNB
```

Accuracy :0.969  
Recall: 0.958  
Precision:1.0  
F1\_Score:0.979  
Batch 13:XGB  
Accuracy :0.906  
Recall: 1.0  
Precision:0.889  
F1\_Score:0.941  
Batch 13:DT  
Accuracy :0.844  
Recall: 1.0  
Precision:0.828  
F1\_Score:0.906  
Batch 13:MLP  
Accuracy :0.938  
Recall: 1.0  
Precision:0.923  
F1\_Score:0.96  
Batch 14:LogReg  
Accuracy :0.906  
Recall: 0.947  
Precision:0.9  
F1\_Score:0.923  
Batch 14:RF  
Accuracy :0.938  
Recall: 0.947  
Precision:0.947  
F1\_Score:0.947  
Batch 14:KNN  
Accuracy :0.656  
Recall: 0.421  
Precision:1.0  
F1\_Score:0.593  
Batch 14:SVM  
Accuracy :0.969  
Recall: 0.947  
Precision:1.0  
F1\_Score:0.973  
Batch 14:GNB  
Accuracy :0.938  
Recall: 0.895  
Precision:1.0  
F1\_Score:0.944  
Batch 14:XGB  
Accuracy :0.875  
Recall: 1.0  
Precision:0.826  
F1\_Score:0.905  
Batch 14:DT  
Accuracy :0.656  
Recall: 0.632  
Precision:0.75  
F1\_Score:0.686  
Batch 14:MLP  
Accuracy :0.875  
Recall: 0.947  
Precision:0.857  
F1\_Score:0.9  
Batch 15:LogReg  
Accuracy :0.969  
Recall: 1.0

```
Precision:0.9
F1_Score:0.947
Batch 15:RF
Accuracy :0.656
Recall: 1.0
Precision:0.45
F1_Score:0.621
Batch 15:KNN
Accuracy :0.75
Recall: 0.556
Precision:0.556
F1_Score:0.556
Batch 15:SVM
Accuracy :0.812
Recall: 1.0
Precision:0.6
F1_Score:0.75
Batch 15:GNB
Accuracy :0.969
Recall: 0.889
Precision:1.0
F1_Score:0.941
Batch 15:XGB
Accuracy :0.75
Recall: 1.0
Precision:0.529
F1_Score:0.692
Batch 15:DT
Accuracy :0.562
Recall: 0.556
Precision:0.333
F1_Score:0.417
Batch 15:MLP
Accuracy :0.719
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 16:LogReg
Accuracy :0.656
Recall: 0.421
Precision:1.0
F1_Score:0.593
Batch 16:RF
Accuracy :0.781
Recall: 1.0
Precision:0.731
F1_Score:0.844
Batch 16:KNN
Accuracy :0.625
Recall: 0.579
Precision:0.733
F1_Score:0.647
Batch 16:SVM
Accuracy :0.781
Recall: 1.0
Precision:0.731
F1_Score:0.844
Batch 16:GNB
Accuracy :0.531
Recall: 0.211
Precision:1.0
F1_Score:0.348
```

```
Batch 16:XGB
Accuracy :0.719
Recall: 1.0
Precision:0.679
F1_Score:0.809
Batch 16:DT
Accuracy :0.469
Recall: 0.421
Precision:0.571
F1_Score:0.485
Batch 16:MLP
Accuracy :0.75
Recall: 1.0
Precision:0.704
F1_Score:0.826
Batch 17:LogReg
Accuracy :0.875
Recall: 0.789
Precision:1.0
F1_Score:0.882
Batch 17:RF
Accuracy :0.906
Recall: 0.947
Precision:0.9
F1_Score:0.923
Batch 17:KNN
Accuracy :0.844
Recall: 0.789
Precision:0.938
F1_Score:0.857
Batch 17:SVM
Accuracy :0.906
Recall: 0.895
Precision:0.944
F1_Score:0.919
Batch 17:GNB
Accuracy :0.875
Recall: 0.789
Precision:1.0
F1_Score:0.882
Batch 17:XGB
Accuracy :0.938
Recall: 0.947
Precision:0.947
F1_Score:0.947
Batch 17:DT
Accuracy :0.812
Recall: 0.842
Precision:0.842
F1_Score:0.842
Batch 17:MLP
Accuracy :0.938
Recall: 0.947
Precision:0.947
F1_Score:0.947
Batch 18:LogReg
Accuracy :0.938
Recall: 1.0
Precision:0.905
F1_Score:0.95
Batch 18:RF
Accuracy :0.938
```

Recall: 1.0  
Precision:0.905  
F1\_Score:0.95  
Batch 18:KNN  
Accuracy :0.844  
Recall: 0.789  
Precision:0.938  
F1\_Score:0.857  
Batch 18:SVM  
Accuracy :0.969  
Recall: 0.947  
Precision:1.0  
F1\_Score:0.973  
Batch 18:GNB  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 18:XGB  
Accuracy :0.875  
Recall: 1.0  
Precision:0.826  
F1\_Score:0.905  
Batch 18:DT  
Accuracy :0.781  
Recall: 0.895  
Precision:0.773  
F1\_Score:0.829  
Batch 18:MLP  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 19:LogReg  
Accuracy :0.969  
Recall: 1.0  
Precision:0.967  
F1\_Score:0.983  
Batch 19:RF  
Accuracy :0.906  
Recall: 0.966  
Precision:0.933  
F1\_Score:0.949  
Batch 19:KNN  
Accuracy :0.625  
Recall: 0.69  
Precision:0.87  
F1\_Score:0.769  
Batch 19:SVM  
Accuracy :0.938  
Recall: 1.0  
Precision:0.935  
F1\_Score:0.967  
Batch 19:GNB  
Accuracy :0.969  
Recall: 1.0  
Precision:0.967  
F1\_Score:0.983  
Batch 19:XGB  
Accuracy :0.906  
Recall: 1.0  
Precision:0.906

F1\_Score:0.951  
Batch 19:DT  
Accuracy :0.906  
Recall: 0.931  
Precision:0.964  
F1\_Score:0.947  
Batch 19:MLP  
Accuracy :0.938  
Recall: 1.0  
Precision:0.935  
F1\_Score:0.967  
Batch 20:LogReg  
Accuracy :0.469  
Recall: 1.0  
Precision:0.346  
F1\_Score:0.514  
Batch 20:RF  
Accuracy :0.469  
Recall: 1.0  
Precision:0.346  
F1\_Score:0.514  
Batch 20:KNN  
Accuracy :0.531  
Recall: 0.333  
Precision:0.25  
F1\_Score:0.286  
Batch 20:SVM  
Accuracy :0.469  
Recall: 1.0  
Precision:0.346  
F1\_Score:0.514  
Batch 20:GNB  
Accuracy :0.469  
Recall: 1.0  
Precision:0.346  
F1\_Score:0.514  
Batch 20:XGB  
Accuracy :0.375  
Recall: 1.0  
Precision:0.31  
F1\_Score:0.474  
Batch 20:DT  
Accuracy :0.438  
Recall: 0.444  
Precision:0.235  
F1\_Score:0.308  
Batch 20:MLP  
Accuracy :0.5  
Recall: 1.0  
Precision:0.36  
F1\_Score:0.529  
Batch 21:LogReg  
Accuracy :0.625  
Recall: 1.0  
Precision:0.5  
F1\_Score:0.667  
Batch 21:RF  
Accuracy :0.594  
Recall: 1.0  
Precision:0.48  
F1\_Score:0.649  
Batch 21:KNN

```
Accuracy :0.844
Recall: 0.75
Precision:0.818
F1_Score:0.783
Batch 21:SVM
Accuracy :0.625
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 21:GNB
Accuracy :0.625
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 21:XGB
Accuracy :0.594
Recall: 1.0
Precision:0.48
F1_Score:0.649
Batch 21:DT
Accuracy :0.531
Recall: 0.917
Precision:0.44
F1_Score:0.595
Batch 21:MLP
Accuracy :0.625
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 22:LogReg
Accuracy :0.375
Recall: 1.0
Precision:0.355
F1_Score:0.524
Batch 22:RF
Accuracy :0.594
Recall: 1.0
Precision:0.458
F1_Score:0.629
Batch 22:KNN
Accuracy :0.469
Recall: 0.455
Precision:0.312
F1_Score:0.37
Batch 22:SVM
Accuracy :0.531
Recall: 1.0
Precision:0.423
F1_Score:0.595
Batch 22:GNB
Accuracy :0.75
Recall: 1.0
Precision:0.579
F1_Score:0.733
Batch 22:XGB
Accuracy :0.375
Recall: 1.0
Precision:0.355
F1_Score:0.524
Batch 22:DT
Accuracy :0.844
Recall: 0.909
```

Precision:0.714  
F1\_Score:0.8  
Batch 22:MLP  
Accuracy :0.375  
Recall: 1.0  
Precision:0.355  
F1\_Score:0.524  
Batch 23:LogReg  
Accuracy :0.844  
Recall: 1.0  
Precision:0.792  
F1\_Score:0.884  
Batch 23:RF  
Accuracy :0.875  
Recall: 1.0  
Precision:0.826  
F1\_Score:0.905  
Batch 23:KNN  
Accuracy :0.438  
Recall: 0.053  
Precision:1.0  
F1\_Score:0.1  
Batch 23:SVM  
Accuracy :0.875  
Recall: 1.0  
Precision:0.826  
F1\_Score:0.905  
Batch 23:GNB  
Accuracy :0.906  
Recall: 0.947  
Precision:0.9  
F1\_Score:0.923  
Batch 23:XGB  
Accuracy :0.75  
Recall: 1.0  
Precision:0.704  
F1\_Score:0.826  
Batch 23:DT  
Accuracy :0.719  
Recall: 0.789  
Precision:0.75  
F1\_Score:0.769  
Batch 23:MLP  
Accuracy :0.844  
Recall: 1.0  
Precision:0.792  
F1\_Score:0.884  
Batch 24:LogReg  
Accuracy :0.562  
Recall: 1.0  
Precision:0.333  
F1\_Score:0.5  
Batch 24:RF  
Accuracy :0.5  
Recall: 0.857  
Precision:0.286  
F1\_Score:0.429  
Batch 24:KNN  
Accuracy :0.75  
Recall: 0.143  
Precision:0.333  
F1\_Score:0.2

```
Batch 24:SVM
Accuracy :0.594
Recall: 0.429
Precision:0.25
F1_Score:0.316
Batch 24:GNB
Accuracy :0.844
Recall: 0.429
Precision:0.75
F1_Score:0.545
Batch 24:XGB
Accuracy :0.438
Recall: 1.0
Precision:0.28
F1_Score:0.438
Batch 24:DT
Accuracy :0.531
Recall: 0.714
Precision:0.278
F1_Score:0.4
Batch 24:MLP
Accuracy :0.5
Recall: 1.0
Precision:0.304
F1_Score:0.467
Batch 25:LogReg
Accuracy :0.812
Recall: 1.0
Precision:0.786
F1_Score:0.88
Batch 25:RF
Accuracy :0.719
Recall: 1.0
Precision:0.71
F1_Score:0.83
Batch 25:KNN
Accuracy :0.312
Recall: 0.091
Precision:0.5
F1_Score:0.154
Batch 25:SVM
Accuracy :0.781
Recall: 0.955
Precision:0.778
F1_Score:0.857
Batch 25:GNB
Accuracy :0.656
Recall: 0.5
Precision:1.0
F1_Score:0.667
Batch 25:XGB
Accuracy :0.719
Recall: 1.0
Precision:0.71
F1_Score:0.83
Batch 25:DT
Accuracy :0.781
Recall: 0.864
Precision:0.826
F1_Score:0.844
Batch 25:MLP
Accuracy :0.75
```

Recall: 1.0  
Precision:0.733  
F1\_Score:0.846  
Batch 26:LogReg  
Accuracy :0.594  
Recall: 0.235  
Precision:1.0  
F1\_Score:0.381  
Batch 26:RF  
Accuracy :0.875  
Recall: 1.0  
Precision:0.81  
F1\_Score:0.895  
Batch 26:KNN  
Accuracy :0.719  
Recall: 0.471  
Precision:1.0  
F1\_Score:0.64  
Batch 26:SVM  
Accuracy :0.531  
Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 26:GNB  
Accuracy :0.719  
Recall: 0.471  
Precision:1.0  
F1\_Score:0.64  
Batch 26:XGB  
Accuracy :0.969  
Recall: 1.0  
Precision:0.944  
F1\_Score:0.971  
Batch 26:DT  
Accuracy :0.719  
Recall: 0.824  
Precision:0.7  
F1\_Score:0.757  
Batch 26:MLP  
Accuracy :0.781  
Recall: 1.0  
Precision:0.708  
F1\_Score:0.829  
Batch 27:LogReg  
Accuracy :0.75  
Recall: 0.385  
Precision:1.0  
F1\_Score:0.556  
Batch 27:RF  
Accuracy :0.781  
Recall: 1.0  
Precision:0.65  
F1\_Score:0.788  
Batch 27:KNN  
Accuracy :0.594  
Recall: 0.231  
Precision:0.5  
F1\_Score:0.316  
Batch 27:SVM  
Accuracy :0.75  
Recall: 1.0  
Precision:0.619

```
F1_Score:0.765
Batch 27:GNB
Accuracy :0.938
Recall: 0.846
Precision:1.0
F1_Score:0.917
Batch 27:XGB
Accuracy :0.906
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 27:DT
Accuracy :0.5
Recall: 0.846
Precision:0.44
F1_Score:0.579
Batch 27:MLP
Accuracy :0.75
Recall: 1.0
Precision:0.619
F1_Score:0.765
Batch 28:LogReg
Accuracy :0.875
Recall: 0.875
Precision:0.955
F1_Score:0.913
Batch 28:RF
Accuracy :0.938
Recall: 1.0
Precision:0.923
F1_Score:0.96
Batch 28:KNN
Accuracy :0.688
Recall: 0.708
Precision:0.85
F1_Score:0.773
Batch 28:SVM
Accuracy :0.938
Recall: 1.0
Precision:0.923
F1_Score:0.96
Batch 28:GNB
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 28:XGB
Accuracy :0.875
Recall: 1.0
Precision:0.857
F1_Score:0.923
Batch 28:DT
Accuracy :0.75
Recall: 0.875
Precision:0.808
F1_Score:0.84
Batch 28:MLP
Accuracy :0.875
Recall: 1.0
Precision:0.857
F1_Score:0.923
Batch 29:LogReg
```

Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 29:RF  
Accuracy :0.906  
Recall: 1.0  
Precision:0.857  
F1\_Score:0.923  
Batch 29:KNN  
Accuracy :0.719  
Recall: 0.556  
Precision:0.909  
F1\_Score:0.69  
Batch 29:SVM  
Accuracy :0.969  
Recall: 1.0  
Precision:0.947  
F1\_Score:0.973  
Batch 29:GNB  
Accuracy :0.938  
Recall: 1.0  
Precision:0.9  
F1\_Score:0.947  
Batch 29:XGB  
Accuracy :0.875  
Recall: 1.0  
Precision:0.818  
F1\_Score:0.9  
Batch 29:DT  
Accuracy :0.812  
Recall: 0.889  
Precision:0.8  
F1\_Score:0.842  
Batch 29:MLP  
Accuracy :0.969  
Recall: 1.0  
Precision:0.947  
F1\_Score:0.973  
Batch 30:LogReg  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 30:RF  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 30:KNN  
Accuracy :0.656  
Recall: 0.231  
Precision:0.75  
F1\_Score:0.353  
Batch 30:SVM  
Accuracy :0.969  
Recall: 0.923  
Precision:1.0  
F1\_Score:0.96  
Batch 30:GNB  
Accuracy :1.0  
Recall: 1.0

```
Precision:1.0
F1_Score:1.0
Batch 30:XGB
Accuracy :0.969
Recall: 1.0
Precision:0.929
F1_Score:0.963
Batch 30:DT
Accuracy :0.938
Recall: 0.923
Precision:0.923
F1_Score:0.923
Batch 30:MLP
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 31:LogReg
Accuracy :0.938
Recall: 1.0
Precision:0.889
F1_Score:0.941
Batch 31:RF
Accuracy :0.781
Recall: 0.75
Precision:0.8
F1_Score:0.774
Batch 31:KNN
Accuracy :0.5
Recall: 0.5
Precision:0.5
F1_Score:0.5
Batch 31:SVM
Accuracy :0.969
Recall: 1.0
Precision:0.941
F1_Score:0.97
Batch 31:GNB
Accuracy :0.844
Recall: 0.688
Precision:1.0
F1_Score:0.815
Batch 31:XGB
Accuracy :0.781
Recall: 1.0
Precision:0.696
F1_Score:0.821
Batch 31:DT
Accuracy :0.625
Recall: 0.75
Precision:0.6
F1_Score:0.667
Batch 31:MLP
Accuracy :0.844
Recall: 1.0
Precision:0.762
F1_Score:0.865
Batch 32:LogReg
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
```

```
Batch 32:RF
Accuracy :0.938
Recall: 0.9
Precision:1.0
F1_Score:0.947
Batch 32:KNN
Accuracy :0.625
Recall: 0.4
Precision:1.0
F1_Score:0.571
Batch 32:SVM
Accuracy :0.938
Recall: 0.9
Precision:1.0
F1_Score:0.947
Batch 32:GNB
Accuracy :0.969
Recall: 0.95
Precision:1.0
F1_Score:0.974
Batch 32:XGB
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 32:DT
Accuracy :0.938
Recall: 0.9
Precision:1.0
F1_Score:0.947
Batch 32:MLP
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 33:LogReg
Accuracy :0.75
Recall: 1.0
Precision:0.529
F1_Score:0.692
Batch 33:RF
Accuracy :0.906
Recall: 1.0
Precision:0.75
F1_Score:0.857
Batch 33:KNN
Accuracy :0.719
Recall: 0.111
Precision:0.5
F1_Score:0.182
Batch 33:SVM
Accuracy :0.906
Recall: 1.0
Precision:0.75
F1_Score:0.857
Batch 33:GNB
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 33:XGB
Accuracy :0.688
```

Recall: 1.0  
Precision:0.474  
F1\_Score:0.643  
Batch 33:DT  
Accuracy :0.781  
Recall: 1.0  
Precision:0.562  
F1\_Score:0.72  
Batch 33:MLP  
Accuracy :0.656  
Recall: 1.0  
Precision:0.45  
F1\_Score:0.621  
Batch 34:LogReg  
Accuracy :0.562  
Recall: 1.0  
Precision:0.533  
F1\_Score:0.696  
Batch 34:RF  
Accuracy :0.562  
Recall: 1.0  
Precision:0.533  
F1\_Score:0.696  
Batch 34:KNN  
Accuracy :0.469  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 34:SVM  
Accuracy :0.938  
Recall: 1.0  
Precision:0.889  
F1\_Score:0.941  
Batch 34:GNB  
Accuracy :0.938  
Recall: 0.875  
Precision:1.0  
F1\_Score:0.933  
Batch 34:XGB  
Accuracy :0.562  
Recall: 1.0  
Precision:0.533  
F1\_Score:0.696  
Batch 34:DT  
Accuracy :0.531  
Recall: 0.812  
Precision:0.52  
F1\_Score:0.634  
Batch 34:MLP  
Accuracy :0.562  
Recall: 1.0  
Precision:0.533  
F1\_Score:0.696  
Batch 35:LogReg  
Accuracy :0.938  
Recall: 1.0  
Precision:0.875  
F1\_Score:0.933  
Batch 35:RF  
Accuracy :0.812  
Recall: 1.0  
Precision:0.7

```
F1_Score:0.824
Batch 35:KNN
Accuracy :0.625
Recall: 0.571
Precision:0.571
F1_Score:0.571
Batch 35:SVM
Accuracy :0.875
Recall: 0.714
Precision:1.0
F1_Score:0.833
Batch 35:GNB
Accuracy :0.688
Recall: 0.286
Precision:1.0
F1_Score:0.444
Batch 35:XGB
Accuracy :0.906
Recall: 1.0
Precision:0.824
F1_Score:0.903
Batch 35:DT
Accuracy :0.594
Recall: 0.786
Precision:0.524
F1_Score:0.629
Batch 35:MLP
Accuracy :0.781
Recall: 1.0
Precision:0.667
F1_Score:0.8
Batch 36:LogReg
Accuracy :0.844
Recall: 0.5
Precision:0.4
F1_Score:0.444
Batch 36:RF
Accuracy :0.594
Recall: 1.0
Precision:0.235
F1_Score:0.381
Batch 36:KNN
Accuracy :0.688
Recall: 0.5
Precision:0.2
F1_Score:0.286
Batch 36:SVM
Accuracy :0.594
Recall: 0.75
Precision:0.2
F1_Score:0.316
Batch 36:GNB
Accuracy :0.875
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 36:XGB
Accuracy :0.719
Recall: 1.0
Precision:0.308
F1_Score:0.471
Batch 36:DT
```

Accuracy :0.438  
Recall: 0.5  
Precision:0.111  
F1\_Score:0.182  
Batch 36:MLP  
Accuracy :0.438  
Recall: 1.0  
Precision:0.182  
F1\_Score:0.308  
Batch 37:LogReg  
Accuracy :0.531  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 37:RF  
Accuracy :0.656  
Recall: 0.267  
Precision:1.0  
F1\_Score:0.421  
Batch 37:KNN  
Accuracy :0.531  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 37:SVM  
Accuracy :0.5  
Recall: 1.0  
Precision:0.484  
F1\_Score:0.652  
Batch 37:GNB  
Accuracy :0.531  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 37:XGB  
Accuracy :0.594  
Recall: 0.133  
Precision:1.0  
F1\_Score:0.235  
Batch 37:DT  
Accuracy :0.844  
Recall: 0.733  
Precision:0.917  
F1\_Score:0.815  
Batch 37:MLP  
Accuracy :0.812  
Recall: 1.0  
Precision:0.714  
F1\_Score:0.833  
Batch 38:LogReg  
Accuracy :0.469  
Recall: 0.32  
Precision:1.0  
F1\_Score:0.485  
Batch 38:RF  
Accuracy :0.625  
Recall: 0.52  
Precision:1.0  
F1\_Score:0.684  
Batch 38:KNN  
Accuracy :0.531  
Recall: 0.4

```
Precision:1.0
F1_Score:0.571
Batch 38:SVM
Accuracy :0.688
Recall: 0.64
Precision:0.941
F1_Score:0.762
Batch 38:GNB
Accuracy :0.5
Recall: 0.36
Precision:1.0
F1_Score:0.529
Batch 38:XGB
Accuracy :0.594
Recall: 0.48
Precision:1.0
F1_Score:0.649
Batch 38:DT
Accuracy :0.781
Recall: 0.72
Precision:1.0
F1_Score:0.837
Batch 38:MLP
Accuracy :0.688
Recall: 0.64
Precision:0.941
F1_Score:0.762
Batch 39:LogReg
Accuracy :0.906
Recall: 0.786
Precision:1.0
F1_Score:0.88
Batch 39:RF
Accuracy :0.938
Recall: 1.0
Precision:0.875
F1_Score:0.933
Batch 39:KNN
Accuracy :0.781
Recall: 0.643
Precision:0.818
F1_Score:0.72
Batch 39:SVM
Accuracy :0.906
Recall: 0.857
Precision:0.923
F1_Score:0.889
Batch 39:GNB
Accuracy :0.875
Recall: 0.714
Precision:1.0
F1_Score:0.833
Batch 39:XGB
Accuracy :0.938
Recall: 1.0
Precision:0.875
F1_Score:0.933
Batch 39:DT
Accuracy :0.844
Recall: 0.786
Precision:0.846
F1_Score:0.815
```

```
Batch 39:MLP
Accuracy :0.906
Recall: 0.857
Precision:0.923
F1_Score:0.889
Batch 40:LogReg
Accuracy :0.938
Recall: 0.909
Precision:1.0
F1_Score:0.952
Batch 40:RF
Accuracy :0.969
Recall: 1.0
Precision:0.957
F1_Score:0.978
Batch 40:KNN
Accuracy :0.562
Recall: 0.455
Precision:0.833
F1_Score:0.588
Batch 40:SVM
Accuracy :0.969
Recall: 0.955
Precision:1.0
F1_Score:0.977
Batch 40:GNB
Accuracy :0.938
Recall: 0.909
Precision:1.0
F1_Score:0.952
Batch 40:XGB
Accuracy :0.969
Recall: 1.0
Precision:0.957
F1_Score:0.978
Batch 40:DT
Accuracy :0.844
Recall: 0.909
Precision:0.87
F1_Score:0.889
Batch 40:MLP
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 41:LogReg
Accuracy :0.969
Recall: 1.0
Precision:0.917
F1_Score:0.957
Batch 41:RF
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 41:KNN
Accuracy :0.938
Recall: 0.909
Precision:0.909
F1_Score:0.909
Batch 41:SVM
Accuracy :1.0
```

Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 41:GNB  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 41:XGB  
Accuracy :0.938  
Recall: 1.0  
Precision:0.846  
F1\_Score:0.917  
Batch 41:DT  
Accuracy :0.969  
Recall: 1.0  
Precision:0.917  
F1\_Score:0.957  
Batch 41:MLP  
Accuracy :0.969  
Recall: 1.0  
Precision:0.917  
F1\_Score:0.957  
Batch 42:LogReg  
Accuracy :0.906  
Recall: 1.0  
Precision:0.727  
F1\_Score:0.842  
Batch 42:RF  
Accuracy :0.906  
Recall: 1.0  
Precision:0.727  
F1\_Score:0.842  
Batch 42:KNN  
Accuracy :0.781  
Recall: 0.75  
Precision:0.545  
F1\_Score:0.632  
Batch 42:SVM  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 42:GNB  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 42:XGB  
Accuracy :0.875  
Recall: 1.0  
Precision:0.667  
F1\_Score:0.8  
Batch 42:DT  
Accuracy :0.719  
Recall: 0.375  
Precision:0.429  
F1\_Score:0.4  
Batch 42:MLP  
Accuracy :0.969  
Recall: 1.0  
Precision:0.889

```
F1_Score:0.941
Batch 43:LogReg
Accuracy :0.906
Recall: 1.0
Precision:0.885
F1_Score:0.939
Batch 43:RF
Accuracy :0.938
Recall: 1.0
Precision:0.92
F1_Score:0.958
Batch 43:KNN
Accuracy :0.75
Recall: 0.696
Precision:0.941
F1_Score:0.8
Batch 43:SVM
Accuracy :0.938
Recall: 1.0
Precision:0.92
F1_Score:0.958
Batch 43:GNB
Accuracy :0.938
Recall: 1.0
Precision:0.92
F1_Score:0.958
Batch 43:XGB
Accuracy :0.906
Recall: 1.0
Precision:0.885
F1_Score:0.939
Batch 43:DT
Accuracy :0.719
Recall: 0.696
Precision:0.889
F1_Score:0.78
Batch 43:MLP
Accuracy :0.938
Recall: 1.0
Precision:0.92
F1_Score:0.958
Batch 44:LogReg
Accuracy :0.844
Recall: 1.0
Precision:0.667
F1_Score:0.8
Batch 44:RF
Accuracy :0.781
Recall: 1.0
Precision:0.588
F1_Score:0.741
Batch 44:KNN
Accuracy :0.719
Recall: 0.2
Precision:0.667
F1_Score:0.308
Batch 44:SVM
Accuracy :0.875
Recall: 1.0
Precision:0.714
F1_Score:0.833
Batch 44:GNB
```

Accuracy :0.906  
Recall: 1.0  
Precision:0.769  
F1\_Score:0.87  
Batch 44:XGB  
Accuracy :0.781  
Recall: 1.0  
Precision:0.588  
F1\_Score:0.741  
Batch 44:DT  
Accuracy :0.656  
Recall: 0.9  
Precision:0.474  
F1\_Score:0.621  
Batch 44:MLP  
Accuracy :0.781  
Recall: 1.0  
Precision:0.588  
F1\_Score:0.741  
Batch 45:LogReg  
Accuracy :0.656  
Recall: 1.0  
Precision:0.267  
F1\_Score:0.421  
Batch 45:RF  
Accuracy :0.406  
Recall: 1.0  
Precision:0.174  
F1\_Score:0.296  
Batch 45:KNN  
Accuracy :0.844  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 45:SVM  
Accuracy :0.719  
Recall: 1.0  
Precision:0.308  
F1\_Score:0.471  
Batch 45:GNB  
Accuracy :0.781  
Recall: 1.0  
Precision:0.364  
F1\_Score:0.533  
Batch 45:XGB  
Accuracy :0.469  
Recall: 1.0  
Precision:0.19  
F1\_Score:0.32  
Batch 45:DT  
Accuracy :0.688  
Recall: 1.0  
Precision:0.286  
F1\_Score:0.444  
Batch 45:MLP  
Accuracy :0.438  
Recall: 1.0  
Precision:0.182  
F1\_Score:0.308  
Batch 46:LogReg  
Accuracy :0.906  
Recall: 1.0

```
Precision:0.625
F1_Score:0.769
Batch 46:RF
Accuracy :0.25
Recall: 1.0
Precision:0.172
F1_Score:0.294
Batch 46:KNN
Accuracy :0.5
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 46:SVM
Accuracy :0.938
Recall: 0.6
Precision:1.0
F1_Score:0.75
Batch 46:GNB
Accuracy :0.906
Recall: 0.4
Precision:1.0
F1_Score:0.571
Batch 46:XGB
Accuracy :0.656
Recall: 1.0
Precision:0.312
F1_Score:0.476
Batch 46:DT
Accuracy :0.344
Recall: 0.8
Precision:0.167
F1_Score:0.276
Batch 46:MLP
Accuracy :0.281
Recall: 1.0
Precision:0.179
F1_Score:0.303
Batch 47:LogReg
Accuracy :0.938
Recall: 0.333
Precision:1.0
F1_Score:0.5
Batch 47:RF
Accuracy :0.969
Recall: 1.0
Precision:0.75
F1_Score:0.857
Batch 47:KNN
Accuracy :0.719
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 47:SVM
Accuracy :0.062
Recall: 0.333
Precision:0.034
F1_Score:0.062
Batch 47:GNB
Accuracy :0.906
Recall: 0.0
Precision:0.0
F1_Score:0.0
```

```
Batch 47:XGB
Accuracy :0.969
Recall: 1.0
Precision:0.75
F1_Score:0.857
Batch 47:DT
Accuracy :0.938
Recall: 1.0
Precision:0.6
F1_Score:0.75
Batch 47:MLP
Accuracy :0.719
Recall: 1.0
Precision:0.25
F1_Score:0.4
Batch 48:LogReg
Accuracy :0.719
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 48:RF
Accuracy :0.75
Recall: 0.111
Precision:1.0
F1_Score:0.2
Batch 48:KNN
Accuracy :0.719
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 48:SVM
Accuracy :0.656
Recall: 1.0
Precision:0.45
F1_Score:0.621
Batch 48:GNB
Accuracy :0.719
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 48:XGB
Accuracy :0.781
Recall: 0.222
Precision:1.0
F1_Score:0.364
Batch 48:DT
Accuracy :0.75
Recall: 0.333
Precision:0.6
F1_Score:0.429
Batch 48:MLP
Accuracy :0.906
Recall: 0.667
Precision:1.0
F1_Score:0.8
Batch 49:LogReg
Accuracy :0.25
Recall: 0.172
Precision:1.0
F1_Score:0.294
Batch 49:RF
Accuracy :0.656
```

```
Recall: 0.621
Precision:1.0
F1_Score:0.766
Batch 49:KNN
Accuracy :0.75
Recall: 0.759
Precision:0.957
F1_Score:0.846
Batch 49:SVM
Accuracy :0.562
Recall: 0.517
Precision:1.0
F1_Score:0.682
Batch 49:GNB
Accuracy :0.281
Recall: 0.207
Precision:1.0
F1_Score:0.343
Batch 49:XGB
Accuracy :0.688
Recall: 0.655
Precision:1.0
F1_Score:0.792
Batch 49:DT
Accuracy :0.719
Recall: 0.724
Precision:0.955
F1_Score:0.824
Batch 49:MLP
Accuracy :0.75
Recall: 0.724
Precision:1.0
F1_Score:0.84
Batch 50:LogReg
Accuracy :0.812
Recall: 0.684
Precision:1.0
F1_Score:0.813
Batch 50:RF
Accuracy :0.906
Recall: 0.842
Precision:1.0
F1_Score:0.914
Batch 50:KNN
Accuracy :0.75
Recall: 0.579
Precision:1.0
F1_Score:0.733
Batch 50:SVM
Accuracy :0.875
Recall: 0.789
Precision:1.0
F1_Score:0.882
Batch 50:GNB
Accuracy :0.875
Recall: 0.789
Precision:1.0
F1_Score:0.882
Batch 50:XGB
Accuracy :0.906
Recall: 0.842
Precision:1.0
```

F1\_Score:0.914  
Batch 50:DT  
Accuracy :0.906  
Recall: 0.947  
Precision:0.9  
F1\_Score:0.923  
Batch 50:MLP  
Accuracy :0.906  
Recall: 0.842  
Precision:1.0  
F1\_Score:0.914  
Batch 51:LogReg  
Accuracy :0.844  
Recall: 1.0  
Precision:0.615  
F1\_Score:0.762  
Batch 51:RF  
Accuracy :0.75  
Recall: 1.0  
Precision:0.5  
F1\_Score:0.667  
Batch 51:KNN  
Accuracy :0.75  
Recall: 0.75  
Precision:0.5  
F1\_Score:0.6  
Batch 51:SVM  
Accuracy :0.844  
Recall: 0.875  
Precision:0.636  
F1\_Score:0.737  
Batch 51:GNB  
Accuracy :0.906  
Recall: 1.0  
Precision:0.727  
F1\_Score:0.842  
Batch 51:XGB  
Accuracy :0.656  
Recall: 1.0  
Precision:0.421  
F1\_Score:0.593  
Batch 51:DT  
Accuracy :0.75  
Recall: 0.875  
Precision:0.5  
F1\_Score:0.636  
Batch 51:MLP  
Accuracy :0.719  
Recall: 1.0  
Precision:0.471  
F1\_Score:0.64  
Batch 52:LogReg  
Accuracy :0.906  
Recall: 1.0  
Precision:0.893  
F1\_Score:0.943  
Batch 52:RF  
Accuracy :0.812  
Recall: 1.0  
Precision:0.806  
F1\_Score:0.893  
Batch 52:KNN

```
Accuracy :0.562
Recall: 0.56
Precision:0.824
F1_Score:0.667
Batch 52:SVM
Accuracy :0.844
Recall: 1.0
Precision:0.833
F1_Score:0.909
Batch 52:GNB
Accuracy :0.969
Recall: 1.0
Precision:0.962
F1_Score:0.98
Batch 52:XGB
Accuracy :0.781
Recall: 1.0
Precision:0.781
F1_Score:0.877
Batch 52:DT
Accuracy :0.812
Recall: 0.88
Precision:0.88
F1_Score:0.88
Batch 52:MLP
Accuracy :0.812
Recall: 1.0
Precision:0.806
F1_Score:0.893
Batch 53:LogReg
Accuracy :0.781
Recall: 1.0
Precision:0.708
F1_Score:0.829
Batch 53:RF
Accuracy :0.812
Recall: 1.0
Precision:0.739
F1_Score:0.85
Batch 53:KNN
Accuracy :0.625
Recall: 0.529
Precision:0.692
F1_Score:0.6
Batch 53:SVM
Accuracy :0.781
Recall: 0.941
Precision:0.727
F1_Score:0.821
Batch 53:GNB
Accuracy :0.875
Recall: 1.0
Precision:0.81
F1_Score:0.895
Batch 53:XGB
Accuracy :0.75
Recall: 1.0
Precision:0.68
F1_Score:0.81
Batch 53:DT
Accuracy :0.719
Recall: 0.824
```

Precision:0.7  
F1\_Score:0.757  
Batch 53:MLP  
Accuracy :0.781  
Recall: 1.0  
Precision:0.708  
F1\_Score:0.829  
Batch 54:LogReg  
Accuracy :0.719  
Recall: 1.0  
Precision:0.64  
F1\_Score:0.78  
Batch 54:RF  
Accuracy :0.75  
Recall: 1.0  
Precision:0.667  
F1\_Score:0.8  
Batch 54:KNN  
Accuracy :0.688  
Recall: 0.5  
Precision:0.8  
F1\_Score:0.615  
Batch 54:SVM  
Accuracy :0.781  
Recall: 1.0  
Precision:0.696  
F1\_Score:0.821  
Batch 54:GNB  
Accuracy :0.844  
Recall: 1.0  
Precision:0.762  
F1\_Score:0.865  
Batch 54:XGB  
Accuracy :0.719  
Recall: 1.0  
Precision:0.64  
F1\_Score:0.78  
Batch 54:DT  
Accuracy :0.719  
Recall: 0.688  
Precision:0.733  
F1\_Score:0.71  
Batch 54:MLP  
Accuracy :0.719  
Recall: 1.0  
Precision:0.64  
F1\_Score:0.78  
Batch 55:LogReg  
Accuracy :0.875  
Recall: 1.0  
Precision:0.871  
F1\_Score:0.931  
Batch 55:RF  
Accuracy :0.906  
Recall: 1.0  
Precision:0.9  
F1\_Score:0.947  
Batch 55:KNN  
Accuracy :0.5  
Recall: 0.444  
Precision:0.923  
F1\_Score:0.6

```
Batch 55:SVM
Accuracy :0.875
Recall: 1.0
Precision:0.871
F1_Score:0.931
Batch 55:GNB
Accuracy :0.906
Recall: 1.0
Precision:0.9
F1_Score:0.947
Batch 55:XGB
Accuracy :0.844
Recall: 1.0
Precision:0.844
F1_Score:0.915
Batch 55:DT
Accuracy :0.875
Recall: 0.926
Precision:0.926
F1_Score:0.926
Batch 55:MLP
Accuracy :0.844
Recall: 1.0
Precision:0.844
F1_Score:0.915
Batch 56:LogReg
Accuracy :0.688
Recall: 1.0
Precision:0.545
F1_Score:0.706
Batch 56:RF
Accuracy :0.688
Recall: 1.0
Precision:0.545
F1_Score:0.706
Batch 56:KNN
Accuracy :0.625
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 56:SVM
Accuracy :0.812
Recall: 1.0
Precision:0.667
F1_Score:0.8
Batch 56:GNB
Accuracy :0.844
Recall: 1.0
Precision:0.706
F1_Score:0.828
Batch 56:XGB
Accuracy :0.656
Recall: 1.0
Precision:0.522
F1_Score:0.686
Batch 56:DT
Accuracy :0.594
Recall: 0.917
Precision:0.478
F1_Score:0.629
Batch 56:MLP
Accuracy :0.688
```

Recall: 1.0  
Precision:0.545  
F1\_Score:0.706  
Batch 57:LogReg  
Accuracy :0.656  
Recall: 0.8  
Precision:0.6  
F1\_Score:0.686  
Batch 57:RF  
Accuracy :0.688  
Recall: 1.0  
Precision:0.6  
F1\_Score:0.75  
Batch 57:KNN  
Accuracy :0.594  
Recall: 0.2  
Precision:0.75  
F1\_Score:0.316  
Batch 57:SVM  
Accuracy :0.469  
Recall: 1.0  
Precision:0.469  
F1\_Score:0.638  
Batch 57:GNB  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 57:XGB  
Accuracy :0.688  
Recall: 1.0  
Precision:0.6  
F1\_Score:0.75  
Batch 57:DT  
Accuracy :0.5  
Recall: 0.733  
Precision:0.478  
F1\_Score:0.579  
Batch 57:MLP  
Accuracy :0.5  
Recall: 1.0  
Precision:0.484  
F1\_Score:0.652  
Batch 58:LogReg  
Accuracy :0.844  
Recall: 0.583  
Precision:1.0  
F1\_Score:0.737  
Batch 58:RF  
Accuracy :0.688  
Recall: 1.0  
Precision:0.545  
F1\_Score:0.706  
Batch 58:KNN  
Accuracy :0.531  
Recall: 0.333  
Precision:0.364  
F1\_Score:0.348  
Batch 58:SVM  
Accuracy :0.375  
Recall: 1.0  
Precision:0.375

F1\_Score:0.545  
Batch 58:GNB  
Accuracy :0.969  
Recall: 1.0  
Precision:0.923  
F1\_Score:0.96  
Batch 58:XGB  
Accuracy :0.812  
Recall: 1.0  
Precision:0.667  
F1\_Score:0.8  
Batch 58:DT  
Accuracy :0.5  
Recall: 0.75  
Precision:0.409  
F1\_Score:0.529  
Batch 58:MLP  
Accuracy :0.438  
Recall: 1.0  
Precision:0.4  
F1\_Score:0.571  
Batch 59:LogReg  
Accuracy :0.75  
Recall: 0.667  
Precision:1.0  
F1\_Score:0.8  
Batch 59:RF  
Accuracy :0.938  
Recall: 0.958  
Precision:0.958  
F1\_Score:0.958  
Batch 59:KNN  
Accuracy :0.844  
Recall: 0.792  
Precision:1.0  
F1\_Score:0.884  
Batch 59:SVM  
Accuracy :0.969  
Recall: 0.958  
Precision:1.0  
F1\_Score:0.979  
Batch 59:GNB  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 59:XGB  
Accuracy :0.969  
Recall: 1.0  
Precision:0.96  
F1\_Score:0.98  
Batch 59:DT  
Accuracy :0.5  
Recall: 0.542  
Precision:0.722  
F1\_Score:0.619  
Batch 59:MLP  
Accuracy :0.969  
Recall: 1.0  
Precision:0.96  
F1\_Score:0.98  
Batch 60:LogReg

Accuracy :0.656  
Recall: 1.0  
Precision:0.542  
F1\_Score:0.703  
Batch 60:RF  
Accuracy :0.625  
Recall: 1.0  
Precision:0.52  
F1\_Score:0.684  
Batch 60:KNN  
Accuracy :0.75  
Recall: 0.769  
Precision:0.667  
F1\_Score:0.714  
Batch 60:SVM  
Accuracy :0.656  
Recall: 1.0  
Precision:0.542  
F1\_Score:0.703  
Batch 60:GNB  
Accuracy :0.625  
Recall: 1.0  
Precision:0.52  
F1\_Score:0.684  
Batch 60:XGB  
Accuracy :0.594  
Recall: 1.0  
Precision:0.5  
F1\_Score:0.667  
Batch 60:DT  
Accuracy :0.344  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 60:MLP  
Accuracy :0.656  
Recall: 1.0  
Precision:0.542  
F1\_Score:0.703  
Batch 61:LogReg  
Accuracy :0.438  
Recall: 1.0  
Precision:0.379  
F1\_Score:0.55  
Batch 61:RF  
Accuracy :0.406  
Recall: 1.0  
Precision:0.367  
F1\_Score:0.537  
Batch 61:KNN  
Accuracy :0.406  
Recall: 0.182  
Precision:0.167  
F1\_Score:0.174  
Batch 61:SVM  
Accuracy :0.438  
Recall: 1.0  
Precision:0.379  
F1\_Score:0.55  
Batch 61:GNB  
Accuracy :0.406  
Recall: 1.0

```
Precision:0.367
F1_Score:0.537
Batch 61:XGB
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 61:DT
Accuracy :0.406
Recall: 0.818
Precision:0.346
F1_Score:0.486
Batch 61:MLP
Accuracy :0.406
Recall: 1.0
Precision:0.367
F1_Score:0.537
Batch 62:LogReg
Accuracy :0.469
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 62:RF
Accuracy :0.5
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 62:KNN
Accuracy :0.594
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 62:SVM
Accuracy :0.5
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 62:GNB
Accuracy :0.531
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 62:XGB
Accuracy :0.281
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 62:DT
Accuracy :0.688
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 62:MLP
Accuracy :0.406
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 63:LogReg
Accuracy :0.812
Recall: 0.889
Precision:0.615
F1_Score:0.727
```

```
Batch 63:RF
Accuracy :0.875
Recall: 0.778
Precision:0.778
F1_Score:0.778
Batch 63:KNN
Accuracy :0.656
Recall: 0.333
Precision:0.375
F1_Score:0.353
Batch 63:SVM
Accuracy :0.781
Recall: 0.444
Precision:0.667
F1_Score:0.533
Batch 63:GNB
Accuracy :0.844
Recall: 0.556
Precision:0.833
F1_Score:0.667
Batch 63:XGB
Accuracy :0.656
Recall: 1.0
Precision:0.45
F1_Score:0.621
Batch 63:DT
Accuracy :0.781
Recall: 0.444
Precision:0.667
F1_Score:0.533
Batch 63:MLP
Accuracy :0.781
Recall: 0.889
Precision:0.571
F1_Score:0.696
Batch 64:LogReg
Accuracy :0.969
Recall: 1.0
Precision:0.968
F1_Score:0.984
Batch 64:RF
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 64:KNN
Accuracy :0.375
Recall: 0.367
Precision:0.917
F1_Score:0.524
Batch 64:SVM
Accuracy :0.969
Recall: 1.0
Precision:0.968
F1_Score:0.984
Batch 64:GNB
Accuracy :0.969
Recall: 0.967
Precision:1.0
F1_Score:0.983
Batch 64:XGB
Accuracy :0.938
```

Recall: 1.0  
Precision:0.938  
F1\_Score:0.968  
Batch 64:DT  
Accuracy :0.625  
Recall: 0.633  
Precision:0.95  
F1\_Score:0.76  
Batch 64:MLP  
Accuracy :0.969  
Recall: 1.0  
Precision:0.968  
F1\_Score:0.984  
Batch 65:LogReg  
Accuracy :0.938  
Recall: 1.0  
Precision:0.913  
F1\_Score:0.955  
Batch 65:RF  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 65:KNN  
Accuracy :0.562  
Recall: 0.381  
Precision:0.889  
F1\_Score:0.533  
Batch 65:SVM  
Accuracy :0.969  
Recall: 0.952  
Precision:1.0  
F1\_Score:0.976  
Batch 65:GNB  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 65:XGB  
Accuracy :0.938  
Recall: 1.0  
Precision:0.913  
F1\_Score:0.955  
Batch 65:DT  
Accuracy :0.875  
Recall: 0.905  
Precision:0.905  
F1\_Score:0.905  
Batch 65:MLP  
Accuracy :0.938  
Recall: 1.0  
Precision:0.913  
F1\_Score:0.955  
Batch 66:LogReg  
Accuracy :0.875  
Recall: 1.0  
Precision:0.826  
F1\_Score:0.905  
Batch 66:RF  
Accuracy :0.875  
Recall: 1.0  
Precision:0.826

F1\_Score:0.905  
Batch 66:KNN  
Accuracy :0.469  
Recall: 0.263  
Precision:0.625  
F1\_Score:0.37  
Batch 66:SVM  
Accuracy :0.844  
Recall: 0.842  
Precision:0.889  
F1\_Score:0.865  
Batch 66:GNB  
Accuracy :0.906  
Recall: 0.842  
Precision:1.0  
F1\_Score:0.914  
Batch 66:XGB  
Accuracy :0.812  
Recall: 1.0  
Precision:0.76  
F1\_Score:0.864  
Batch 66:DT  
Accuracy :0.656  
Recall: 0.684  
Precision:0.722  
F1\_Score:0.703  
Batch 66:MLP  
Accuracy :0.812  
Recall: 1.0  
Precision:0.76  
F1\_Score:0.864  
Batch 67:LogReg  
Accuracy :0.656  
Recall: 1.0  
Precision:0.607  
F1\_Score:0.756  
Batch 67:RF  
Accuracy :0.562  
Recall: 1.0  
Precision:0.548  
F1\_Score:0.708  
Batch 67:KNN  
Accuracy :0.469  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 67:SVM  
Accuracy :0.812  
Recall: 1.0  
Precision:0.739  
F1\_Score:0.85  
Batch 67:GNB  
Accuracy :0.875  
Recall: 0.765  
Precision:1.0  
F1\_Score:0.867  
Batch 67:XGB  
Accuracy :0.531  
Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 67:DT

Accuracy :0.781  
Recall: 0.882  
Precision:0.75  
F1\_Score:0.811  
Batch 67:MLP  
Accuracy :0.562  
Recall: 1.0  
Precision:0.548  
F1\_Score:0.708  
Batch 68:LogReg  
Accuracy :0.906  
Recall: 0.333  
Precision:0.5  
F1\_Score:0.4  
Batch 68:RF  
Accuracy :0.875  
Recall: 1.0  
Precision:0.429  
F1\_Score:0.6  
Batch 68:KNN  
Accuracy :0.656  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 68:SVM  
Accuracy :0.188  
Recall: 1.0  
Precision:0.103  
F1\_Score:0.188  
Batch 68:GNB  
Accuracy :0.906  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 68:XGB  
Accuracy :0.812  
Recall: 0.333  
Precision:0.2  
F1\_Score:0.25  
Batch 68:DT  
Accuracy :0.469  
Recall: 1.0  
Precision:0.15  
F1\_Score:0.261  
Batch 68:MLP  
Accuracy :0.469  
Recall: 1.0  
Precision:0.15  
F1\_Score:0.261  
Batch 69:LogReg  
Accuracy :0.75  
Recall: 0.111  
Precision:1.0  
F1\_Score:0.2  
Batch 69:RF  
Accuracy :0.906  
Recall: 0.778  
Precision:0.875  
F1\_Score:0.824  
Batch 69:KNN  
Accuracy :0.781  
Recall: 0.333

Precision:0.75  
F1\_Score:0.462  
Batch 69:SVM  
Accuracy :0.594  
Recall: 0.889  
Precision:0.4  
F1\_Score:0.552  
Batch 69:GNB  
Accuracy :0.812  
Recall: 0.333  
Precision:1.0  
F1\_Score:0.5  
Batch 69:XGB  
Accuracy :0.812  
Recall: 0.333  
Precision:1.0  
F1\_Score:0.5  
Batch 69:DT  
Accuracy :0.562  
Recall: 0.444  
Precision:0.308  
F1\_Score:0.364  
Batch 69:MLP  
Accuracy :0.625  
Recall: 0.889  
Precision:0.421  
F1\_Score:0.571  
Batch 70:LogReg  
Accuracy :0.938  
Recall: 0.926  
Precision:1.0  
F1\_Score:0.962  
Batch 70:RF  
Accuracy :0.938  
Recall: 0.963  
Precision:0.963  
F1\_Score:0.963  
Batch 70:KNN  
Accuracy :0.594  
Recall: 0.593  
Precision:0.889  
F1\_Score:0.711  
Batch 70:SVM  
Accuracy :0.938  
Recall: 1.0  
Precision:0.931  
F1\_Score:0.964  
Batch 70:GNB  
Accuracy :0.938  
Recall: 0.926  
Precision:1.0  
F1\_Score:0.962  
Batch 70:XGB  
Accuracy :0.938  
Recall: 0.963  
Precision:0.963  
F1\_Score:0.963  
Batch 70:DT  
Accuracy :0.844  
Recall: 0.926  
Precision:0.893  
F1\_Score:0.909

```
Batch 70:MLP
Accuracy :0.938
Recall: 1.0
Precision:0.931
F1_Score:0.964
Batch 71:LogReg
Accuracy :0.938
Recall: 0.944
Precision:0.944
F1_Score:0.944
Batch 71:RF
Accuracy :0.844
Recall: 1.0
Precision:0.783
F1_Score:0.878
Batch 71:KNN
Accuracy :0.656
Recall: 0.389
Precision:1.0
F1_Score:0.56
Batch 71:SVM
Accuracy :0.906
Recall: 1.0
Precision:0.857
F1_Score:0.923
Batch 71:GNB
Accuracy :0.969
Recall: 1.0
Precision:0.947
F1_Score:0.973
Batch 71:XGB
Accuracy :0.875
Recall: 1.0
Precision:0.818
F1_Score:0.9
Batch 71:DT
Accuracy :0.844
Recall: 0.944
Precision:0.81
F1_Score:0.872
Batch 71:MLP
Accuracy :0.906
Recall: 1.0
Precision:0.857
F1_Score:0.923
Batch 72:LogReg
Accuracy :0.875
Recall: 1.0
Precision:0.75
F1_Score:0.857
Batch 72:RF
Accuracy :0.812
Recall: 0.833
Precision:0.714
F1_Score:0.769
Batch 72:KNN
Accuracy :0.719
Recall: 0.333
Precision:0.8
F1_Score:0.471
Batch 72:SVM
Accuracy :0.844
```

```
Recall: 0.833
Precision:0.769
F1_Score:0.8
Batch 72:GNB
Accuracy :0.938
Recall: 1.0
Precision:0.857
F1_Score:0.923
Batch 72:XGB
Accuracy :0.75
Recall: 1.0
Precision:0.6
F1_Score:0.75
Batch 72:DT
Accuracy :0.812
Recall: 1.0
Precision:0.667
F1_Score:0.8
Batch 72:MLP
Accuracy :0.812
Recall: 1.0
Precision:0.667
F1_Score:0.8
Batch 73:LogReg
Accuracy :0.781
Recall: 1.0
Precision:0.3
F1_Score:0.462
Batch 73:RF
Accuracy :0.938
Recall: 1.0
Precision:0.6
F1_Score:0.75
Batch 73:KNN
Accuracy :0.469
Recall: 1.0
Precision:0.15
F1_Score:0.261
Batch 73:SVM
Accuracy :0.719
Recall: 0.667
Precision:0.2
F1_Score:0.308
Batch 73:GNB
Accuracy :0.938
Recall: 0.333
Precision:1.0
F1_Score:0.5
Batch 73:XGB
Accuracy :0.344
Recall: 1.0
Precision:0.125
F1_Score:0.222
Batch 73:DT
Accuracy :0.75
Recall: 0.333
Precision:0.143
F1_Score:0.2
Batch 73:MLP
Accuracy :0.562
Recall: 1.0
Precision:0.176
```

```
F1_Score:0.3
Batch 74:LogReg
Accuracy :0.625
Recall: 0.615
Precision:0.533
F1_Score:0.571
Batch 74:RF
Accuracy :0.656
Recall: 0.538
Precision:0.583
F1_Score:0.56
Batch 74:KNN
Accuracy :0.594
Recall: 0.231
Precision:0.5
F1_Score:0.316
Batch 74:SVM
Accuracy :0.562
Recall: 0.462
Precision:0.462
F1_Score:0.462
Batch 74:GNB
Accuracy :0.625
Recall: 0.077
Precision:1.0
F1_Score:0.143
Batch 74:XGB
Accuracy :0.719
Recall: 1.0
Precision:0.591
F1_Score:0.743
Batch 74:DT
Accuracy :0.594
Recall: 0.154
Precision:0.5
F1_Score:0.235
Batch 74:MLP
Accuracy :0.688
Recall: 0.769
Precision:0.588
F1_Score:0.667
Batch 75:LogReg
Accuracy :0.844
Recall: 0.9
Precision:0.692
F1_Score:0.783
Batch 75:RF
Accuracy :0.906
Recall: 0.8
Precision:0.889
F1_Score:0.842
Batch 75:KNN
Accuracy :0.531
Recall: 0.2
Precision:0.222
F1_Score:0.211
Batch 75:SVM
Accuracy :0.844
Recall: 0.6
Precision:0.857
F1_Score:0.706
Batch 75:GNB
```

Accuracy :0.844  
Recall: 0.5  
Precision:1.0  
F1\_Score:0.667  
Batch 75:XGB  
Accuracy :0.688  
Recall: 0.9  
Precision:0.5  
F1\_Score:0.643  
Batch 75:DT  
Accuracy :0.688  
Recall: 0.3  
Precision:0.5  
F1\_Score:0.375  
Batch 75:MLP  
Accuracy :0.656  
Recall: 1.0  
Precision:0.476  
F1\_Score:0.645  
Batch 76:LogReg  
Accuracy :0.719  
Recall: 1.0  
Precision:0.679  
F1\_Score:0.809  
Batch 76:RF  
Accuracy :0.625  
Recall: 0.947  
Precision:0.621  
F1\_Score:0.75  
Batch 76:KNN  
Accuracy :0.281  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 76:SVM  
Accuracy :0.844  
Recall: 0.947  
Precision:0.818  
F1\_Score:0.878  
Batch 76:GNB  
Accuracy :0.938  
Recall: 0.895  
Precision:1.0  
F1\_Score:0.944  
Batch 76:XGB  
Accuracy :0.688  
Recall: 1.0  
Precision:0.655  
F1\_Score:0.792  
Batch 76:DT  
Accuracy :0.625  
Recall: 0.947  
Precision:0.621  
F1\_Score:0.75  
Batch 76:MLP  
Accuracy :0.656  
Recall: 1.0  
Precision:0.633  
F1\_Score:0.776  
Batch 77:LogReg  
Accuracy :0.812  
Recall: 1.0

```
Precision:0.333
F1_Score:0.5
Batch 77:RF
Accuracy :0.438
Recall: 0.667
Precision:0.105
F1_Score:0.182
Batch 77:KNN
Accuracy :0.938
Recall: 0.333
Precision:1.0
F1_Score:0.5
Batch 77:SVM
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 77:GNB
Accuracy :0.969
Recall: 0.667
Precision:1.0
F1_Score:0.8
Batch 77:XGB
Accuracy :0.438
Recall: 1.0
Precision:0.143
F1_Score:0.25
Batch 77:DT
Accuracy :0.375
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 77:MLP
Accuracy :0.438
Recall: 1.0
Precision:0.143
F1_Score:0.25
Batch 78:LogReg
Accuracy :0.688
Recall: 0.333
Precision:1.0
F1_Score:0.5
Batch 78:RF
Accuracy :0.438
Recall: 0.533
Precision:0.421
F1_Score:0.471
Batch 78:KNN
Accuracy :0.594
Recall: 0.133
Precision:1.0
F1_Score:0.235
Batch 78:SVM
Accuracy :0.562
Recall: 0.467
Precision:0.538
F1_Score:0.5
Batch 78:GNB
Accuracy :0.531
Recall: 0.0
Precision:0.0
F1_Score:0.0
```

```
Batch 78:XGB
Accuracy :0.469
Recall: 0.6
Precision:0.45
F1_Score:0.514
Batch 78:DT
Accuracy :0.531
Recall: 0.667
Precision:0.5
F1_Score:0.571
Batch 78:MLP
Accuracy :0.5
Recall: 0.667
Precision:0.476
F1_Score:0.556
Batch 79:LogReg
Accuracy :0.406
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 79:RF
Accuracy :0.406
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 79:KNN
Accuracy :0.5
Recall: 0.211
Precision:0.8
F1_Score:0.333
Batch 79:SVM
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 79:GNB
Accuracy :0.406
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 79:XGB
Accuracy :0.406
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 79:DT
Accuracy :0.688
Recall: 0.579
Precision:0.846
F1_Score:0.688
Batch 79:MLP
Accuracy :0.844
Recall: 1.0
Precision:0.792
F1_Score:0.884
Batch 80:LogReg
Accuracy :0.781
Recall: 0.696
Precision:1.0
F1_Score:0.821
Batch 80:RF
Accuracy :0.844
```

```
Recall: 0.783
Precision:1.0
F1_Score:0.878
Batch 80:KNN
Accuracy :0.688
Recall: 0.565
Precision:1.0
F1_Score:0.722
Batch 80:SVM
Accuracy :0.844
Recall: 0.87
Precision:0.909
F1_Score:0.889
Batch 80:GNB
Accuracy :0.812
Recall: 0.739
Precision:1.0
F1_Score:0.85
Batch 80:XGB
Accuracy :0.844
Recall: 0.783
Precision:1.0
F1_Score:0.878
Batch 80:DT
Accuracy :0.688
Recall: 0.826
Precision:0.76
F1_Score:0.792
Batch 80:MLP
Accuracy :0.812
Recall: 0.783
Precision:0.947
F1_Score:0.857
Batch 81:LogReg
Accuracy :0.969
Recall: 0.909
Precision:1.0
F1_Score:0.952
Batch 81:RF
Accuracy :0.906
Recall: 1.0
Precision:0.786
F1_Score:0.88
Batch 81:KNN
Accuracy :0.812
Recall: 0.909
Precision:0.667
F1_Score:0.769
Batch 81:SVM
Accuracy :0.969
Recall: 1.0
Precision:0.917
F1_Score:0.957
Batch 81:GNB
Accuracy :0.969
Recall: 0.909
Precision:1.0
F1_Score:0.952
Batch 81:XGB
Accuracy :0.875
Recall: 1.0
Precision:0.733
```

F1\_Score:0.846  
Batch 81:DT  
Accuracy :0.75  
Recall: 0.818  
Precision:0.6  
F1\_Score:0.692  
Batch 81:MLP  
Accuracy :0.969  
Recall: 1.0  
Precision:0.917  
F1\_Score:0.957  
Batch 82:LogReg  
Accuracy :0.969  
Recall: 1.0  
Precision:0.929  
F1\_Score:0.963  
Batch 82:RF  
Accuracy :0.719  
Recall: 1.0  
Precision:0.591  
F1\_Score:0.743  
Batch 82:KNN  
Accuracy :0.781  
Recall: 0.692  
Precision:0.75  
F1\_Score:0.72  
Batch 82:SVM  
Accuracy :0.906  
Recall: 1.0  
Precision:0.812  
F1\_Score:0.897  
Batch 82:GNB  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 82:XGB  
Accuracy :0.656  
Recall: 1.0  
Precision:0.542  
F1\_Score:0.703  
Batch 82:DT  
Accuracy :0.781  
Recall: 1.0  
Precision:0.65  
F1\_Score:0.788  
Batch 82:MLP  
Accuracy :0.719  
Recall: 1.0  
Precision:0.591  
F1\_Score:0.743  
Batch 83:LogReg  
Accuracy :0.875  
Recall: 0.857  
Precision:0.857  
F1\_Score:0.857  
Batch 83:RF  
Accuracy :0.719  
Recall: 0.857  
Precision:0.632  
F1\_Score:0.727  
Batch 83:KNN

Accuracy :0.531  
Recall: 0.714  
Precision:0.476  
F1\_Score:0.571  
Batch 83:SVM  
Accuracy :0.75  
Recall: 0.786  
Precision:0.688  
F1\_Score:0.733  
Batch 83:GNB  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 83:XGB  
Accuracy :0.688  
Recall: 0.929  
Precision:0.591  
F1\_Score:0.722  
Batch 83:DT  
Accuracy :0.656  
Recall: 0.714  
Precision:0.588  
F1\_Score:0.645  
Batch 83:MLP  
Accuracy :0.688  
Recall: 0.786  
Precision:0.611  
F1\_Score:0.688  
Batch 84:LogReg  
Accuracy :0.938  
Recall: 0.833  
Precision:0.833  
F1\_Score:0.833  
Batch 84:RF  
Accuracy :0.812  
Recall: 0.833  
Precision:0.5  
F1\_Score:0.625  
Batch 84:KNN  
Accuracy :0.562  
Recall: 0.167  
Precision:0.1  
F1\_Score:0.125  
Batch 84:SVM  
Accuracy :0.969  
Recall: 0.833  
Precision:1.0  
F1\_Score:0.909  
Batch 84:GNB  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 84:XGB  
Accuracy :0.75  
Recall: 1.0  
Precision:0.429  
F1\_Score:0.6  
Batch 84:DT  
Accuracy :0.781  
Recall: 0.5

Precision:0.429  
F1\_Score:0.462  
Batch 84:MLP  
Accuracy :0.906  
Recall: 0.833  
Precision:0.714  
F1\_Score:0.769  
Batch 85:LogReg  
Accuracy :0.875  
Recall: 1.0  
Precision:0.75  
F1\_Score:0.857  
Batch 85:RF  
Accuracy :0.812  
Recall: 1.0  
Precision:0.667  
F1\_Score:0.8  
Batch 85:KNN  
Accuracy :0.656  
Recall: 0.5  
Precision:0.545  
F1\_Score:0.522  
Batch 85:SVM  
Accuracy :0.75  
Recall: 1.0  
Precision:0.6  
F1\_Score:0.75  
Batch 85:GNB  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 85:XGB  
Accuracy :0.594  
Recall: 1.0  
Precision:0.48  
F1\_Score:0.649  
Batch 85:DT  
Accuracy :0.75  
Recall: 0.75  
Precision:0.643  
F1\_Score:0.692  
Batch 85:MLP  
Accuracy :0.688  
Recall: 1.0  
Precision:0.545  
F1\_Score:0.706  
Batch 86:LogReg  
Accuracy :0.594  
Recall: 1.0  
Precision:0.435  
F1\_Score:0.606  
Batch 86:RF  
Accuracy :0.625  
Recall: 0.9  
Precision:0.45  
F1\_Score:0.6  
Batch 86:KNN  
Accuracy :0.438  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0

```
Batch 86:SVM
Accuracy :0.688
Recall: 0.9
Precision:0.5
F1_Score:0.643
Batch 86:GNB
Accuracy :0.938
Recall: 0.8
Precision:1.0
F1_Score:0.889
Batch 86:XGB
Accuracy :0.5
Recall: 1.0
Precision:0.385
F1_Score:0.556
Batch 86:DT
Accuracy :0.625
Recall: 0.9
Precision:0.45
F1_Score:0.6
Batch 86:MLP
Accuracy :0.531
Recall: 1.0
Precision:0.4
F1_Score:0.571
Batch 87:LogReg
Accuracy :0.688
Recall: 1.0
Precision:0.286
F1_Score:0.444
Batch 87:RF
Accuracy :0.438
Recall: 1.0
Precision:0.182
F1_Score:0.308
Batch 87:KNN
Accuracy :0.844
Recall: 0.25
Precision:0.333
F1_Score:0.286
Batch 87:SVM
Accuracy :0.844
Recall: 0.5
Precision:0.4
F1_Score:0.444
Batch 87:GNB
Accuracy :0.906
Recall: 0.25
Precision:1.0
F1_Score:0.4
Batch 87:XGB
Accuracy :0.406
Recall: 1.0
Precision:0.174
F1_Score:0.296
Batch 87:DT
Accuracy :0.219
Recall: 0.25
Precision:0.043
F1_Score:0.074
Batch 87:MLP
Accuracy :0.406
```

Recall: 1.0  
Precision:0.174  
F1\_Score:0.296  
Batch 88:LogReg  
Accuracy :0.875  
Recall: 0.95  
Precision:0.864  
F1\_Score:0.905  
Batch 88:RF  
Accuracy :0.594  
Recall: 0.95  
Precision:0.613  
F1\_Score:0.745  
Batch 88:KNN  
Accuracy :0.375  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 88:SVM  
Accuracy :0.938  
Recall: 0.9  
Precision:1.0  
F1\_Score:0.947  
Batch 88:GNB  
Accuracy :0.5  
Recall: 0.2  
Precision:1.0  
F1\_Score:0.333  
Batch 88:XGB  
Accuracy :0.625  
Recall: 1.0  
Precision:0.625  
F1\_Score:0.769  
Batch 88:DT  
Accuracy :0.281  
Recall: 0.35  
Precision:0.412  
F1\_Score:0.378  
Batch 88:MLP  
Accuracy :0.625  
Recall: 1.0  
Precision:0.625  
F1\_Score:0.769  
Batch 89:LogReg  
Accuracy :0.938  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 89:RF  
Accuracy :0.844  
Recall: 1.0  
Precision:0.167  
F1\_Score:0.286  
Batch 89:KNN  
Accuracy :0.688  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 89:SVM  
Accuracy :0.219  
Recall: 1.0  
Precision:0.038

F1\_Score:0.074  
Batch 89:GNB  
Accuracy :0.969  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 89:XGB  
Accuracy :0.875  
Recall: 1.0  
Precision:0.2  
F1\_Score:0.333  
Batch 89:DT  
Accuracy :0.625  
Recall: 1.0  
Precision:0.077  
F1\_Score:0.143  
Batch 89:MLP  
Accuracy :0.438  
Recall: 1.0  
Precision:0.053  
F1\_Score:0.1  
Batch 90:LogReg  
Accuracy :0.344  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 90:RF  
Accuracy :0.5  
Recall: 0.238  
Precision:1.0  
F1\_Score:0.385  
Batch 90:KNN  
Accuracy :0.281  
Recall: 0.048  
Precision:0.25  
F1\_Score:0.08  
Batch 90:SVM  
Accuracy :0.562  
Recall: 0.667  
Precision:0.667  
F1\_Score:0.667  
Batch 90:GNB  
Accuracy :0.406  
Recall: 0.095  
Precision:1.0  
F1\_Score:0.174  
Batch 90:XGB  
Accuracy :0.5  
Recall: 0.238  
Precision:1.0  
F1\_Score:0.385  
Batch 90:DT  
Accuracy :0.375  
Recall: 0.381  
Precision:0.533  
F1\_Score:0.444  
Batch 90:MLP  
Accuracy :0.656  
Recall: 0.714  
Precision:0.75  
F1\_Score:0.732  
Batch 91:LogReg

Accuracy :0.875  
Recall: 0.2  
Precision:1.0  
F1\_Score:0.333  
Batch 91:RF  
Accuracy :0.594  
Recall: 0.8  
Precision:0.25  
F1\_Score:0.381  
Batch 91:KNN  
Accuracy :0.438  
Recall: 0.4  
Precision:0.118  
F1\_Score:0.182  
Batch 91:SVM  
Accuracy :0.906  
Recall: 1.0  
Precision:0.625  
F1\_Score:0.769  
Batch 91:GNB  
Accuracy :0.875  
Recall: 0.2  
Precision:1.0  
F1\_Score:0.333  
Batch 91:XGB  
Accuracy :0.906  
Recall: 0.4  
Precision:1.0  
F1\_Score:0.571  
Batch 91:DT  
Accuracy :0.875  
Recall: 0.4  
Precision:0.667  
F1\_Score:0.5  
Batch 91:MLP  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 92:LogReg  
Accuracy :0.781  
Recall: 0.125  
Precision:1.0  
F1\_Score:0.222  
Batch 92:RF  
Accuracy :0.781  
Recall: 0.375  
Precision:0.6  
F1\_Score:0.462  
Batch 92:KNN  
Accuracy :0.719  
Recall: 0.25  
Precision:0.4  
F1\_Score:0.308  
Batch 92:SVM  
Accuracy :0.844  
Recall: 0.375  
Precision:1.0  
F1\_Score:0.545  
Batch 92:GNB  
Accuracy :0.781  
Recall: 0.125

```
Precision:1.0
F1_Score:0.222
Batch 92:XGB
Accuracy :0.844
Recall: 0.375
Precision:1.0
F1_Score:0.545
Batch 92:DT
Accuracy :0.875
Recall: 0.5
Precision:1.0
F1_Score:0.667
Batch 92:MLP
Accuracy :0.844
Recall: 0.375
Precision:1.0
F1_Score:0.545
Batch 93:LogReg
Accuracy :0.719
Recall: 0.1
Precision:1.0
F1_Score:0.182
Batch 93:RF
Accuracy :0.625
Recall: 0.2
Precision:0.333
F1_Score:0.25
Batch 93:KNN
Accuracy :0.531
Recall: 0.2
Precision:0.222
F1_Score:0.211
Batch 93:SVM
Accuracy :0.719
Recall: 0.1
Precision:1.0
F1_Score:0.182
Batch 93:GNB
Accuracy :0.719
Recall: 0.1
Precision:1.0
F1_Score:0.182
Batch 93:XGB
Accuracy :0.781
Recall: 0.3
Precision:1.0
F1_Score:0.462
Batch 93:DT
Accuracy :0.781
Recall: 0.3
Precision:1.0
F1_Score:0.462
Batch 93:MLP
Accuracy :0.719
Recall: 0.1
Precision:1.0
F1_Score:0.182
Batch 94:LogReg
Accuracy :0.812
Recall: 0.762
Precision:0.941
F1_Score:0.842
```

```
Batch 94:RF
Accuracy :0.562
Recall: 0.476
Precision:0.769
F1_Score:0.588
Batch 94:KNN
Accuracy :0.5
Recall: 0.429
Precision:0.692
F1_Score:0.529
Batch 94:SVM
Accuracy :0.938
Recall: 0.905
Precision:1.0
F1_Score:0.95
Batch 94:GNB
Accuracy :0.531
Recall: 0.286
Precision:1.0
F1_Score:0.444
Batch 94:XGB
Accuracy :0.875
Recall: 1.0
Precision:0.84
F1_Score:0.913
Batch 94:DT
Accuracy :0.469
Recall: 0.381
Precision:0.667
F1_Score:0.485
Batch 94:MLP
Accuracy :0.938
Recall: 0.952
Precision:0.952
F1_Score:0.952
Batch 95:LogReg
Accuracy :0.688
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 95:RF
Accuracy :0.656
Recall: 1.0
Precision:0.353
F1_Score:0.522
Batch 95:KNN
Accuracy :0.688
Recall: 0.333
Precision:0.25
F1_Score:0.286
Batch 95:SVM
Accuracy :0.688
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 95:GNB
Accuracy :0.906
Recall: 0.5
Precision:1.0
F1_Score:0.667
Batch 95:XGB
Accuracy :0.656
```

Recall: 1.0  
Precision:0.353  
F1\_Score:0.522  
Batch 95:DT  
Accuracy :0.688  
Recall: 0.167  
Precision:0.167  
F1\_Score:0.167  
Batch 95:MLP  
Accuracy :0.625  
Recall: 1.0  
Precision:0.333  
F1\_Score:0.5  
Batch 96:LogReg  
Accuracy :0.781  
Recall: 0.5  
Precision:0.143  
F1\_Score:0.222  
Batch 96:RF  
Accuracy :0.812  
Recall: 1.0  
Precision:0.25  
F1\_Score:0.4  
Batch 96:KNN  
Accuracy :0.75  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 96:SVM  
Accuracy :0.844  
Recall: 0.5  
Precision:0.2  
F1\_Score:0.286  
Batch 96:GNB  
Accuracy :0.969  
Recall: 0.5  
Precision:1.0  
F1\_Score:0.667  
Batch 96:XGB  
Accuracy :0.688  
Recall: 1.0  
Precision:0.167  
F1\_Score:0.286  
Batch 96:DT  
Accuracy :0.625  
Recall: 1.0  
Precision:0.143  
F1\_Score:0.25  
Batch 96:MLP  
Accuracy :0.719  
Recall: 0.5  
Precision:0.111  
F1\_Score:0.182  
Batch 97:LogReg  
Accuracy :0.625  
Recall: 1.0  
Precision:0.429  
F1\_Score:0.6  
Batch 97:RF  
Accuracy :0.406  
Recall: 1.0  
Precision:0.321

F1\_Score:0.486  
Batch 97:KNN  
Accuracy :0.531  
Recall: 0.333  
Precision:0.25  
F1\_Score:0.286  
Batch 97:SVM  
Accuracy :0.75  
Recall: 0.778  
Precision:0.538  
F1\_Score:0.636  
Batch 97:GNB  
Accuracy :0.75  
Recall: 0.111  
Precision:1.0  
F1\_Score:0.2  
Batch 97:XGB  
Accuracy :0.375  
Recall: 1.0  
Precision:0.31  
F1\_Score:0.474  
Batch 97:DT  
Accuracy :0.281  
Recall: 0.889  
Precision:0.267  
F1\_Score:0.41  
Batch 97:MLP  
Accuracy :0.375  
Recall: 1.0  
Precision:0.31  
F1\_Score:0.474  
Batch 98:LogReg  
Accuracy :0.844  
Recall: 0.737  
Precision:1.0  
F1\_Score:0.848  
Batch 98:RF  
Accuracy :0.875  
Recall: 0.947  
Precision:0.857  
F1\_Score:0.9  
Batch 98:KNN  
Accuracy :0.375  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 98:SVM  
Accuracy :0.656  
Recall: 0.421  
Precision:1.0  
F1\_Score:0.593  
Batch 98:GNB  
Accuracy :0.406  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 98:XGB  
Accuracy :0.906  
Recall: 0.947  
Precision:0.9  
F1\_Score:0.923  
Batch 98:DT

Accuracy :0.438  
Recall: 0.421  
Precision:0.533  
F1\_Score:0.471  
Batch 98:MLP  
Accuracy :0.906  
Recall: 1.0  
Precision:0.864  
F1\_Score:0.927  
Batch 99:LogReg  
Accuracy :0.906  
Recall: 0.6  
Precision:0.75  
F1\_Score:0.667  
Batch 99:RF  
Accuracy :0.469  
Recall: 1.0  
Precision:0.227  
F1\_Score:0.37  
Batch 99:KNN  
Accuracy :0.781  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 99:SVM  
Accuracy :0.562  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 99:GNB  
Accuracy :0.844  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 99:XGB  
Accuracy :0.531  
Recall: 1.0  
Precision:0.25  
F1\_Score:0.4  
Batch 99:DT  
Accuracy :0.438  
Recall: 1.0  
Precision:0.217  
F1\_Score:0.357  
Batch 99:MLP  
Accuracy :0.5  
Recall: 1.0  
Precision:0.238  
F1\_Score:0.385  
Batch 100:LogReg  
Accuracy :0.5  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 100:RF  
Accuracy :0.5  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 100:KNN  
Accuracy :0.469  
Recall: 0.312

```
Precision:0.455
F1_Score:0.37
Batch 100:SVM
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 100:GNB
Accuracy :0.5
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 100:XGB
Accuracy :0.5
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 100:DT
Accuracy :0.438
Recall: 0.312
Precision:0.417
F1_Score:0.357
Batch 100:MLP
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 101:LogReg
Accuracy :0.219
Recall: 0.074
Precision:1.0
F1_Score:0.138
Batch 101:RF
Accuracy :0.75
Recall: 0.704
Precision:1.0
F1_Score:0.826
Batch 101:KNN
Accuracy :0.531
Recall: 0.444
Precision:1.0
F1_Score:0.615
Batch 101:SVM
Accuracy :0.781
Recall: 0.778
Precision:0.955
F1_Score:0.857
Batch 101:GNB
Accuracy :0.219
Recall: 0.074
Precision:1.0
F1_Score:0.138
Batch 101:XGB
Accuracy :0.688
Recall: 0.63
Precision:1.0
F1_Score:0.773
Batch 101:DT
Accuracy :0.656
Recall: 0.667
Precision:0.9
F1_Score:0.766
```

```
Batch 101:MLP
Accuracy :0.781
Recall: 0.778
Precision:0.955
F1_Score:0.857
Batch 102:LogReg
Accuracy :0.781
Recall: 0.222
Precision:1.0
F1_Score:0.364
Batch 102:RF
Accuracy :0.906
Recall: 1.0
Precision:0.75
F1_Score:0.857
Batch 102:KNN
Accuracy :0.812
Recall: 0.667
Precision:0.667
F1_Score:0.667
Batch 102:SVM
Accuracy :0.875
Recall: 0.778
Precision:0.778
F1_Score:0.778
Batch 102:GNB
Accuracy :0.781
Recall: 0.222
Precision:1.0
F1_Score:0.364
Batch 102:XGB
Accuracy :0.969
Recall: 1.0
Precision:0.9
F1_Score:0.947
Batch 102:DT
Accuracy :0.719
Recall: 0.556
Precision:0.5
F1_Score:0.526
Batch 102:MLP
Accuracy :0.875
Recall: 0.778
Precision:0.778
F1_Score:0.778
Batch 103:LogReg
Accuracy :0.844
Recall: 0.667
Precision:1.0
F1_Score:0.8
Batch 103:RF
Accuracy :0.969
Recall: 1.0
Precision:0.938
F1_Score:0.968
Batch 103:KNN
Accuracy :0.625
Recall: 0.4
Precision:0.667
F1_Score:0.5
Batch 103:SVM
Accuracy :0.844
```

Recall: 0.933  
Precision:0.778  
F1\_Score:0.848  
Batch 103:GNB  
Accuracy :0.719  
Recall: 0.4  
Precision:1.0  
F1\_Score:0.571  
Batch 103:XGB  
Accuracy :0.844  
Recall: 1.0  
Precision:0.75  
F1\_Score:0.857  
Batch 103:DT  
Accuracy :0.75  
Recall: 0.933  
Precision:0.667  
F1\_Score:0.778  
Batch 103:MLP  
Accuracy :0.844  
Recall: 1.0  
Precision:0.75  
F1\_Score:0.857  
Batch 104:LogReg  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 104:RF  
Accuracy :0.938  
Recall: 1.0  
Precision:0.882  
F1\_Score:0.938  
Batch 104:KNN  
Accuracy :0.875  
Recall: 0.867  
Precision:0.867  
F1\_Score:0.867  
Batch 104:SVM  
Accuracy :0.969  
Recall: 1.0  
Precision:0.938  
F1\_Score:0.968  
Batch 104:GNB  
Accuracy :0.969  
Recall: 0.933  
Precision:1.0  
F1\_Score:0.966  
Batch 104:XGB  
Accuracy :0.938  
Recall: 1.0  
Precision:0.882  
F1\_Score:0.938  
Batch 104:DT  
Accuracy :0.906  
Recall: 0.933  
Precision:0.875  
F1\_Score:0.903  
Batch 104:MLP  
Accuracy :0.938  
Recall: 1.0  
Precision:0.882

```
F1_Score:0.938
Batch 105:LogReg
Accuracy :0.969
Recall: 1.0
Precision:0.9
F1_Score:0.947
Batch 105:RF
Accuracy :0.875
Recall: 1.0
Precision:0.692
F1_Score:0.818
Batch 105:KNN
Accuracy :0.75
Recall: 0.889
Precision:0.533
F1_Score:0.667
Batch 105:SVM
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 105:GNB
Accuracy :0.969
Recall: 1.0
Precision:0.9
F1_Score:0.947
Batch 105:XGB
Accuracy :0.688
Recall: 1.0
Precision:0.474
F1_Score:0.643
Batch 105:DT
Accuracy :0.719
Recall: 0.889
Precision:0.5
F1_Score:0.64
Batch 105:MLP
Accuracy :0.969
Recall: 1.0
Precision:0.9
F1_Score:0.947
Batch 106:LogReg
Accuracy :0.688
Recall: 1.0
Precision:0.615
F1_Score:0.762
Batch 106:RF
Accuracy :0.75
Recall: 1.0
Precision:0.667
F1_Score:0.8
Batch 106:KNN
Accuracy :0.719
Recall: 0.625
Precision:0.769
F1_Score:0.69
Batch 106:SVM
Accuracy :0.781
Recall: 1.0
Precision:0.696
F1_Score:0.821
Batch 106:GNB
```

```
Accuracy :0.844
Recall: 1.0
Precision:0.762
F1_Score:0.865
Batch 106:XGB
Accuracy :0.594
Recall: 1.0
Precision:0.552
F1_Score:0.711
Batch 106:DT
Accuracy :0.781
Recall: 0.938
Precision:0.714
F1_Score:0.811
Batch 106:MLP
Accuracy :0.625
Recall: 1.0
Precision:0.571
F1_Score:0.727
Batch 107:LogReg
Accuracy :0.719
Recall: 1.0
Precision:0.571
F1_Score:0.727
Batch 107:RF
Accuracy :0.656
Recall: 1.0
Precision:0.522
F1_Score:0.686
Batch 107:KNN
Accuracy :0.469
Recall: 0.167
Precision:0.222
F1_Score:0.19
Batch 107:SVM
Accuracy :0.75
Recall: 1.0
Precision:0.6
F1_Score:0.75
Batch 107:GNB
Accuracy :0.938
Recall: 1.0
Precision:0.857
F1_Score:0.923
Batch 107:XGB
Accuracy :0.625
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 107:DT
Accuracy :0.812
Recall: 0.917
Precision:0.688
F1_Score:0.786
Batch 107:MLP
Accuracy :0.625
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 108:LogReg
Accuracy :0.562
Recall: 1.0
```

```
Precision:0.125
F1_Score:0.222
Batch 108:RF
Accuracy :0.375
Recall: 1.0
Precision:0.091
F1_Score:0.167
Batch 108:KNN
Accuracy :0.719
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 108:SVM
Accuracy :0.812
Recall: 1.0
Precision:0.25
F1_Score:0.4
Batch 108:GNB
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 108:XGB
Accuracy :0.375
Recall: 1.0
Precision:0.091
F1_Score:0.167
Batch 108:DT
Accuracy :0.219
Recall: 0.5
Precision:0.04
F1_Score:0.074
Batch 108:MLP
Accuracy :0.344
Recall: 1.0
Precision:0.087
F1_Score:0.16
Batch 109:LogReg
Accuracy :0.875
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 109:RF
Accuracy :0.219
Recall: 1.0
Precision:0.138
F1_Score:0.242
Batch 109:KNN
Accuracy :0.719
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 109:SVM
Accuracy :0.938
Recall: 0.5
Precision:1.0
F1_Score:0.667
Batch 109:GNB
Accuracy :0.875
Recall: 0.0
Precision:0.0
F1_Score:0.0
```

```
Batch 109:XGB
Accuracy :0.219
Recall: 1.0
Precision:0.138
F1_Score:0.242
Batch 109:DT
Accuracy :0.281
Recall: 0.25
Precision:0.048
F1_Score:0.08
Batch 109:MLP
Accuracy :0.188
Recall: 1.0
Precision:0.133
F1_Score:0.235
Batch 110:LogReg
Accuracy :0.594
Recall: 0.071
Precision:1.0
F1_Score:0.133
Batch 110:RF
Accuracy :0.5
Recall: 0.071
Precision:0.25
F1_Score:0.111
Batch 110:KNN
Accuracy :0.812
Recall: 0.714
Precision:0.833
F1_Score:0.769
Batch 110:SVM
Accuracy :0.594
Recall: 0.929
Precision:0.52
F1_Score:0.667
Batch 110:GNB
Accuracy :0.562
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 110:XGB
Accuracy :0.5
Recall: 0.071
Precision:0.25
F1_Score:0.111
Batch 110:DT
Accuracy :0.5
Recall: 0.143
Precision:0.333
F1_Score:0.2
Batch 110:MLP
Accuracy :0.812
Recall: 1.0
Precision:0.7
F1_Score:0.824
Batch 111:LogReg
Accuracy :0.156
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 111:RF
Accuracy :0.219
```

```
Recall: 0.074
Precision:1.0
F1_Score:0.138
Batch 111:KNN
Accuracy :0.344
Recall: 0.222
Precision:1.0
F1_Score:0.364
Batch 111:SVM
Accuracy :0.812
Recall: 0.778
Precision:1.0
F1_Score:0.875
Batch 111:GNB
Accuracy :0.156
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 111:XGB
Accuracy :0.156
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 111:DT
Accuracy :0.25
Recall: 0.185
Precision:0.714
F1_Score:0.294
Batch 111:MLP
Accuracy :0.812
Recall: 0.778
Precision:1.0
F1_Score:0.875
Batch 112:LogReg
Accuracy :0.438
Recall: 0.143
Precision:1.0
F1_Score:0.25
Batch 112:RF
Accuracy :0.844
Recall: 0.81
Precision:0.944
F1_Score:0.872
Batch 112:KNN
Accuracy :0.812
Recall: 0.762
Precision:0.941
F1_Score:0.842
Batch 112:SVM
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 112:GNB
Accuracy :0.406
Recall: 0.095
Precision:1.0
F1_Score:0.174
Batch 112:XGB
Accuracy :0.969
Recall: 0.952
Precision:1.0
```

F1\_Score:0.976  
Batch 112:DT  
Accuracy :0.969  
Recall: 1.0  
Precision:0.955  
F1\_Score:0.977  
Batch 112:MLP  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 113:LogReg  
Accuracy :0.75  
Recall: 0.529  
Precision:1.0  
F1\_Score:0.692  
Batch 113:RF  
Accuracy :0.812  
Recall: 0.706  
Precision:0.923  
F1\_Score:0.8  
Batch 113:KNN  
Accuracy :0.719  
Recall: 0.529  
Precision:0.9  
F1\_Score:0.667  
Batch 113:SVM  
Accuracy :0.75  
Recall: 0.647  
Precision:0.846  
F1\_Score:0.733  
Batch 113:GNB  
Accuracy :0.719  
Recall: 0.471  
Precision:1.0  
F1\_Score:0.64  
Batch 113:XGB  
Accuracy :0.656  
Recall: 0.706  
Precision:0.667  
F1\_Score:0.686  
Batch 113:DT  
Accuracy :0.625  
Recall: 0.706  
Precision:0.632  
F1\_Score:0.667  
Batch 113:MLP  
Accuracy :0.656  
Recall: 0.647  
Precision:0.688  
F1\_Score:0.667  
Batch 114:LogReg  
Accuracy :0.906  
Recall: 0.25  
Precision:1.0  
F1\_Score:0.4  
Batch 114:RF  
Accuracy :0.938  
Recall: 0.5  
Precision:1.0  
F1\_Score:0.667  
Batch 114:KNN

```
Accuracy :0.812
Recall: 0.75
Precision:0.375
F1_Score:0.5
Batch 114:SVM
Accuracy :0.906
Recall: 0.25
Precision:1.0
F1_Score:0.4
Batch 114:GNB
Accuracy :0.906
Recall: 0.25
Precision:1.0
F1_Score:0.4
Batch 114:XGB
Accuracy :0.844
Recall: 0.75
Precision:0.429
F1_Score:0.545
Batch 114:DT
Accuracy :0.688
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 114:MLP
Accuracy :0.938
Recall: 0.5
Precision:1.0
F1_Score:0.667
Batch 115:LogReg
Accuracy :0.938
Recall: 1.0
Precision:0.818
F1_Score:0.9
Batch 115:RF
Accuracy :0.906
Recall: 0.889
Precision:0.8
F1_Score:0.842
Batch 115:KNN
Accuracy :0.469
Recall: 0.889
Precision:0.333
F1_Score:0.485
Batch 115:SVM
Accuracy :0.969
Recall: 1.0
Precision:0.9
F1_Score:0.947
Batch 115:GNB
Accuracy :0.938
Recall: 0.778
Precision:1.0
F1_Score:0.875
Batch 115:XGB
Accuracy :0.5
Recall: 1.0
Precision:0.36
F1_Score:0.529
Batch 115:DT
Accuracy :0.906
Recall: 0.889
```

```
Precision:0.8
F1_Score:0.842
Batch 115:MLP
Accuracy :0.688
Recall: 1.0
Precision:0.474
F1_Score:0.643
Batch 116:LogReg
Accuracy :0.719
Recall: 0.941
Precision:0.667
F1_Score:0.78
Batch 116:RF
Accuracy :0.812
Recall: 0.824
Precision:0.824
F1_Score:0.824
Batch 116:KNN
Accuracy :0.375
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 116:SVM
Accuracy :0.625
Recall: 0.706
Precision:0.632
F1_Score:0.667
Batch 116:GNB
Accuracy :0.906
Recall: 0.824
Precision:1.0
F1_Score:0.903
Batch 116:XGB
Accuracy :0.719
Recall: 0.941
Precision:0.667
F1_Score:0.78
Batch 116:DT
Accuracy :0.656
Recall: 0.412
Precision:0.875
F1_Score:0.56
Batch 116:MLP
Accuracy :0.719
Recall: 0.941
Precision:0.667
F1_Score:0.78
Batch 117:LogReg
Accuracy :0.844
Recall: 1.0
Precision:0.615
F1_Score:0.762
Batch 117:RF
Accuracy :0.906
Recall: 0.75
Precision:0.857
F1_Score:0.8
Batch 117:KNN
Accuracy :0.594
Recall: 0.0
Precision:0.0
F1_Score:0.0
```

```
Batch 117:SVM
Accuracy :0.688
Recall: 0.5
Precision:0.4
F1_Score:0.444
Batch 117:GNB
Accuracy :0.875
Recall: 0.5
Precision:1.0
F1_Score:0.667
Batch 117:XGB
Accuracy :0.75
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 117:DT
Accuracy :0.719
Recall: 0.625
Precision:0.455
F1_Score:0.526
Batch 117:MLP
Accuracy :0.75
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 118:LogReg
Accuracy :0.719
Recall: 1.0
Precision:0.591
F1_Score:0.743
Batch 118:RF
Accuracy :0.406
Recall: 0.923
Precision:0.4
F1_Score:0.558
Batch 118:KNN
Accuracy :0.5
Recall: 0.308
Precision:0.364
F1_Score:0.333
Batch 118:SVM
Accuracy :0.812
Recall: 1.0
Precision:0.684
F1_Score:0.813
Batch 118:GNB
Accuracy :0.906
Recall: 0.769
Precision:1.0
F1_Score:0.87
Batch 118:XGB
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 118:DT
Accuracy :0.156
Recall: 0.385
Precision:0.208
F1_Score:0.27
Batch 118:MLP
Accuracy :0.406
```

Recall: 1.0  
Precision:0.406  
F1\_Score:0.578  
Batch 119:LogReg  
Accuracy :0.938  
Recall: 1.0  
Precision:0.9  
F1\_Score:0.947  
Batch 119:RF  
Accuracy :0.844  
Recall: 0.944  
Precision:0.81  
F1\_Score:0.872  
Batch 119:KNN  
Accuracy :0.5  
Recall: 0.111  
Precision:1.0  
F1\_Score:0.2  
Batch 119:SVM  
Accuracy :0.875  
Recall: 0.778  
Precision:1.0  
F1\_Score:0.875  
Batch 119:GNB  
Accuracy :0.656  
Recall: 0.389  
Precision:1.0  
F1\_Score:0.56  
Batch 119:XGB  
Accuracy :0.844  
Recall: 1.0  
Precision:0.783  
F1\_Score:0.878  
Batch 119:DT  
Accuracy :0.406  
Recall: 0.389  
Precision:0.467  
F1\_Score:0.424  
Batch 119:MLP  
Accuracy :0.844  
Recall: 1.0  
Precision:0.783  
F1\_Score:0.878  
Batch 120:LogReg  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 120:RF  
Accuracy :0.312  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 120:KNN  
Accuracy :0.906  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 120:SVM  
Accuracy :0.688  
Recall: 1.0  
Precision:0.091

```
F1_Score:0.167
Batch 120:GNB
Accuracy :0.969
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 120:XGB
Accuracy :0.406
Recall: 1.0
Precision:0.05
F1_Score:0.095
Batch 120:DT
Accuracy :0.344
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 120:MLP
Accuracy :0.406
Recall: 1.0
Precision:0.05
F1_Score:0.095
Batch 121:LogReg
Accuracy :0.188
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 121:RF
Accuracy :0.25
Recall: 0.077
Precision:1.0
F1_Score:0.143
Batch 121:KNN
Accuracy :0.438
Recall: 0.308
Precision:1.0
F1_Score:0.471
Batch 121:SVM
Accuracy :0.812
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 121:GNB
Accuracy :0.219
Recall: 0.038
Precision:1.0
F1_Score:0.074
Batch 121:XGB
Accuracy :0.25
Recall: 0.077
Precision:1.0
F1_Score:0.143
Batch 121:DT
Accuracy :0.25
Recall: 0.077
Precision:1.0
F1_Score:0.143
Batch 121:MLP
Accuracy :0.812
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 122:LogReg
```

Accuracy :0.688  
Recall: 0.63  
Precision:1.0  
F1\_Score:0.773  
Batch 122:RF  
Accuracy :0.812  
Recall: 0.778  
Precision:1.0  
F1\_Score:0.875  
Batch 122:KNN  
Accuracy :0.688  
Recall: 0.63  
Precision:1.0  
F1\_Score:0.773  
Batch 122:SVM  
Accuracy :0.844  
Recall: 0.815  
Precision:1.0  
F1\_Score:0.898  
Batch 122:GNB  
Accuracy :0.719  
Recall: 0.667  
Precision:1.0  
F1\_Score:0.8  
Batch 122:XGB  
Accuracy :0.75  
Recall: 0.704  
Precision:1.0  
F1\_Score:0.826  
Batch 122:DT  
Accuracy :0.719  
Recall: 0.778  
Precision:0.875  
F1\_Score:0.824  
Batch 122:MLP  
Accuracy :0.844  
Recall: 0.815  
Precision:1.0  
F1\_Score:0.898  
Batch 123:LogReg  
Accuracy :0.969  
Recall: 1.0  
Precision:0.9  
F1\_Score:0.947  
Batch 123:RF  
Accuracy :0.688  
Recall: 1.0  
Precision:0.474  
F1\_Score:0.643  
Batch 123:KNN  
Accuracy :0.781  
Recall: 0.556  
Precision:0.625  
F1\_Score:0.588  
Batch 123:SVM  
Accuracy :0.844  
Recall: 1.0  
Precision:0.643  
F1\_Score:0.783  
Batch 123:GNB  
Accuracy :0.844  
Recall: 1.0

```
Precision:0.643
F1_Score:0.783
Batch 123:XGB
Accuracy :0.719
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 123:DT
Accuracy :0.75
Recall: 0.889
Precision:0.533
F1_Score:0.667
Batch 123:MLP
Accuracy :0.812
Recall: 1.0
Precision:0.6
F1_Score:0.75
Batch 124:LogReg
Accuracy :0.906
Recall: 1.0
Precision:0.85
F1_Score:0.919
Batch 124:RF
Accuracy :0.75
Recall: 1.0
Precision:0.68
F1_Score:0.81
Batch 124:KNN
Accuracy :0.438
Recall: 0.235
Precision:0.444
F1_Score:0.308
Batch 124:SVM
Accuracy :0.844
Recall: 1.0
Precision:0.773
F1_Score:0.872
Batch 124:GNB
Accuracy :0.906
Recall: 1.0
Precision:0.85
F1_Score:0.919
Batch 124:XGB
Accuracy :0.781
Recall: 1.0
Precision:0.708
F1_Score:0.829
Batch 124:DT
Accuracy :0.875
Recall: 1.0
Precision:0.81
F1_Score:0.895
Batch 124:MLP
Accuracy :0.844
Recall: 1.0
Precision:0.773
F1_Score:0.872
Batch 125:LogReg
Accuracy :0.906
Recall: 0.944
Precision:0.895
F1_Score:0.919
```

```
Batch 125:RF
Accuracy :0.906
Recall: 1.0
Precision:0.857
F1_Score:0.923
Batch 125:KNN
Accuracy :0.844
Recall: 0.833
Precision:0.882
F1_Score:0.857
Batch 125:SVM
Accuracy :0.906
Recall: 0.944
Precision:0.895
F1_Score:0.919
Batch 125:GNB
Accuracy :0.875
Recall: 1.0
Precision:0.818
F1_Score:0.9
Batch 125:XGB
Accuracy :0.844
Recall: 1.0
Precision:0.783
F1_Score:0.878
Batch 125:DT
Accuracy :0.781
Recall: 0.889
Precision:0.762
F1_Score:0.821
Batch 125:MLP
Accuracy :0.906
Recall: 0.944
Precision:0.895
F1_Score:0.919
Batch 126:LogReg
Accuracy :0.875
Recall: 1.0
Precision:0.714
F1_Score:0.833
Batch 126:RF
Accuracy :0.969
Recall: 1.0
Precision:0.909
F1_Score:0.952
Batch 126:KNN
Accuracy :0.844
Recall: 0.6
Precision:0.857
F1_Score:0.706
Batch 126:SVM
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 126:GNB
Accuracy :0.906
Recall: 1.0
Precision:0.769
F1_Score:0.87
Batch 126:XGB
Accuracy :0.688
```

Recall: 1.0  
Precision:0.5  
F1\_Score:0.667  
Batch 126:DT  
Accuracy :0.781  
Recall: 0.9  
Precision:0.6  
F1\_Score:0.72  
Batch 126:MLP  
Accuracy :0.906  
Recall: 1.0  
Precision:0.769  
F1\_Score:0.87  
Batch 127:LogReg  
Accuracy :0.688  
Recall: 1.0  
Precision:0.667  
F1\_Score:0.8  
Batch 127:RF  
Accuracy :0.75  
Recall: 1.0  
Precision:0.714  
F1\_Score:0.833  
Batch 127:KNN  
Accuracy :0.781  
Recall: 0.75  
Precision:0.882  
F1\_Score:0.811  
Batch 127:SVM  
Accuracy :0.75  
Recall: 1.0  
Precision:0.714  
F1\_Score:0.833  
Batch 127:GNB  
Accuracy :0.938  
Recall: 1.0  
Precision:0.909  
F1\_Score:0.952  
Batch 127:XGB  
Accuracy :0.656  
Recall: 1.0  
Precision:0.645  
F1\_Score:0.784  
Batch 127:DT  
Accuracy :0.875  
Recall: 1.0  
Precision:0.833  
F1\_Score:0.909  
Batch 127:MLP  
Accuracy :0.688  
Recall: 1.0  
Precision:0.667  
F1\_Score:0.8  
Batch 128:LogReg  
Accuracy :0.719  
Recall: 1.0  
Precision:0.609  
F1\_Score:0.757  
Batch 128:RF  
Accuracy :0.719  
Recall: 1.0  
Precision:0.609

F1\_Score:0.757  
Batch 128:KNN  
Accuracy :0.469  
Recall: 0.214  
Precision:0.333  
F1\_Score:0.261  
Batch 128:SVM  
Accuracy :0.75  
Recall: 1.0  
Precision:0.636  
F1\_Score:0.778  
Batch 128:GNB  
Accuracy :0.812  
Recall: 1.0  
Precision:0.7  
F1\_Score:0.824  
Batch 128:XGB  
Accuracy :0.625  
Recall: 1.0  
Precision:0.538  
F1\_Score:0.7  
Batch 128:DT  
Accuracy :0.625  
Recall: 0.786  
Precision:0.55  
F1\_Score:0.647  
Batch 128:MLP  
Accuracy :0.656  
Recall: 1.0  
Precision:0.56  
F1\_Score:0.718  
Batch 129:LogReg  
Accuracy :0.75  
Recall: 1.0  
Precision:0.273  
F1\_Score:0.429  
Batch 129:RF  
Accuracy :0.531  
Recall: 1.0  
Precision:0.167  
F1\_Score:0.286  
Batch 129:KNN  
Accuracy :0.719  
Recall: 0.333  
Precision:0.125  
F1\_Score:0.182  
Batch 129:SVM  
Accuracy :0.812  
Recall: 1.0  
Precision:0.333  
F1\_Score:0.5  
Batch 129:GNB  
Accuracy :0.969  
Recall: 0.667  
Precision:1.0  
F1\_Score:0.8  
Batch 129:XGB  
Accuracy :0.375  
Recall: 1.0  
Precision:0.13  
F1\_Score:0.231  
Batch 129:DT

Accuracy :0.344  
Recall: 0.333  
Precision:0.05  
F1\_Score:0.087  
Batch 129:MLP  
Accuracy :0.344  
Recall: 1.0  
Precision:0.125  
F1\_Score:0.222  
Batch 130:LogReg  
Accuracy :0.812  
Recall: 1.0  
Precision:0.143  
F1\_Score:0.25  
Batch 130:RF  
Accuracy :0.125  
Recall: 1.0  
Precision:0.034  
F1\_Score:0.067  
Batch 130:KNN  
Accuracy :0.969  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 130:SVM  
Accuracy :0.969  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 130:GNB  
Accuracy :0.969  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 130:XGB  
Accuracy :0.125  
Recall: 1.0  
Precision:0.034  
F1\_Score:0.067  
Batch 130:DT  
Accuracy :0.281  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 130:MLP  
Accuracy :0.094  
Recall: 1.0  
Precision:0.033  
F1\_Score:0.065  
Batch 131:LogReg  
Accuracy :0.562  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 131:RF  
Accuracy :0.469  
Recall: 0.214  
Precision:0.333  
F1\_Score:0.261  
Batch 131:KNN  
Accuracy :0.625  
Recall: 0.286

```
Precision:0.667
F1_Score:0.4
Batch 131:SVM
Accuracy :0.625
Recall: 1.0
Precision:0.538
F1_Score:0.7
Batch 131:GNB
Accuracy :0.562
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 131:XGB
Accuracy :0.469
Recall: 0.071
Precision:0.2
F1_Score:0.105
Batch 131:DT
Accuracy :0.406
Recall: 0.357
Precision:0.333
F1_Score:0.345
Batch 131:MLP
Accuracy :0.781
Recall: 1.0
Precision:0.667
F1_Score:0.8
Batch 132:LogReg
Accuracy :0.188
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 132:RF
Accuracy :0.312
Recall: 0.154
Precision:1.0
F1_Score:0.267
Batch 132:KNN
Accuracy :0.188
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 132:SVM
Accuracy :0.875
Recall: 0.846
Precision:1.0
F1_Score:0.917
Batch 132:GNB
Accuracy :0.219
Recall: 0.038
Precision:1.0
F1_Score:0.074
Batch 132:XGB
Accuracy :0.281
Recall: 0.115
Precision:1.0
F1_Score:0.207
Batch 132:DT
Accuracy :0.219
Recall: 0.231
Precision:0.545
F1_Score:0.324
```

```
Batch 132:MLP
Accuracy :0.875
Recall: 0.846
Precision:1.0
F1_Score:0.917
Batch 133:LogReg
Accuracy :0.906
Recall: 0.857
Precision:1.0
F1_Score:0.923
Batch 133:RF
Accuracy :0.969
Recall: 1.0
Precision:0.955
F1_Score:0.977
Batch 133:KNN
Accuracy :0.812
Recall: 0.857
Precision:0.857
F1_Score:0.857
Batch 133:SVM
Accuracy :0.969
Recall: 1.0
Precision:0.955
F1_Score:0.977
Batch 133:GNB
Accuracy :0.938
Recall: 0.905
Precision:1.0
F1_Score:0.95
Batch 133:XGB
Accuracy :0.969
Recall: 1.0
Precision:0.955
F1_Score:0.977
Batch 133:DT
Accuracy :0.656
Recall: 0.571
Precision:0.857
F1_Score:0.686
Batch 133:MLP
Accuracy :0.969
Recall: 1.0
Precision:0.955
F1_Score:0.977
Batch 134:LogReg
Accuracy :0.812
Recall: 0.789
Precision:0.882
F1_Score:0.833
Batch 134:RF
Accuracy :0.812
Recall: 1.0
Precision:0.76
F1_Score:0.864
Batch 134:KNN
Accuracy :0.594
Recall: 0.421
Precision:0.8
F1_Score:0.552
Batch 134:SVM
Accuracy :0.719
```

Recall: 0.842  
Precision:0.727  
F1\_Score:0.78  
Batch 134:GNB  
Accuracy :0.938  
Recall: 0.947  
Precision:0.947  
F1\_Score:0.947  
Batch 134:XGB  
Accuracy :0.781  
Recall: 1.0  
Precision:0.731  
F1\_Score:0.844  
Batch 134:DT  
Accuracy :0.438  
Recall: 0.368  
Precision:0.538  
F1\_Score:0.438  
Batch 134:MLP  
Accuracy :0.75  
Recall: 0.895  
Precision:0.739  
F1\_Score:0.81  
Batch 135:LogReg  
Accuracy :0.875  
Recall: 0.692  
Precision:1.0  
F1\_Score:0.818  
Batch 135:RF  
Accuracy :0.719  
Recall: 0.846  
Precision:0.611  
F1\_Score:0.71  
Batch 135:KNN  
Accuracy :0.719  
Recall: 0.308  
Precision:1.0  
F1\_Score:0.471  
Batch 135:SVM  
Accuracy :0.688  
Recall: 0.385  
Precision:0.714  
F1\_Score:0.5  
Batch 135:GNB  
Accuracy :0.969  
Recall: 0.923  
Precision:1.0  
F1\_Score:0.96  
Batch 135:XGB  
Accuracy :0.781  
Recall: 1.0  
Precision:0.65  
F1\_Score:0.788  
Batch 135:DT  
Accuracy :0.812  
Recall: 0.846  
Precision:0.733  
F1\_Score:0.786  
Batch 135:MLP  
Accuracy :0.75  
Recall: 0.538  
Precision:0.778

```
F1_Score:0.636
Batch 136:LogReg
Accuracy :0.844
Recall: 1.0
Precision:0.792
F1_Score:0.884
Batch 136:RF
Accuracy :0.875
Recall: 1.0
Precision:0.826
F1_Score:0.905
Batch 136:KNN
Accuracy :0.688
Recall: 0.789
Precision:0.714
F1_Score:0.75
Batch 136:SVM
Accuracy :0.938
Recall: 1.0
Precision:0.905
F1_Score:0.95
Batch 136:GNB
Accuracy :0.938
Recall: 1.0
Precision:0.905
F1_Score:0.95
Batch 136:XGB
Accuracy :0.625
Recall: 1.0
Precision:0.613
F1_Score:0.76
Batch 136:DT
Accuracy :0.875
Recall: 1.0
Precision:0.826
F1_Score:0.905
Batch 136:MLP
Accuracy :0.812
Recall: 1.0
Precision:0.76
F1_Score:0.864
Batch 137:LogReg
Accuracy :0.906
Recall: 0.95
Precision:0.905
F1_Score:0.927
Batch 137:RF
Accuracy :0.969
Recall: 1.0
Precision:0.952
F1_Score:0.976
Batch 137:KNN
Accuracy :0.625
Recall: 0.5
Precision:0.833
F1_Score:0.625
Batch 137:SVM
Accuracy :0.875
Recall: 0.85
Precision:0.944
F1_Score:0.895
Batch 137:GNB
```

Accuracy :0.938  
Recall: 1.0  
Precision:0.909  
F1\_Score:0.952  
Batch 137:XGB  
Accuracy :0.844  
Recall: 1.0  
Precision:0.8  
F1\_Score:0.889  
Batch 137:DT  
Accuracy :0.875  
Recall: 0.9  
Precision:0.9  
F1\_Score:0.9  
Batch 137:MLP  
Accuracy :0.906  
Recall: 0.95  
Precision:0.905  
F1\_Score:0.927  
Batch 138:LogReg  
Accuracy :0.531  
Recall: 1.0  
Precision:0.375  
F1\_Score:0.545  
Batch 138:RF  
Accuracy :0.688  
Recall: 1.0  
Precision:0.474  
F1\_Score:0.643  
Batch 138:KNN  
Accuracy :0.625  
Recall: 0.111  
Precision:0.2  
F1\_Score:0.143  
Batch 138:SVM  
Accuracy :0.719  
Recall: 1.0  
Precision:0.5  
F1\_Score:0.667  
Batch 138:GNB  
Accuracy :0.781  
Recall: 1.0  
Precision:0.562  
F1\_Score:0.72  
Batch 138:XGB  
Accuracy :0.5  
Recall: 1.0  
Precision:0.36  
F1\_Score:0.529  
Batch 138:DT  
Accuracy :0.781  
Recall: 1.0  
Precision:0.562  
F1\_Score:0.72  
Batch 138:MLP  
Accuracy :0.5  
Recall: 1.0  
Precision:0.36  
F1\_Score:0.529  
Batch 139:LogReg  
Accuracy :0.625  
Recall: 1.0

```
Precision:0.625
F1_Score:0.769
Batch 139:RF
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 139:KNN
Accuracy :0.469
Recall: 0.2
Precision:0.8
F1_Score:0.32
Batch 139:SVM
Accuracy :0.688
Recall: 1.0
Precision:0.667
F1_Score:0.8
Batch 139:GNB
Accuracy :0.938
Recall: 1.0
Precision:0.909
F1_Score:0.952
Batch 139:XGB
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 139:DT
Accuracy :0.875
Recall: 0.95
Precision:0.864
F1_Score:0.905
Batch 139:MLP
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 140:LogReg
Accuracy :0.625
Recall: 1.0
Precision:0.478
F1_Score:0.647
Batch 140:RF
Accuracy :0.625
Recall: 0.909
Precision:0.476
F1_Score:0.625
Batch 140:KNN
Accuracy :0.531
Recall: 0.182
Precision:0.25
F1_Score:0.211
Batch 140:SVM
Accuracy :0.969
Recall: 0.909
Precision:1.0
F1_Score:0.952
Batch 140:GNB
Accuracy :0.938
Recall: 0.818
Precision:1.0
F1_Score:0.9
```

```
Batch 140:XGB
Accuracy :0.594
Recall: 1.0
Precision:0.458
F1_Score:0.629
Batch 140:DT
Accuracy :0.75
Recall: 0.818
Precision:0.6
F1_Score:0.692
Batch 140:MLP
Accuracy :0.594
Recall: 1.0
Precision:0.458
F1_Score:0.629
Batch 141:LogReg
Accuracy :0.25
Recall: 1.0
Precision:0.118
F1_Score:0.211
Batch 141:RF
Accuracy :0.15
Recall: 1.0
Precision:0.105
F1_Score:0.19
Batch 141:KNN
Accuracy :0.55
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 141:SVM
Accuracy :0.9
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 141:GNB
Accuracy :0.9
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 141:XGB
Accuracy :0.1
Recall: 1.0
Precision:0.1
F1_Score:0.182
Batch 141:DT
Accuracy :0.65
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 141:MLP
Accuracy :0.1
Recall: 1.0
Precision:0.1
F1_Score:0.182
```

In [114...]

```
df2=df2[0:12]
plt_classification_results(df,df2)
```

C Gradual Drift Top25/ Top30%

In [115...]

```
def inject_gradual_drift(stream,rank_list,batch_size=32):
    #labels=pd.DataFrame(stream['class'].reset_index(drop=True)) # retain class label
    n=int(0.30*len(rank_list)) # Number of features ( top 25 %)
    top25p_features=list(rank_list[0:int(n)].index) # List of top n features
    bottom25p_features=list(rank_list[-int(n):].index) # List of bottom n features
    all_features=list(rank_list.index) # features sorted ( descending order) by mutual information
    unchanged_features_top25=set(all_features)-set(top25p_features)
    unchanged_features_bottom25=set(all_features)-set(bottom25p_features)
    unchanged_data_top25=stream[unchanged_features_top25].reset_index(drop=True)
    unchanged_data_bottom25=stream[unchanged_features_bottom25].reset_index(drop=True)
    data_for_drift_top25=stream[top25p_features].reset_index(drop=True)
    data_for_drift_bottom25=stream[bottom25p_features].reset_index(drop=True)
    # Finding 10 split points after every 10% of instances in the stream . Based on batch size
    # find exact number of batches to be included in each split.

    start=0
    shift=int(0.1*len(stream)/batch_size)*batch_size # start and end define each chunk
    end=shift

    df=data_for_drift_top25.copy()# Create a temporary dataframe

    for pas in range (1,11):
        if pas==1:
            df1=df[start:end]
            df1=df1.where(df1<=1,1)
            start+=shift
            end+=shift
        if pas==2:
            #df2=df[start:end] +df[start:end]*0.1
            df2=df[start:end] + 0.1
            df2=df2.where(df2<=1,1)
            start=end
            end+=shift
        if pas==3:
            #df3=df[start:end] +df[start:end]*0.2
            df3=df[start:end] + 0.2
            df3=df3.where(df3<=1,1)
            start=end
            end+=shift
        if pas==4:
            #df4=df[start:end] +df[start:end]*0.3
            df4=df[start:end] + 0.3
            df4=df4.where(df4<=1,1)
            start=end
            end+=shift
        if pas==5:
            #df5=df[start:end] +df[start:end]*0.4
            df5=df[start:end] + 0.4
            df5=df5.where(df5<=1,1)
            start=end
            end+=shift
        if pas==6:
            #df6=df[start:end] +df[start:end]*0.5
            df6=df[start:end] + 0.5
            df6=df6.where(df6<=1,1)
            start=end
            end+=shift
```



```
In [116]: df_drifted_top25_all,df_drifted_bottom25_all=inject_gradual_drift(stream,rank_list,batch_size)
```

```
In [117...]: batches_d=make_batches(df_drifted_top25_all)
```

```
In [118...]: all_excede_list_d,exceed_count_L2_instThresh_d ,exceed_count_L2_countThresh_d,avg_mse
```

\*\*\*\*\*

Batch Number : 0

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 1

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 2

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 3

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 4

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

```
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 5

Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 6

Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 7

Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 8

Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 9

Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
```

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 10

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 11

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 12

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 13

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 14

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 15

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 16

Data Points Exceeding Layer 1 Encoder Instance Threshold : [3, 4]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 17

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 18

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 19

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 20

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 21

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 22

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 23

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 24

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 25

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 26

Data Points Exceeding Layer 1 Encoder Instance Threshold : [19, 20]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 27

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 28

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 29

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 30

Data Points Exceeding Layer 1 Encoder Instance Threshold : [30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 31

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 32

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 33

Data Points Exceeding Layer 1 Encoder Instance Threshold : [30]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 34

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 35

Data Points Exceeding Layer 1 Encoder Instance Threshold : [12, 13, 14, 15, 16, 17, 1

8]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 36

Data Points Exceeding Layer 1 Encoder Instance Threshold : [2, 3, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 37

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 2]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 2

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Batch Number : 38

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 13, 14, 15, 16]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 39

Data Points Exceeding Layer 1 Encoder Instance Threshold : [30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 40

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0]

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Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
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Batch Number : 41
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Data Points Exceeding Layer 1 Encoder Instance Threshold : [14, 15]
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Data Points Exceeding Layer 2 Encoder Instance Threshold: []
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```
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
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*****
```

```
Batch Number : 42
```

```
Data Points Exceeding Layer 1 Encoder Instance Threshold : [25, 26, 27, 28, 29, 30, 31]
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Data Points Exceeding Layer 2 Encoder Instance Threshold: []
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```
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
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*****
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```
Batch Number : 43
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```
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
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Data Points Exceeding Layer 2 Encoder Instance Threshold: []
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```
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
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*****
```

```
Batch Number : 44
```

```
Data Points Exceeding Layer 1 Encoder Instance Threshold : [10, 11, 12, 13, 14, 15]
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Data Points Exceeding Layer 2 Encoder Instance Threshold: []
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```
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
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*****
```

```
Batch Number : 45
```

```
Data Points Exceeding Layer 1 Encoder Instance Threshold : [25, 26, 27, 28, 29, 30, 31]
```

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 46

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 18]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 47

Data Points Exceeding Layer 1 Encoder Instance Threshold : [8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [12, 13, 14, 15, 16]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 5

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Batch Number : 48

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 49

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 24, 25]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 50

Data Points Exceeding Layer 1 Encoder Instance Threshold : [9, 10, 11, 12, 13, 14]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 51

Data Points Exceeding Layer 1 Encoder Instance Threshold : [6, 8, 9, 10, 11, 12, 13, 28, 29]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [6, 7, 8, 9, 10, 11, 12, 13]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 8

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Batch Number : 52

Data Points Exceeding Layer 1 Encoder Instance Threshold : [3, 4, 5, 6, 7, 8, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [21, 22, 23, 24, 25, 26, 27, 28, 29, 30]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 10

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Batch Number : 53

Data Points Exceeding Layer 1 Encoder Instance Threshold : [12, 13, 20, 21, 22, 23, 24, 25]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 54

Data Points Exceeding Layer 1 Encoder Instance Threshold : [8, 9, 10, 11, 28, 29, 30]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 55

Data Points Exceeding Layer 1 Encoder Instance Threshold : [4, 6, 7]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 56

Data Points Exceeding Layer 1 Encoder Instance Threshold : [9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 1

\*\*\*\*\*

Batch Number : 57

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 15, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 9

\*\*\*\*\*

Batch Number : 58

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 16, 17, 18, 20]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 8

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Batch Number : 59

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 2

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Batch Number : 60

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 13

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Batch Number : 61

Data Points Exceeding Layer 1 Encoder Instance Threshold : [6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [15, 16, 17, 21, 22, 23, 24, 25, 26]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 9

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Batch Number : 62

Data Points Exceeding Layer 1 Encoder Instance Threshold : [11, 12, 13, 14, 15]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 63

Data Points Exceeding Layer 1 Encoder Instance Threshold : [27, 28, 29, 30]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 64

Data Points Exceeding Layer 1 Encoder Instance Threshold : [10]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 65

Data Points Exceeding Layer 1 Encoder Instance Threshold : [12, 13, 14]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 66

Data Points Exceeding Layer 1 Encoder Instance Threshold : [27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 67

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 12, 18, 19, 20, 21]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [19, 21]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 2

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Batch Number : 68

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 12, 13, 14, 15, 16, 17, 18, 19, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 12

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Batch Number : 69

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 14, 15, 16, 17, 19, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 5

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Batch Number : 70

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 22

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Batch Number : 71

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 2, 3, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 10

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Batch Number : 72

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 16, 18, 19]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 17

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Batch Number : 73

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [11, 12, 13, 14, 15, 16, 17, 21, 22, 23, 24, 25, 26, 27, 28]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 15

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Batch Number : 74

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 2, 3, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 8

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Batch Number : 75

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 16, 18, 19]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 16

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Batch Number : 76

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 22

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Batch Number : 77

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 2, 3, 12, 13, 14, 15, 16, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 14

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Batch Number : 78

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 27

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Batch Number : 79

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 80

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 13, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 12

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Batch Number : 81

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 9, 10, 11, 12, 13, 16, 17, 18, 19]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 16

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Batch Number : 82

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [1, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25, 26, 27, 28, 29]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 24

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Batch Number : 83

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 2, 3, 16, 17, 18, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 14

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Batch Number : 84

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 27

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Batch Number : 85

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 86

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 27

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Batch Number : 87

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 27

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Batch Number : 88

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 89

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 30

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Batch Number : 90

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 29

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Batch Number : 91

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 31

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Batch Number : 92

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 28

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Batch Number : 93

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 28

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Batch Number : 94

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 95

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 28

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Batch Number : 96

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 28

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Batch Number : 97

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 31

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Batch Number : 98

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 99

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 100

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 101

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 102

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 103

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 104

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 105

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 106

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 107

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 108

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 109

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 110

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 111

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 112

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 113

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30]

, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 114

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 115

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 116

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 117

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 118

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 119

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 120

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 121

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,

30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 122

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 123

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 124

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 125

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 126

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 127

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 128

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 129

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 130

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 131

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 132

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 133

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 134

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 135

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 136

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 137

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 138

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 139

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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Batch Number : 140

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

\*\*\*\*\*

Batch Number : 141

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

Drift Detection at Batch Level

Hello

Threshold exceeds at batch : 57  
[57]  
Warning Level at Batch 57  
Threshold exceeds at batch : 58  
[57, 58]  
Warning Level at Batch 58  
Threshold exceeds at batch : 60  
[60]  
Warning Level at Batch 60  
Threshold exceeds at batch : 61  
[60, 61]  
Warning Level at Batch 61  
Threshold exceeds at batch : 68  
[68]  
Warning Level at Batch 68  
Threshold exceeds at batch : 69  
[68, 69]  
Warning Level at Batch 69  
Threshold exceeds at batch : 70  
[68, 69, 70]  
Drift Confirmed at Batch No : 68  
Threshold exceeds at batch : 71  
[68, 69, 70, 71]  
Drift Confirmed at Batch No : 69  
Threshold exceeds at batch : 72  
[68, 69, 70, 71, 72]  
Drift Confirmed at Batch No : 70  
Threshold exceeds at batch : 73  
[68, 69, 70, 71, 72, 73]  
Drift Confirmed at Batch No : 71  
Threshold exceeds at batch : 74  
[68, 69, 70, 71, 72, 73, 74]  
Drift Confirmed at Batch No : 72  
Threshold exceeds at batch : 75  
[68, 69, 70, 71, 72, 73, 74, 75]  
Drift Confirmed at Batch No : 73  
Threshold exceeds at batch : 76  
[68, 69, 70, 71, 72, 73, 74, 75, 76]  
Drift Confirmed at Batch No : 74  
Threshold exceeds at batch : 77  
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77]  
Drift Confirmed at Batch No : 75  
Threshold exceeds at batch : 78

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[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78]
Drift Confirmed at Batch No : 76
Threshold exceeds at batch : 79
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79]
Drift Confirmed at Batch No : 77
Threshold exceeds at batch : 80
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80]
Drift Confirmed at Batch No : 78
Threshold exceeds at batch : 81
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81]
Drift Confirmed at Batch No : 79
Threshold exceeds at batch : 82
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82]
Drift Confirmed at Batch No : 80
Threshold exceeds at batch : 83
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83]
Drift Confirmed at Batch No : 81
Threshold exceeds at batch : 84
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84]
Drift Confirmed at Batch No : 82
Threshold exceeds at batch : 85
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85]
Drift Confirmed at Batch No : 83
Threshold exceeds at batch : 86
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86]
Drift Confirmed at Batch No : 84
Threshold exceeds at batch : 87
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87]
Drift Confirmed at Batch No : 85
Threshold exceeds at batch : 88
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88]
Drift Confirmed at Batch No : 86
Threshold exceeds at batch : 89
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89]
Drift Confirmed at Batch No : 87
Threshold exceeds at batch : 90
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90]
Drift Confirmed at Batch No : 88
Threshold exceeds at batch : 91
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91]
Drift Confirmed at Batch No : 89
Threshold exceeds at batch : 92
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92]
Drift Confirmed at Batch No : 90
Threshold exceeds at batch : 93
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93]
Drift Confirmed at Batch No : 91
Threshold exceeds at batch : 94
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94]
Drift Confirmed at Batch No : 92
Threshold exceeds at batch : 95
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95]
Drift Confirmed at Batch No : 93
Threshold exceeds at batch : 96
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88,
```

89, 90, 91, 92, 93, 94, 95, 96]  
Drift Confirmed at Batch No : 94  
Threshold exceeds at batch : 97  
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88,  
89, 90, 91, 92, 93, 94, 95, 96, 97]  
Drift Confirmed at Batch No : 95  
Threshold exceeds at batch : 98  
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88,  
89, 90, 91, 92, 93, 94, 95, 96, 97, 98]  
Drift Confirmed at Batch No : 96  
Threshold exceeds at batch : 99  
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88,  
89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99]  
Drift Confirmed at Batch No : 97  
Threshold exceeds at batch : 100  
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88,  
89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100]  
Drift Confirmed at Batch No : 98  
Threshold exceeds at batch : 101  
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88,  
89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101]  
Drift Confirmed at Batch No : 99  
Threshold exceeds at batch : 102  
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88,  
89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102]  
Drift Confirmed at Batch No : 100  
Threshold exceeds at batch : 103  
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88,  
89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103]  
Drift Confirmed at Batch No : 101  
Threshold exceeds at batch : 104  
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88,  
89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104]  
Drift Confirmed at Batch No : 102  
Threshold exceeds at batch : 105  
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88,  
89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105]  
Drift Confirmed at Batch No : 103  
Threshold exceeds at batch : 106  
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88,  
89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107]  
Drift Confirmed at Batch No : 104  
Threshold exceeds at batch : 107  
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88,  
89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108]  
Drift Confirmed at Batch No : 106  
Threshold exceeds at batch : 109  
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88,  
89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109]  
Drift Confirmed at Batch No : 107  
Threshold exceeds at batch : 110  
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88,  
89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110]  
Drift Confirmed at Batch No : 108  
Threshold exceeds at batch : 111

[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111]

Drift Confirmed at Batch No : 109

Threshold exceeds at batch : 112

[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112]

Drift Confirmed at Batch No : 110

Threshold exceeds at batch : 113

[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113]

Drift Confirmed at Batch No : 111

Threshold exceeds at batch : 114

[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114]

Drift Confirmed at Batch No : 112

Threshold exceeds at batch : 115

[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115]

Drift Confirmed at Batch No : 113

Threshold exceeds at batch : 116

[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116]

Drift Confirmed at Batch No : 114

Threshold exceeds at batch : 117

[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117]

Drift Confirmed at Batch No : 115

Threshold exceeds at batch : 118

[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118]

Drift Confirmed at Batch No : 116

Threshold exceeds at batch : 119

[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119]

Drift Confirmed at Batch No : 117

Threshold exceeds at batch : 120

[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120]

Drift Confirmed at Batch No : 118

Threshold exceeds at batch : 121

[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121]

Drift Confirmed at Batch No : 119

Threshold exceeds at batch : 122

[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122]

Drift Confirmed at Batch No : 120

Threshold exceeds at batch : 123

[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122]

08, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123]  
Drift Confirmed at Batch No : 121  
Threshold exceeds at batch : 124  
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88,  
89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 1  
08, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124]  
Drift Confirmed at Batch No : 122  
Threshold exceeds at batch : 125  
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88,  
89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 1  
08, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 1  
25]  
Drift Confirmed at Batch No : 123  
Threshold exceeds at batch : 126  
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88,  
89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 1  
08, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 1  
25, 126]  
Drift Confirmed at Batch No : 124  
Threshold exceeds at batch : 127  
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88,  
89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 1  
08, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 1  
25, 126, 127]  
Drift Confirmed at Batch No : 125  
Threshold exceeds at batch : 128  
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88,  
89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 1  
08, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 1  
25, 126, 127, 128]  
Drift Confirmed at Batch No : 126  
Threshold exceeds at batch : 129  
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88,  
89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 1  
08, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 1  
25, 126, 127, 128, 129]  
Drift Confirmed at Batch No : 127  
Threshold exceeds at batch : 130  
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88,  
89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 1  
08, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 1  
25, 126, 127, 128, 129, 130]  
Drift Confirmed at Batch No : 128  
Threshold exceeds at batch : 131  
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88,  
89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 1  
08, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 1  
25, 126, 127, 128, 129, 130, 131]  
Drift Confirmed at Batch No : 129  
Threshold exceeds at batch : 132  
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88,  
89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 1  
08, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 1  
25, 126, 127, 128, 129, 130, 131, 132]  
Drift Confirmed at Batch No : 130  
Threshold exceeds at batch : 133  
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88,  
89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 1  
08, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 1  
25, 126, 127, 128, 129, 130, 131, 132, 133]  
Drift Confirmed at Batch No : 131  
Threshold exceeds at batch : 134

```
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134]
```

Drift Confirmed at Batch No : 132

Threshold exceeds at batch : 135

```
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135]
```

Drift Confirmed at Batch No : 133

Threshold exceeds at batch : 136

```
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136]
```

Drift Confirmed at Batch No : 134

Threshold exceeds at batch : 137

```
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137]
```

Drift Confirmed at Batch No : 135

Threshold exceeds at batch : 138

```
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138]
```

Drift Confirmed at Batch No : 136

Threshold exceeds at batch : 139

```
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139]
```

Drift Confirmed at Batch No : 137

Threshold exceeds at batch : 140

```
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140]
```

Drift Confirmed at Batch No : 138

Threshold exceeds at batch : 141

```
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141]
```

Drift Confirmed at Batch No : 139

Number of Drifted Batches 72

```
[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139]
```

In [119...]

```
perform_t_test()
```

Layer 1 Reconstruction Error Values for Normal and Drifted Data

Test statistic is 13.366455

p-value for two tailed test is 0.000000

Conclusion :

Since p-value(=0.000000) < alpha(=0.05) We reject the null hypothesis H0 and Accept H1 . So we conclude that

There is a drift in the dataset at 0.05 level of significance.

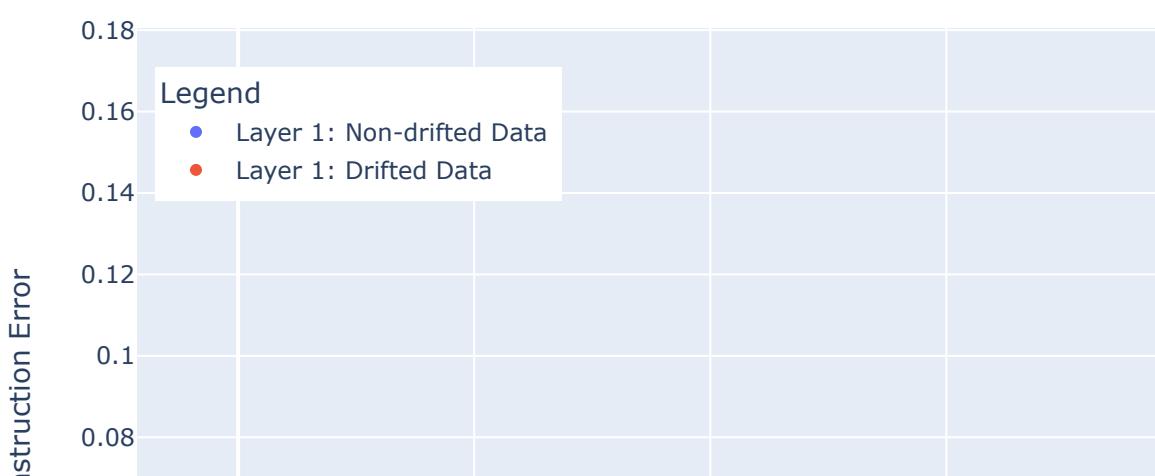
Layer 1 Exceed Count Values for Normal and Drifted Data  
Test statistic is -15.193508  
p-value for two tailed test is 0.000000  
Conclusion :  
Since p-value(=0.000000) < alpha(=0.05) We reject the null hypothesis H0 and Accept H1 . So we conclude that  
There is a drift in the dataset at 0.05 level of significance.

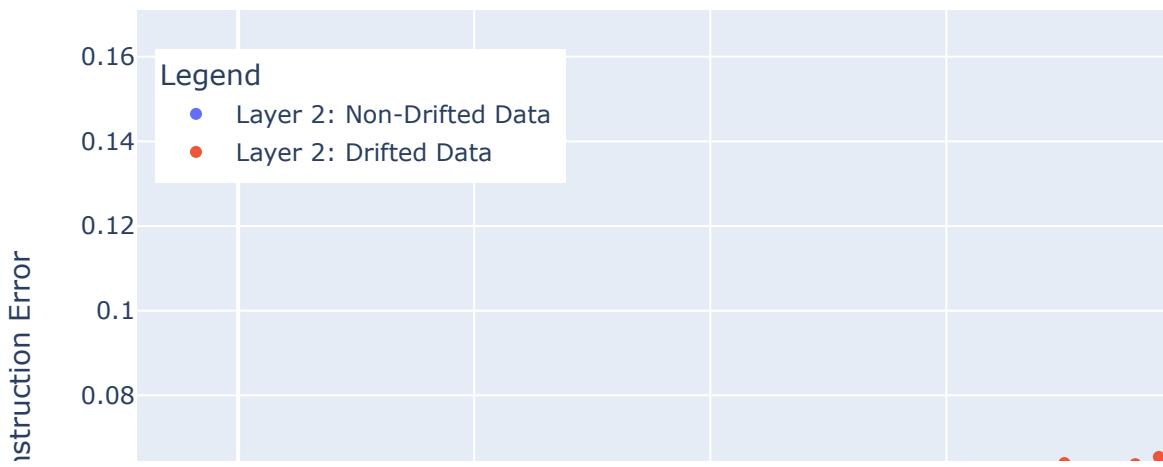
Layer 2 Reconstruction Error Values for Normal and Drifted Data  
Test statistic is 13.254808  
p-value for two tailed test is 0.000000  
Conclusion :  
Since p-value(=0.000000) < alpha(=0.05) We reject the null hypothesis H0 and Accept H1 . So we conclude that  
There is a drift in the dataset at 0.05 level of significance.

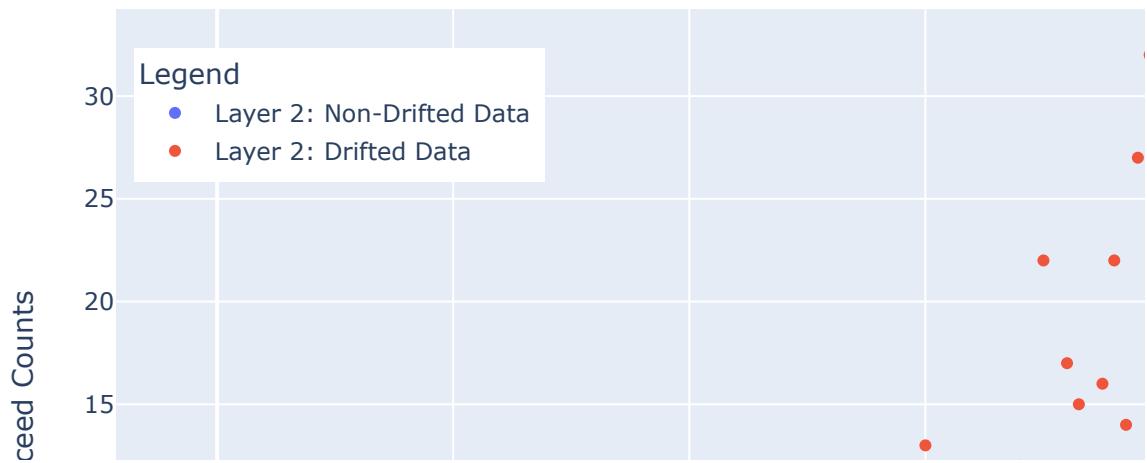
Layer 2 Exceed Count Values for Normal and Drifted Data  
Test statistic is 12.291580  
p-value for two tailed test is 0.000000  
Conclusion :  
Since p-value(=0.000000) < alpha(=0.05) We reject the null hypothesis H0 and Accept H1 . So we conclude that  
There is a drift in the dataset at 0.05 level of significance.

In [120]:

```
df_plotting=visual_analysis()
```







In [121...]

```
df, df2=classify_batches(models, df_drifted_top25_all , stream, 'class', batch_size=32)
```

```
Batch 0:LogReg
Accuracy :0.781
Recall: 0.769
Precision:0.714
F1_Score:0.741
Batch 0:RF
Accuracy :0.844
Recall: 0.846
Precision:0.786
F1_Score:0.815
Batch 0:KNN
Accuracy :0.688
Recall: 0.308
Precision:0.8
F1_Score:0.444
Batch 0:SVM
```

Accuracy :0.812  
Recall: 0.692  
Precision:0.818  
F1\_Score:0.75  
Batch 0:GNB  
Accuracy :0.938  
Recall: 0.846  
Precision:1.0  
F1\_Score:0.917  
Batch 0:XGB  
Accuracy :0.656  
Recall: 0.923  
Precision:0.545  
F1\_Score:0.686  
Batch 0:DT  
Accuracy :0.656  
Recall: 0.615  
Precision:0.571  
F1\_Score:0.593  
Batch 0:MLP  
Accuracy :0.781  
Recall: 0.769  
Precision:0.714  
F1\_Score:0.741  
Batch 1:LogReg  
Accuracy :0.969  
Recall: 1.0  
Precision:0.964  
F1\_Score:0.982  
Batch 1:RF  
Accuracy :0.969  
Recall: 1.0  
Precision:0.964  
F1\_Score:0.982  
Batch 1:KNN  
Accuracy :0.688  
Recall: 0.63  
Precision:1.0  
F1\_Score:0.773  
Batch 1:SVM  
Accuracy :0.969  
Recall: 1.0  
Precision:0.964  
F1\_Score:0.982  
Batch 1:GNB  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 1:XGB  
Accuracy :0.938  
Recall: 1.0  
Precision:0.931  
F1\_Score:0.964  
Batch 1:DT  
Accuracy :0.906  
Recall: 0.963  
Precision:0.929  
F1\_Score:0.945  
Batch 1:MLP  
Accuracy :0.969  
Recall: 1.0

Precision:0.964  
F1\_Score:0.982  
Batch 2:LogReg  
Accuracy :0.812  
Recall: 1.0  
Precision:0.714  
F1\_Score:0.833  
Batch 2:RF  
Accuracy :0.75  
Recall: 1.0  
Precision:0.652  
F1\_Score:0.789  
Batch 2:KNN  
Accuracy :0.625  
Recall: 0.4  
Precision:0.667  
F1\_Score:0.5  
Batch 2:SVM  
Accuracy :0.781  
Recall: 0.933  
Precision:0.7  
F1\_Score:0.8  
Batch 2:GNB  
Accuracy :0.812  
Recall: 1.0  
Precision:0.714  
F1\_Score:0.833  
Batch 2:XGB  
Accuracy :0.688  
Recall: 1.0  
Precision:0.6  
F1\_Score:0.75  
Batch 2:DT  
Accuracy :0.625  
Recall: 0.867  
Precision:0.565  
F1\_Score:0.684  
Batch 2:MLP  
Accuracy :0.781  
Recall: 1.0  
Precision:0.682  
F1\_Score:0.811  
Batch 3:LogReg  
Accuracy :0.906  
Recall: 1.0  
Precision:0.812  
F1\_Score:0.897  
Batch 3:RF  
Accuracy :0.75  
Recall: 1.0  
Precision:0.619  
F1\_Score:0.765  
Batch 3:KNN  
Accuracy :0.75  
Recall: 0.462  
Precision:0.857  
F1\_Score:0.6  
Batch 3:SVM  
Accuracy :0.844  
Recall: 1.0  
Precision:0.722  
F1\_Score:0.839

```
Batch 3:GNB
Accuracy :0.844
Recall: 1.0
Precision:0.722
F1_Score:0.839
Batch 3:XGB
Accuracy :0.719
Recall: 1.0
Precision:0.591
F1_Score:0.743
Batch 3:DT
Accuracy :0.75
Recall: 0.769
Precision:0.667
F1_Score:0.714
Batch 3:MLP
Accuracy :0.812
Recall: 1.0
Precision:0.684
F1_Score:0.813
Batch 4:LogReg
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 4:RF
Accuracy :0.938
Recall: 1.0
Precision:0.931
F1_Score:0.964
Batch 4:KNN
Accuracy :0.625
Recall: 0.593
Precision:0.941
F1_Score:0.727
Batch 4:SVM
Accuracy :0.969
Recall: 1.0
Precision:0.964
F1_Score:0.982
Batch 4:GNB
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 4:XGB
Accuracy :0.969
Recall: 1.0
Precision:0.964
F1_Score:0.982
Batch 4:DT
Accuracy :0.938
Recall: 0.963
Precision:0.963
F1_Score:0.963
Batch 4:MLP
Accuracy :0.969
Recall: 1.0
Precision:0.964
F1_Score:0.982
Batch 5:LogReg
Accuracy :0.875
```

```
Recall: 0.778
Precision:0.778
F1_Score:0.778
Batch 5:RF
Accuracy :0.656
Recall: 0.889
Precision:0.444
F1_Score:0.593
Batch 5:KNN
Accuracy :0.656
Recall: 0.778
Precision:0.438
F1_Score:0.56
Batch 5:SVM
Accuracy :0.625
Recall: 0.667
Precision:0.4
F1_Score:0.5
Batch 5:GNB
Accuracy :0.875
Recall: 1.0
Precision:0.692
F1_Score:0.818
Batch 5:XGB
Accuracy :0.625
Recall: 1.0
Precision:0.429
F1_Score:0.6
Batch 5:DT
Accuracy :0.656
Recall: 0.556
Precision:0.417
F1_Score:0.476
Batch 5:MLP
Accuracy :0.625
Recall: 0.889
Precision:0.421
F1_Score:0.571
Batch 6:LogReg
Accuracy :0.812
Recall: 0.647
Precision:1.0
F1_Score:0.786
Batch 6:RF
Accuracy :0.688
Recall: 0.765
Precision:0.684
F1_Score:0.722
Batch 6:KNN
Accuracy :0.562
Recall: 0.647
Precision:0.579
F1_Score:0.611
Batch 6:SVM
Accuracy :0.531
Recall: 0.647
Precision:0.55
F1_Score:0.595
Batch 6:GNB
Accuracy :0.844
Recall: 0.706
Precision:1.0
```

F1\_Score:0.828  
Batch 6:XGB  
Accuracy :0.781  
Recall: 1.0  
Precision:0.708  
F1\_Score:0.829  
Batch 6:DT  
Accuracy :0.688  
Recall: 0.824  
Precision:0.667  
F1\_Score:0.737  
Batch 6:MLP  
Accuracy :0.562  
Recall: 0.706  
Precision:0.571  
F1\_Score:0.632  
Batch 7:LogReg  
Accuracy :0.969  
Recall: 1.0  
Precision:0.968  
F1\_Score:0.984  
Batch 7:RF  
Accuracy :0.969  
Recall: 1.0  
Precision:0.968  
F1\_Score:0.984  
Batch 7:KNN  
Accuracy :0.875  
Recall: 0.867  
Precision:1.0  
F1\_Score:0.929  
Batch 7:SVM  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 7:GNB  
Accuracy :0.969  
Recall: 1.0  
Precision:0.968  
F1\_Score:0.984  
Batch 7:XGB  
Accuracy :0.969  
Recall: 1.0  
Precision:0.968  
F1\_Score:0.984  
Batch 7:DT  
Accuracy :0.906  
Recall: 0.933  
Precision:0.966  
F1\_Score:0.949  
Batch 7:MLP  
Accuracy :0.969  
Recall: 1.0  
Precision:0.968  
F1\_Score:0.984  
Batch 8:LogReg  
Accuracy :0.969  
Recall: 1.0  
Precision:0.962  
F1\_Score:0.98  
Batch 8:RF

Accuracy :0.969  
Recall: 1.0  
Precision:0.962  
F1\_Score:0.98  
Batch 8:KNN  
Accuracy :0.469  
Recall: 0.36  
Precision:0.9  
F1\_Score:0.514  
Batch 8:SVM  
Accuracy :0.969  
Recall: 1.0  
Precision:0.962  
F1\_Score:0.98  
Batch 8:GNB  
Accuracy :0.969  
Recall: 1.0  
Precision:0.962  
F1\_Score:0.98  
Batch 8:XGB  
Accuracy :0.906  
Recall: 1.0  
Precision:0.893  
F1\_Score:0.943  
Batch 8:DT  
Accuracy :0.812  
Recall: 0.8  
Precision:0.952  
F1\_Score:0.87  
Batch 8:MLP  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 9:LogReg  
Accuracy :0.5  
Recall: 1.0  
Precision:0.273  
F1\_Score:0.429  
Batch 9:RF  
Accuracy :0.5  
Recall: 1.0  
Precision:0.273  
F1\_Score:0.429  
Batch 9:KNN  
Accuracy :0.562  
Recall: 0.667  
Precision:0.25  
F1\_Score:0.364  
Batch 9:SVM  
Accuracy :0.594  
Recall: 1.0  
Precision:0.316  
F1\_Score:0.48  
Batch 9:GNB  
Accuracy :0.562  
Recall: 1.0  
Precision:0.3  
F1\_Score:0.462  
Batch 9:XGB  
Accuracy :0.531  
Recall: 1.0

```
Precision:0.286
F1_Score:0.444
Batch 9:DT
Accuracy :0.562
Recall: 0.833
Precision:0.278
F1_Score:0.417
Batch 9:MLP
Accuracy :0.5
Recall: 1.0
Precision:0.273
F1_Score:0.429
Batch 10:LogReg
Accuracy :0.906
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 10:RF
Accuracy :0.906
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 10:KNN
Accuracy :0.812
Recall: 0.769
Precision:0.769
F1_Score:0.769
Batch 10:SVM
Accuracy :0.969
Recall: 1.0
Precision:0.929
F1_Score:0.963
Batch 10:GNB
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 10:XGB
Accuracy :0.812
Recall: 1.0
Precision:0.684
F1_Score:0.813
Batch 10:DT
Accuracy :0.688
Recall: 0.846
Precision:0.579
F1_Score:0.688
Batch 10:MLP
Accuracy :0.969
Recall: 1.0
Precision:0.929
F1_Score:0.963
Batch 11:LogReg
Accuracy :0.969
Recall: 1.0
Precision:0.952
F1_Score:0.976
Batch 11:RF
Accuracy :0.969
Recall: 1.0
Precision:0.952
F1_Score:0.976
```

```
Batch 11:KNN
Accuracy :0.719
Recall: 0.55
Precision:1.0
F1_Score:0.71
Batch 11:SVM
Accuracy :0.906
Recall: 0.85
Precision:1.0
F1_Score:0.919
Batch 11:GNB
Accuracy :0.938
Recall: 0.9
Precision:1.0
F1_Score:0.947
Batch 11:XGB
Accuracy :0.906
Recall: 1.0
Precision:0.87
F1_Score:0.93
Batch 11:DT
Accuracy :0.844
Recall: 0.85
Precision:0.895
F1_Score:0.872
Batch 11:MLP
Accuracy :0.969
Recall: 1.0
Precision:0.952
F1_Score:0.976
Batch 12:LogReg
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 12:RF
Accuracy :0.906
Recall: 0.923
Precision:0.857
F1_Score:0.889
Batch 12:KNN
Accuracy :0.844
Recall: 0.692
Precision:0.9
F1_Score:0.783
Batch 12:SVM
Accuracy :0.938
Recall: 0.923
Precision:0.923
F1_Score:0.923
Batch 12:GNB
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 12:XGB
Accuracy :0.906
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 12:DT
Accuracy :0.812
```

```
Recall: 0.923
Precision:0.706
F1_Score:0.8
Batch 12:MLP
Accuracy :0.969
Recall: 1.0
Precision:0.929
F1_Score:0.963
Batch 13:LogReg
Accuracy :0.938
Recall: 1.0
Precision:0.923
F1_Score:0.96
Batch 13:RF
Accuracy :0.844
Recall: 1.0
Precision:0.828
F1_Score:0.906
Batch 13:KNN
Accuracy :0.469
Recall: 0.458
Precision:0.733
F1_Score:0.564
Batch 13:SVM
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 13:GNB
Accuracy :0.969
Recall: 0.958
Precision:1.0
F1_Score:0.979
Batch 13:XGB
Accuracy :0.906
Recall: 1.0
Precision:0.889
F1_Score:0.941
Batch 13:DT
Accuracy :0.844
Recall: 1.0
Precision:0.828
F1_Score:0.906
Batch 13:MLP
Accuracy :0.938
Recall: 1.0
Precision:0.923
F1_Score:0.96
Batch 14:LogReg
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 14:RF
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 14:KNN
Accuracy :0.812
Recall: 0.684
Precision:1.0
```

```
F1_Score:0.813
Batch 14:SVM
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 14:GNB
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 14:XGB
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 14:DT
Accuracy :0.5
Recall: 0.789
Precision:0.556
F1_Score:0.652
Batch 14:MLP
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 15:LogReg
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 15:RF
Accuracy :0.312
Recall: 1.0
Precision:0.29
F1_Score:0.45
Batch 15:KNN
Accuracy :0.688
Recall: 0.889
Precision:0.471
F1_Score:0.615
Batch 15:SVM
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 15:GNB
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 15:XGB
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 15:DT
Accuracy :0.5
Recall: 0.889
Precision:0.348
F1_Score:0.5
Batch 15:MLP
```

Accuracy :0.281  
Recall: 1.0  
Precision:0.281  
F1\_Score:0.439  
Batch 16:LogReg  
Accuracy :0.594  
Recall: 1.0  
Precision:0.594  
F1\_Score:0.745  
Batch 16:RF  
Accuracy :0.594  
Recall: 1.0  
Precision:0.594  
F1\_Score:0.745  
Batch 16:KNN  
Accuracy :0.531  
Recall: 0.421  
Precision:0.667  
F1\_Score:0.516  
Batch 16:SVM  
Accuracy :0.594  
Recall: 1.0  
Precision:0.594  
F1\_Score:0.745  
Batch 16:GNB  
Accuracy :0.594  
Recall: 1.0  
Precision:0.594  
F1\_Score:0.745  
Batch 16:XGB  
Accuracy :0.594  
Recall: 1.0  
Precision:0.594  
F1\_Score:0.745  
Batch 16:DT  
Accuracy :0.594  
Recall: 0.842  
Precision:0.615  
F1\_Score:0.711  
Batch 16:MLP  
Accuracy :0.594  
Recall: 1.0  
Precision:0.594  
F1\_Score:0.745  
Batch 17:LogReg  
Accuracy :0.594  
Recall: 1.0  
Precision:0.594  
F1\_Score:0.745  
Batch 17:RF  
Accuracy :0.594  
Recall: 1.0  
Precision:0.594  
F1\_Score:0.745  
Batch 17:KNN  
Accuracy :0.906  
Recall: 0.895  
Precision:0.944  
F1\_Score:0.919  
Batch 17:SVM  
Accuracy :0.594  
Recall: 1.0

```
Precision:0.594
F1_Score:0.745
Batch 17:GNB
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 17:XGB
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 17:DT
Accuracy :0.781
Recall: 1.0
Precision:0.731
F1_Score:0.844
Batch 17:MLP
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 18:LogReg
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 18:RF
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 18:KNN
Accuracy :0.719
Recall: 0.842
Precision:0.727
F1_Score:0.78
Batch 18:SVM
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 18:GNB
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 18:XGB
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 18:DT
Accuracy :0.531
Recall: 0.684
Precision:0.591
F1_Score:0.634
Batch 18:MLP
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
```

```
Batch 19:LogReg
Accuracy :0.906
Recall: 1.0
Precision:0.906
F1_Score:0.951
Batch 19:RF
Accuracy :0.906
Recall: 1.0
Precision:0.906
F1_Score:0.951
Batch 19:KNN
Accuracy :0.594
Recall: 0.655
Precision:0.864
F1_Score:0.745
Batch 19:SVM
Accuracy :0.906
Recall: 1.0
Precision:0.906
F1_Score:0.951
Batch 19:GNB
Accuracy :0.906
Recall: 1.0
Precision:0.906
F1_Score:0.951
Batch 19:XGB
Accuracy :0.906
Recall: 1.0
Precision:0.906
F1_Score:0.951
Batch 19:DT
Accuracy :0.844
Recall: 0.931
Precision:0.9
F1_Score:0.915
Batch 19:MLP
Accuracy :0.906
Recall: 1.0
Precision:0.906
F1_Score:0.951
Batch 20:LogReg
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 20:RF
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 20:KNN
Accuracy :0.438
Recall: 0.778
Precision:0.304
F1_Score:0.438
Batch 20:SVM
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 20:GNB
Accuracy :0.281
```

Recall: 1.0  
Precision:0.281  
F1\_Score:0.439  
Batch 20:XGB  
Accuracy :0.188  
Recall: 0.667  
Precision:0.207  
F1\_Score:0.316  
Batch 20:DT  
Accuracy :0.156  
Recall: 0.222  
Precision:0.091  
F1\_Score:0.129  
Batch 20:MLP  
Accuracy :0.281  
Recall: 1.0  
Precision:0.281  
F1\_Score:0.439  
Batch 21:LogReg  
Accuracy :0.375  
Recall: 1.0  
Precision:0.375  
F1\_Score:0.545  
Batch 21:RF  
Accuracy :0.375  
Recall: 1.0  
Precision:0.375  
F1\_Score:0.545  
Batch 21:KNN  
Accuracy :0.625  
Recall: 0.917  
Precision:0.5  
F1\_Score:0.647  
Batch 21:SVM  
Accuracy :0.375  
Recall: 1.0  
Precision:0.375  
F1\_Score:0.545  
Batch 21:GNB  
Accuracy :0.375  
Recall: 1.0  
Precision:0.375  
F1\_Score:0.545  
Batch 21:XGB  
Accuracy :0.375  
Recall: 1.0  
Precision:0.375  
F1\_Score:0.545  
Batch 21:DT  
Accuracy :0.344  
Recall: 0.667  
Precision:0.32  
F1\_Score:0.432  
Batch 21:MLP  
Accuracy :0.375  
Recall: 1.0  
Precision:0.375  
F1\_Score:0.545  
Batch 22:LogReg  
Accuracy :0.344  
Recall: 1.0  
Precision:0.344

```
F1_Score:0.512
Batch 22:RF
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 22:KNN
Accuracy :0.469
Recall: 1.0
Precision:0.393
F1_Score:0.564
Batch 22:SVM
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 22:GNB
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 22:XGB
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 22:DT
Accuracy :0.5
Recall: 1.0
Precision:0.407
F1_Score:0.579
Batch 22:MLP
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 23:LogReg
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 23:RF
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 23:KNN
Accuracy :0.562
Recall: 0.526
Precision:0.667
F1_Score:0.588
Batch 23:SVM
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 23:GNB
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 23:XGB
```

Accuracy :0.594  
Recall: 1.0  
Precision:0.594  
F1\_Score:0.745  
Batch 23:DT  
Accuracy :0.469  
Recall: 0.737  
Precision:0.538  
F1\_Score:0.622  
Batch 23:MLP  
Accuracy :0.594  
Recall: 1.0  
Precision:0.594  
F1\_Score:0.745  
Batch 24:LogReg  
Accuracy :0.219  
Recall: 1.0  
Precision:0.219  
F1\_Score:0.359  
Batch 24:RF  
Accuracy :0.219  
Recall: 1.0  
Precision:0.219  
F1\_Score:0.359  
Batch 24:KNN  
Accuracy :0.5  
Recall: 0.286  
Precision:0.154  
F1\_Score:0.2  
Batch 24:SVM  
Accuracy :0.219  
Recall: 1.0  
Precision:0.219  
F1\_Score:0.359  
Batch 24:GNB  
Accuracy :0.219  
Recall: 1.0  
Precision:0.219  
F1\_Score:0.359  
Batch 24:XGB  
Accuracy :0.219  
Recall: 1.0  
Precision:0.219  
F1\_Score:0.359  
Batch 24:DT  
Accuracy :0.219  
Recall: 0.857  
Precision:0.2  
F1\_Score:0.324  
Batch 24:MLP  
Accuracy :0.219  
Recall: 1.0  
Precision:0.219  
F1\_Score:0.359  
Batch 25:LogReg  
Accuracy :0.688  
Recall: 1.0  
Precision:0.688  
F1\_Score:0.815  
Batch 25:RF  
Accuracy :0.688  
Recall: 1.0

```
Precision:0.688
F1_Score:0.815
Batch 25:KNN
Accuracy :0.531
Recall: 0.591
Precision:0.684
F1_Score:0.634
Batch 25:SVM
Accuracy :0.688
Recall: 1.0
Precision:0.688
F1_Score:0.815
Batch 25:GNB
Accuracy :0.688
Recall: 1.0
Precision:0.688
F1_Score:0.815
Batch 25:XGB
Accuracy :0.688
Recall: 1.0
Precision:0.688
F1_Score:0.815
Batch 25:DT
Accuracy :0.688
Recall: 1.0
Precision:0.688
F1_Score:0.815
Batch 25:MLP
Accuracy :0.688
Recall: 1.0
Precision:0.688
F1_Score:0.815
Batch 26:LogReg
Accuracy :0.531
Recall: 1.0
Precision:0.531
F1_Score:0.694
Batch 26:RF
Accuracy :0.531
Recall: 1.0
Precision:0.531
F1_Score:0.694
Batch 26:KNN
Accuracy :0.594
Recall: 0.294
Precision:0.833
F1_Score:0.435
Batch 26:SVM
Accuracy :0.531
Recall: 1.0
Precision:0.531
F1_Score:0.694
Batch 26:GNB
Accuracy :0.531
Recall: 1.0
Precision:0.531
F1_Score:0.694
Batch 26:XGB
Accuracy :0.531
Recall: 1.0
Precision:0.531
F1_Score:0.694
```

```
Batch 26:DT
Accuracy :0.844
Recall: 1.0
Precision:0.773
F1_Score:0.872
Batch 26:MLP
Accuracy :0.531
Recall: 1.0
Precision:0.531
F1_Score:0.694
Batch 27:LogReg
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 27:RF
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 27:KNN
Accuracy :0.531
Recall: 0.615
Precision:0.444
F1_Score:0.516
Batch 27:SVM
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 27:GNB
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 27:XGB
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 27:DT
Accuracy :0.5
Recall: 0.769
Precision:0.435
F1_Score:0.556
Batch 27:MLP
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 28:LogReg
Accuracy :0.75
Recall: 1.0
Precision:0.75
F1_Score:0.857
Batch 28:RF
Accuracy :0.75
Recall: 1.0
Precision:0.75
F1_Score:0.857
Batch 28:KNN
Accuracy :0.75
```

Recall: 1.0  
Precision:0.75  
F1\_Score:0.857  
Batch 28:SVM  
Accuracy :0.75  
Recall: 1.0  
Precision:0.75  
F1\_Score:0.857  
Batch 28:GNB  
Accuracy :0.75  
Recall: 1.0  
Precision:0.75  
F1\_Score:0.857  
Batch 28:XGB  
Accuracy :0.75  
Recall: 1.0  
Precision:0.75  
F1\_Score:0.857  
Batch 28:DT  
Accuracy :0.719  
Recall: 0.833  
Precision:0.8  
F1\_Score:0.816  
Batch 28:MLP  
Accuracy :0.75  
Recall: 1.0  
Precision:0.75  
F1\_Score:0.857  
Batch 29:LogReg  
Accuracy :0.562  
Recall: 1.0  
Precision:0.562  
F1\_Score:0.72  
Batch 29:RF  
Accuracy :0.562  
Recall: 1.0  
Precision:0.562  
F1\_Score:0.72  
Batch 29:KNN  
Accuracy :0.781  
Recall: 1.0  
Precision:0.72  
F1\_Score:0.837  
Batch 29:SVM  
Accuracy :0.562  
Recall: 1.0  
Precision:0.562  
F1\_Score:0.72  
Batch 29:GNB  
Accuracy :0.562  
Recall: 1.0  
Precision:0.562  
F1\_Score:0.72  
Batch 29:XGB  
Accuracy :0.562  
Recall: 1.0  
Precision:0.562  
F1\_Score:0.72  
Batch 29:DT  
Accuracy :0.656  
Recall: 0.833  
Precision:0.652

```
F1_Score:0.732
Batch 29:MLP
Accuracy :0.562
Recall: 1.0
Precision:0.562
F1_Score:0.72
Batch 30:LogReg
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 30:RF
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 30:KNN
Accuracy :0.688
Recall: 1.0
Precision:0.565
F1_Score:0.722
Batch 30:SVM
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 30:GNB
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 30:XGB
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 30:DT
Accuracy :0.344
Recall: 0.615
Precision:0.333
F1_Score:0.432
Batch 30:MLP
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 31:LogReg
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 31:RF
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 31:KNN
Accuracy :0.5
Recall: 0.938
Precision:0.5
F1_Score:0.652
Batch 31:SVM
```

```
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 31:GNB
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 31:XGB
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 31:DT
Accuracy :0.656
Recall: 0.812
Precision:0.619
F1_Score:0.703
Batch 31:MLP
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 32:LogReg
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 32:RF
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 32:KNN
Accuracy :0.844
Recall: 1.0
Precision:0.8
F1_Score:0.889
Batch 32:SVM
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 32:GNB
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 32:XGB
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 32:DT
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 32:MLP
Accuracy :0.625
Recall: 1.0
```

```
Precision:0.625
F1_Score:0.769
Batch 33:LogReg
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 33:RF
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 33:KNN
Accuracy :0.469
Recall: 0.889
Precision:0.333
F1_Score:0.485
Batch 33:SVM
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 33:GNB
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 33:XGB
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 33:DT
Accuracy :0.469
Recall: 0.667
Precision:0.3
F1_Score:0.414
Batch 33:MLP
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 34:LogReg
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 34:RF
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 34:KNN
Accuracy :0.531
Recall: 1.0
Precision:0.516
F1_Score:0.681
Batch 34:SVM
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
```

```
Batch 34:GNB
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 34:XGB
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 34:DT
Accuracy :0.625
Recall: 1.0
Precision:0.571
F1_Score:0.727
Batch 34:MLP
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 35:LogReg
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 35:RF
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 35:KNN
Accuracy :0.906
Recall: 0.929
Precision:0.867
F1_Score:0.897
Batch 35:SVM
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 35:GNB
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 35:XGB
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 35:DT
Accuracy :0.344
Recall: 0.714
Precision:0.37
F1_Score:0.488
Batch 35:MLP
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 36:LogReg
Accuracy :0.125
```

Recall: 1.0  
Precision:0.125  
F1\_Score:0.222  
Batch 36:RF  
Accuracy :0.125  
Recall: 1.0  
Precision:0.125  
F1\_Score:0.222  
Batch 36:KNN  
Accuracy :0.562  
Recall: 1.0  
Precision:0.222  
F1\_Score:0.364  
Batch 36:SVM  
Accuracy :0.125  
Recall: 1.0  
Precision:0.125  
F1\_Score:0.222  
Batch 36:GNB  
Accuracy :0.125  
Recall: 1.0  
Precision:0.125  
F1\_Score:0.222  
Batch 36:XGB  
Accuracy :0.125  
Recall: 1.0  
Precision:0.125  
F1\_Score:0.222  
Batch 36:DT  
Accuracy :0.344  
Recall: 0.75  
Precision:0.13  
F1\_Score:0.222  
Batch 36:MLP  
Accuracy :0.125  
Recall: 1.0  
Precision:0.125  
F1\_Score:0.222  
Batch 37:LogReg  
Accuracy :0.469  
Recall: 1.0  
Precision:0.469  
F1\_Score:0.638  
Batch 37:RF  
Accuracy :0.469  
Recall: 1.0  
Precision:0.469  
F1\_Score:0.638  
Batch 37:KNN  
Accuracy :0.344  
Recall: 0.6  
Precision:0.375  
F1\_Score:0.462  
Batch 37:SVM  
Accuracy :0.469  
Recall: 1.0  
Precision:0.469  
F1\_Score:0.638  
Batch 37:GNB  
Accuracy :0.469  
Recall: 1.0  
Precision:0.469

```
F1_Score:0.638
Batch 37:XGB
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 37:DT
Accuracy :0.562
Recall: 1.0
Precision:0.517
F1_Score:0.682
Batch 37:MLP
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 38:LogReg
Accuracy :0.781
Recall: 1.0
Precision:0.781
F1_Score:0.877
Batch 38:RF
Accuracy :0.781
Recall: 1.0
Precision:0.781
F1_Score:0.877
Batch 38:KNN
Accuracy :0.594
Recall: 0.72
Precision:0.75
F1_Score:0.735
Batch 38:SVM
Accuracy :0.781
Recall: 1.0
Precision:0.781
F1_Score:0.877
Batch 38:GNB
Accuracy :0.781
Recall: 1.0
Precision:0.781
F1_Score:0.877
Batch 38:XGB
Accuracy :0.781
Recall: 1.0
Precision:0.781
F1_Score:0.877
Batch 38:DT
Accuracy :0.562
Recall: 0.72
Precision:0.72
F1_Score:0.72
Batch 38:MLP
Accuracy :0.781
Recall: 1.0
Precision:0.781
F1_Score:0.877
Batch 39:LogReg
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 39:RF
```

Accuracy :0.438  
Recall: 1.0  
Precision:0.438  
F1\_Score:0.609  
Batch 39:KNN  
Accuracy :0.688  
Recall: 1.0  
Precision:0.583  
F1\_Score:0.737  
Batch 39:SVM  
Accuracy :0.438  
Recall: 1.0  
Precision:0.438  
F1\_Score:0.609  
Batch 39:GNB  
Accuracy :0.438  
Recall: 1.0  
Precision:0.438  
F1\_Score:0.609  
Batch 39:XGB  
Accuracy :0.438  
Recall: 1.0  
Precision:0.438  
F1\_Score:0.609  
Batch 39:DT  
Accuracy :0.562  
Recall: 0.714  
Precision:0.5  
F1\_Score:0.588  
Batch 39:MLP  
Accuracy :0.438  
Recall: 1.0  
Precision:0.438  
F1\_Score:0.609  
Batch 40:LogReg  
Accuracy :0.688  
Recall: 1.0  
Precision:0.688  
F1\_Score:0.815  
Batch 40:RF  
Accuracy :0.688  
Recall: 1.0  
Precision:0.688  
F1\_Score:0.815  
Batch 40:KNN  
Accuracy :0.719  
Recall: 1.0  
Precision:0.71  
F1\_Score:0.83  
Batch 40:SVM  
Accuracy :0.688  
Recall: 1.0  
Precision:0.688  
F1\_Score:0.815  
Batch 40:GNB  
Accuracy :0.688  
Recall: 1.0  
Precision:0.688  
F1\_Score:0.815  
Batch 40:XGB  
Accuracy :0.688  
Recall: 1.0

```
Precision:0.688
F1_Score:0.815
Batch 40:DT
Accuracy :0.656
Recall: 0.818
Precision:0.72
F1_Score:0.766
Batch 40:MLP
Accuracy :0.688
Recall: 1.0
Precision:0.688
F1_Score:0.815
Batch 41:LogReg
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 41:RF
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 41:KNN
Accuracy :0.875
Recall: 1.0
Precision:0.733
F1_Score:0.846
Batch 41:SVM
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 41:GNB
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 41:XGB
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 41:DT
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 41:MLP
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 42:LogReg
Accuracy :0.25
Recall: 1.0
Precision:0.25
F1_Score:0.4
Batch 42:RF
Accuracy :0.25
Recall: 1.0
Precision:0.25
F1_Score:0.4
```

```
Batch 42:KNN
Accuracy :0.469
Recall: 1.0
Precision:0.32
F1_Score:0.485
Batch 42:SVM
Accuracy :0.25
Recall: 1.0
Precision:0.25
F1_Score:0.4
Batch 42:GNB
Accuracy :0.25
Recall: 1.0
Precision:0.25
F1_Score:0.4
Batch 42:XGB
Accuracy :0.25
Recall: 1.0
Precision:0.25
F1_Score:0.4
Batch 42:DT
Accuracy :0.344
Recall: 0.875
Precision:0.259
F1_Score:0.4
Batch 42:MLP
Accuracy :0.25
Recall: 1.0
Precision:0.25
F1_Score:0.4
Batch 43:LogReg
Accuracy :0.719
Recall: 1.0
Precision:0.719
F1_Score:0.836
Batch 43:RF
Accuracy :0.719
Recall: 1.0
Precision:0.719
F1_Score:0.836
Batch 43:KNN
Accuracy :0.75
Recall: 1.0
Precision:0.742
F1_Score:0.852
Batch 43:SVM
Accuracy :0.719
Recall: 1.0
Precision:0.719
F1_Score:0.836
Batch 43:GNB
Accuracy :0.719
Recall: 1.0
Precision:0.719
F1_Score:0.836
Batch 43:XGB
Accuracy :0.719
Recall: 1.0
Precision:0.719
F1_Score:0.836
Batch 43:DT
Accuracy :0.812
```

Recall: 1.0  
Precision:0.793  
F1\_Score:0.885  
Batch 43:MLP  
Accuracy :0.719  
Recall: 1.0  
Precision:0.719  
F1\_Score:0.836  
Batch 44:LogReg  
Accuracy :0.312  
Recall: 1.0  
Precision:0.312  
F1\_Score:0.476  
Batch 44:RF  
Accuracy :0.312  
Recall: 1.0  
Precision:0.312  
F1\_Score:0.476  
Batch 44:KNN  
Accuracy :0.562  
Recall: 1.0  
Precision:0.417  
F1\_Score:0.588  
Batch 44:SVM  
Accuracy :0.312  
Recall: 1.0  
Precision:0.312  
F1\_Score:0.476  
Batch 44:GNB  
Accuracy :0.312  
Recall: 1.0  
Precision:0.312  
F1\_Score:0.476  
Batch 44:XGB  
Accuracy :0.312  
Recall: 1.0  
Precision:0.312  
F1\_Score:0.476  
Batch 44:DT  
Accuracy :0.312  
Recall: 1.0  
Precision:0.312  
F1\_Score:0.476  
Batch 44:MLP  
Accuracy :0.312  
Recall: 1.0  
Precision:0.312  
F1\_Score:0.476  
Batch 45:LogReg  
Accuracy :0.125  
Recall: 1.0  
Precision:0.125  
F1\_Score:0.222  
Batch 45:RF  
Accuracy :0.125  
Recall: 1.0  
Precision:0.125  
F1\_Score:0.222  
Batch 45:KNN  
Accuracy :0.469  
Recall: 1.0  
Precision:0.19

```
F1_Score:0.32
Batch 45:SVM
Accuracy :0.125
Recall: 1.0
Precision:0.125
F1_Score:0.222
Batch 45:GNB
Accuracy :0.125
Recall: 1.0
Precision:0.125
F1_Score:0.222
Batch 45:XGB
Accuracy :0.125
Recall: 1.0
Precision:0.125
F1_Score:0.222
Batch 45:DT
Accuracy :0.25
Recall: 0.75
Precision:0.115
F1_Score:0.2
Batch 45:MLP
Accuracy :0.125
Recall: 1.0
Precision:0.125
F1_Score:0.222
Batch 46:LogReg
Accuracy :0.156
Recall: 1.0
Precision:0.156
F1_Score:0.27
Batch 46:RF
Accuracy :0.156
Recall: 1.0
Precision:0.156
F1_Score:0.27
Batch 46:KNN
Accuracy :0.375
Recall: 1.0
Precision:0.2
F1_Score:0.333
Batch 46:SVM
Accuracy :0.156
Recall: 1.0
Precision:0.156
F1_Score:0.27
Batch 46:GNB
Accuracy :0.156
Recall: 1.0
Precision:0.156
F1_Score:0.27
Batch 46:XGB
Accuracy :0.156
Recall: 1.0
Precision:0.156
F1_Score:0.27
Batch 46:DT
Accuracy :0.156
Recall: 1.0
Precision:0.156
F1_Score:0.27
Batch 46:MLP
```

Accuracy :0.156  
Recall: 1.0  
Precision:0.156  
F1\_Score:0.27  
Batch 47:LogReg  
Accuracy :0.094  
Recall: 1.0  
Precision:0.094  
F1\_Score:0.171  
Batch 47:RF  
Accuracy :0.094  
Recall: 1.0  
Precision:0.094  
F1\_Score:0.171  
Batch 47:KNN  
Accuracy :0.531  
Recall: 1.0  
Precision:0.167  
F1\_Score:0.286  
Batch 47:SVM  
Accuracy :0.094  
Recall: 1.0  
Precision:0.094  
F1\_Score:0.171  
Batch 47:GNB  
Accuracy :0.094  
Recall: 1.0  
Precision:0.094  
F1\_Score:0.171  
Batch 47:XGB  
Accuracy :0.094  
Recall: 1.0  
Precision:0.094  
F1\_Score:0.171  
Batch 47:DT  
Accuracy :0.469  
Recall: 1.0  
Precision:0.15  
F1\_Score:0.261  
Batch 47:MLP  
Accuracy :0.094  
Recall: 1.0  
Precision:0.094  
F1\_Score:0.171  
Batch 48:LogReg  
Accuracy :0.281  
Recall: 1.0  
Precision:0.281  
F1\_Score:0.439  
Batch 48:RF  
Accuracy :0.281  
Recall: 1.0  
Precision:0.281  
F1\_Score:0.439  
Batch 48:KNN  
Accuracy :0.531  
Recall: 0.889  
Precision:0.364  
F1\_Score:0.516  
Batch 48:SVM  
Accuracy :0.281  
Recall: 1.0

```
Precision:0.281
F1_Score:0.439
Batch 48:GNB
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 48:XGB
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 48:DT
Accuracy :0.594
Recall: 1.0
Precision:0.409
F1_Score:0.581
Batch 48:MLP
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 49:LogReg
Accuracy :0.906
Recall: 1.0
Precision:0.906
F1_Score:0.951
Batch 49:RF
Accuracy :0.906
Recall: 1.0
Precision:0.906
F1_Score:0.951
Batch 49:KNN
Accuracy :0.906
Recall: 1.0
Precision:0.906
F1_Score:0.951
Batch 49:SVM
Accuracy :0.906
Recall: 1.0
Precision:0.906
F1_Score:0.951
Batch 49:GNB
Accuracy :0.906
Recall: 1.0
Precision:0.906
F1_Score:0.951
Batch 49:XGB
Accuracy :0.906
Recall: 1.0
Precision:0.906
F1_Score:0.951
Batch 49:DT
Accuracy :0.812
Recall: 0.897
Precision:0.897
F1_Score:0.897
Batch 49:MLP
Accuracy :0.906
Recall: 1.0
Precision:0.906
F1_Score:0.951
```

```
Batch 50:LogReg
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 50:RF
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 50:KNN
Accuracy :0.75
Recall: 1.0
Precision:0.704
F1_Score:0.826
Batch 50:SVM
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 50:GNB
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 50:XGB
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 50:DT
Accuracy :0.781
Recall: 0.947
Precision:0.75
F1_Score:0.837
Batch 50:MLP
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 51:LogReg
Accuracy :0.25
Recall: 1.0
Precision:0.25
F1_Score:0.4
Batch 51:RF
Accuracy :0.219
Recall: 0.75
Precision:0.207
F1_Score:0.324
Batch 51:KNN
Accuracy :0.562
Recall: 1.0
Precision:0.364
F1_Score:0.533
Batch 51:SVM
Accuracy :0.25
Recall: 1.0
Precision:0.25
F1_Score:0.4
Batch 51:GNB
Accuracy :0.25
```

Recall: 1.0  
Precision:0.25  
F1\_Score:0.4  
Batch 51:XGB  
Accuracy :0.25  
Recall: 1.0  
Precision:0.25  
F1\_Score:0.4  
Batch 51:DT  
Accuracy :0.344  
Recall: 0.375  
Precision:0.158  
F1\_Score:0.222  
Batch 51:MLP  
Accuracy :0.25  
Recall: 1.0  
Precision:0.25  
F1\_Score:0.4  
Batch 52:LogReg  
Accuracy :0.781  
Recall: 1.0  
Precision:0.781  
F1\_Score:0.877  
Batch 52:RF  
Accuracy :0.781  
Recall: 1.0  
Precision:0.781  
F1\_Score:0.877  
Batch 52:KNN  
Accuracy :0.781  
Recall: 1.0  
Precision:0.781  
F1\_Score:0.877  
Batch 52:SVM  
Accuracy :0.781  
Recall: 1.0  
Precision:0.781  
F1\_Score:0.877  
Batch 52:GNB  
Accuracy :0.781  
Recall: 1.0  
Precision:0.781  
F1\_Score:0.877  
Batch 52:XGB  
Accuracy :0.781  
Recall: 1.0  
Precision:0.781  
F1\_Score:0.877  
Batch 52:DT  
Accuracy :0.469  
Recall: 0.36  
Precision:0.9  
F1\_Score:0.514  
Batch 52:MLP  
Accuracy :0.781  
Recall: 1.0  
Precision:0.781  
F1\_Score:0.877  
Batch 53:LogReg  
Accuracy :0.531  
Recall: 1.0  
Precision:0.531

```
F1_Score:0.694
Batch 53:RF
Accuracy :0.531
Recall: 1.0
Precision:0.531
F1_Score:0.694
Batch 53:KNN
Accuracy :0.594
Recall: 1.0
Precision:0.567
F1_Score:0.723
Batch 53:SVM
Accuracy :0.531
Recall: 1.0
Precision:0.531
F1_Score:0.694
Batch 53:GNB
Accuracy :0.531
Recall: 1.0
Precision:0.531
F1_Score:0.694
Batch 53:XGB
Accuracy :0.531
Recall: 1.0
Precision:0.531
F1_Score:0.694
Batch 53:DT
Accuracy :0.375
Recall: 0.706
Precision:0.444
F1_Score:0.545
Batch 53:MLP
Accuracy :0.531
Recall: 1.0
Precision:0.531
F1_Score:0.694
Batch 54:LogReg
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 54:RF
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 54:KNN
Accuracy :0.594
Recall: 1.0
Precision:0.552
F1_Score:0.711
Batch 54:SVM
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 54:GNB
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 54:XGB
```

Accuracy :0.5  
Recall: 1.0  
Precision:0.5  
F1\_Score:0.667  
Batch 54:DT  
Accuracy :0.344  
Recall: 0.5  
Precision:0.381  
F1\_Score:0.432  
Batch 54:MLP  
Accuracy :0.5  
Recall: 1.0  
Precision:0.5  
F1\_Score:0.667  
Batch 55:LogReg  
Accuracy :0.844  
Recall: 1.0  
Precision:0.844  
F1\_Score:0.915  
Batch 55:RF  
Accuracy :0.844  
Recall: 1.0  
Precision:0.844  
F1\_Score:0.915  
Batch 55:KNN  
Accuracy :0.875  
Recall: 1.0  
Precision:0.871  
F1\_Score:0.931  
Batch 55:SVM  
Accuracy :0.844  
Recall: 1.0  
Precision:0.844  
F1\_Score:0.915  
Batch 55:GNB  
Accuracy :0.844  
Recall: 1.0  
Precision:0.844  
F1\_Score:0.915  
Batch 55:XGB  
Accuracy :0.844  
Recall: 1.0  
Precision:0.844  
F1\_Score:0.915  
Batch 55:DT  
Accuracy :0.594  
Recall: 0.667  
Precision:0.818  
F1\_Score:0.735  
Batch 55:MLP  
Accuracy :0.844  
Recall: 1.0  
Precision:0.844  
F1\_Score:0.915  
Batch 56:LogReg  
Accuracy :0.375  
Recall: 1.0  
Precision:0.375  
F1\_Score:0.545  
Batch 56:RF  
Accuracy :0.375  
Recall: 1.0

```
Precision:0.375
F1_Score:0.545
Batch 56:KNN
Accuracy :0.594
Recall: 1.0
Precision:0.48
F1_Score:0.649
Batch 56:SVM
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 56:GNB
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 56:XGB
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 56:DT
Accuracy :0.469
Recall: 1.0
Precision:0.414
F1_Score:0.585
Batch 56:MLP
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 57:LogReg
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 57:RF
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 57:KNN
Accuracy :0.625
Recall: 1.0
Precision:0.556
F1_Score:0.714
Batch 57:SVM
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 57:GNB
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 57:XGB
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
```

```
Batch 57:DT
Accuracy :0.625
Recall: 0.8
Precision:0.571
F1_Score:0.667
Batch 57:MLP
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 58:LogReg
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 58:RF
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 58:KNN
Accuracy :0.219
Recall: 0.25
Precision:0.158
F1_Score:0.194
Batch 58:SVM
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 58:GNB
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 58:XGB
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 58:DT
Accuracy :0.438
Recall: 0.917
Precision:0.393
F1_Score:0.55
Batch 58:MLP
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 59:LogReg
Accuracy :0.75
Recall: 1.0
Precision:0.75
F1_Score:0.857
Batch 59:RF
Accuracy :0.75
Recall: 1.0
Precision:0.75
F1_Score:0.857
Batch 59:KNN
Accuracy :0.625
```

```
Recall: 0.833
Precision:0.714
F1_Score:0.769
Batch 59:SVM
Accuracy :0.75
Recall: 1.0
Precision:0.75
F1_Score:0.857
Batch 59:GNB
Accuracy :0.75
Recall: 1.0
Precision:0.75
F1_Score:0.857
Batch 59:XGB
Accuracy :0.75
Recall: 1.0
Precision:0.75
F1_Score:0.857
Batch 59:DT
Accuracy :0.781
Recall: 0.75
Precision:0.947
F1_Score:0.837
Batch 59:MLP
Accuracy :0.75
Recall: 1.0
Precision:0.75
F1_Score:0.857
Batch 60:LogReg
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 60:RF
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 60:KNN
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 60:SVM
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 60:GNB
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 60:XGB
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 60:DT
Accuracy :0.281
Recall: 0.308
Precision:0.222
```

```
F1_Score:0.258
Batch 60:MLP
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 61:LogReg
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 61:RF
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 61:KNN
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 61:SVM
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 61:GNB
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 61:XGB
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 61:DT
Accuracy :0.375
Recall: 0.273
Precision:0.2
F1_Score:0.231
Batch 61:MLP
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 62:LogReg
Accuracy :0.0
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 62:RF
Accuracy :0.0
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 62:KNN
Accuracy :0.062
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 62:SVM
```

```
Accuracy :0.0
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 62:GNB
Accuracy :0.0
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 62:XGB
Accuracy :0.0
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 62:DT
Accuracy :0.219
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 62:MLP
Accuracy :0.0
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 63:LogReg
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 63:RF
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 63:KNN
Accuracy :0.312
Recall: 1.0
Precision:0.29
F1_Score:0.45
Batch 63:SVM
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 63:GNB
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 63:XGB
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 63:DT
Accuracy :0.469
Recall: 0.889
Precision:0.333
F1_Score:0.485
Batch 63:MLP
Accuracy :0.281
Recall: 1.0
```

```
Precision:0.281
F1_Score:0.439
Batch 64:LogReg
Accuracy :0.938
Recall: 1.0
Precision:0.938
F1_Score:0.968
Batch 64:RF
Accuracy :0.938
Recall: 1.0
Precision:0.938
F1_Score:0.968
Batch 64:KNN
Accuracy :0.938
Recall: 1.0
Precision:0.938
F1_Score:0.968
Batch 64:SVM
Accuracy :0.938
Recall: 1.0
Precision:0.938
F1_Score:0.968
Batch 64:GNB
Accuracy :0.938
Recall: 1.0
Precision:0.938
F1_Score:0.968
Batch 64:XGB
Accuracy :0.938
Recall: 1.0
Precision:0.938
F1_Score:0.968
Batch 64:DT
Accuracy :0.375
Recall: 0.367
Precision:0.917
F1_Score:0.524
Batch 64:MLP
Accuracy :0.938
Recall: 1.0
Precision:0.938
F1_Score:0.968
Batch 65:LogReg
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 65:RF
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 65:KNN
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 65:SVM
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
```

```
Batch 65:GNB
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 65:XGB
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 65:DT
Accuracy :0.5
Recall: 0.762
Precision:0.593
F1_Score:0.667
Batch 65:MLP
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 66:LogReg
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 66:RF
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 66:KNN
Accuracy :0.75
Recall: 1.0
Precision:0.704
F1_Score:0.826
Batch 66:SVM
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 66:GNB
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 66:XGB
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 66:DT
Accuracy :0.438
Recall: 0.737
Precision:0.519
F1_Score:0.609
Batch 66:MLP
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 67:LogReg
Accuracy :0.531
```

Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 67:RF  
Accuracy :0.531  
Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 67:KNN  
Accuracy :0.562  
Recall: 1.0  
Precision:0.548  
F1\_Score:0.708  
Batch 67:SVM  
Accuracy :0.531  
Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 67:GNB  
Accuracy :0.531  
Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 67:XGB  
Accuracy :0.531  
Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 67:DT  
Accuracy :0.531  
Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 67:MLP  
Accuracy :0.531  
Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 68:LogReg  
Accuracy :0.094  
Recall: 1.0  
Precision:0.094  
F1\_Score:0.171  
Batch 68:RF  
Accuracy :0.094  
Recall: 1.0  
Precision:0.094  
F1\_Score:0.171  
Batch 68:KNN  
Accuracy :0.406  
Recall: 0.667  
Precision:0.1  
F1\_Score:0.174  
Batch 68:SVM  
Accuracy :0.094  
Recall: 1.0  
Precision:0.094  
F1\_Score:0.171  
Batch 68:GNB  
Accuracy :0.094  
Recall: 1.0  
Precision:0.094

F1\_Score:0.171  
Batch 68:XGB  
Accuracy :0.094  
Recall: 1.0  
Precision:0.094  
F1\_Score:0.171  
Batch 68:DT  
Accuracy :0.469  
Recall: 1.0  
Precision:0.15  
F1\_Score:0.261  
Batch 68:MLP  
Accuracy :0.094  
Recall: 1.0  
Precision:0.094  
F1\_Score:0.171  
Batch 69:LogReg  
Accuracy :0.281  
Recall: 1.0  
Precision:0.281  
F1\_Score:0.439  
Batch 69:RF  
Accuracy :0.25  
Recall: 0.889  
Precision:0.258  
F1\_Score:0.4  
Batch 69:KNN  
Accuracy :0.5  
Recall: 0.111  
Precision:0.111  
F1\_Score:0.111  
Batch 69:SVM  
Accuracy :0.281  
Recall: 1.0  
Precision:0.281  
F1\_Score:0.439  
Batch 69:GNB  
Accuracy :0.281  
Recall: 1.0  
Precision:0.281  
F1\_Score:0.439  
Batch 69:XGB  
Accuracy :0.281  
Recall: 1.0  
Precision:0.281  
F1\_Score:0.439  
Batch 69:DT  
Accuracy :0.375  
Recall: 0.556  
Precision:0.238  
F1\_Score:0.333  
Batch 69:MLP  
Accuracy :0.281  
Recall: 1.0  
Precision:0.281  
F1\_Score:0.439  
Batch 70:LogReg  
Accuracy :0.844  
Recall: 1.0  
Precision:0.844  
F1\_Score:0.915  
Batch 70:RF

```
Accuracy :0.844
Recall: 1.0
Precision:0.844
F1_Score:0.915
Batch 70:KNN
Accuracy :0.844
Recall: 1.0
Precision:0.844
F1_Score:0.915
Batch 70:SVM
Accuracy :0.844
Recall: 1.0
Precision:0.844
F1_Score:0.915
Batch 70:GNB
Accuracy :0.844
Recall: 1.0
Precision:0.844
F1_Score:0.915
Batch 70:XGB
Accuracy :0.844
Recall: 1.0
Precision:0.844
F1_Score:0.915
Batch 70:DT
Accuracy :0.469
Recall: 0.519
Precision:0.778
F1_Score:0.622
Batch 70:MLP
Accuracy :0.844
Recall: 1.0
Precision:0.844
F1_Score:0.915
Batch 71:LogReg
Accuracy :0.562
Recall: 1.0
Precision:0.562
F1_Score:0.72
Batch 71:RF
Accuracy :0.562
Recall: 1.0
Precision:0.562
F1_Score:0.72
Batch 71:KNN
Accuracy :0.562
Recall: 1.0
Precision:0.562
F1_Score:0.72
Batch 71:SVM
Accuracy :0.562
Recall: 1.0
Precision:0.562
F1_Score:0.72
Batch 71:GNB
Accuracy :0.562
Recall: 1.0
Precision:0.562
F1_Score:0.72
Batch 71:XGB
Accuracy :0.562
Recall: 1.0
```

```
Precision:0.562
F1_Score:0.72
Batch 71:DT
Accuracy :0.375
Recall: 0.333
Precision:0.429
F1_Score:0.375
Batch 71:MLP
Accuracy :0.562
Recall: 1.0
Precision:0.562
F1_Score:0.72
Batch 72:LogReg
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 72:RF
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 72:KNN
Accuracy :0.5
Recall: 1.0
Precision:0.429
F1_Score:0.6
Batch 72:SVM
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 72:GNB
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 72:XGB
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 72:DT
Accuracy :0.281
Recall: 0.333
Precision:0.211
F1_Score:0.258
Batch 72:MLP
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 73:LogReg
Accuracy :0.094
Recall: 1.0
Precision:0.094
F1_Score:0.171
Batch 73:RF
Accuracy :0.094
Recall: 1.0
Precision:0.094
F1_Score:0.171
```

```
Batch 73:KNN
Accuracy :0.094
Recall: 1.0
Precision:0.094
F1_Score:0.171
Batch 73:SVM
Accuracy :0.094
Recall: 1.0
Precision:0.094
F1_Score:0.171
Batch 73:GNB
Accuracy :0.094
Recall: 1.0
Precision:0.094
F1_Score:0.171
Batch 73:XGB
Accuracy :0.094
Recall: 1.0
Precision:0.094
F1_Score:0.171
Batch 73:DT
Accuracy :0.531
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 73:MLP
Accuracy :0.094
Recall: 1.0
Precision:0.094
F1_Score:0.171
Batch 74:LogReg
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 74:RF
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 74:KNN
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 74:SVM
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 74:GNB
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 74:XGB
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 74:DT
Accuracy :0.375
```

Recall: 0.538  
Precision:0.333  
F1\_Score:0.412  
Batch 74:MLP  
Accuracy :0.406  
Recall: 1.0  
Precision:0.406  
F1\_Score:0.578  
Batch 75:LogReg  
Accuracy :0.312  
Recall: 1.0  
Precision:0.312  
F1\_Score:0.476  
Batch 75:RF  
Accuracy :0.312  
Recall: 1.0  
Precision:0.312  
F1\_Score:0.476  
Batch 75:KNN  
Accuracy :0.344  
Recall: 1.0  
Precision:0.323  
F1\_Score:0.488  
Batch 75:SVM  
Accuracy :0.312  
Recall: 1.0  
Precision:0.312  
F1\_Score:0.476  
Batch 75:GNB  
Accuracy :0.312  
Recall: 1.0  
Precision:0.312  
F1\_Score:0.476  
Batch 75:XGB  
Accuracy :0.312  
Recall: 1.0  
Precision:0.312  
F1\_Score:0.476  
Batch 75:DT  
Accuracy :0.5  
Recall: 0.7  
Precision:0.35  
F1\_Score:0.467  
Batch 75:MLP  
Accuracy :0.312  
Recall: 1.0  
Precision:0.312  
F1\_Score:0.476  
Batch 76:LogReg  
Accuracy :0.594  
Recall: 1.0  
Precision:0.594  
F1\_Score:0.745  
Batch 76:RF  
Accuracy :0.594  
Recall: 1.0  
Precision:0.594  
F1\_Score:0.745  
Batch 76:KNN  
Accuracy :0.594  
Recall: 1.0  
Precision:0.594

```
F1_Score:0.745
Batch 76:SVM
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 76:GNB
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 76:XGB
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 76:DT
Accuracy :0.312
Recall: 0.421
Precision:0.421
F1_Score:0.421
Batch 76:MLP
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 77:LogReg
Accuracy :0.094
Recall: 1.0
Precision:0.094
F1_Score:0.171
Batch 77:RF
Accuracy :0.094
Recall: 1.0
Precision:0.094
F1_Score:0.171
Batch 77:KNN
Accuracy :0.312
Recall: 1.0
Precision:0.12
F1_Score:0.214
Batch 77:SVM
Accuracy :0.094
Recall: 1.0
Precision:0.094
F1_Score:0.171
Batch 77:GNB
Accuracy :0.094
Recall: 1.0
Precision:0.094
F1_Score:0.171
Batch 77:XGB
Accuracy :0.094
Recall: 1.0
Precision:0.094
F1_Score:0.171
Batch 77:DT
Accuracy :0.094
Recall: 1.0
Precision:0.094
F1_Score:0.171
Batch 77:MLP
```

```
Accuracy :0.094
Recall: 1.0
Precision:0.094
F1_Score:0.171
Batch 78:LogReg
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 78:RF
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 78:KNN
Accuracy :0.625
Recall: 0.933
Precision:0.56
F1_Score:0.7
Batch 78:SVM
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 78:GNB
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 78:XGB
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 78:DT
Accuracy :0.562
Recall: 0.8
Precision:0.522
F1_Score:0.632
Batch 78:MLP
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 79:LogReg
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 79:RF
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 79:KNN
Accuracy :0.5
Recall: 0.474
Precision:0.6
F1_Score:0.529
Batch 79:SVM
Accuracy :0.594
Recall: 1.0
```

```
Precision:0.594
F1_Score:0.745
Batch 79:GNB
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 79:XGB
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 79:DT
Accuracy :0.656
Recall: 1.0
Precision:0.633
F1_Score:0.776
Batch 79:MLP
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 80:LogReg
Accuracy :0.719
Recall: 1.0
Precision:0.719
F1_Score:0.836
Batch 80:RF
Accuracy :0.719
Recall: 1.0
Precision:0.719
F1_Score:0.836
Batch 80:KNN
Accuracy :0.75
Recall: 1.0
Precision:0.742
F1_Score:0.852
Batch 80:SVM
Accuracy :0.719
Recall: 1.0
Precision:0.719
F1_Score:0.836
Batch 80:GNB
Accuracy :0.719
Recall: 1.0
Precision:0.719
F1_Score:0.836
Batch 80:XGB
Accuracy :0.719
Recall: 1.0
Precision:0.719
F1_Score:0.836
Batch 80:DT
Accuracy :0.656
Recall: 0.696
Precision:0.8
F1_Score:0.744
Batch 80:MLP
Accuracy :0.719
Recall: 1.0
Precision:0.719
F1_Score:0.836
```

```
Batch 81:LogReg
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 81:RF
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 81:KNN
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 81:SVM
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 81:GNB
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 81:XGB
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 81:DT
Accuracy :0.406
Recall: 0.455
Precision:0.278
F1_Score:0.345
Batch 81:MLP
Accuracy :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
Batch 82:LogReg
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 82:RF
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 82:KNN
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 82:SVM
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 82:GNB
Accuracy :0.406
```

```
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 82:XGB
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 82:DT
Accuracy :0.625
Recall: 0.385
Precision:0.556
F1_Score:0.455
Batch 82:MLP
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 83:LogReg
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 83:RF
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 83:KNN
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 83:SVM
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 83:GNB
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 83:XGB
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 83:DT
Accuracy :0.656
Recall: 0.643
Precision:0.6
F1_Score:0.621
Batch 83:MLP
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 84:LogReg
Accuracy :0.188
Recall: 1.0
Precision:0.188
```

```
F1_Score:0.316
Batch 84:RF
Accuracy :0.188
Recall: 1.0
Precision:0.188
F1_Score:0.316
Batch 84:KNN
Accuracy :0.188
Recall: 1.0
Precision:0.188
F1_Score:0.316
Batch 84:SVM
Accuracy :0.188
Recall: 1.0
Precision:0.188
F1_Score:0.316
Batch 84:GNB
Accuracy :0.188
Recall: 1.0
Precision:0.188
F1_Score:0.316
Batch 84:XGB
Accuracy :0.188
Recall: 1.0
Precision:0.188
F1_Score:0.316
Batch 84:DT
Accuracy :0.312
Recall: 0.833
Precision:0.192
F1_Score:0.312
Batch 84:MLP
Accuracy :0.188
Recall: 1.0
Precision:0.188
F1_Score:0.316
Batch 85:LogReg
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 85:RF
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 85:KNN
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 85:SVM
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 85:GNB
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 85:XGB
```

Accuracy :0.375  
Recall: 1.0  
Precision:0.375  
F1\_Score:0.545  
Batch 85:DT  
Accuracy :0.594  
Recall: 0.5  
Precision:0.462  
F1\_Score:0.48  
Batch 85:MLP  
Accuracy :0.375  
Recall: 1.0  
Precision:0.375  
F1\_Score:0.545  
Batch 86:LogReg  
Accuracy :0.312  
Recall: 1.0  
Precision:0.312  
F1\_Score:0.476  
Batch 86:RF  
Accuracy :0.312  
Recall: 1.0  
Precision:0.312  
F1\_Score:0.476  
Batch 86:KNN  
Accuracy :0.312  
Recall: 1.0  
Precision:0.312  
F1\_Score:0.476  
Batch 86:SVM  
Accuracy :0.312  
Recall: 1.0  
Precision:0.312  
F1\_Score:0.476  
Batch 86:GNB  
Accuracy :0.312  
Recall: 1.0  
Precision:0.312  
F1\_Score:0.476  
Batch 86:XGB  
Accuracy :0.312  
Recall: 1.0  
Precision:0.312  
F1\_Score:0.476  
Batch 86:DT  
Accuracy :0.531  
Recall: 0.8  
Precision:0.381  
F1\_Score:0.516  
Batch 86:MLP  
Accuracy :0.312  
Recall: 1.0  
Precision:0.312  
F1\_Score:0.476  
Batch 87:LogReg  
Accuracy :0.125  
Recall: 1.0  
Precision:0.125  
F1\_Score:0.222  
Batch 87:RF  
Accuracy :0.125  
Recall: 1.0

```
Precision:0.125
F1_Score:0.222
Batch 87:KNN
Accuracy :0.125
Recall: 1.0
Precision:0.125
F1_Score:0.222
Batch 87:SVM
Accuracy :0.125
Recall: 1.0
Precision:0.125
F1_Score:0.222
Batch 87:GNB
Accuracy :0.125
Recall: 1.0
Precision:0.125
F1_Score:0.222
Batch 87:XGB
Accuracy :0.125
Recall: 1.0
Precision:0.125
F1_Score:0.222
Batch 87:DT
Accuracy :0.375
Recall: 0.75
Precision:0.136
F1_Score:0.231
Batch 87:MLP
Accuracy :0.125
Recall: 1.0
Precision:0.125
F1_Score:0.222
Batch 88:LogReg
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 88:RF
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 88:KNN
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 88:SVM
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 88:GNB
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 88:XGB
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
```

```
Batch 88:DT
Accuracy :0.562
Recall: 0.9
Precision:0.6
F1_Score:0.72
Batch 88:MLP
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 89:LogReg
Accuracy :0.031
Recall: 1.0
Precision:0.031
F1_Score:0.061
Batch 89:RF
Accuracy :0.031
Recall: 1.0
Precision:0.031
F1_Score:0.061
Batch 89:KNN
Accuracy :0.312
Recall: 1.0
Precision:0.043
F1_Score:0.083
Batch 89:SVM
Accuracy :0.031
Recall: 1.0
Precision:0.031
F1_Score:0.061
Batch 89:GNB
Accuracy :0.031
Recall: 1.0
Precision:0.031
F1_Score:0.061
Batch 89:XGB
Accuracy :0.031
Recall: 1.0
Precision:0.031
F1_Score:0.061
Batch 89:DT
Accuracy :0.375
Recall: 1.0
Precision:0.048
F1_Score:0.091
Batch 89:MLP
Accuracy :0.031
Recall: 1.0
Precision:0.031
F1_Score:0.061
Batch 90:LogReg
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 90:RF
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 90:KNN
Accuracy :0.312
```

```
Recall: 0.429
Precision:0.474
F1_Score:0.45
Batch 90:SVM
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 90:GNB
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 90:XGB
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 90:DT
Accuracy :0.656
Recall: 0.857
Precision:0.692
F1_Score:0.766
Batch 90:MLP
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 91:LogReg
Accuracy :0.156
Recall: 1.0
Precision:0.156
F1_Score:0.27
Batch 91:RF
Accuracy :0.156
Recall: 1.0
Precision:0.156
F1_Score:0.27
Batch 91:KNN
Accuracy :0.219
Recall: 1.0
Precision:0.167
F1_Score:0.286
Batch 91:SVM
Accuracy :0.156
Recall: 1.0
Precision:0.156
F1_Score:0.27
Batch 91:GNB
Accuracy :0.156
Recall: 1.0
Precision:0.156
F1_Score:0.27
Batch 91:XGB
Accuracy :0.156
Recall: 1.0
Precision:0.156
F1_Score:0.27
Batch 91:DT
Accuracy :0.875
Recall: 0.8
Precision:0.571
```

```
F1_Score:0.667
Batch 91:MLP
Accuracy :0.156
Recall: 1.0
Precision:0.156
F1_Score:0.27
Batch 92:LogReg
Accuracy :0.25
Recall: 1.0
Precision:0.25
F1_Score:0.4
Batch 92:RF
Accuracy :0.25
Recall: 1.0
Precision:0.25
F1_Score:0.4
Batch 92:KNN
Accuracy :0.25
Recall: 0.75
Precision:0.214
F1_Score:0.333
Batch 92:SVM
Accuracy :0.25
Recall: 1.0
Precision:0.25
F1_Score:0.4
Batch 92:GNB
Accuracy :0.25
Recall: 1.0
Precision:0.25
F1_Score:0.4
Batch 92:XGB
Accuracy :0.25
Recall: 1.0
Precision:0.25
F1_Score:0.4
Batch 92:DT
Accuracy :0.562
Recall: 0.375
Precision:0.25
F1_Score:0.3
Batch 92:MLP
Accuracy :0.25
Recall: 1.0
Precision:0.25
F1_Score:0.4
Batch 93:LogReg
Accuracy :0.312
Recall: 1.0
Precision:0.312
F1_Score:0.476
Batch 93:RF
Accuracy :0.312
Recall: 1.0
Precision:0.312
F1_Score:0.476
Batch 93:KNN
Accuracy :0.469
Recall: 0.8
Precision:0.348
F1_Score:0.485
Batch 93:SVM
```

Accuracy :0.312  
Recall: 1.0  
Precision:0.312  
F1\_Score:0.476  
Batch 93:GNB  
Accuracy :0.312  
Recall: 1.0  
Precision:0.312  
F1\_Score:0.476  
Batch 93:XGB  
Accuracy :0.312  
Recall: 1.0  
Precision:0.312  
F1\_Score:0.476  
Batch 93:DT  
Accuracy :0.281  
Recall: 0.8  
Precision:0.276  
F1\_Score:0.41  
Batch 93:MLP  
Accuracy :0.312  
Recall: 1.0  
Precision:0.312  
F1\_Score:0.476  
Batch 94:LogReg  
Accuracy :0.656  
Recall: 1.0  
Precision:0.656  
F1\_Score:0.792  
Batch 94:RF  
Accuracy :0.656  
Recall: 1.0  
Precision:0.656  
F1\_Score:0.792  
Batch 94:KNN  
Accuracy :0.656  
Recall: 1.0  
Precision:0.656  
F1\_Score:0.792  
Batch 94:SVM  
Accuracy :0.656  
Recall: 1.0  
Precision:0.656  
F1\_Score:0.792  
Batch 94:GNB  
Accuracy :0.656  
Recall: 1.0  
Precision:0.656  
F1\_Score:0.792  
Batch 94:XGB  
Accuracy :0.656  
Recall: 1.0  
Precision:0.656  
F1\_Score:0.792  
Batch 94:DT  
Accuracy :0.094  
Recall: 0.048  
Precision:0.1  
F1\_Score:0.065  
Batch 94:MLP  
Accuracy :0.656  
Recall: 1.0

```
Precision:0.656
F1_Score:0.792
Batch 95:LogReg
Accuracy :0.188
Recall: 1.0
Precision:0.188
F1_Score:0.316
Batch 95:RF
Accuracy :0.188
Recall: 1.0
Precision:0.188
F1_Score:0.316
Batch 95:KNN
Accuracy :0.281
Recall: 1.0
Precision:0.207
F1_Score:0.343
Batch 95:SVM
Accuracy :0.188
Recall: 1.0
Precision:0.188
F1_Score:0.316
Batch 95:GNB
Accuracy :0.188
Recall: 1.0
Precision:0.188
F1_Score:0.316
Batch 95:XGB
Accuracy :0.188
Recall: 1.0
Precision:0.188
F1_Score:0.316
Batch 95:DT
Accuracy :0.344
Recall: 0.5
Precision:0.143
F1_Score:0.222
Batch 95:MLP
Accuracy :0.188
Recall: 1.0
Precision:0.188
F1_Score:0.316
Batch 96:LogReg
Accuracy :0.062
Recall: 1.0
Precision:0.062
F1_Score:0.118
Batch 96:RF
Accuracy :0.062
Recall: 1.0
Precision:0.062
F1_Score:0.118
Batch 96:KNN
Accuracy :0.125
Recall: 1.0
Precision:0.067
F1_Score:0.125
Batch 96:SVM
Accuracy :0.062
Recall: 1.0
Precision:0.062
F1_Score:0.118
```

```
Batch 96:GNB
Accuracy :0.062
Recall: 1.0
Precision:0.062
F1_Score:0.118
Batch 96:XGB
Accuracy :0.062
Recall: 1.0
Precision:0.062
F1_Score:0.118
Batch 96:DT
Accuracy :0.406
Recall: 1.0
Precision:0.095
F1_Score:0.174
Batch 96:MLP
Accuracy :0.062
Recall: 1.0
Precision:0.062
F1_Score:0.118
Batch 97:LogReg
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 97:RF
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 97:KNN
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 97:SVM
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 97:GNB
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 97:XGB
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 97:DT
Accuracy :0.344
Recall: 0.111
Precision:0.071
F1_Score:0.087
Batch 97:MLP
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 98:LogReg
Accuracy :0.594
```

Recall: 1.0  
Precision:0.594  
F1\_Score:0.745  
Batch 98:RF  
Accuracy :0.594  
Recall: 1.0  
Precision:0.594  
F1\_Score:0.745  
Batch 98:KNN  
Accuracy :0.594  
Recall: 1.0  
Precision:0.594  
F1\_Score:0.745  
Batch 98:SVM  
Accuracy :0.594  
Recall: 1.0  
Precision:0.594  
F1\_Score:0.745  
Batch 98:GNB  
Accuracy :0.594  
Recall: 1.0  
Precision:0.594  
F1\_Score:0.745  
Batch 98:XGB  
Accuracy :0.594  
Recall: 1.0  
Precision:0.594  
F1\_Score:0.745  
Batch 98:DT  
Accuracy :0.562  
Recall: 0.947  
Precision:0.581  
F1\_Score:0.72  
Batch 98:MLP  
Accuracy :0.594  
Recall: 1.0  
Precision:0.594  
F1\_Score:0.745  
Batch 99:LogReg  
Accuracy :0.156  
Recall: 1.0  
Precision:0.156  
F1\_Score:0.27  
Batch 99:RF  
Accuracy :0.156  
Recall: 1.0  
Precision:0.156  
F1\_Score:0.27  
Batch 99:KNN  
Accuracy :0.156  
Recall: 1.0  
Precision:0.156  
F1\_Score:0.27  
Batch 99:SVM  
Accuracy :0.156  
Recall: 1.0  
Precision:0.156  
F1\_Score:0.27  
Batch 99:GNB  
Accuracy :0.156  
Recall: 1.0  
Precision:0.156

```
F1_Score:0.27
Batch 99:XGB
Accuracy :0.156
Recall: 1.0
Precision:0.156
F1_Score:0.27
Batch 99:DT
Accuracy :0.344
Recall: 1.0
Precision:0.192
F1_Score:0.323
Batch 99:MLP
Accuracy :0.156
Recall: 1.0
Precision:0.156
F1_Score:0.27
Batch 100:LogReg
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 100:RF
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 100:KNN
Accuracy :0.281
Recall: 0.5
Precision:0.348
F1_Score:0.41
Batch 100:SVM
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 100:GNB
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 100:XGB
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 100:DT
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 100:MLP
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 101:LogReg
Accuracy :0.844
Recall: 1.0
Precision:0.844
F1_Score:0.915
Batch 101:RF
```

```
Accuracy :0.844
Recall: 1.0
Precision:0.844
F1_Score:0.915
Batch 101:KNN
Accuracy :0.75
Recall: 0.889
Precision:0.828
F1_Score:0.857
Batch 101:SVM
Accuracy :0.844
Recall: 1.0
Precision:0.844
F1_Score:0.915
Batch 101:GNB
Accuracy :0.844
Recall: 1.0
Precision:0.844
F1_Score:0.915
Batch 101:XGB
Accuracy :0.844
Recall: 1.0
Precision:0.844
F1_Score:0.915
Batch 101:DT
Accuracy :0.5
Recall: 0.444
Precision:0.923
F1_Score:0.6
Batch 101:MLP
Accuracy :0.844
Recall: 1.0
Precision:0.844
F1_Score:0.915
Batch 102:LogReg
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 102:RF
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 102:KNN
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 102:SVM
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 102:GNB
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 102:XGB
Accuracy :0.281
Recall: 1.0
```

```
Precision:0.281
F1_Score:0.439
Batch 102:DT
Accuracy :0.469
Recall: 0.556
Precision:0.278
F1_Score:0.37
Batch 102:MLP
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 103:LogReg
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 103:RF
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 103:KNN
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 103:SVM
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 103:GNB
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 103:XGB
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 103:DT
Accuracy :0.344
Recall: 0.133
Precision:0.2
F1_Score:0.16
Batch 103:MLP
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 104:LogReg
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 104:RF
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
```

```
Batch 104:KNN
Accuracy :0.562
Recall: 1.0
Precision:0.517
F1_Score:0.682
Batch 104:SVM
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 104:GNB
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 104:XGB
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 104:DT
Accuracy :0.062
Recall: 0.067
Precision:0.059
F1_Score:0.062
Batch 104:MLP
Accuracy :0.469
Recall: 1.0
Precision:0.469
F1_Score:0.638
Batch 105:LogReg
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 105:RF
Accuracy :0.25
Recall: 0.889
Precision:0.258
F1_Score:0.4
Batch 105:KNN
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 105:SVM
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 105:GNB
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 105:XGB
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 105:DT
Accuracy :0.094
```

```
Recall: 0.333
Precision:0.115
F1_Score:0.171
Batch 105:MLP
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 106:LogReg
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 106:RF
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 106:KNN
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 106:SVM
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 106:GNB
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 106:XGB
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 106:DT
Accuracy :0.469
Recall: 0.25
Precision:0.444
F1_Score:0.32
Batch 106:MLP
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 107:LogReg
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 107:RF
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 107:KNN
Accuracy :0.375
Recall: 1.0
Precision:0.375
```

F1\_Score:0.545  
Batch 107:SVM  
Accuracy :0.375  
Recall: 1.0  
Precision:0.375  
F1\_Score:0.545  
Batch 107:GNB  
Accuracy :0.375  
Recall: 1.0  
Precision:0.375  
F1\_Score:0.545  
Batch 107:XGB  
Accuracy :0.375  
Recall: 1.0  
Precision:0.375  
F1\_Score:0.545  
Batch 107:DT  
Accuracy :0.5  
Recall: 0.833  
Precision:0.417  
F1\_Score:0.556  
Batch 107:MLP  
Accuracy :0.375  
Recall: 1.0  
Precision:0.375  
F1\_Score:0.545  
Batch 108:LogReg  
Accuracy :0.062  
Recall: 1.0  
Precision:0.062  
F1\_Score:0.118  
Batch 108:RF  
Accuracy :0.062  
Recall: 1.0  
Precision:0.062  
F1\_Score:0.118  
Batch 108:KNN  
Accuracy :0.062  
Recall: 1.0  
Precision:0.062  
F1\_Score:0.118  
Batch 108:SVM  
Accuracy :0.062  
Recall: 1.0  
Precision:0.062  
F1\_Score:0.118  
Batch 108:GNB  
Accuracy :0.062  
Recall: 1.0  
Precision:0.062  
F1\_Score:0.118  
Batch 108:XGB  
Accuracy :0.062  
Recall: 1.0  
Precision:0.062  
F1\_Score:0.118  
Batch 108:DT  
Accuracy :0.281  
Recall: 1.0  
Precision:0.08  
F1\_Score:0.148  
Batch 108:MLP

Accuracy :0.062  
Recall: 1.0  
Precision:0.062  
F1\_Score:0.118  
Batch 109:LogReg  
Accuracy :0.125  
Recall: 1.0  
Precision:0.125  
F1\_Score:0.222  
Batch 109:RF  
Accuracy :0.125  
Recall: 1.0  
Precision:0.125  
F1\_Score:0.222  
Batch 109:KNN  
Accuracy :0.125  
Recall: 1.0  
Precision:0.125  
F1\_Score:0.222  
Batch 109:SVM  
Accuracy :0.125  
Recall: 1.0  
Precision:0.125  
F1\_Score:0.222  
Batch 109:GNB  
Accuracy :0.125  
Recall: 1.0  
Precision:0.125  
F1\_Score:0.222  
Batch 109:XGB  
Accuracy :0.125  
Recall: 1.0  
Precision:0.125  
F1\_Score:0.222  
Batch 109:DT  
Accuracy :0.062  
Recall: 0.5  
Precision:0.067  
F1\_Score:0.118  
Batch 109:MLP  
Accuracy :0.125  
Recall: 1.0  
Precision:0.125  
F1\_Score:0.222  
Batch 110:LogReg  
Accuracy :0.438  
Recall: 1.0  
Precision:0.438  
F1\_Score:0.609  
Batch 110:RF  
Accuracy :0.438  
Recall: 1.0  
Precision:0.438  
F1\_Score:0.609  
Batch 110:KNN  
Accuracy :0.219  
Recall: 0.429  
Precision:0.261  
F1\_Score:0.324  
Batch 110:SVM  
Accuracy :0.438  
Recall: 1.0

```
Precision:0.438
F1_Score:0.609
Batch 110:GNB
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 110:XGB
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 110:DT
Accuracy :0.625
Recall: 1.0
Precision:0.538
F1_Score:0.7
Batch 110:MLP
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 111:LogReg
Accuracy :0.844
Recall: 1.0
Precision:0.844
F1_Score:0.915
Batch 111:RF
Accuracy :0.844
Recall: 1.0
Precision:0.844
F1_Score:0.915
Batch 111:KNN
Accuracy :0.344
Recall: 0.407
Precision:0.688
F1_Score:0.512
Batch 111:SVM
Accuracy :0.844
Recall: 1.0
Precision:0.844
F1_Score:0.915
Batch 111:GNB
Accuracy :0.844
Recall: 1.0
Precision:0.844
F1_Score:0.915
Batch 111:XGB
Accuracy :0.844
Recall: 1.0
Precision:0.844
F1_Score:0.915
Batch 111:DT
Accuracy :0.906
Recall: 0.926
Precision:0.962
F1_Score:0.943
Batch 111:MLP
Accuracy :0.844
Recall: 1.0
Precision:0.844
F1_Score:0.915
```

```
Batch 112:LogReg
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 112:RF
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 112:KNN
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 112:SVM
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 112:GNB
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 112:XGB
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 112:DT
Accuracy :0.219
Recall: 0.143
Precision:0.3
F1_Score:0.194
Batch 112:MLP
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 113:LogReg
Accuracy :0.531
Recall: 1.0
Precision:0.531
F1_Score:0.694
Batch 113:RF
Accuracy :0.531
Recall: 1.0
Precision:0.531
F1_Score:0.694
Batch 113:KNN
Accuracy :0.531
Recall: 1.0
Precision:0.531
F1_Score:0.694
Batch 113:SVM
Accuracy :0.531
Recall: 1.0
Precision:0.531
F1_Score:0.694
Batch 113:GNB
Accuracy :0.531
```

Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 113:XGB  
Accuracy :0.531  
Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 113:DT  
Accuracy :0.5  
Recall: 0.588  
Precision:0.526  
F1\_Score:0.556  
Batch 113:MLP  
Accuracy :0.531  
Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 114:LogReg  
Accuracy :0.125  
Recall: 1.0  
Precision:0.125  
F1\_Score:0.222  
Batch 114:RF  
Accuracy :0.125  
Recall: 1.0  
Precision:0.125  
F1\_Score:0.222  
Batch 114:KNN  
Accuracy :0.125  
Recall: 1.0  
Precision:0.125  
F1\_Score:0.222  
Batch 114:SVM  
Accuracy :0.125  
Recall: 1.0  
Precision:0.125  
F1\_Score:0.222  
Batch 114:GNB  
Accuracy :0.125  
Recall: 1.0  
Precision:0.125  
F1\_Score:0.222  
Batch 114:XGB  
Accuracy :0.125  
Recall: 1.0  
Precision:0.125  
F1\_Score:0.222  
Batch 114:DT  
Accuracy :0.469  
Recall: 1.0  
Precision:0.19  
F1\_Score:0.32  
Batch 114:MLP  
Accuracy :0.125  
Recall: 1.0  
Precision:0.125  
F1\_Score:0.222  
Batch 115:LogReg  
Accuracy :0.281  
Recall: 1.0  
Precision:0.281

```
F1_Score:0.439
Batch 115:RF
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 115:KNN
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 115:SVM
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 115:GNB
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 115:XGB
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 115:DT
Accuracy :0.719
Recall: 0.444
Precision:0.5
F1_Score:0.471
Batch 115:MLP
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 116:LogReg
Accuracy :0.531
Recall: 1.0
Precision:0.531
F1_Score:0.694
Batch 116:RF
Accuracy :0.531
Recall: 1.0
Precision:0.531
F1_Score:0.694
Batch 116:KNN
Accuracy :0.531
Recall: 1.0
Precision:0.531
F1_Score:0.694
Batch 116:SVM
Accuracy :0.531
Recall: 1.0
Precision:0.531
F1_Score:0.694
Batch 116:GNB
Accuracy :0.531
Recall: 1.0
Precision:0.531
F1_Score:0.694
Batch 116:XGB
```

Accuracy :0.531  
Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 116:DT  
Accuracy :0.594  
Recall: 0.647  
Precision:0.611  
F1\_Score:0.629  
Batch 116:MLP  
Accuracy :0.531  
Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 117:LogReg  
Accuracy :0.25  
Recall: 1.0  
Precision:0.25  
F1\_Score:0.4  
Batch 117:RF  
Accuracy :0.25  
Recall: 1.0  
Precision:0.25  
F1\_Score:0.4  
Batch 117:KNN  
Accuracy :0.25  
Recall: 1.0  
Precision:0.25  
F1\_Score:0.4  
Batch 117:SVM  
Accuracy :0.25  
Recall: 1.0  
Precision:0.25  
F1\_Score:0.4  
Batch 117:GNB  
Accuracy :0.25  
Recall: 1.0  
Precision:0.25  
F1\_Score:0.4  
Batch 117:XGB  
Accuracy :0.25  
Recall: 1.0  
Precision:0.25  
F1\_Score:0.4  
Batch 117:DT  
Accuracy :0.531  
Recall: 0.625  
Precision:0.294  
F1\_Score:0.4  
Batch 117:MLP  
Accuracy :0.25  
Recall: 1.0  
Precision:0.25  
F1\_Score:0.4  
Batch 118:LogReg  
Accuracy :0.406  
Recall: 1.0  
Precision:0.406  
F1\_Score:0.578  
Batch 118:RF  
Accuracy :0.406  
Recall: 1.0

```
Precision:0.406
F1_Score:0.578
Batch 118:KNN
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 118:SVM
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 118:GNB
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 118:XGB
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 118:DT
Accuracy :0.25
Recall: 0.308
Precision:0.211
F1_Score:0.25
Batch 118:MLP
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 119:LogReg
Accuracy :0.562
Recall: 1.0
Precision:0.562
F1_Score:0.72
Batch 119:RF
Accuracy :0.562
Recall: 1.0
Precision:0.562
F1_Score:0.72
Batch 119:KNN
Accuracy :0.562
Recall: 1.0
Precision:0.562
F1_Score:0.72
Batch 119:SVM
Accuracy :0.562
Recall: 1.0
Precision:0.562
F1_Score:0.72
Batch 119:GNB
Accuracy :0.562
Recall: 1.0
Precision:0.562
F1_Score:0.72
Batch 119:XGB
Accuracy :0.562
Recall: 1.0
Precision:0.562
F1_Score:0.72
```

```
Batch 119:DT
Accuracy :0.5
Recall: 0.889
Precision:0.533
F1_Score:0.667
Batch 119:MLP
Accuracy :0.562
Recall: 1.0
Precision:0.562
F1_Score:0.72
Batch 120:LogReg
Accuracy :0.031
Recall: 1.0
Precision:0.031
F1_Score:0.061
Batch 120:RF
Accuracy :0.031
Recall: 1.0
Precision:0.031
F1_Score:0.061
Batch 120:KNN
Accuracy :0.031
Recall: 1.0
Precision:0.031
F1_Score:0.061
Batch 120:SVM
Accuracy :0.031
Recall: 1.0
Precision:0.031
F1_Score:0.061
Batch 120:GNB
Accuracy :0.031
Recall: 1.0
Precision:0.031
F1_Score:0.061
Batch 120:XGB
Accuracy :0.031
Recall: 1.0
Precision:0.031
F1_Score:0.061
Batch 120:DT
Accuracy :0.062
Recall: 1.0
Precision:0.032
F1_Score:0.062
Batch 120:MLP
Accuracy :0.031
Recall: 1.0
Precision:0.031
F1_Score:0.061
Batch 121:LogReg
Accuracy :0.812
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 121:RF
Accuracy :0.812
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 121:KNN
Accuracy :0.438
```

Recall: 0.5  
Precision:0.722  
F1\_Score:0.591  
Batch 121:SVM  
Accuracy :0.812  
Recall: 1.0  
Precision:0.812  
F1\_Score:0.897  
Batch 121:GNB  
Accuracy :0.812  
Recall: 1.0  
Precision:0.812  
F1\_Score:0.897  
Batch 121:XGB  
Accuracy :0.812  
Recall: 1.0  
Precision:0.812  
F1\_Score:0.897  
Batch 121:DT  
Accuracy :0.812  
Recall: 1.0  
Precision:0.812  
F1\_Score:0.897  
Batch 121:MLP  
Accuracy :0.812  
Recall: 1.0  
Precision:0.812  
F1\_Score:0.897  
Batch 122:LogReg  
Accuracy :0.844  
Recall: 1.0  
Precision:0.844  
F1\_Score:0.915  
Batch 122:RF  
Accuracy :0.844  
Recall: 1.0  
Precision:0.844  
F1\_Score:0.915  
Batch 122:KNN  
Accuracy :0.75  
Recall: 0.889  
Precision:0.828  
F1\_Score:0.857  
Batch 122:SVM  
Accuracy :0.844  
Recall: 1.0  
Precision:0.844  
F1\_Score:0.915  
Batch 122:GNB  
Accuracy :0.844  
Recall: 1.0  
Precision:0.844  
F1\_Score:0.915  
Batch 122:XGB  
Accuracy :0.844  
Recall: 1.0  
Precision:0.844  
F1\_Score:0.915  
Batch 122:DT  
Accuracy :0.406  
Recall: 0.481  
Precision:0.722

```
F1_Score:0.578
Batch 122:MLP
Accuracy :0.844
Recall: 1.0
Precision:0.844
F1_Score:0.915
Batch 123:LogReg
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 123:RF
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 123:KNN
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 123:SVM
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 123:GNB
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 123:XGB
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 123:DT
Accuracy :0.094
Recall: 0.222
Precision:0.083
F1_Score:0.121
Batch 123:MLP
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 124:LogReg
Accuracy :0.531
Recall: 1.0
Precision:0.531
F1_Score:0.694
Batch 124:RF
Accuracy :0.531
Recall: 1.0
Precision:0.531
F1_Score:0.694
Batch 124:KNN
Accuracy :0.531
Recall: 1.0
Precision:0.531
F1_Score:0.694
Batch 124:SVM
```

```
Accuracy :0.531
Recall: 1.0
Precision:0.531
F1_Score:0.694
Batch 124:GNB
Accuracy :0.531
Recall: 1.0
Precision:0.531
F1_Score:0.694
Batch 124:XGB
Accuracy :0.531
Recall: 1.0
Precision:0.531
F1_Score:0.694
Batch 124:DT
Accuracy :0.125
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 124:MLP
Accuracy :0.531
Recall: 1.0
Precision:0.531
F1_Score:0.694
Batch 125:LogReg
Accuracy :0.562
Recall: 1.0
Precision:0.562
F1_Score:0.72
Batch 125:RF
Accuracy :0.5
Recall: 0.889
Precision:0.533
F1_Score:0.667
Batch 125:KNN
Accuracy :0.562
Recall: 1.0
Precision:0.562
F1_Score:0.72
Batch 125:SVM
Accuracy :0.562
Recall: 1.0
Precision:0.562
F1_Score:0.72
Batch 125:GNB
Accuracy :0.562
Recall: 1.0
Precision:0.562
F1_Score:0.72
Batch 125:XGB
Accuracy :0.562
Recall: 1.0
Precision:0.562
F1_Score:0.72
Batch 125:DT
Accuracy :0.344
Recall: 0.444
Precision:0.421
F1_Score:0.432
Batch 125:MLP
Accuracy :0.562
Recall: 1.0
```

```
Precision:0.562
F1_Score:0.72
Batch 126:LogReg
Accuracy :0.312
Recall: 1.0
Precision:0.312
F1_Score:0.476
Batch 126:RF
Accuracy :0.281
Recall: 0.9
Precision:0.29
F1_Score:0.439
Batch 126:KNN
Accuracy :0.312
Recall: 1.0
Precision:0.312
F1_Score:0.476
Batch 126:SVM
Accuracy :0.312
Recall: 1.0
Precision:0.312
F1_Score:0.476
Batch 126:GNB
Accuracy :0.312
Recall: 1.0
Precision:0.312
F1_Score:0.476
Batch 126:XGB
Accuracy :0.312
Recall: 1.0
Precision:0.312
F1_Score:0.476
Batch 126:DT
Accuracy :0.156
Recall: 0.4
Precision:0.16
F1_Score:0.229
Batch 126:MLP
Accuracy :0.312
Recall: 1.0
Precision:0.312
F1_Score:0.476
Batch 127:LogReg
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 127:RF
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 127:KNN
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 127:SVM
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
```

```
Batch 127:GNB
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 127:XGB
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 127:DT
Accuracy :0.188
Recall: 0.1
Precision:0.2
F1_Score:0.133
Batch 127:MLP
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 128:LogReg
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 128:RF
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 128:KNN
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 128:SVM
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 128:GNB
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 128:XGB
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 128:DT
Accuracy :0.406
Recall: 0.429
Precision:0.353
F1_Score:0.387
Batch 128:MLP
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 129:LogReg
Accuracy :0.094
```

Recall: 1.0  
Precision:0.094  
F1\_Score:0.171  
Batch 129:RF  
Accuracy :0.094  
Recall: 1.0  
Precision:0.094  
F1\_Score:0.171  
Batch 129:KNN  
Accuracy :0.094  
Recall: 1.0  
Precision:0.094  
F1\_Score:0.171  
Batch 129:SVM  
Accuracy :0.094  
Recall: 1.0  
Precision:0.094  
F1\_Score:0.171  
Batch 129:GNB  
Accuracy :0.094  
Recall: 1.0  
Precision:0.094  
F1\_Score:0.171  
Batch 129:XGB  
Accuracy :0.094  
Recall: 1.0  
Precision:0.094  
F1\_Score:0.171  
Batch 129:DT  
Accuracy :0.219  
Recall: 1.0  
Precision:0.107  
F1\_Score:0.194  
Batch 129:MLP  
Accuracy :0.094  
Recall: 1.0  
Precision:0.094  
F1\_Score:0.171  
Batch 130:LogReg  
Accuracy :0.031  
Recall: 1.0  
Precision:0.031  
F1\_Score:0.061  
Batch 130:RF  
Accuracy :0.031  
Recall: 1.0  
Precision:0.031  
F1\_Score:0.061  
Batch 130:KNN  
Accuracy :0.031  
Recall: 1.0  
Precision:0.031  
F1\_Score:0.061  
Batch 130:SVM  
Accuracy :0.031  
Recall: 1.0  
Precision:0.031  
F1\_Score:0.061  
Batch 130:GNB  
Accuracy :0.031  
Recall: 1.0  
Precision:0.031

```
F1_Score:0.061
Batch 130:XGB
Accuracy :0.031
Recall: 1.0
Precision:0.031
F1_Score:0.061
Batch 130:DT
Accuracy :0.062
Recall: 1.0
Precision:0.032
F1_Score:0.062
Batch 130:MLP
Accuracy :0.031
Recall: 1.0
Precision:0.031
F1_Score:0.061
Batch 131:LogReg
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 131:RF
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 131:KNN
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 131:SVM
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 131:GNB
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 131:XGB
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 131:DT
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 131:MLP
Accuracy :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
Batch 132:LogReg
Accuracy :0.812
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 132:RF
```

```
Accuracy :0.812
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 132:KNN
Accuracy :0.812
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 132:SVM
Accuracy :0.812
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 132:GNB
Accuracy :0.812
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 132:XGB
Accuracy :0.812
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 132:DT
Accuracy :0.812
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 132:MLP
Accuracy :0.812
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 133:LogReg
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 133:RF
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 133:KNN
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 133:SVM
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 133:GNB
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 133:XGB
Accuracy :0.656
Recall: 1.0
```

```
Precision:0.656
F1_Score:0.792
Batch 133:DT
Accuracy :0.156
Recall: 0.143
Precision:0.25
F1_Score:0.182
Batch 133:MLP
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 134:LogReg
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 134:RF
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 134:KNN
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 134:SVM
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 134:GNB
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 134:XGB
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 134:DT
Accuracy :0.438
Recall: 0.474
Precision:0.529
F1_Score:0.5
Batch 134:MLP
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 135:LogReg
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 135:RF
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
```

```
Batch 135:KNN
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 135:SVM
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 135:GNB
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 135:XGB
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 135:DT
Accuracy :0.375
Recall: 0.692
Precision:0.36
F1_Score:0.474
Batch 135:MLP
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 136:LogReg
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 136:RF
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 136:KNN
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 136:SVM
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 136:GNB
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 136:XGB
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 136:DT
Accuracy :0.156
```

```
Recall: 0.105
Precision:0.167
F1_Score:0.129
Batch 136:MLP
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 137:LogReg
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 137:RF
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 137:KNN
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 137:SVM
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 137:GNB
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 137:XGB
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 137:DT
Accuracy :0.594
Recall: 0.9
Precision:0.621
F1_Score:0.735
Batch 137:MLP
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 138:LogReg
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 138:RF
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 138:KNN
Accuracy :0.281
Recall: 1.0
Precision:0.281
```

```
F1_Score:0.439
Batch 138:SVM
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 138:GNB
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 138:XGB
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 138:DT
Accuracy :0.406
Recall: 0.667
Precision:0.273
F1_Score:0.387
Batch 138:MLP
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 139:LogReg
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 139:RF
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 139:KNN
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 139:SVM
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 139:GNB
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 139:XGB
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 139:DT
Accuracy :0.469
Recall: 0.7
Precision:0.56
F1_Score:0.622
Batch 139:MLP
```

Accuracy :0.625  
Recall: 1.0  
Precision:0.625  
F1\_Score:0.769  
Batch 140:LogReg  
Accuracy :0.344  
Recall: 1.0  
Precision:0.344  
F1\_Score:0.512  
Batch 140:RF  
Accuracy :0.344  
Recall: 1.0  
Precision:0.344  
F1\_Score:0.512  
Batch 140:KNN  
Accuracy :0.344  
Recall: 1.0  
Precision:0.344  
F1\_Score:0.512  
Batch 140:SVM  
Accuracy :0.344  
Recall: 1.0  
Precision:0.344  
F1\_Score:0.512  
Batch 140:GNB  
Accuracy :0.344  
Recall: 1.0  
Precision:0.344  
F1\_Score:0.512  
Batch 140:XGB  
Accuracy :0.344  
Recall: 1.0  
Precision:0.344  
F1\_Score:0.512  
Batch 140:DT  
Accuracy :0.281  
Recall: 0.818  
Precision:0.3  
F1\_Score:0.439  
Batch 140:MLP  
Accuracy :0.344  
Recall: 1.0  
Precision:0.344  
F1\_Score:0.512  
Batch 141:LogReg  
Accuracy :0.1  
Recall: 1.0  
Precision:0.1  
F1\_Score:0.182  
Batch 141:RF  
Accuracy :0.1  
Recall: 1.0  
Precision:0.1  
F1\_Score:0.182  
Batch 141:KNN  
Accuracy :0.1  
Recall: 1.0  
Precision:0.1  
F1\_Score:0.182  
Batch 141:SVM  
Accuracy :0.1  
Recall: 1.0

```
Precision:0.1  
F1_Score:0.182  
Batch 141:GNB  
Accuracy :0.1  
Recall: 1.0  
Precision:0.1  
F1_Score:0.182  
Batch 141:XGB  
Accuracy :0.1  
Recall: 1.0  
Precision:0.1  
F1_Score:0.182  
Batch 141:DT  
Accuracy :0.1  
Recall: 1.0  
Precision:0.1  
F1_Score:0.182  
Batch 141:MLP  
Accuracy :0.1  
Recall: 1.0  
Precision:0.1  
F1_Score:0.182
```

In [122...]

```
plt_classification_results(df,df2)
```



Gradual Drift Bottom 25 % / 30 %

In [123...]

```
batches_d=make_batches(df_drifted_bottom25_all)

all_excede_list_d,exceed_count_L2_instThresh_d ,exceed_count_L2_countThresh_d,avg_mse
```

```
*****
```

```
Batch Number : 0
```

```
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
```

```
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
```

```
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
*****
```

```
Batch Number : 1
```

```
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
```

```
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
```

```
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
*****
```

```
Batch Number : 2
```

```
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
```

```
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
```

```
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
*****
```

```
Batch Number : 3
```

```
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
```

```
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
```

```
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
*****
```

```
Batch Number : 4
```

```
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
```

```
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 5

Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 6

Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

*****
Batch Number : 7

Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 8

Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 9

Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
```

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 10

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 11

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 12

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 13

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 14

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 15

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 16

Data Points Exceeding Layer 1 Encoder Instance Threshold : [4, 5, 6, 7, 9, 16, 17, 18, 19, 20]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 17

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 18

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 19

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 20

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 21

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 22

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 23

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 24

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 25

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 26

Data Points Exceeding Layer 1 Encoder Instance Threshold : [29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 27

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 28

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 29

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 30

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Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
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Batch Number : 31
Data Points Exceeding Layer 1 Encoder Instance Threshold : [0]
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
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```
Batch Number : 32
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
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```
Batch Number : 33
Data Points Exceeding Layer 1 Encoder Instance Threshold : [31]
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
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```
Batch Number : 34
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

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```
Batch Number : 35
Data Points Exceeding Layer 1 Encoder Instance Threshold : [17, 18, 19, 20, 21, 22, 2
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3, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 14

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Batch Number : 36

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

\*\*\*\*\*

Batch Number : 37

Data Points Exceeding Layer 1 Encoder Instance Threshold : [3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 16, 17, 18, 19, 20, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 12

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Batch Number : 38

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 16, 17]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 39

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 40

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Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

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Batch Number : 41
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
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```
Batch Number : 42
Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5]
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

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```
Batch Number : 43
Data Points Exceeding Layer 1 Encoder Instance Threshold : [0]
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

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```
Batch Number : 44
Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 29]
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

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Batch Number : 45
Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 15, 16]
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Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 46

Data Points Exceeding Layer 1 Encoder Instance Threshold : [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 4

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Batch Number : 47

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 16

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Batch Number : 48

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 49

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 50

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Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
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Batch Number : 51
Data Points Exceeding Layer 1 Encoder Instance Threshold : [6, 8]
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
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Batch Number : 52
Data Points Exceeding Layer 1 Encoder Instance Threshold : [25, 26]
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
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```
Batch Number : 53
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
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```
Batch Number : 54
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
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Batch Number : 55
Data Points Exceeding Layer 1 Encoder Instance Threshold : []
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Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 56

Data Points Exceeding Layer 1 Encoder Instance Threshold : [7, 8, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 15

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Batch Number : 57

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 13, 14, 15, 16, 17, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [15, 16, 17, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 16

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Batch Number : 58

Data Points Exceeding Layer 1 Encoder Instance Threshold : [3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 24, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 6

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Batch Number : 59

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 16, 17, 18, 19, 20, 22, 23, 24, 26, 27, 28, 30]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 16

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Batch Number : 60

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 13

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Batch Number : 61

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 7]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 62

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 5, 16, 25]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 63

Data Points Exceeding Layer 1 Encoder Instance Threshold : [4, 6]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 64

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 65

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 66

Data Points Exceeding Layer 1 Encoder Instance Threshold : []

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 67

Data Points Exceeding Layer 1 Encoder Instance Threshold : [2, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 5

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Batch Number : 68

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 16, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 21

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Batch Number : 69

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [14, 15, 16, 17, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 17

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Batch Number : 70

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 1

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Batch Number : 71

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 15, 16, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 15

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Batch Number : 72

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 16

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Batch Number : 73

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 19, 22, 23, 24, 25, 29]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 1

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Batch Number : 74

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 15, 16, 17, 18, 20, 22, 23, 24, 25, 26]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 17

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Batch Number : 75

Data Points Exceeding Layer 1 Encoder Instance Threshold : [7, 8, 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 16

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Batch Number : 76

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 1

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Batch Number : 77

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 3, 4, 5, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 19

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Batch Number : 78

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 27, 28, 29, 30]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 19

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Batch Number : 79

Data Points Exceeding Layer 1 Encoder Instance Threshold : [3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 8

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Batch Number : 80

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 16

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Batch Number : 81

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 14, 15, 16, 17, 18, 19, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 18

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Batch Number : 82

Data Points Exceeding Layer 1 Encoder Instance Threshold : [31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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Batch Number : 83

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 3, 4, 13, 14, 15, 16, 17, 20, 21]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 3, 4, 5, 6, 7, 8, 9,

10, 11, 12, 13, 14, 15]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 15

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Batch Number : 84

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 18

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Batch Number : 85

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 2, 4, 5, 6, 14, 15, 16, 17, 18, 19, 23, 24, 25, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 3

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Batch Number : 86

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 16

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Batch Number : 87

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 19

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Batch Number : 88

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 7

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Batch Number : 89

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 90

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 19

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Batch Number : 91

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 3

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Batch Number : 92

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 19

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Batch Number : 93

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 21

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Batch Number : 94

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [1, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 5

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Batch Number : 95

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 18

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Batch Number : 96

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 97

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 6

\*\*\*\*\*

Batch Number : 98

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 18

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Batch Number : 99

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 21

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Batch Number : 100

Data Points Exceeding Layer 1 Encoder Instance Threshold : [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 8

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Batch Number : 101

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 17]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 16

\*\*\*\*\*

Batch Number : 102

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 19

\*\*\*\*\*

Batch Number : 103

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 6

\*\*\*\*\*

Batch Number : 104

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 18

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Batch Number : 105

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

\*\*\*\*\*

Batch Number : 106

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 4, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 8

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Batch Number : 107

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 23

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Batch Number : 108

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 21

\*\*\*\*\*

Batch Number : 109

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 8

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Batch Number : 110

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 111

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 112

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [1, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 5

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Batch Number : 113

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 18

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Batch Number : 114

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 115

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 8

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Batch Number : 116

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 18

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Batch Number : 117

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 21

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Batch Number : 118

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 6

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Batch Number : 119

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 18

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Batch Number : 120

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 23

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Batch Number : 121

Data Points Exceeding Layer 1 Encoder Instance Threshold : [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 8

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Batch Number : 122

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 17

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Batch Number : 123

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 124

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 6

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Batch Number : 125

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 18

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Batch Number : 126

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 127

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 19, 20, 21, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 10

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Batch Number : 128

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 19

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Batch Number : 129

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 130

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 9

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Batch Number : 131

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 132

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 22

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Batch Number : 133

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [1, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 5

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Batch Number : 134

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 18

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Batch Number : 135

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

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Batch Number : 136

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [1, 16, 17, 18, 19, 20, 21, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 12

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Batch Number : 137

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 17

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Batch Number : 138

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 21

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Batch Number : 139

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [1, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 5

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Batch Number : 140

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 18

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Batch Number : 141

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 11

Drift Detection at Batch Level

Hello

Threshold exceeds at batch : 35  
[35]  
Warning Level at Batch 35  
Threshold exceeds at batch : 37  
[37]  
Warning Level at Batch 37  
Threshold exceeds at batch : 46  
[46]  
Warning Level at Batch 46  
Threshold exceeds at batch : 47  
[46, 47]  
Warning Level at Batch 47  
Threshold exceeds at batch : 56  
[56]  
Warning Level at Batch 56  
Threshold exceeds at batch : 57  
[56, 57]  
Warning Level at Batch 57  
Threshold exceeds at batch : 58  
[56, 57, 58]  
Drift Confirmed at Batch No : 56  
Threshold exceeds at batch : 59  
[56, 57, 58, 59]  
Drift Confirmed at Batch No : 57  
Threshold exceeds at batch : 60  
[56, 57, 58, 59, 60]  
Drift Confirmed at Batch No : 58  
Threshold exceeds at batch : 67  
[56, 57, 58, 59, 60]  
Threshold exceeds at batch : 68  
[56, 57, 58, 59, 60]  
Threshold exceeds at batch : 69  
[56, 57, 58, 59, 60]  
Drift Confirmed at Batch No : 67  
Threshold exceeds at batch : 71  
[56, 57, 58, 59, 60]  
Threshold exceeds at batch : 72  
[56, 57, 58, 59, 60]  
Threshold exceeds at batch : 74  
[56, 57, 58, 59, 60]  
Threshold exceeds at batch : 75  
[56, 57, 58, 59, 60]

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Threshold exceeds at batch : 77
[56, 57, 58, 59, 60]
Threshold exceeds at batch : 78
[56, 57, 58, 59, 60]
Threshold exceeds at batch : 79
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 77
Threshold exceeds at batch : 80
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 78
Threshold exceeds at batch : 81
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 79
Threshold exceeds at batch : 83
[56, 57, 58, 59, 60]
Threshold exceeds at batch : 84
[56, 57, 58, 59, 60]
Threshold exceeds at batch : 86
[56, 57, 58, 59, 60]
Threshold exceeds at batch : 87
[56, 57, 58, 59, 60]
Threshold exceeds at batch : 88
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 86
Threshold exceeds at batch : 89
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 87
Threshold exceeds at batch : 90
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 88
Threshold exceeds at batch : 91
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 89
Threshold exceeds at batch : 92
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 90
Threshold exceeds at batch : 93
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 91
Threshold exceeds at batch : 94
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 92
Threshold exceeds at batch : 95
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 93
Threshold exceeds at batch : 96
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 94
Threshold exceeds at batch : 97
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 95
Threshold exceeds at batch : 98
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 96
Threshold exceeds at batch : 99
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 97
Threshold exceeds at batch : 100
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 98
Threshold exceeds at batch : 101
[56, 57, 58, 59, 60]
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Drift Confirmed at Batch No : 99
Threshold exceeds at batch : 102
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 100
Threshold exceeds at batch : 103
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 101
Threshold exceeds at batch : 104
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 102
Threshold exceeds at batch : 105
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 103
Threshold exceeds at batch : 106
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 104
Threshold exceeds at batch : 107
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 105
Threshold exceeds at batch : 108
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 106
Threshold exceeds at batch : 109
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 107
Threshold exceeds at batch : 110
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 108
Threshold exceeds at batch : 111
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 109
Threshold exceeds at batch : 112
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 110
Threshold exceeds at batch : 113
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 111
Threshold exceeds at batch : 114
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 112
Threshold exceeds at batch : 115
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 113
Threshold exceeds at batch : 116
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 114
Threshold exceeds at batch : 117
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 115
Threshold exceeds at batch : 118
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 116
Threshold exceeds at batch : 119
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 117
Threshold exceeds at batch : 120
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 118
Threshold exceeds at batch : 121
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 119
Threshold exceeds at batch : 122
```

```
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 120
Threshold exceeds at batch : 123
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 121
Threshold exceeds at batch : 124
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 122
Threshold exceeds at batch : 125
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 123
Threshold exceeds at batch : 126
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 124
Threshold exceeds at batch : 127
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 125
Threshold exceeds at batch : 128
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 126
Threshold exceeds at batch : 129
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 127
Threshold exceeds at batch : 130
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 128
Threshold exceeds at batch : 131
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 129
Threshold exceeds at batch : 132
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 130
Threshold exceeds at batch : 133
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 131
Threshold exceeds at batch : 134
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 132
Threshold exceeds at batch : 135
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 133
Threshold exceeds at batch : 136
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 134
Threshold exceeds at batch : 137
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 135
Threshold exceeds at batch : 138
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 136
Threshold exceeds at batch : 139
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 137
Threshold exceeds at batch : 140
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 138
Threshold exceeds at batch : 141
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 139
Number of Drifted Batches61
[56, 57, 58, 67, 77, 78, 79, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99,
100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116,
```

```
117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133,  
134, 135, 136, 137, 138, 139]
```

In [124...]

```
perform_t_test()
```

```
Layer 1 Reconstruction Error Values for Normal and Drifted Data  
Test statistic is 16.894442  
p-value for two tailed test is 0.000000  
Conclusion :  
Since p-value(=0.000000) < alpha(=0.05) We reject the null hypothesis H0 and Accept H  
1 . So we conclude that  
There is a drift in the dataset at 0.05 level of significance.
```

```
Layer 1 Exceed Count Values for Normal and Drifted Data  
Test statistic is -13.963947  
p-value for two tailed test is 0.000000  
Conclusion :  
Since p-value(=0.000000) < alpha(=0.05) We reject the null hypothesis H0 and Accept H  
1 . So we conclude that  
There is a drift in the dataset at 0.05 level of significance.
```

```
Layer 2 Reconstruction Error Values for Normal and Drifted Data  
Test statistic is 13.815237  
p-value for two tailed test is 0.000000  
Conclusion :  
Since p-value(=0.000000) < alpha(=0.05) We reject the null hypothesis H0 and Accept H  
1 . So we conclude that  
There is a drift in the dataset at 0.05 level of significance.
```

```
Layer 2 Exceed Count Values for Normal and Drifted Data  
Test statistic is 11.627102  
p-value for two tailed test is 0.000000  
Conclusion :  
Since p-value(=0.000000) < alpha(=0.05) We reject the null hypothesis H0 and Accept H  
1 . So we conclude that  
There is a drift in the dataset at 0.05 level of significance.
```

In [125...]

```
df_plotting=visual_analysis()
```







In [126]:

```
df,df2=classify_batches(models,df_drifted_bottom25_all ,stream,'class',batch_size=32)
```

Batch 0:LogReg  
Accuracy :0.781  
Recall: 0.769  
Precision:0.714

```
F1_Score:0.741
Batch 0:RF
Accuracy :0.844
Recall: 0.846
Precision:0.786
F1_Score:0.815
Batch 0:KNN
Accuracy :0.688
Recall: 0.308
Precision:0.8
F1_Score:0.444
Batch 0:SVM
Accuracy :0.812
Recall: 0.692
Precision:0.818
F1_Score:0.75
Batch 0:GNB
Accuracy :0.938
Recall: 0.846
Precision:1.0
F1_Score:0.917
Batch 0:XGB
Accuracy :0.656
Recall: 0.923
Precision:0.545
F1_Score:0.686
Batch 0:DT
Accuracy :0.656
Recall: 0.615
Precision:0.571
F1_Score:0.593
Batch 0:MLP
Accuracy :0.781
Recall: 0.769
Precision:0.714
F1_Score:0.741
Batch 1:LogReg
Accuracy :0.969
Recall: 1.0
Precision:0.964
F1_Score:0.982
Batch 1:RF
Accuracy :0.969
Recall: 1.0
Precision:0.964
F1_Score:0.982
Batch 1:KNN
Accuracy :0.688
Recall: 0.63
Precision:1.0
F1_Score:0.773
Batch 1:SVM
Accuracy :0.969
Recall: 1.0
Precision:0.964
F1_Score:0.982
Batch 1:GNB
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 1:XGB
```

Accuracy :0.938  
Recall: 1.0  
Precision:0.931  
F1\_Score:0.964  
Batch 1:DT  
Accuracy :0.906  
Recall: 0.963  
Precision:0.929  
F1\_Score:0.945  
Batch 1:MLP  
Accuracy :0.969  
Recall: 1.0  
Precision:0.964  
F1\_Score:0.982  
Batch 2:LogReg  
Accuracy :0.812  
Recall: 1.0  
Precision:0.714  
F1\_Score:0.833  
Batch 2:RF  
Accuracy :0.75  
Recall: 1.0  
Precision:0.652  
F1\_Score:0.789  
Batch 2:KNN  
Accuracy :0.625  
Recall: 0.4  
Precision:0.667  
F1\_Score:0.5  
Batch 2:SVM  
Accuracy :0.781  
Recall: 0.933  
Precision:0.7  
F1\_Score:0.8  
Batch 2:GNB  
Accuracy :0.812  
Recall: 1.0  
Precision:0.714  
F1\_Score:0.833  
Batch 2:XGB  
Accuracy :0.688  
Recall: 1.0  
Precision:0.6  
F1\_Score:0.75  
Batch 2:DT  
Accuracy :0.625  
Recall: 0.867  
Precision:0.565  
F1\_Score:0.684  
Batch 2:MLP  
Accuracy :0.781  
Recall: 1.0  
Precision:0.682  
F1\_Score:0.811  
Batch 3:LogReg  
Accuracy :0.906  
Recall: 1.0  
Precision:0.812  
F1\_Score:0.897  
Batch 3:RF  
Accuracy :0.75  
Recall: 1.0

```
Precision:0.619
F1_Score:0.765
Batch 3:KNN
Accuracy :0.75
Recall: 0.462
Precision:0.857
F1_Score:0.6
Batch 3:SVM
Accuracy :0.844
Recall: 1.0
Precision:0.722
F1_Score:0.839
Batch 3:GNB
Accuracy :0.844
Recall: 1.0
Precision:0.722
F1_Score:0.839
Batch 3:XGB
Accuracy :0.719
Recall: 1.0
Precision:0.591
F1_Score:0.743
Batch 3:DT
Accuracy :0.75
Recall: 0.769
Precision:0.667
F1_Score:0.714
Batch 3:MLP
Accuracy :0.812
Recall: 1.0
Precision:0.684
F1_Score:0.813
Batch 4:LogReg
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 4:RF
Accuracy :0.938
Recall: 1.0
Precision:0.931
F1_Score:0.964
Batch 4:KNN
Accuracy :0.625
Recall: 0.593
Precision:0.941
F1_Score:0.727
Batch 4:SVM
Accuracy :0.969
Recall: 1.0
Precision:0.964
F1_Score:0.982
Batch 4:GNB
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 4:XGB
Accuracy :0.969
Recall: 1.0
Precision:0.964
F1_Score:0.982
```

```
Batch 4:DT
Accuracy :0.938
Recall: 0.963
Precision:0.963
F1_Score:0.963
Batch 4:MLP
Accuracy :0.969
Recall: 1.0
Precision:0.964
F1_Score:0.982
Batch 5:LogReg
Accuracy :0.875
Recall: 0.778
Precision:0.778
F1_Score:0.778
Batch 5:RF
Accuracy :0.656
Recall: 0.889
Precision:0.444
F1_Score:0.593
Batch 5:KNN
Accuracy :0.656
Recall: 0.778
Precision:0.438
F1_Score:0.56
Batch 5:SVM
Accuracy :0.625
Recall: 0.667
Precision:0.4
F1_Score:0.5
Batch 5:GNB
Accuracy :0.875
Recall: 1.0
Precision:0.692
F1_Score:0.818
Batch 5:XGB
Accuracy :0.625
Recall: 1.0
Precision:0.429
F1_Score:0.6
Batch 5:DT
Accuracy :0.656
Recall: 0.556
Precision:0.417
F1_Score:0.476
Batch 5:MLP
Accuracy :0.625
Recall: 0.889
Precision:0.421
F1_Score:0.571
Batch 6:LogReg
Accuracy :0.812
Recall: 0.647
Precision:1.0
F1_Score:0.786
Batch 6:RF
Accuracy :0.688
Recall: 0.765
Precision:0.684
F1_Score:0.722
Batch 6:KNN
Accuracy :0.562
```

Recall: 0.647  
Precision:0.579  
F1\_Score:0.611  
Batch 6:SVM  
Accuracy :0.531  
Recall: 0.647  
Precision:0.55  
F1\_Score:0.595  
Batch 6:GNB  
Accuracy :0.844  
Recall: 0.706  
Precision:1.0  
F1\_Score:0.828  
Batch 6:XGB  
Accuracy :0.781  
Recall: 1.0  
Precision:0.708  
F1\_Score:0.829  
Batch 6:DT  
Accuracy :0.688  
Recall: 0.824  
Precision:0.667  
F1\_Score:0.737  
Batch 6:MLP  
Accuracy :0.562  
Recall: 0.706  
Precision:0.571  
F1\_Score:0.632  
Batch 7:LogReg  
Accuracy :0.969  
Recall: 1.0  
Precision:0.968  
F1\_Score:0.984  
Batch 7:RF  
Accuracy :0.969  
Recall: 1.0  
Precision:0.968  
F1\_Score:0.984  
Batch 7:KNN  
Accuracy :0.875  
Recall: 0.867  
Precision:1.0  
F1\_Score:0.929  
Batch 7:SVM  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 7:GNB  
Accuracy :0.969  
Recall: 1.0  
Precision:0.968  
F1\_Score:0.984  
Batch 7:XGB  
Accuracy :0.969  
Recall: 1.0  
Precision:0.968  
F1\_Score:0.984  
Batch 7:DT  
Accuracy :0.906  
Recall: 0.933  
Precision:0.966

F1\_Score:0.949  
Batch 7:MLP  
Accuracy :0.969  
Recall: 1.0  
Precision:0.968  
F1\_Score:0.984  
Batch 8:LogReg  
Accuracy :0.969  
Recall: 1.0  
Precision:0.962  
F1\_Score:0.98  
Batch 8:RF  
Accuracy :0.969  
Recall: 1.0  
Precision:0.962  
F1\_Score:0.98  
Batch 8:KNN  
Accuracy :0.469  
Recall: 0.36  
Precision:0.9  
F1\_Score:0.514  
Batch 8:SVM  
Accuracy :0.969  
Recall: 1.0  
Precision:0.962  
F1\_Score:0.98  
Batch 8:GNB  
Accuracy :0.969  
Recall: 1.0  
Precision:0.962  
F1\_Score:0.98  
Batch 8:XGB  
Accuracy :0.906  
Recall: 1.0  
Precision:0.893  
F1\_Score:0.943  
Batch 8:DT  
Accuracy :0.812  
Recall: 0.8  
Precision:0.952  
F1\_Score:0.87  
Batch 8:MLP  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 9:LogReg  
Accuracy :0.5  
Recall: 1.0  
Precision:0.273  
F1\_Score:0.429  
Batch 9:RF  
Accuracy :0.5  
Recall: 1.0  
Precision:0.273  
F1\_Score:0.429  
Batch 9:KNN  
Accuracy :0.562  
Recall: 0.667  
Precision:0.25  
F1\_Score:0.364  
Batch 9:SVM

Accuracy :0.594  
Recall: 1.0  
Precision:0.316  
F1\_Score:0.48  
Batch 9:GNB  
Accuracy :0.562  
Recall: 1.0  
Precision:0.3  
F1\_Score:0.462  
Batch 9:XGB  
Accuracy :0.531  
Recall: 1.0  
Precision:0.286  
F1\_Score:0.444  
Batch 9:DT  
Accuracy :0.562  
Recall: 0.833  
Precision:0.278  
F1\_Score:0.417  
Batch 9:MLP  
Accuracy :0.5  
Recall: 1.0  
Precision:0.273  
F1\_Score:0.429  
Batch 10:LogReg  
Accuracy :0.906  
Recall: 1.0  
Precision:0.812  
F1\_Score:0.897  
Batch 10:RF  
Accuracy :0.906  
Recall: 1.0  
Precision:0.812  
F1\_Score:0.897  
Batch 10:KNN  
Accuracy :0.812  
Recall: 0.769  
Precision:0.769  
F1\_Score:0.769  
Batch 10:SVM  
Accuracy :0.969  
Recall: 1.0  
Precision:0.929  
F1\_Score:0.963  
Batch 10:GNB  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 10:XGB  
Accuracy :0.812  
Recall: 1.0  
Precision:0.684  
F1\_Score:0.813  
Batch 10:DT  
Accuracy :0.688  
Recall: 0.846  
Precision:0.579  
F1\_Score:0.688  
Batch 10:MLP  
Accuracy :0.969  
Recall: 1.0

```
Precision:0.929
F1_Score:0.963
Batch 11:LogReg
Accuracy :0.969
Recall: 1.0
Precision:0.952
F1_Score:0.976
Batch 11:RF
Accuracy :0.969
Recall: 1.0
Precision:0.952
F1_Score:0.976
Batch 11:KNN
Accuracy :0.719
Recall: 0.55
Precision:1.0
F1_Score:0.71
Batch 11:SVM
Accuracy :0.906
Recall: 0.85
Precision:1.0
F1_Score:0.919
Batch 11:GNB
Accuracy :0.938
Recall: 0.9
Precision:1.0
F1_Score:0.947
Batch 11:XGB
Accuracy :0.906
Recall: 1.0
Precision:0.87
F1_Score:0.93
Batch 11:DT
Accuracy :0.844
Recall: 0.85
Precision:0.895
F1_Score:0.872
Batch 11:MLP
Accuracy :0.969
Recall: 1.0
Precision:0.952
F1_Score:0.976
Batch 12:LogReg
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 12:RF
Accuracy :0.906
Recall: 0.923
Precision:0.857
F1_Score:0.889
Batch 12:KNN
Accuracy :0.844
Recall: 0.692
Precision:0.9
F1_Score:0.783
Batch 12:SVM
Accuracy :0.938
Recall: 0.923
Precision:0.923
F1_Score:0.923
```

```
Batch 12:GNB
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 12:XGB
Accuracy :0.906
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 12:DT
Accuracy :0.812
Recall: 0.923
Precision:0.706
F1_Score:0.8
Batch 12:MLP
Accuracy :0.969
Recall: 1.0
Precision:0.929
F1_Score:0.963
Batch 13:LogReg
Accuracy :0.938
Recall: 1.0
Precision:0.923
F1_Score:0.96
Batch 13:RF
Accuracy :0.844
Recall: 1.0
Precision:0.828
F1_Score:0.906
Batch 13:KNN
Accuracy :0.469
Recall: 0.458
Precision:0.733
F1_Score:0.564
Batch 13:SVM
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 13:GNB
Accuracy :0.969
Recall: 0.958
Precision:1.0
F1_Score:0.979
Batch 13:XGB
Accuracy :0.906
Recall: 1.0
Precision:0.889
F1_Score:0.941
Batch 13:DT
Accuracy :0.844
Recall: 1.0
Precision:0.828
F1_Score:0.906
Batch 13:MLP
Accuracy :0.938
Recall: 1.0
Precision:0.923
F1_Score:0.96
Batch 14:LogReg
Accuracy :0.938
```

Recall: 1.0  
Precision:0.905  
F1\_Score:0.95  
Batch 14:RF  
Accuracy :0.844  
Recall: 0.947  
Precision:0.818  
F1\_Score:0.878  
Batch 14:KNN  
Accuracy :0.844  
Recall: 0.789  
Precision:0.938  
F1\_Score:0.857  
Batch 14:SVM  
Accuracy :0.938  
Recall: 0.947  
Precision:0.947  
F1\_Score:0.947  
Batch 14:GNB  
Accuracy :0.938  
Recall: 0.895  
Precision:1.0  
F1\_Score:0.944  
Batch 14:XGB  
Accuracy :0.875  
Recall: 1.0  
Precision:0.826  
F1\_Score:0.905  
Batch 14:DT  
Accuracy :0.688  
Recall: 0.684  
Precision:0.765  
F1\_Score:0.722  
Batch 14:MLP  
Accuracy :0.906  
Recall: 1.0  
Precision:0.864  
F1\_Score:0.927  
Batch 15:LogReg  
Accuracy :0.906  
Recall: 1.0  
Precision:0.75  
F1\_Score:0.857  
Batch 15:RF  
Accuracy :0.656  
Recall: 1.0  
Precision:0.45  
F1\_Score:0.621  
Batch 15:KNN  
Accuracy :0.781  
Recall: 0.333  
Precision:0.75  
F1\_Score:0.462  
Batch 15:SVM  
Accuracy :0.812  
Recall: 1.0  
Precision:0.6  
F1\_Score:0.75  
Batch 15:GNB  
Accuracy :0.969  
Recall: 0.889  
Precision:1.0

F1\_Score:0.941  
Batch 15:XGB  
Accuracy :0.75  
Recall: 1.0  
Precision:0.529  
F1\_Score:0.692  
Batch 15:DT  
Accuracy :0.438  
Recall: 0.556  
Precision:0.263  
F1\_Score:0.357  
Batch 15:MLP  
Accuracy :0.656  
Recall: 1.0  
Precision:0.45  
F1\_Score:0.621  
Batch 16:LogReg  
Accuracy :0.688  
Recall: 0.526  
Precision:0.909  
F1\_Score:0.667  
Batch 16:RF  
Accuracy :0.719  
Recall: 1.0  
Precision:0.679  
F1\_Score:0.809  
Batch 16:KNN  
Accuracy :0.719  
Recall: 0.632  
Precision:0.857  
F1\_Score:0.727  
Batch 16:SVM  
Accuracy :0.938  
Recall: 1.0  
Precision:0.905  
F1\_Score:0.95  
Batch 16:GNB  
Accuracy :0.531  
Recall: 0.211  
Precision:1.0  
F1\_Score:0.348  
Batch 16:XGB  
Accuracy :0.781  
Recall: 1.0  
Precision:0.731  
F1\_Score:0.844  
Batch 16:DT  
Accuracy :0.375  
Recall: 0.421  
Precision:0.471  
F1\_Score:0.444  
Batch 16:MLP  
Accuracy :0.75  
Recall: 1.0  
Precision:0.704  
F1\_Score:0.826  
Batch 17:LogReg  
Accuracy :0.906  
Recall: 0.842  
Precision:1.0  
F1\_Score:0.914  
Batch 17:RF

Accuracy :0.875  
Recall: 0.842  
Precision:0.941  
F1\_Score:0.889  
Batch 17:KNN  
Accuracy :0.781  
Recall: 0.684  
Precision:0.929  
F1\_Score:0.788  
Batch 17:SVM  
Accuracy :0.938  
Recall: 0.947  
Precision:0.947  
F1\_Score:0.947  
Batch 17:GNB  
Accuracy :0.875  
Recall: 0.789  
Precision:1.0  
F1\_Score:0.882  
Batch 17:XGB  
Accuracy :0.938  
Recall: 0.895  
Precision:1.0  
F1\_Score:0.944  
Batch 17:DT  
Accuracy :0.875  
Recall: 0.947  
Precision:0.857  
F1\_Score:0.9  
Batch 17:MLP  
Accuracy :0.938  
Recall: 0.947  
Precision:0.947  
F1\_Score:0.947  
Batch 18:LogReg  
Accuracy :0.938  
Recall: 1.0  
Precision:0.905  
F1\_Score:0.95  
Batch 18:RF  
Accuracy :0.969  
Recall: 1.0  
Precision:0.95  
F1\_Score:0.974  
Batch 18:KNN  
Accuracy :0.75  
Recall: 0.684  
Precision:0.867  
F1\_Score:0.765  
Batch 18:SVM  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 18:GNB  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 18:XGB  
Accuracy :0.938  
Recall: 1.0

```
Precision:0.905
F1_Score:0.95
Batch 18:DT
Accuracy :0.812
Recall: 0.895
Precision:0.81
F1_Score:0.85
Batch 18:MLP
Accuracy :0.969
Recall: 1.0
Precision:0.95
F1_Score:0.974
Batch 19:LogReg
Accuracy :0.969
Recall: 1.0
Precision:0.967
F1_Score:0.983
Batch 19:RF
Accuracy :0.938
Recall: 1.0
Precision:0.935
F1_Score:0.967
Batch 19:KNN
Accuracy :0.656
Recall: 0.69
Precision:0.909
F1_Score:0.784
Batch 19:SVM
Accuracy :0.969
Recall: 1.0
Precision:0.967
F1_Score:0.983
Batch 19:GNB
Accuracy :0.969
Recall: 1.0
Precision:0.967
F1_Score:0.983
Batch 19:XGB
Accuracy :0.906
Recall: 1.0
Precision:0.906
F1_Score:0.951
Batch 19:DT
Accuracy :0.906
Recall: 0.897
Precision:1.0
F1_Score:0.945
Batch 19:MLP
Accuracy :0.969
Recall: 1.0
Precision:0.967
F1_Score:0.983
Batch 20:LogReg
Accuracy :0.438
Recall: 1.0
Precision:0.333
F1_Score:0.5
Batch 20:RF
Accuracy :0.312
Recall: 1.0
Precision:0.29
F1_Score:0.45
```

```
Batch 20:KNN
Accuracy :0.469
Recall: 0.667
Precision:0.3
F1_Score:0.414
Batch 20:SVM
Accuracy :0.438
Recall: 1.0
Precision:0.333
F1_Score:0.5
Batch 20:GNB
Accuracy :0.469
Recall: 1.0
Precision:0.346
F1_Score:0.514
Batch 20:XGB
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 20:DT
Accuracy :0.469
Recall: 0.667
Precision:0.3
F1_Score:0.414
Batch 20:MLP
Accuracy :0.469
Recall: 1.0
Precision:0.346
F1_Score:0.514
Batch 21:LogReg
Accuracy :0.625
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 21:RF
Accuracy :0.594
Recall: 1.0
Precision:0.48
F1_Score:0.649
Batch 21:KNN
Accuracy :0.656
Recall: 0.667
Precision:0.533
F1_Score:0.593
Batch 21:SVM
Accuracy :0.625
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 21:GNB
Accuracy :0.625
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 21:XGB
Accuracy :0.5
Recall: 1.0
Precision:0.429
F1_Score:0.6
Batch 21:DT
Accuracy :0.562
```

Recall: 1.0  
Precision:0.462  
F1\_Score:0.632  
Batch 21:MLP  
Accuracy :0.625  
Recall: 1.0  
Precision:0.5  
F1\_Score:0.667  
Batch 22:LogReg  
Accuracy :0.625  
Recall: 1.0  
Precision:0.478  
F1\_Score:0.647  
Batch 22:RF  
Accuracy :0.594  
Recall: 1.0  
Precision:0.458  
F1\_Score:0.629  
Batch 22:KNN  
Accuracy :0.688  
Recall: 0.636  
Precision:0.538  
F1\_Score:0.583  
Batch 22:SVM  
Accuracy :0.656  
Recall: 1.0  
Precision:0.5  
F1\_Score:0.667  
Batch 22:GNB  
Accuracy :0.75  
Recall: 1.0  
Precision:0.579  
F1\_Score:0.733  
Batch 22:XGB  
Accuracy :0.406  
Recall: 1.0  
Precision:0.367  
F1\_Score:0.537  
Batch 22:DT  
Accuracy :0.656  
Recall: 1.0  
Precision:0.5  
F1\_Score:0.667  
Batch 22:MLP  
Accuracy :0.562  
Recall: 1.0  
Precision:0.44  
F1\_Score:0.611  
Batch 23:LogReg  
Accuracy :0.875  
Recall: 1.0  
Precision:0.826  
F1\_Score:0.905  
Batch 23:RF  
Accuracy :0.844  
Recall: 1.0  
Precision:0.792  
F1\_Score:0.884  
Batch 23:KNN  
Accuracy :0.625  
Recall: 0.474  
Precision:0.818

F1\_Score:0.6  
Batch 23:SVM  
Accuracy :0.844  
Recall: 1.0  
Precision:0.792  
F1\_Score:0.884  
Batch 23:GNB  
Accuracy :0.906  
Recall: 0.947  
Precision:0.9  
F1\_Score:0.923  
Batch 23:XGB  
Accuracy :0.75  
Recall: 1.0  
Precision:0.704  
F1\_Score:0.826  
Batch 23:DT  
Accuracy :0.562  
Recall: 0.737  
Precision:0.609  
F1\_Score:0.667  
Batch 23:MLP  
Accuracy :0.844  
Recall: 1.0  
Precision:0.792  
F1\_Score:0.884  
Batch 24:LogReg  
Accuracy :0.844  
Recall: 0.857  
Precision:0.6  
F1\_Score:0.706  
Batch 24:RF  
Accuracy :0.531  
Recall: 0.857  
Precision:0.3  
F1\_Score:0.444  
Batch 24:KNN  
Accuracy :0.469  
Recall: 0.143  
Precision:0.083  
F1\_Score:0.105  
Batch 24:SVM  
Accuracy :0.656  
Recall: 0.429  
Precision:0.3  
F1\_Score:0.353  
Batch 24:GNB  
Accuracy :0.969  
Recall: 1.0  
Precision:0.875  
F1\_Score:0.933  
Batch 24:XGB  
Accuracy :0.562  
Recall: 1.0  
Precision:0.333  
F1\_Score:0.5  
Batch 24:DT  
Accuracy :0.5  
Recall: 0.714  
Precision:0.263  
F1\_Score:0.385  
Batch 24:MLP

Accuracy :0.688  
Recall: 0.857  
Precision:0.4  
F1\_Score:0.545  
Batch 25:LogReg  
Accuracy :0.969  
Recall: 0.955  
Precision:1.0  
F1\_Score:0.977  
Batch 25:RF  
Accuracy :0.75  
Recall: 1.0  
Precision:0.733  
F1\_Score:0.846  
Batch 25:KNN  
Accuracy :0.469  
Recall: 0.364  
Precision:0.727  
F1\_Score:0.485  
Batch 25:SVM  
Accuracy :0.844  
Recall: 1.0  
Precision:0.815  
F1\_Score:0.898  
Batch 25:GNB  
Accuracy :0.656  
Recall: 0.5  
Precision:1.0  
F1\_Score:0.667  
Batch 25:XGB  
Accuracy :0.75  
Recall: 1.0  
Precision:0.733  
F1\_Score:0.846  
Batch 25:DT  
Accuracy :0.688  
Recall: 0.909  
Precision:0.714  
F1\_Score:0.8  
Batch 25:MLP  
Accuracy :0.75  
Recall: 1.0  
Precision:0.733  
F1\_Score:0.846  
Batch 26:LogReg  
Accuracy :0.906  
Recall: 0.882  
Precision:0.938  
F1\_Score:0.909  
Batch 26:RF  
Accuracy :0.844  
Recall: 0.941  
Precision:0.8  
F1\_Score:0.865  
Batch 26:KNN  
Accuracy :0.719  
Recall: 0.706  
Precision:0.75  
F1\_Score:0.727  
Batch 26:SVM  
Accuracy :0.781  
Recall: 0.706

Precision:0.857  
F1\_Score:0.774  
Batch 26:GNB  
Accuracy :0.75  
Recall: 0.529  
Precision:1.0  
F1\_Score:0.692  
Batch 26:XGB  
Accuracy :0.875  
Recall: 0.941  
Precision:0.842  
F1\_Score:0.889  
Batch 26:DT  
Accuracy :0.844  
Recall: 0.765  
Precision:0.929  
F1\_Score:0.839  
Batch 26:MLP  
Accuracy :0.844  
Recall: 0.882  
Precision:0.833  
F1\_Score:0.857  
Batch 27:LogReg  
Accuracy :0.906  
Recall: 0.923  
Precision:0.857  
F1\_Score:0.889  
Batch 27:RF  
Accuracy :0.75  
Recall: 0.923  
Precision:0.632  
F1\_Score:0.75  
Batch 27:KNN  
Accuracy :0.531  
Recall: 0.308  
Precision:0.4  
F1\_Score:0.348  
Batch 27:SVM  
Accuracy :0.719  
Recall: 0.923  
Precision:0.6  
F1\_Score:0.727  
Batch 27:GNB  
Accuracy :0.938  
Recall: 0.846  
Precision:1.0  
F1\_Score:0.917  
Batch 27:XGB  
Accuracy :0.75  
Recall: 1.0  
Precision:0.619  
F1\_Score:0.765  
Batch 27:DT  
Accuracy :0.875  
Recall: 0.846  
Precision:0.846  
F1\_Score:0.846  
Batch 27:MLP  
Accuracy :0.75  
Recall: 1.0  
Precision:0.619  
F1\_Score:0.765

```
Batch 28:LogReg
Accuracy :0.906
Recall: 1.0
Precision:0.889
F1_Score:0.941
Batch 28:RF
Accuracy :0.969
Recall: 1.0
Precision:0.96
F1_Score:0.98
Batch 28:KNN
Accuracy :0.469
Recall: 0.5
Precision:0.706
F1_Score:0.585
Batch 28:SVM
Accuracy :0.969
Recall: 1.0
Precision:0.96
F1_Score:0.98
Batch 28:GNB
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 28:XGB
Accuracy :0.875
Recall: 1.0
Precision:0.857
F1_Score:0.923
Batch 28:DT
Accuracy :0.844
Recall: 0.917
Precision:0.88
F1_Score:0.898
Batch 28:MLP
Accuracy :0.938
Recall: 1.0
Precision:0.923
F1_Score:0.96
Batch 29:LogReg
Accuracy :0.906
Recall: 1.0
Precision:0.857
F1_Score:0.923
Batch 29:RF
Accuracy :0.969
Recall: 1.0
Precision:0.947
F1_Score:0.973
Batch 29:KNN
Accuracy :0.688
Recall: 0.556
Precision:0.833
F1_Score:0.667
Batch 29:SVM
Accuracy :0.938
Recall: 1.0
Precision:0.9
F1_Score:0.947
Batch 29:GNB
Accuracy :0.938
```

Recall: 1.0  
Precision:0.9  
F1\_Score:0.947  
Batch 29:XGB  
Accuracy :0.781  
Recall: 1.0  
Precision:0.72  
F1\_Score:0.837  
Batch 29:DT  
Accuracy :0.844  
Recall: 0.889  
Precision:0.842  
F1\_Score:0.865  
Batch 29:MLP  
Accuracy :0.844  
Recall: 1.0  
Precision:0.783  
F1\_Score:0.878  
Batch 30:LogReg  
Accuracy :0.969  
Recall: 1.0  
Precision:0.929  
F1\_Score:0.963  
Batch 30:RF  
Accuracy :0.938  
Recall: 1.0  
Precision:0.867  
F1\_Score:0.929  
Batch 30:KNN  
Accuracy :0.656  
Recall: 0.231  
Precision:0.75  
F1\_Score:0.353  
Batch 30:SVM  
Accuracy :0.969  
Recall: 0.923  
Precision:1.0  
F1\_Score:0.96  
Batch 30:GNB  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 30:XGB  
Accuracy :0.875  
Recall: 1.0  
Precision:0.765  
F1\_Score:0.867  
Batch 30:DT  
Accuracy :0.719  
Recall: 0.923  
Precision:0.6  
F1\_Score:0.727  
Batch 30:MLP  
Accuracy :0.938  
Recall: 1.0  
Precision:0.867  
F1\_Score:0.929  
Batch 31:LogReg  
Accuracy :0.875  
Recall: 1.0  
Precision:0.8

```
F1_Score:0.889
Batch 31:RF
Accuracy :0.844
Recall: 1.0
Precision:0.762
F1_Score:0.865
Batch 31:KNN
Accuracy :0.562
Recall: 0.438
Precision:0.583
F1_Score:0.5
Batch 31:SVM
Accuracy :0.875
Recall: 1.0
Precision:0.8
F1_Score:0.889
Batch 31:GNB
Accuracy :0.812
Recall: 0.625
Precision:1.0
F1_Score:0.769
Batch 31:XGB
Accuracy :0.781
Recall: 1.0
Precision:0.696
F1_Score:0.821
Batch 31:DT
Accuracy :0.469
Recall: 0.562
Precision:0.474
F1_Score:0.514
Batch 31:MLP
Accuracy :0.844
Recall: 1.0
Precision:0.762
F1_Score:0.865
Batch 32:LogReg
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 32:RF
Accuracy :0.969
Recall: 0.95
Precision:1.0
F1_Score:0.974
Batch 32:KNN
Accuracy :0.438
Recall: 0.1
Precision:1.0
F1_Score:0.182
Batch 32:SVM
Accuracy :0.938
Recall: 0.9
Precision:1.0
F1_Score:0.947
Batch 32:GNB
Accuracy :0.969
Recall: 0.95
Precision:1.0
F1_Score:0.974
Batch 32:XGB
```

Accuracy :0.969  
Recall: 1.0  
Precision:0.952  
F1\_Score:0.976  
Batch 32:DT  
Accuracy :0.906  
Recall: 0.85  
Precision:1.0  
F1\_Score:0.919  
Batch 32:MLP  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 33:LogReg  
Accuracy :0.719  
Recall: 1.0  
Precision:0.5  
F1\_Score:0.667  
Batch 33:RF  
Accuracy :0.688  
Recall: 1.0  
Precision:0.474  
F1\_Score:0.643  
Batch 33:KNN  
Accuracy :0.562  
Recall: 0.333  
Precision:0.273  
F1\_Score:0.3  
Batch 33:SVM  
Accuracy :0.844  
Recall: 1.0  
Precision:0.643  
F1\_Score:0.783  
Batch 33:GNB  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 33:XGB  
Accuracy :0.656  
Recall: 1.0  
Precision:0.45  
F1\_Score:0.621  
Batch 33:DT  
Accuracy :0.531  
Recall: 1.0  
Precision:0.375  
F1\_Score:0.545  
Batch 33:MLP  
Accuracy :0.562  
Recall: 1.0  
Precision:0.391  
F1\_Score:0.562  
Batch 34:LogReg  
Accuracy :0.781  
Recall: 1.0  
Precision:0.696  
F1\_Score:0.821  
Batch 34:RF  
Accuracy :0.562  
Recall: 1.0

Precision:0.533  
F1\_Score:0.696  
Batch 34:KNN  
Accuracy :0.594  
Recall: 0.688  
Precision:0.579  
F1\_Score:0.629  
Batch 34:SVM  
Accuracy :0.625  
Recall: 1.0  
Precision:0.571  
F1\_Score:0.727  
Batch 34:GNB  
Accuracy :0.938  
Recall: 0.875  
Precision:1.0  
F1\_Score:0.933  
Batch 34:XGB  
Accuracy :0.594  
Recall: 1.0  
Precision:0.552  
F1\_Score:0.711  
Batch 34:DT  
Accuracy :0.438  
Recall: 0.75  
Precision:0.462  
F1\_Score:0.571  
Batch 34:MLP  
Accuracy :0.562  
Recall: 1.0  
Precision:0.533  
F1\_Score:0.696  
Batch 35:LogReg  
Accuracy :0.969  
Recall: 1.0  
Precision:0.933  
F1\_Score:0.966  
Batch 35:RF  
Accuracy :0.75  
Recall: 1.0  
Precision:0.636  
F1\_Score:0.778  
Batch 35:KNN  
Accuracy :0.719  
Recall: 0.571  
Precision:0.727  
F1\_Score:0.64  
Batch 35:SVM  
Accuracy :0.906  
Recall: 1.0  
Precision:0.824  
F1\_Score:0.903  
Batch 35:GNB  
Accuracy :0.75  
Recall: 0.429  
Precision:1.0  
F1\_Score:0.6  
Batch 35:XGB  
Accuracy :0.875  
Recall: 1.0  
Precision:0.778  
F1\_Score:0.875

```
Batch 35:DT
Accuracy :0.5
Recall: 0.786
Precision:0.458
F1_Score:0.579
Batch 35:MLP
Accuracy :0.812
Recall: 1.0
Precision:0.7
F1_Score:0.824
Batch 36:LogReg
Accuracy :0.938
Recall: 0.5
Precision:1.0
F1_Score:0.667
Batch 36:RF
Accuracy :0.531
Recall: 1.0
Precision:0.211
F1_Score:0.348
Batch 36:KNN
Accuracy :0.719
Recall: 0.25
Precision:0.143
F1_Score:0.182
Batch 36:SVM
Accuracy :0.906
Recall: 0.75
Precision:0.6
F1_Score:0.667
Batch 36:GNB
Accuracy :0.875
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 36:XGB
Accuracy :0.656
Recall: 1.0
Precision:0.267
F1_Score:0.421
Batch 36:DT
Accuracy :0.656
Recall: 1.0
Precision:0.267
F1_Score:0.421
Batch 36:MLP
Accuracy :0.5
Recall: 1.0
Precision:0.2
F1_Score:0.333
Batch 37:LogReg
Accuracy :0.625
Recall: 0.2
Precision:1.0
F1_Score:0.333
Batch 37:RF
Accuracy :0.656
Recall: 1.0
Precision:0.577
F1_Score:0.732
Batch 37:KNN
Accuracy :0.5
```

Recall: 0.733  
Precision:0.478  
F1\_Score:0.579  
Batch 37:SVM  
Accuracy :0.656  
Recall: 0.267  
Precision:1.0  
F1\_Score:0.421  
Batch 37:GNB  
Accuracy :0.531  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 37:XGB  
Accuracy :0.938  
Recall: 1.0  
Precision:0.882  
F1\_Score:0.938  
Batch 37:DT  
Accuracy :0.281  
Recall: 0.267  
Precision:0.25  
F1\_Score:0.258  
Batch 37:MLP  
Accuracy :0.812  
Recall: 1.0  
Precision:0.714  
F1\_Score:0.833  
Batch 38:LogReg  
Accuracy :0.562  
Recall: 0.44  
Precision:1.0  
F1\_Score:0.611  
Batch 38:RF  
Accuracy :0.656  
Recall: 0.64  
Precision:0.889  
F1\_Score:0.744  
Batch 38:KNN  
Accuracy :0.25  
Recall: 0.12  
Precision:0.6  
F1\_Score:0.2  
Batch 38:SVM  
Accuracy :0.594  
Recall: 0.48  
Precision:1.0  
F1\_Score:0.649  
Batch 38:GNB  
Accuracy :0.5  
Recall: 0.36  
Precision:1.0  
F1\_Score:0.529  
Batch 38:XGB  
Accuracy :0.656  
Recall: 0.6  
Precision:0.938  
F1\_Score:0.732  
Batch 38:DT  
Accuracy :0.75  
Recall: 0.72  
Precision:0.947

```
F1_Score:0.818
Batch 38:MLP
Accuracy :0.594
Recall: 0.56
Precision:0.875
F1_Score:0.683
Batch 39:LogReg
Accuracy :0.938
Recall: 1.0
Precision:0.875
F1_Score:0.933
Batch 39:RF
Accuracy :0.906
Recall: 0.857
Precision:0.923
F1_Score:0.889
Batch 39:KNN
Accuracy :0.812
Recall: 0.571
Precision:1.0
F1_Score:0.727
Batch 39:SVM
Accuracy :0.906
Recall: 0.786
Precision:1.0
F1_Score:0.88
Batch 39:GNB
Accuracy :0.875
Recall: 0.714
Precision:1.0
F1_Score:0.833
Batch 39:XGB
Accuracy :0.938
Recall: 1.0
Precision:0.875
F1_Score:0.933
Batch 39:DT
Accuracy :0.719
Recall: 0.643
Precision:0.692
F1_Score:0.667
Batch 39:MLP
Accuracy :0.938
Recall: 1.0
Precision:0.875
F1_Score:0.933
Batch 40:LogReg
Accuracy :0.969
Recall: 1.0
Precision:0.957
F1_Score:0.978
Batch 40:RF
Accuracy :0.969
Recall: 1.0
Precision:0.957
F1_Score:0.978
Batch 40:KNN
Accuracy :0.344
Recall: 0.045
Precision:1.0
F1_Score:0.087
Batch 40:SVM
```

Accuracy :0.969  
Recall: 0.955  
Precision:1.0  
F1\_Score:0.977  
Batch 40:GNB  
Accuracy :0.938  
Recall: 0.909  
Precision:1.0  
F1\_Score:0.952  
Batch 40:XGB  
Accuracy :0.938  
Recall: 1.0  
Precision:0.917  
F1\_Score:0.957  
Batch 40:DT  
Accuracy :0.781  
Recall: 0.773  
Precision:0.895  
F1\_Score:0.829  
Batch 40:MLP  
Accuracy :0.969  
Recall: 1.0  
Precision:0.957  
F1\_Score:0.978  
Batch 41:LogReg  
Accuracy :0.969  
Recall: 1.0  
Precision:0.917  
F1\_Score:0.957  
Batch 41:RF  
Accuracy :0.75  
Recall: 1.0  
Precision:0.579  
F1\_Score:0.733  
Batch 41:KNN  
Accuracy :0.5  
Recall: 0.091  
Precision:0.143  
F1\_Score:0.111  
Batch 41:SVM  
Accuracy :0.969  
Recall: 1.0  
Precision:0.917  
F1\_Score:0.957  
Batch 41:GNB  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0  
F1\_Score:1.0  
Batch 41:XGB  
Accuracy :0.781  
Recall: 1.0  
Precision:0.611  
F1\_Score:0.759  
Batch 41:DT  
Accuracy :0.688  
Recall: 1.0  
Precision:0.524  
F1\_Score:0.688  
Batch 41:MLP  
Accuracy :0.781  
Recall: 1.0

```
Precision:0.611
F1_Score:0.759
Batch 42:LogReg
Accuracy :0.844
Recall: 1.0
Precision:0.615
F1_Score:0.762
Batch 42:RF
Accuracy :0.562
Recall: 1.0
Precision:0.364
F1_Score:0.533
Batch 42:KNN
Accuracy :0.594
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 42:SVM
Accuracy :0.875
Recall: 1.0
Precision:0.667
F1_Score:0.8
Batch 42:GNB
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 42:XGB
Accuracy :0.75
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 42:DT
Accuracy :0.531
Recall: 1.0
Precision:0.348
F1_Score:0.516
Batch 42:MLP
Accuracy :0.75
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 43:LogReg
Accuracy :0.875
Recall: 1.0
Precision:0.852
F1_Score:0.92
Batch 43:RF
Accuracy :0.75
Recall: 1.0
Precision:0.742
F1_Score:0.852
Batch 43:KNN
Accuracy :0.469
Recall: 0.435
Precision:0.714
F1_Score:0.541
Batch 43:SVM
Accuracy :0.875
Recall: 1.0
Precision:0.852
F1_Score:0.92
```

```
Batch 43:GNB
Accuracy :0.938
Recall: 1.0
Precision:0.92
F1_Score:0.958
Batch 43:XGB
Accuracy :0.781
Recall: 1.0
Precision:0.767
F1_Score:0.868
Batch 43:DT
Accuracy :0.781
Recall: 1.0
Precision:0.767
F1_Score:0.868
Batch 43:MLP
Accuracy :0.75
Recall: 1.0
Precision:0.742
F1_Score:0.852
Batch 44:LogReg
Accuracy :0.844
Recall: 1.0
Precision:0.667
F1_Score:0.8
Batch 44:RF
Accuracy :0.719
Recall: 1.0
Precision:0.526
F1_Score:0.69
Batch 44:KNN
Accuracy :0.562
Recall: 0.5
Precision:0.357
F1_Score:0.417
Batch 44:SVM
Accuracy :0.844
Recall: 1.0
Precision:0.667
F1_Score:0.8
Batch 44:GNB
Accuracy :0.906
Recall: 1.0
Precision:0.769
F1_Score:0.87
Batch 44:XGB
Accuracy :0.781
Recall: 1.0
Precision:0.588
F1_Score:0.741
Batch 44:DT
Accuracy :0.656
Recall: 0.9
Precision:0.474
F1_Score:0.621
Batch 44:MLP
Accuracy :0.781
Recall: 1.0
Precision:0.588
F1_Score:0.741
Batch 45:LogReg
Accuracy :0.688
```

Recall: 1.0  
Precision:0.286  
F1\_Score:0.444  
Batch 45:RF  
Accuracy :0.438  
Recall: 1.0  
Precision:0.182  
F1\_Score:0.308  
Batch 45:KNN  
Accuracy :0.719  
Recall: 1.0  
Precision:0.308  
F1\_Score:0.471  
Batch 45:SVM  
Accuracy :0.656  
Recall: 1.0  
Precision:0.267  
F1\_Score:0.421  
Batch 45:GNB  
Accuracy :0.781  
Recall: 1.0  
Precision:0.364  
F1\_Score:0.533  
Batch 45:XGB  
Accuracy :0.469  
Recall: 1.0  
Precision:0.19  
F1\_Score:0.32  
Batch 45:DT  
Accuracy :0.656  
Recall: 1.0  
Precision:0.267  
F1\_Score:0.421  
Batch 45:MLP  
Accuracy :0.469  
Recall: 1.0  
Precision:0.19  
F1\_Score:0.32  
Batch 46:LogReg  
Accuracy :0.875  
Recall: 0.6  
Precision:0.6  
F1\_Score:0.6  
Batch 46:RF  
Accuracy :0.25  
Recall: 1.0  
Precision:0.172  
F1\_Score:0.294  
Batch 46:KNN  
Accuracy :0.594  
Recall: 1.0  
Precision:0.278  
F1\_Score:0.435  
Batch 46:SVM  
Accuracy :0.594  
Recall: 1.0  
Precision:0.278  
F1\_Score:0.435  
Batch 46:GNB  
Accuracy :0.906  
Recall: 0.4  
Precision:1.0

```
F1_Score:0.571
Batch 46:XGB
Accuracy :0.562
Recall: 1.0
Precision:0.263
F1_Score:0.417
Batch 46:DT
Accuracy :0.312
Recall: 1.0
Precision:0.185
F1_Score:0.312
Batch 46:MLP
Accuracy :0.25
Recall: 1.0
Precision:0.172
F1_Score:0.294
Batch 47:LogReg
Accuracy :0.938
Recall: 0.333
Precision:1.0
F1_Score:0.5
Batch 47:RF
Accuracy :0.688
Recall: 1.0
Precision:0.231
F1_Score:0.375
Batch 47:KNN
Accuracy :0.562
Recall: 0.333
Precision:0.077
F1_Score:0.125
Batch 47:SVM
Accuracy :0.938
Recall: 0.333
Precision:1.0
F1_Score:0.5
Batch 47:GNB
Accuracy :0.938
Recall: 0.333
Precision:1.0
F1_Score:0.5
Batch 47:XGB
Accuracy :0.938
Recall: 0.667
Precision:0.667
F1_Score:0.667
Batch 47:DT
Accuracy :0.5
Recall: 1.0
Precision:0.158
F1_Score:0.273
Batch 47:MLP
Accuracy :0.906
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 48:LogReg
Accuracy :0.719
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 48:RF
```

Accuracy :0.781  
Recall: 0.556  
Precision:0.625  
F1\_Score:0.588  
Batch 48:KNN  
Accuracy :0.562  
Recall: 0.556  
Precision:0.333  
F1\_Score:0.417  
Batch 48:SVM  
Accuracy :0.719  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 48:GNB  
Accuracy :0.719  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 48:XGB  
Accuracy :0.844  
Recall: 0.444  
Precision:1.0  
F1\_Score:0.615  
Batch 48:DT  
Accuracy :0.688  
Recall: 0.444  
Precision:0.444  
F1\_Score:0.444  
Batch 48:MLP  
Accuracy :0.812  
Recall: 0.333  
Precision:1.0  
F1\_Score:0.5  
Batch 49:LogReg  
Accuracy :0.281  
Recall: 0.207  
Precision:1.0  
F1\_Score:0.343  
Batch 49:RF  
Accuracy :0.75  
Recall: 0.724  
Precision:1.0  
F1\_Score:0.84  
Batch 49:KNN  
Accuracy :0.5  
Recall: 0.448  
Precision:1.0  
F1\_Score:0.619  
Batch 49:SVM  
Accuracy :0.281  
Recall: 0.207  
Precision:1.0  
F1\_Score:0.343  
Batch 49:GNB  
Accuracy :0.281  
Recall: 0.207  
Precision:1.0  
F1\_Score:0.343  
Batch 49:XGB  
Accuracy :0.844  
Recall: 0.862

Precision:0.962  
F1\_Score:0.909  
Batch 49:DT  
Accuracy :0.406  
Recall: 0.414  
Precision:0.857  
F1\_Score:0.558  
Batch 49:MLP  
Accuracy :0.406  
Recall: 0.345  
Precision:1.0  
F1\_Score:0.513  
Batch 50:LogReg  
Accuracy :0.875  
Recall: 0.789  
Precision:1.0  
F1\_Score:0.882  
Batch 50:RF  
Accuracy :0.906  
Recall: 0.842  
Precision:1.0  
F1\_Score:0.914  
Batch 50:KNN  
Accuracy :0.594  
Recall: 0.421  
Precision:0.8  
F1\_Score:0.552  
Batch 50:SVM  
Accuracy :0.875  
Recall: 0.789  
Precision:1.0  
F1\_Score:0.882  
Batch 50:GNB  
Accuracy :0.875  
Recall: 0.789  
Precision:1.0  
F1\_Score:0.882  
Batch 50:XGB  
Accuracy :0.969  
Recall: 0.947  
Precision:1.0  
F1\_Score:0.973  
Batch 50:DT  
Accuracy :0.875  
Recall: 0.842  
Precision:0.941  
F1\_Score:0.889  
Batch 50:MLP  
Accuracy :0.938  
Recall: 0.895  
Precision:1.0  
F1\_Score:0.944  
Batch 51:LogReg  
Accuracy :0.781  
Recall: 1.0  
Precision:0.533  
F1\_Score:0.696  
Batch 51:RF  
Accuracy :0.75  
Recall: 1.0  
Precision:0.5  
F1\_Score:0.667

```
Batch 51:KNN
Accuracy :0.656
Recall: 0.375
Precision:0.333
F1_Score:0.353
Batch 51:SVM
Accuracy :0.781
Recall: 1.0
Precision:0.533
F1_Score:0.696
Batch 51:GNB
Accuracy :0.906
Recall: 1.0
Precision:0.727
F1_Score:0.842
Batch 51:XGB
Accuracy :0.656
Recall: 1.0
Precision:0.421
F1_Score:0.593
Batch 51:DT
Accuracy :0.781
Recall: 0.875
Precision:0.538
F1_Score:0.667
Batch 51:MLP
Accuracy :0.656
Recall: 1.0
Precision:0.421
F1_Score:0.593
Batch 52:LogReg
Accuracy :0.875
Recall: 1.0
Precision:0.862
F1_Score:0.926
Batch 52:RF
Accuracy :0.812
Recall: 1.0
Precision:0.806
F1_Score:0.893
Batch 52:KNN
Accuracy :0.656
Recall: 0.64
Precision:0.889
F1_Score:0.744
Batch 52:SVM
Accuracy :0.812
Recall: 1.0
Precision:0.806
F1_Score:0.893
Batch 52:GNB
Accuracy :0.969
Recall: 1.0
Precision:0.962
F1_Score:0.98
Batch 52:XGB
Accuracy :0.812
Recall: 1.0
Precision:0.806
F1_Score:0.893
Batch 52:DT
Accuracy :0.812
```

Recall: 0.96  
Precision:0.828  
F1\_Score:0.889  
Batch 52:MLP  
Accuracy :0.812  
Recall: 1.0  
Precision:0.806  
F1\_Score:0.893  
Batch 53:LogReg  
Accuracy :0.781  
Recall: 1.0  
Precision:0.708  
F1\_Score:0.829  
Batch 53:RF  
Accuracy :0.75  
Recall: 1.0  
Precision:0.68  
F1\_Score:0.81  
Batch 53:KNN  
Accuracy :0.719  
Recall: 0.706  
Precision:0.75  
F1\_Score:0.727  
Batch 53:SVM  
Accuracy :0.812  
Recall: 1.0  
Precision:0.739  
F1\_Score:0.85  
Batch 53:GNB  
Accuracy :0.875  
Recall: 1.0  
Precision:0.81  
F1\_Score:0.895  
Batch 53:XGB  
Accuracy :0.719  
Recall: 1.0  
Precision:0.654  
F1\_Score:0.791  
Batch 53:DT  
Accuracy :0.562  
Recall: 0.765  
Precision:0.565  
F1\_Score:0.65  
Batch 53:MLP  
Accuracy :0.781  
Recall: 1.0  
Precision:0.708  
F1\_Score:0.829  
Batch 54:LogReg  
Accuracy :0.75  
Recall: 1.0  
Precision:0.667  
F1\_Score:0.8  
Batch 54:RF  
Accuracy :0.719  
Recall: 1.0  
Precision:0.64  
F1\_Score:0.78  
Batch 54:KNN  
Accuracy :0.719  
Recall: 0.75  
Precision:0.706

F1\_Score:0.727  
Batch 54:SVM  
Accuracy :0.75  
Recall: 1.0  
Precision:0.667  
F1\_Score:0.8  
Batch 54:GNB  
Accuracy :0.844  
Recall: 1.0  
Precision:0.762  
F1\_Score:0.865  
Batch 54:XGB  
Accuracy :0.719  
Recall: 1.0  
Precision:0.64  
F1\_Score:0.78  
Batch 54:DT  
Accuracy :0.656  
Recall: 0.938  
Precision:0.6  
F1\_Score:0.732  
Batch 54:MLP  
Accuracy :0.719  
Recall: 1.0  
Precision:0.64  
F1\_Score:0.78  
Batch 55:LogReg  
Accuracy :0.875  
Recall: 1.0  
Precision:0.871  
F1\_Score:0.931  
Batch 55:RF  
Accuracy :0.844  
Recall: 1.0  
Precision:0.844  
F1\_Score:0.915  
Batch 55:KNN  
Accuracy :0.844  
Recall: 0.889  
Precision:0.923  
F1\_Score:0.906  
Batch 55:SVM  
Accuracy :0.875  
Recall: 1.0  
Precision:0.871  
F1\_Score:0.931  
Batch 55:GNB  
Accuracy :0.906  
Recall: 1.0  
Precision:0.9  
F1\_Score:0.947  
Batch 55:XGB  
Accuracy :0.844  
Recall: 1.0  
Precision:0.844  
F1\_Score:0.915  
Batch 55:DT  
Accuracy :0.875  
Recall: 1.0  
Precision:0.871  
F1\_Score:0.931  
Batch 55:MLP

Accuracy :0.844  
Recall: 1.0  
Precision:0.844  
F1\_Score:0.915  
Batch 56:LogReg  
Accuracy :0.688  
Recall: 1.0  
Precision:0.545  
F1\_Score:0.706  
Batch 56:RF  
Accuracy :0.719  
Recall: 1.0  
Precision:0.571  
F1\_Score:0.727  
Batch 56:KNN  
Accuracy :0.906  
Recall: 0.917  
Precision:0.846  
F1\_Score:0.88  
Batch 56:SVM  
Accuracy :0.688  
Recall: 1.0  
Precision:0.545  
F1\_Score:0.706  
Batch 56:GNB  
Accuracy :0.781  
Recall: 1.0  
Precision:0.632  
F1\_Score:0.774  
Batch 56:XGB  
Accuracy :0.656  
Recall: 1.0  
Precision:0.522  
F1\_Score:0.686  
Batch 56:DT  
Accuracy :0.562  
Recall: 0.833  
Precision:0.455  
F1\_Score:0.588  
Batch 56:MLP  
Accuracy :0.688  
Recall: 1.0  
Precision:0.545  
F1\_Score:0.706  
Batch 57:LogReg  
Accuracy :0.719  
Recall: 1.0  
Precision:0.625  
F1\_Score:0.769  
Batch 57:RF  
Accuracy :0.75  
Recall: 1.0  
Precision:0.652  
F1\_Score:0.789  
Batch 57:KNN  
Accuracy :0.812  
Recall: 0.6  
Precision:1.0  
F1\_Score:0.75  
Batch 57:SVM  
Accuracy :0.719  
Recall: 0.933

Precision:0.636  
F1\_Score:0.757  
Batch 57:GNB  
Accuracy :0.969  
Recall: 0.933  
Precision:1.0  
F1\_Score:0.966  
Batch 57:XGB  
Accuracy :0.688  
Recall: 1.0  
Precision:0.6  
F1\_Score:0.75  
Batch 57:DT  
Accuracy :0.531  
Recall: 0.733  
Precision:0.5  
F1\_Score:0.595  
Batch 57:MLP  
Accuracy :0.719  
Recall: 1.0  
Precision:0.625  
F1\_Score:0.769  
Batch 58:LogReg  
Accuracy :0.844  
Recall: 1.0  
Precision:0.706  
F1\_Score:0.828  
Batch 58:RF  
Accuracy :0.469  
Recall: 1.0  
Precision:0.414  
F1\_Score:0.585  
Batch 58:KNN  
Accuracy :0.375  
Recall: 0.167  
Precision:0.167  
F1\_Score:0.167  
Batch 58:SVM  
Accuracy :0.875  
Recall: 0.917  
Precision:0.786  
F1\_Score:0.846  
Batch 58:GNB  
Accuracy :0.969  
Recall: 0.917  
Precision:1.0  
F1\_Score:0.957  
Batch 58:XGB  
Accuracy :0.562  
Recall: 1.0  
Precision:0.462  
F1\_Score:0.632  
Batch 58:DT  
Accuracy :0.562  
Recall: 0.917  
Precision:0.458  
F1\_Score:0.611  
Batch 58:MLP  
Accuracy :0.531  
Recall: 1.0  
Precision:0.444  
F1\_Score:0.615

```
Batch 59:LogReg
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 59:RF
Accuracy :0.969
Recall: 0.958
Precision:1.0
F1_Score:0.979
Batch 59:KNN
Accuracy :0.281
Recall: 0.042
Precision:1.0
F1_Score:0.08
Batch 59:SVM
Accuracy :0.969
Recall: 0.958
Precision:1.0
F1_Score:0.979
Batch 59:GNB
Accuracy :0.844
Recall: 0.792
Precision:1.0
F1_Score:0.884
Batch 59:XGB
Accuracy :0.938
Recall: 1.0
Precision:0.923
F1_Score:0.96
Batch 59:DT
Accuracy :0.844
Recall: 0.875
Precision:0.913
F1_Score:0.894
Batch 59:MLP
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 60:LogReg
Accuracy :0.594
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 60:RF
Accuracy :0.594
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 60:KNN
Accuracy :0.719
Recall: 0.308
Precision:1.0
F1_Score:0.471
Batch 60:SVM
Accuracy :0.625
Recall: 1.0
Precision:0.52
F1_Score:0.684
Batch 60:GNB
Accuracy :0.656
```

Recall: 1.0  
Precision:0.542  
F1\_Score:0.703  
Batch 60:XGB  
Accuracy :0.531  
Recall: 1.0  
Precision:0.464  
F1\_Score:0.634  
Batch 60:DT  
Accuracy :0.656  
Recall: 0.923  
Precision:0.545  
F1\_Score:0.686  
Batch 60:MLP  
Accuracy :0.594  
Recall: 1.0  
Precision:0.5  
F1\_Score:0.667  
Batch 61:LogReg  
Accuracy :0.375  
Recall: 1.0  
Precision:0.355  
F1\_Score:0.524  
Batch 61:RF  
Accuracy :0.344  
Recall: 1.0  
Precision:0.344  
F1\_Score:0.512  
Batch 61:KNN  
Accuracy :0.719  
Recall: 0.364  
Precision:0.667  
F1\_Score:0.471  
Batch 61:SVM  
Accuracy :0.406  
Recall: 1.0  
Precision:0.367  
F1\_Score:0.537  
Batch 61:GNB  
Accuracy :0.438  
Recall: 1.0  
Precision:0.379  
F1\_Score:0.55  
Batch 61:XGB  
Accuracy :0.344  
Recall: 1.0  
Precision:0.344  
F1\_Score:0.512  
Batch 61:DT  
Accuracy :0.406  
Recall: 0.909  
Precision:0.357  
F1\_Score:0.513  
Batch 61:MLP  
Accuracy :0.344  
Recall: 1.0  
Precision:0.344  
F1\_Score:0.512  
Batch 62:LogReg  
Accuracy :0.25  
Recall: 0.0  
Precision:0.0

```
F1_Score:0.0
Batch 62:RF
Accuracy :0.219
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 62:KNN
Accuracy :0.688
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 62:SVM
Accuracy :0.25
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 62:GNB
Accuracy :0.562
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 62:XGB
Accuracy :0.188
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 62:DT
Accuracy :0.438
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 62:MLP
Accuracy :0.25
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 63:LogReg
Accuracy :0.531
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 63:RF
Accuracy :0.5
Recall: 1.0
Precision:0.36
F1_Score:0.529
Batch 63:KNN
Accuracy :0.406
Recall: 0.222
Precision:0.143
F1_Score:0.174
Batch 63:SVM
Accuracy :0.5
Recall: 0.889
Precision:0.348
F1_Score:0.5
Batch 63:GNB
Accuracy :0.812
Recall: 0.444
Precision:0.8
F1_Score:0.571
Batch 63:XGB
```

```
Accuracy :0.5
Recall: 1.0
Precision:0.36
F1_Score:0.529
Batch 63:DT
Accuracy :0.469
Recall: 0.889
Precision:0.333
F1_Score:0.485
Batch 63:MLP
Accuracy :0.531
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 64:LogReg
Accuracy :0.969
Recall: 1.0
Precision:0.968
F1_Score:0.984
Batch 64:RF
Accuracy :0.938
Recall: 1.0
Precision:0.938
F1_Score:0.968
Batch 64:KNN
Accuracy :0.594
Recall: 0.6
Precision:0.947
F1_Score:0.735
Batch 64:SVM
Accuracy :0.969
Recall: 1.0
Precision:0.968
F1_Score:0.984
Batch 64:GNB
Accuracy :0.969
Recall: 0.967
Precision:1.0
F1_Score:0.983
Batch 64:XGB
Accuracy :0.938
Recall: 1.0
Precision:0.938
F1_Score:0.968
Batch 64:DT
Accuracy :0.844
Recall: 0.9
Precision:0.931
F1_Score:0.915
Batch 64:MLP
Accuracy :0.938
Recall: 1.0
Precision:0.938
F1_Score:0.968
Batch 65:LogReg
Accuracy :0.938
Recall: 1.0
Precision:0.913
F1_Score:0.955
Batch 65:RF
Accuracy :0.938
Recall: 1.0
```

```
Precision:0.913
F1_Score:0.955
Batch 65:KNN
Accuracy :0.781
Recall: 0.714
Precision:0.938
F1_Score:0.811
Batch 65:SVM
Accuracy :0.969
Recall: 1.0
Precision:0.955
F1_Score:0.977
Batch 65:GNB
Accuracy :0.969
Recall: 0.952
Precision:1.0
F1_Score:0.976
Batch 65:XGB
Accuracy :0.844
Recall: 1.0
Precision:0.808
F1_Score:0.894
Batch 65:DT
Accuracy :0.688
Recall: 0.857
Precision:0.72
F1_Score:0.783
Batch 65:MLP
Accuracy :0.906
Recall: 1.0
Precision:0.875
F1_Score:0.933
Batch 66:LogReg
Accuracy :0.938
Recall: 1.0
Precision:0.905
F1_Score:0.95
Batch 66:RF
Accuracy :0.812
Recall: 1.0
Precision:0.76
F1_Score:0.864
Batch 66:KNN
Accuracy :0.625
Recall: 0.474
Precision:0.818
F1_Score:0.6
Batch 66:SVM
Accuracy :0.938
Recall: 1.0
Precision:0.905
F1_Score:0.95
Batch 66:GNB
Accuracy :0.969
Recall: 0.947
Precision:1.0
F1_Score:0.973
Batch 66:XGB
Accuracy :0.812
Recall: 1.0
Precision:0.76
F1_Score:0.864
```

```
Batch 66:DT
Accuracy :0.625
Recall: 0.842
Precision:0.64
F1_Score:0.727
Batch 66:MLP
Accuracy :0.875
Recall: 1.0
Precision:0.826
F1_Score:0.905
Batch 67:LogReg
Accuracy :0.781
Recall: 1.0
Precision:0.708
F1_Score:0.829
Batch 67:RF
Accuracy :0.562
Recall: 1.0
Precision:0.548
F1_Score:0.708
Batch 67:KNN
Accuracy :0.719
Recall: 0.765
Precision:0.722
F1_Score:0.743
Batch 67:SVM
Accuracy :0.656
Recall: 1.0
Precision:0.607
F1_Score:0.756
Batch 67:GNB
Accuracy :0.969
Recall: 0.941
Precision:1.0
F1_Score:0.97
Batch 67:XGB
Accuracy :0.531
Recall: 1.0
Precision:0.531
F1_Score:0.694
Batch 67:DT
Accuracy :0.406
Recall: 0.765
Precision:0.464
F1_Score:0.578
Batch 67:MLP
Accuracy :0.562
Recall: 1.0
Precision:0.548
F1_Score:0.708
Batch 68:LogReg
Accuracy :0.969
Recall: 1.0
Precision:0.75
F1_Score:0.857
Batch 68:RF
Accuracy :0.594
Recall: 1.0
Precision:0.188
F1_Score:0.316
Batch 68:KNN
Accuracy :0.75
```

Recall: 1.0  
Precision:0.273  
F1\_Score:0.429  
Batch 68:SVM  
Accuracy :0.875  
Recall: 0.333  
Precision:0.333  
F1\_Score:0.333  
Batch 68:GNB  
Accuracy :0.938  
Recall: 0.333  
Precision:1.0  
F1\_Score:0.5  
Batch 68:XGB  
Accuracy :0.812  
Recall: 1.0  
Precision:0.333  
F1\_Score:0.5  
Batch 68:DT  
Accuracy :0.312  
Recall: 0.667  
Precision:0.087  
F1\_Score:0.154  
Batch 68:MLP  
Accuracy :0.562  
Recall: 1.0  
Precision:0.176  
F1\_Score:0.3  
Batch 69:LogReg  
Accuracy :0.875  
Recall: 0.889  
Precision:0.727  
F1\_Score:0.8  
Batch 69:RF  
Accuracy :0.562  
Recall: 0.889  
Precision:0.381  
F1\_Score:0.533  
Batch 69:KNN  
Accuracy :0.75  
Recall: 0.111  
Precision:1.0  
F1\_Score:0.2  
Batch 69:SVM  
Accuracy :0.812  
Recall: 0.333  
Precision:1.0  
F1\_Score:0.5  
Batch 69:GNB  
Accuracy :0.781  
Recall: 0.222  
Precision:1.0  
F1\_Score:0.364  
Batch 69:XGB  
Accuracy :0.656  
Recall: 1.0  
Precision:0.45  
F1\_Score:0.621  
Batch 69:DT  
Accuracy :0.531  
Recall: 0.556  
Precision:0.312

```
F1_Score:0.4
Batch 69:MLP
Accuracy :0.594
Recall: 1.0
Precision:0.409
F1_Score:0.581
Batch 70:LogReg
Accuracy :0.875
Recall: 0.926
Precision:0.926
F1_Score:0.926
Batch 70:RF
Accuracy :0.812
Recall: 0.926
Precision:0.862
F1_Score:0.893
Batch 70:KNN
Accuracy :0.156
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 70:SVM
Accuracy :0.906
Recall: 0.926
Precision:0.962
F1_Score:0.943
Batch 70:GNB
Accuracy :0.938
Recall: 0.926
Precision:1.0
F1_Score:0.962
Batch 70:XGB
Accuracy :0.875
Recall: 1.0
Precision:0.871
F1_Score:0.931
Batch 70:DT
Accuracy :0.812
Recall: 0.889
Precision:0.889
F1_Score:0.889
Batch 70:MLP
Accuracy :0.844
Recall: 1.0
Precision:0.844
F1_Score:0.915
Batch 71:LogReg
Accuracy :0.844
Recall: 1.0
Precision:0.783
F1_Score:0.878
Batch 71:RF
Accuracy :0.844
Recall: 1.0
Precision:0.783
F1_Score:0.878
Batch 71:KNN
Accuracy :0.406
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 71:SVM
```

Accuracy :0.906  
Recall: 1.0  
Precision:0.857  
F1\_Score:0.923  
Batch 71:GNB  
Accuracy :0.938  
Recall: 0.944  
Precision:0.944  
F1\_Score:0.944  
Batch 71:XGB  
Accuracy :0.844  
Recall: 1.0  
Precision:0.783  
F1\_Score:0.878  
Batch 71:DT  
Accuracy :0.719  
Recall: 0.889  
Precision:0.696  
F1\_Score:0.78  
Batch 71:MLP  
Accuracy :0.844  
Recall: 1.0  
Precision:0.783  
F1\_Score:0.878  
Batch 72:LogReg  
Accuracy :0.625  
Recall: 1.0  
Precision:0.5  
F1\_Score:0.667  
Batch 72:RF  
Accuracy :0.531  
Recall: 0.833  
Precision:0.435  
F1\_Score:0.571  
Batch 72:KNN  
Accuracy :0.688  
Recall: 0.167  
Precision:1.0  
F1\_Score:0.286  
Batch 72:SVM  
Accuracy :0.75  
Recall: 1.0  
Precision:0.6  
F1\_Score:0.75  
Batch 72:GNB  
Accuracy :0.875  
Recall: 0.833  
Precision:0.833  
F1\_Score:0.833  
Batch 72:XGB  
Accuracy :0.594  
Recall: 1.0  
Precision:0.48  
F1\_Score:0.649  
Batch 72:DT  
Accuracy :0.5  
Recall: 0.917  
Precision:0.423  
F1\_Score:0.579  
Batch 72:MLP  
Accuracy :0.594  
Recall: 1.0

Precision:0.48  
F1\_Score:0.649  
Batch 73:LogReg  
Accuracy :0.188  
Recall: 1.0  
Precision:0.103  
F1\_Score:0.188  
Batch 73:RF  
Accuracy :0.125  
Recall: 1.0  
Precision:0.097  
F1\_Score:0.176  
Batch 73:KNN  
Accuracy :0.125  
Recall: 0.667  
Precision:0.069  
F1\_Score:0.125  
Batch 73:SVM  
Accuracy :0.156  
Recall: 1.0  
Precision:0.1  
F1\_Score:0.182  
Batch 73:GNB  
Accuracy :0.938  
Recall: 0.333  
Precision:1.0  
F1\_Score:0.5  
Batch 73:XGB  
Accuracy :0.094  
Recall: 1.0  
Precision:0.094  
F1\_Score:0.171  
Batch 73:DT  
Accuracy :0.156  
Recall: 0.667  
Precision:0.071  
F1\_Score:0.129  
Batch 73:MLP  
Accuracy :0.125  
Recall: 1.0  
Precision:0.097  
F1\_Score:0.176  
Batch 74:LogReg  
Accuracy :0.688  
Recall: 1.0  
Precision:0.565  
F1\_Score:0.722  
Batch 74:RF  
Accuracy :0.656  
Recall: 1.0  
Precision:0.542  
F1\_Score:0.703  
Batch 74:KNN  
Accuracy :0.562  
Recall: 0.615  
Precision:0.471  
F1\_Score:0.533  
Batch 74:SVM  
Accuracy :0.719  
Recall: 0.923  
Precision:0.6  
F1\_Score:0.727

```
Batch 74:GNB
Accuracy :0.625
Recall: 0.077
Precision:1.0
F1_Score:0.143
Batch 74:XGB
Accuracy :0.656
Recall: 1.0
Precision:0.542
F1_Score:0.703
Batch 74:DT
Accuracy :0.562
Recall: 0.923
Precision:0.48
F1_Score:0.632
Batch 74:MLP
Accuracy :0.656
Recall: 1.0
Precision:0.542
F1_Score:0.703
Batch 75:LogReg
Accuracy :0.625
Recall: 1.0
Precision:0.455
F1_Score:0.625
Batch 75:RF
Accuracy :0.562
Recall: 1.0
Precision:0.417
F1_Score:0.588
Batch 75:KNN
Accuracy :0.469
Recall: 0.4
Precision:0.267
F1_Score:0.32
Batch 75:SVM
Accuracy :0.562
Recall: 0.9
Precision:0.409
F1_Score:0.563
Batch 75:GNB
Accuracy :0.812
Recall: 0.4
Precision:1.0
F1_Score:0.571
Batch 75:XGB
Accuracy :0.562
Recall: 1.0
Precision:0.417
F1_Score:0.588
Batch 75:DT
Accuracy :0.438
Recall: 0.8
Precision:0.333
F1_Score:0.471
Batch 75:MLP
Accuracy :0.562
Recall: 1.0
Precision:0.417
F1_Score:0.588
Batch 76:LogReg
Accuracy :0.844
```

Recall: 1.0  
Precision:0.792  
F1\_Score:0.884  
Batch 76:RF  
Accuracy :0.656  
Recall: 1.0  
Precision:0.633  
F1\_Score:0.776  
Batch 76:KNN  
Accuracy :0.719  
Recall: 1.0  
Precision:0.679  
F1\_Score:0.809  
Batch 76:SVM  
Accuracy :0.719  
Recall: 1.0  
Precision:0.679  
F1\_Score:0.809  
Batch 76:GNB  
Accuracy :0.938  
Recall: 0.895  
Precision:1.0  
F1\_Score:0.944  
Batch 76:XGB  
Accuracy :0.656  
Recall: 1.0  
Precision:0.633  
F1\_Score:0.776  
Batch 76:DT  
Accuracy :0.656  
Recall: 0.947  
Precision:0.643  
F1\_Score:0.766  
Batch 76:MLP  
Accuracy :0.656  
Recall: 1.0  
Precision:0.633  
F1\_Score:0.776  
Batch 77:LogReg  
Accuracy :0.844  
Recall: 1.0  
Precision:0.375  
F1\_Score:0.545  
Batch 77:RF  
Accuracy :0.406  
Recall: 1.0  
Precision:0.136  
F1\_Score:0.24  
Batch 77:KNN  
Accuracy :0.531  
Recall: 0.333  
Precision:0.071  
F1\_Score:0.118  
Batch 77:SVM  
Accuracy :0.688  
Recall: 1.0  
Precision:0.231  
F1\_Score:0.375  
Batch 77:GNB  
Accuracy :0.969  
Recall: 0.667  
Precision:1.0

F1\_Score:0.8  
Batch 77:XGB  
Accuracy :0.438  
Recall: 1.0  
Precision:0.143  
F1\_Score:0.25  
Batch 77:DT  
Accuracy :0.344  
Recall: 0.667  
Precision:0.091  
F1\_Score:0.16  
Batch 77:MLP  
Accuracy :0.469  
Recall: 1.0  
Precision:0.15  
F1\_Score:0.261  
Batch 78:LogReg  
Accuracy :0.625  
Recall: 0.2  
Precision:1.0  
F1\_Score:0.333  
Batch 78:RF  
Accuracy :0.531  
Recall: 0.733  
Precision:0.5  
F1\_Score:0.595  
Batch 78:KNN  
Accuracy :0.531  
Recall: 0.267  
Precision:0.5  
F1\_Score:0.348  
Batch 78:SVM  
Accuracy :0.625  
Recall: 0.467  
Precision:0.636  
F1\_Score:0.538  
Batch 78:GNB  
Accuracy :0.531  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 78:XGB  
Accuracy :0.469  
Recall: 0.6  
Precision:0.45  
F1\_Score:0.514  
Batch 78:DT  
Accuracy :0.562  
Recall: 0.667  
Precision:0.526  
F1\_Score:0.588  
Batch 78:MLP  
Accuracy :0.531  
Recall: 0.733  
Precision:0.5  
F1\_Score:0.595  
Batch 79:LogReg  
Accuracy :0.469  
Recall: 0.105  
Precision:1.0  
F1\_Score:0.19  
Batch 79:RF

Accuracy :0.812  
Recall: 1.0  
Precision:0.76  
F1\_Score:0.864  
Batch 79:KNN  
Accuracy :0.406  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 79:SVM  
Accuracy :0.406  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 79:GNB  
Accuracy :0.406  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 79:XGB  
Accuracy :0.562  
Recall: 0.474  
Precision:0.692  
F1\_Score:0.562  
Batch 79:DT  
Accuracy :0.719  
Recall: 0.842  
Precision:0.727  
F1\_Score:0.78  
Batch 79:MLP  
Accuracy :0.781  
Recall: 1.0  
Precision:0.731  
F1\_Score:0.844  
Batch 80:LogReg  
Accuracy :0.844  
Recall: 0.783  
Precision:1.0  
F1\_Score:0.878  
Batch 80:RF  
Accuracy :0.875  
Recall: 0.87  
Precision:0.952  
F1\_Score:0.909  
Batch 80:KNN  
Accuracy :0.281  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 80:SVM  
Accuracy :0.812  
Recall: 0.739  
Precision:1.0  
F1\_Score:0.85  
Batch 80:GNB  
Accuracy :0.781  
Recall: 0.696  
Precision:1.0  
F1\_Score:0.821  
Batch 80:XGB  
Accuracy :0.844  
Recall: 0.826

```
Precision:0.95
F1_Score:0.884
Batch 80:DT
Accuracy :0.75
Recall: 0.826
Precision:0.826
F1_Score:0.826
Batch 80:MLP
Accuracy :0.844
Recall: 0.87
Precision:0.909
F1_Score:0.889
Batch 81:LogReg
Accuracy :0.844
Recall: 1.0
Precision:0.688
F1_Score:0.815
Batch 81:RF
Accuracy :0.656
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 81:KNN
Accuracy :0.656
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 81:SVM
Accuracy :0.969
Recall: 1.0
Precision:0.917
F1_Score:0.957
Batch 81:GNB
Accuracy :0.938
Recall: 0.818
Precision:1.0
F1_Score:0.9
Batch 81:XGB
Accuracy :0.594
Recall: 1.0
Precision:0.458
F1_Score:0.629
Batch 81:DT
Accuracy :0.469
Recall: 0.727
Precision:0.364
F1_Score:0.485
Batch 81:MLP
Accuracy :0.594
Recall: 1.0
Precision:0.458
F1_Score:0.629
Batch 82:LogReg
Accuracy :0.562
Recall: 1.0
Precision:0.481
F1_Score:0.65
Batch 82:RF
Accuracy :0.656
Recall: 1.0
Precision:0.542
F1_Score:0.703
```

```
Batch 82:KNN
Accuracy :0.594
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 82:SVM
Accuracy :0.688
Recall: 1.0
Precision:0.565
F1_Score:0.722
Batch 82:GNB
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 82:XGB
Accuracy :0.5
Recall: 1.0
Precision:0.448
F1_Score:0.619
Batch 82:DT
Accuracy :0.625
Recall: 1.0
Precision:0.52
F1_Score:0.684
Batch 82:MLP
Accuracy :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
Batch 83:LogReg
Accuracy :0.719
Recall: 1.0
Precision:0.609
F1_Score:0.757
Batch 83:RF
Accuracy :0.531
Recall: 0.929
Precision:0.481
F1_Score:0.634
Batch 83:KNN
Accuracy :0.406
Recall: 0.429
Precision:0.353
F1_Score:0.387
Batch 83:SVM
Accuracy :0.656
Recall: 1.0
Precision:0.56
F1_Score:0.718
Batch 83:GNB
Accuracy :0.906
Recall: 0.786
Precision:1.0
F1_Score:0.88
Batch 83:XGB
Accuracy :0.531
Recall: 1.0
Precision:0.483
F1_Score:0.651
Batch 83:DT
Accuracy :0.531
```

Recall: 0.929  
Precision:0.481  
F1\_Score:0.634  
Batch 83:MLP  
Accuracy :0.594  
Recall: 1.0  
Precision:0.519  
F1\_Score:0.683  
Batch 84:LogReg  
Accuracy :0.406  
Recall: 1.0  
Precision:0.24  
F1\_Score:0.387  
Batch 84:RF  
Accuracy :0.312  
Recall: 0.833  
Precision:0.192  
F1\_Score:0.312  
Batch 84:KNN  
Accuracy :0.594  
Recall: 0.333  
Precision:0.182  
F1\_Score:0.235  
Batch 84:SVM  
Accuracy :0.469  
Recall: 1.0  
Precision:0.261  
F1\_Score:0.414  
Batch 84:GNB  
Accuracy :0.969  
Recall: 0.833  
Precision:1.0  
F1\_Score:0.909  
Batch 84:XGB  
Accuracy :0.344  
Recall: 1.0  
Precision:0.222  
F1\_Score:0.364  
Batch 84:DT  
Accuracy :0.312  
Recall: 0.667  
Precision:0.167  
F1\_Score:0.267  
Batch 84:MLP  
Accuracy :0.375  
Recall: 1.0  
Precision:0.231  
F1\_Score:0.375  
Batch 85:LogReg  
Accuracy :0.438  
Recall: 1.0  
Precision:0.4  
F1\_Score:0.571  
Batch 85:RF  
Accuracy :0.375  
Recall: 1.0  
Precision:0.375  
F1\_Score:0.545  
Batch 85:KNN  
Accuracy :0.531  
Recall: 0.917  
Precision:0.44

```
F1_Score:0.595
Batch 85:SVM
Accuracy :0.438
Recall: 1.0
Precision:0.4
F1_Score:0.571
Batch 85:GNB
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 85:XGB
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 85:DT
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 85:MLP
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 86:LogReg
Accuracy :0.531
Recall: 1.0
Precision:0.4
F1_Score:0.571
Batch 86:RF
Accuracy :0.438
Recall: 0.9
Precision:0.346
F1_Score:0.5
Batch 86:KNN
Accuracy :0.562
Recall: 0.9
Precision:0.409
F1_Score:0.563
Batch 86:SVM
Accuracy :0.594
Recall: 1.0
Precision:0.435
F1_Score:0.606
Batch 86:GNB
Accuracy :0.906
Recall: 0.7
Precision:1.0
F1_Score:0.824
Batch 86:XGB
Accuracy :0.469
Recall: 1.0
Precision:0.37
F1_Score:0.541
Batch 86:DT
Accuracy :0.5
Recall: 0.9
Precision:0.375
F1_Score:0.529
Batch 86:MLP
```

Accuracy :0.531  
Recall: 1.0  
Precision:0.4  
F1\_Score:0.571  
Batch 87:LogReg  
Accuracy :0.562  
Recall: 1.0  
Precision:0.222  
F1\_Score:0.364  
Batch 87:RF  
Accuracy :0.406  
Recall: 1.0  
Precision:0.174  
F1\_Score:0.296  
Batch 87:KNN  
Accuracy :0.688  
Recall: 1.0  
Precision:0.286  
F1\_Score:0.444  
Batch 87:SVM  
Accuracy :0.531  
Recall: 1.0  
Precision:0.211  
F1\_Score:0.348  
Batch 87:GNB  
Accuracy :0.906  
Recall: 0.25  
Precision:1.0  
F1\_Score:0.4  
Batch 87:XGB  
Accuracy :0.406  
Recall: 1.0  
Precision:0.174  
F1\_Score:0.296  
Batch 87:DT  
Accuracy :0.312  
Recall: 1.0  
Precision:0.154  
F1\_Score:0.267  
Batch 87:MLP  
Accuracy :0.406  
Recall: 1.0  
Precision:0.174  
F1\_Score:0.296  
Batch 88:LogReg  
Accuracy :0.906  
Recall: 0.95  
Precision:0.905  
F1\_Score:0.927  
Batch 88:RF  
Accuracy :0.625  
Recall: 1.0  
Precision:0.625  
F1\_Score:0.769  
Batch 88:KNN  
Accuracy :0.562  
Recall: 0.6  
Precision:0.667  
F1\_Score:0.632  
Batch 88:SVM  
Accuracy :0.656  
Recall: 0.95

```
Precision:0.655
F1_Score:0.776
Batch 88:GNB
Accuracy :0.5
Recall: 0.2
Precision:1.0
F1_Score:0.333
Batch 88:XGB
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 88:DT
Accuracy :0.594
Recall: 0.9
Precision:0.621
F1_Score:0.735
Batch 88:MLP
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 89:LogReg
Accuracy :0.969
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 89:RF
Accuracy :0.5
Recall: 1.0
Precision:0.059
F1_Score:0.111
Batch 89:KNN
Accuracy :0.844
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 89:SVM
Accuracy :0.906
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 89:GNB
Accuracy :0.969
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 89:XGB
Accuracy :0.875
Recall: 1.0
Precision:0.2
F1_Score:0.333
Batch 89:DT
Accuracy :0.281
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 89:MLP
Accuracy :0.5
Recall: 1.0
Precision:0.059
F1_Score:0.111
```

```
Batch 90:LogReg
Accuracy :0.531
Recall: 0.286
Precision:1.0
F1_Score:0.444
Batch 90:RF
Accuracy :0.719
Recall: 0.81
Precision:0.773
F1_Score:0.791
Batch 90:KNN
Accuracy :0.344
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 90:SVM
Accuracy :0.469
Recall: 0.19
Precision:1.0
F1_Score:0.32
Batch 90:GNB
Accuracy :0.406
Recall: 0.095
Precision:1.0
F1_Score:0.174
Batch 90:XGB
Accuracy :0.75
Recall: 0.714
Precision:0.882
F1_Score:0.789
Batch 90:DT
Accuracy :0.594
Recall: 0.524
Precision:0.786
F1_Score:0.629
Batch 90:MLP
Accuracy :0.656
Recall: 0.714
Precision:0.75
F1_Score:0.732
Batch 91:LogReg
Accuracy :0.219
Recall: 1.0
Precision:0.167
F1_Score:0.286
Batch 91:RF
Accuracy :0.188
Recall: 0.8
Precision:0.138
F1_Score:0.235
Batch 91:KNN
Accuracy :0.719
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 91:SVM
Accuracy :0.906
Recall: 0.4
Precision:1.0
F1_Score:0.571
Batch 91:GNB
Accuracy :0.875
```

Recall: 0.2  
Precision:1.0  
F1\_Score:0.333  
Batch 91:XGB  
Accuracy :0.281  
Recall: 0.8  
Precision:0.154  
F1\_Score:0.258  
Batch 91:DT  
Accuracy :0.125  
Recall: 0.4  
Precision:0.074  
F1\_Score:0.125  
Batch 91:MLP  
Accuracy :0.156  
Recall: 0.8  
Precision:0.133  
F1\_Score:0.229  
Batch 92:LogReg  
Accuracy :0.688  
Recall: 0.875  
Precision:0.438  
F1\_Score:0.583  
Batch 92:RF  
Accuracy :0.531  
Recall: 1.0  
Precision:0.348  
F1\_Score:0.516  
Batch 92:KNN  
Accuracy :0.5  
Recall: 0.25  
Precision:0.167  
F1\_Score:0.2  
Batch 92:SVM  
Accuracy :0.438  
Recall: 0.5  
Precision:0.222  
F1\_Score:0.308  
Batch 92:GNB  
Accuracy :0.781  
Recall: 0.125  
Precision:1.0  
F1\_Score:0.222  
Batch 92:XGB  
Accuracy :0.688  
Recall: 1.0  
Precision:0.444  
F1\_Score:0.615  
Batch 92:DT  
Accuracy :0.5  
Recall: 0.625  
Precision:0.278  
F1\_Score:0.385  
Batch 92:MLP  
Accuracy :0.562  
Recall: 1.0  
Precision:0.364  
F1\_Score:0.533  
Batch 93:LogReg  
Accuracy :0.781  
Recall: 0.6  
Precision:0.667

F1\_Score:0.632  
Batch 93:RF  
Accuracy :0.469  
Recall: 0.9  
Precision:0.36  
F1\_Score:0.514  
Batch 93:KNN  
Accuracy :0.688  
Recall: 0.2  
Precision:0.5  
F1\_Score:0.286  
Batch 93:SVM  
Accuracy :0.406  
Recall: 0.5  
Precision:0.263  
F1\_Score:0.345  
Batch 93:GNB  
Accuracy :0.719  
Recall: 0.1  
Precision:1.0  
F1\_Score:0.182  
Batch 93:XGB  
Accuracy :0.531  
Recall: 0.9  
Precision:0.391  
F1\_Score:0.545  
Batch 93:DT  
Accuracy :0.531  
Recall: 0.7  
Precision:0.368  
F1\_Score:0.483  
Batch 93:MLP  
Accuracy :0.438  
Recall: 0.8  
Precision:0.333  
F1\_Score:0.471  
Batch 94:LogReg  
Accuracy :0.75  
Recall: 1.0  
Precision:0.724  
F1\_Score:0.84  
Batch 94:RF  
Accuracy :0.656  
Recall: 1.0  
Precision:0.656  
F1\_Score:0.792  
Batch 94:KNN  
Accuracy :0.812  
Recall: 1.0  
Precision:0.778  
F1\_Score:0.875  
Batch 94:SVM  
Accuracy :0.719  
Recall: 1.0  
Precision:0.7  
F1\_Score:0.824  
Batch 94:GNB  
Accuracy :0.531  
Recall: 0.286  
Precision:1.0  
F1\_Score:0.444  
Batch 94:XGB

Accuracy :0.688  
Recall: 1.0  
Precision:0.677  
F1\_Score:0.808  
Batch 94:DT  
Accuracy :0.625  
Recall: 0.952  
Precision:0.645  
F1\_Score:0.769  
Batch 94:MLP  
Accuracy :0.656  
Recall: 1.0  
Precision:0.656  
F1\_Score:0.792  
Batch 95:LogReg  
Accuracy :0.531  
Recall: 1.0  
Precision:0.286  
F1\_Score:0.444  
Batch 95:RF  
Accuracy :0.406  
Recall: 1.0  
Precision:0.24  
F1\_Score:0.387  
Batch 95:KNN  
Accuracy :0.5  
Recall: 1.0  
Precision:0.273  
F1\_Score:0.429  
Batch 95:SVM  
Accuracy :0.531  
Recall: 1.0  
Precision:0.286  
F1\_Score:0.444  
Batch 95:GNB  
Accuracy :0.875  
Recall: 0.333  
Precision:1.0  
F1\_Score:0.5  
Batch 95:XGB  
Accuracy :0.406  
Recall: 1.0  
Precision:0.24  
F1\_Score:0.387  
Batch 95:DT  
Accuracy :0.406  
Recall: 0.5  
Precision:0.158  
F1\_Score:0.24  
Batch 95:MLP  
Accuracy :0.438  
Recall: 1.0  
Precision:0.25  
F1\_Score:0.4  
Batch 96:LogReg  
Accuracy :0.5  
Recall: 1.0  
Precision:0.111  
F1\_Score:0.2  
Batch 96:RF  
Accuracy :0.25  
Recall: 1.0

Precision:0.077  
F1\_Score:0.143  
Batch 96:KNN  
Accuracy :0.594  
Recall: 1.0  
Precision:0.133  
F1\_Score:0.235  
Batch 96:SVM  
Accuracy :0.531  
Recall: 1.0  
Precision:0.118  
F1\_Score:0.211  
Batch 96:GNB  
Accuracy :0.969  
Recall: 0.5  
Precision:1.0  
F1\_Score:0.667  
Batch 96:XGB  
Accuracy :0.344  
Recall: 1.0  
Precision:0.087  
F1\_Score:0.16  
Batch 96:DT  
Accuracy :0.281  
Recall: 0.5  
Precision:0.043  
F1\_Score:0.08  
Batch 96:MLP  
Accuracy :0.344  
Recall: 1.0  
Precision:0.087  
F1\_Score:0.16  
Batch 97:LogReg  
Accuracy :0.438  
Recall: 1.0  
Precision:0.333  
F1\_Score:0.5  
Batch 97:RF  
Accuracy :0.312  
Recall: 1.0  
Precision:0.29  
F1\_Score:0.45  
Batch 97:KNN  
Accuracy :0.5  
Recall: 1.0  
Precision:0.36  
F1\_Score:0.529  
Batch 97:SVM  
Accuracy :0.406  
Recall: 1.0  
Precision:0.321  
F1\_Score:0.486  
Batch 97:GNB  
Accuracy :0.75  
Recall: 0.111  
Precision:1.0  
F1\_Score:0.2  
Batch 97:XGB  
Accuracy :0.281  
Recall: 1.0  
Precision:0.281  
F1\_Score:0.439

```
Batch 97:DT
Accuracy :0.312
Recall: 1.0
Precision:0.29
F1_Score:0.45
Batch 97:MLP
Accuracy :0.312
Recall: 1.0
Precision:0.29
F1_Score:0.45
Batch 98:LogReg
Accuracy :0.875
Recall: 0.789
Precision:1.0
F1_Score:0.882
Batch 98:RF
Accuracy :0.875
Recall: 0.947
Precision:0.857
F1_Score:0.9
Batch 98:KNN
Accuracy :0.844
Recall: 0.842
Precision:0.889
F1_Score:0.865
Batch 98:SVM
Accuracy :0.844
Recall: 0.842
Precision:0.889
F1_Score:0.865
Batch 98:GNB
Accuracy :0.406
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 98:XGB
Accuracy :0.938
Recall: 1.0
Precision:0.905
F1_Score:0.95
Batch 98:DT
Accuracy :0.688
Recall: 0.842
Precision:0.696
F1_Score:0.762
Batch 98:MLP
Accuracy :0.875
Recall: 0.947
Precision:0.857
F1_Score:0.9
Batch 99:LogReg
Accuracy :0.938
Recall: 0.6
Precision:1.0
F1_Score:0.75
Batch 99:RF
Accuracy :0.469
Recall: 1.0
Precision:0.227
F1_Score:0.37
Batch 99:KNN
Accuracy :0.656
```

Recall: 0.2  
Precision:0.125  
F1\_Score:0.154  
Batch 99:SVM  
Accuracy :0.75  
Recall: 1.0  
Precision:0.385  
F1\_Score:0.556  
Batch 99:GNB  
Accuracy :0.844  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 99:XGB  
Accuracy :0.531  
Recall: 1.0  
Precision:0.25  
F1\_Score:0.4  
Batch 99:DT  
Accuracy :0.406  
Recall: 1.0  
Precision:0.208  
F1\_Score:0.345  
Batch 99:MLP  
Accuracy :0.531  
Recall: 1.0  
Precision:0.25  
F1\_Score:0.4  
Batch 100:LogReg  
Accuracy :0.562  
Recall: 0.125  
Precision:1.0  
F1\_Score:0.222  
Batch 100:RF  
Accuracy :0.594  
Recall: 1.0  
Precision:0.552  
F1\_Score:0.711  
Batch 100:KNN  
Accuracy :0.438  
Recall: 0.312  
Precision:0.417  
F1\_Score:0.357  
Batch 100:SVM  
Accuracy :0.5  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 100:GNB  
Accuracy :0.5  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 100:XGB  
Accuracy :0.906  
Recall: 0.938  
Precision:0.882  
F1\_Score:0.909  
Batch 100:DT  
Accuracy :0.375  
Recall: 0.688  
Precision:0.423

```
F1_Score:0.524
Batch 100:MLP
Accuracy :0.594
Recall: 1.0
Precision:0.552
F1_Score:0.711
Batch 101:LogReg
Accuracy :0.719
Recall: 0.667
Precision:1.0
F1_Score:0.8
Batch 101:RF
Accuracy :0.844
Recall: 0.852
Precision:0.958
F1_Score:0.902
Batch 101:KNN
Accuracy :0.344
Recall: 0.222
Precision:1.0
F1_Score:0.364
Batch 101:SVM
Accuracy :0.688
Recall: 0.63
Precision:1.0
F1_Score:0.773
Batch 101:GNB
Accuracy :0.188
Recall: 0.037
Precision:1.0
F1_Score:0.071
Batch 101:XGB
Accuracy :0.75
Recall: 0.741
Precision:0.952
F1_Score:0.833
Batch 101:DT
Accuracy :0.75
Recall: 0.778
Precision:0.913
F1_Score:0.84
Batch 101:MLP
Accuracy :0.781
Recall: 0.778
Precision:0.955
F1_Score:0.857
Batch 102:LogReg
Accuracy :0.594
Recall: 0.889
Precision:0.4
F1_Score:0.552
Batch 102:RF
Accuracy :0.5
Recall: 1.0
Precision:0.36
F1_Score:0.529
Batch 102:KNN
Accuracy :0.812
Recall: 0.667
Precision:0.667
F1_Score:0.667
Batch 102:SVM
```

Accuracy :0.844  
Recall: 0.889  
Precision:0.667  
F1\_Score:0.762  
Batch 102:GNB  
Accuracy :0.781  
Recall: 0.222  
Precision:1.0  
F1\_Score:0.364  
Batch 102:XGB  
Accuracy :0.531  
Recall: 1.0  
Precision:0.375  
F1\_Score:0.545  
Batch 102:DT  
Accuracy :0.406  
Recall: 0.778  
Precision:0.292  
F1\_Score:0.424  
Batch 102:MLP  
Accuracy :0.5  
Recall: 1.0  
Precision:0.36  
F1\_Score:0.529  
Batch 103:LogReg  
Accuracy :0.562  
Recall: 1.0  
Precision:0.517  
F1\_Score:0.682  
Batch 103:RF  
Accuracy :0.469  
Recall: 1.0  
Precision:0.469  
F1\_Score:0.638  
Batch 103:KNN  
Accuracy :0.656  
Recall: 1.0  
Precision:0.577  
F1\_Score:0.732  
Batch 103:SVM  
Accuracy :0.531  
Recall: 1.0  
Precision:0.5  
F1\_Score:0.667  
Batch 103:GNB  
Accuracy :0.688  
Recall: 0.333  
Precision:1.0  
F1\_Score:0.5  
Batch 103:XGB  
Accuracy :0.469  
Recall: 1.0  
Precision:0.469  
F1\_Score:0.638  
Batch 103:DT  
Accuracy :0.438  
Recall: 0.933  
Precision:0.452  
F1\_Score:0.609  
Batch 103:MLP  
Accuracy :0.469  
Recall: 1.0

```
Precision:0.469
F1_Score:0.638
Batch 104:LogReg
Accuracy :0.812
Recall: 1.0
Precision:0.714
F1_Score:0.833
Batch 104:RF
Accuracy :0.688
Recall: 1.0
Precision:0.6
F1_Score:0.75
Batch 104:KNN
Accuracy :0.812
Recall: 1.0
Precision:0.714
F1_Score:0.833
Batch 104:SVM
Accuracy :0.812
Recall: 1.0
Precision:0.714
F1_Score:0.833
Batch 104:GNB
Accuracy :0.969
Recall: 0.933
Precision:1.0
F1_Score:0.966
Batch 104:XGB
Accuracy :0.75
Recall: 1.0
Precision:0.652
F1_Score:0.789
Batch 104:DT
Accuracy :0.781
Recall: 1.0
Precision:0.682
F1_Score:0.811
Batch 104:MLP
Accuracy :0.75
Recall: 1.0
Precision:0.652
F1_Score:0.789
Batch 105:LogReg
Accuracy :0.625
Recall: 1.0
Precision:0.429
F1_Score:0.6
Batch 105:RF
Accuracy :0.469
Recall: 1.0
Precision:0.346
F1_Score:0.514
Batch 105:KNN
Accuracy :0.781
Recall: 0.889
Precision:0.571
F1_Score:0.696
Batch 105:SVM
Accuracy :0.594
Recall: 1.0
Precision:0.409
F1_Score:0.581
```

```
Batch 105:GNB
Accuracy :0.969
Recall: 0.889
Precision:1.0
F1_Score:0.941
Batch 105:XGB
Accuracy :0.531
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 105:DT
Accuracy :0.406
Recall: 0.889
Precision:0.308
F1_Score:0.457
Batch 105:MLP
Accuracy :0.5
Recall: 1.0
Precision:0.36
F1_Score:0.529
Batch 106:LogReg
Accuracy :0.531
Recall: 1.0
Precision:0.516
F1_Score:0.681
Batch 106:RF
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 106:KNN
Accuracy :0.656
Recall: 1.0
Precision:0.593
F1_Score:0.744
Batch 106:SVM
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 106:GNB
Accuracy :0.844
Recall: 1.0
Precision:0.762
F1_Score:0.865
Batch 106:XGB
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 106:DT
Accuracy :0.531
Recall: 1.0
Precision:0.516
F1_Score:0.681
Batch 106:MLP
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 107:LogReg
Accuracy :0.688
```

Recall: 1.0  
Precision:0.545  
F1\_Score:0.706  
Batch 107:RF  
Accuracy :0.594  
Recall: 1.0  
Precision:0.48  
F1\_Score:0.649  
Batch 107:KNN  
Accuracy :0.719  
Recall: 1.0  
Precision:0.571  
F1\_Score:0.727  
Batch 107:SVM  
Accuracy :0.688  
Recall: 1.0  
Precision:0.545  
F1\_Score:0.706  
Batch 107:GNB  
Accuracy :0.969  
Recall: 1.0  
Precision:0.923  
F1\_Score:0.96  
Batch 107:XGB  
Accuracy :0.594  
Recall: 1.0  
Precision:0.48  
F1\_Score:0.649  
Batch 107:DT  
Accuracy :0.719  
Recall: 0.917  
Precision:0.579  
F1\_Score:0.71  
Batch 107:MLP  
Accuracy :0.594  
Recall: 1.0  
Precision:0.48  
F1\_Score:0.649  
Batch 108:LogReg  
Accuracy :0.438  
Recall: 1.0  
Precision:0.1  
F1\_Score:0.182  
Batch 108:RF  
Accuracy :0.344  
Recall: 1.0  
Precision:0.087  
F1\_Score:0.16  
Batch 108:KNN  
Accuracy :0.594  
Recall: 1.0  
Precision:0.133  
F1\_Score:0.235  
Batch 108:SVM  
Accuracy :0.438  
Recall: 1.0  
Precision:0.1  
F1\_Score:0.182  
Batch 108:GNB  
Accuracy :1.0  
Recall: 1.0  
Precision:1.0

```
F1_Score:1.0
Batch 108:XGB
Accuracy :0.344
Recall: 1.0
Precision:0.087
F1_Score:0.16
Batch 108:DT
Accuracy :0.219
Recall: 0.5
Precision:0.04
F1_Score:0.074
Batch 108:MLP
Accuracy :0.375
Recall: 1.0
Precision:0.091
F1_Score:0.167
Batch 109:LogReg
Accuracy :0.875
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 109:RF
Accuracy :0.156
Recall: 1.0
Precision:0.129
F1_Score:0.229
Batch 109:KNN
Accuracy :0.531
Recall: 1.0
Precision:0.211
F1_Score:0.348
Batch 109:SVM
Accuracy :0.344
Recall: 1.0
Precision:0.16
F1_Score:0.276
Batch 109:GNB
Accuracy :0.875
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 109:XGB
Accuracy :0.219
Recall: 1.0
Precision:0.138
F1_Score:0.242
Batch 109:DT
Accuracy :0.344
Recall: 1.0
Precision:0.16
F1_Score:0.276
Batch 109:MLP
Accuracy :0.188
Recall: 1.0
Precision:0.133
F1_Score:0.235
Batch 110:LogReg
Accuracy :0.594
Recall: 0.071
Precision:1.0
F1_Score:0.133
Batch 110:RF
```

Accuracy :0.906  
Recall: 1.0  
Precision:0.824  
F1\_Score:0.903  
Batch 110:KNN  
Accuracy :0.656  
Recall: 0.357  
Precision:0.714  
F1\_Score:0.476  
Batch 110:SVM  
Accuracy :0.562  
Recall: 0.071  
Precision:0.5  
F1\_Score:0.125  
Batch 110:GNB  
Accuracy :0.562  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 110:XGB  
Accuracy :0.719  
Recall: 0.571  
Precision:0.727  
F1\_Score:0.64  
Batch 110:DT  
Accuracy :0.719  
Recall: 1.0  
Precision:0.609  
F1\_Score:0.757  
Batch 110:MLP  
Accuracy :0.906  
Recall: 1.0  
Precision:0.824  
F1\_Score:0.903  
Batch 111:LogReg  
Accuracy :0.188  
Recall: 0.037  
Precision:1.0  
F1\_Score:0.071  
Batch 111:RF  
Accuracy :0.844  
Recall: 0.815  
Precision:1.0  
F1\_Score:0.898  
Batch 111:KNN  
Accuracy :0.281  
Recall: 0.148  
Precision:1.0  
F1\_Score:0.258  
Batch 111:SVM  
Accuracy :0.188  
Recall: 0.037  
Precision:1.0  
F1\_Score:0.071  
Batch 111:GNB  
Accuracy :0.156  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 111:XGB  
Accuracy :0.656  
Recall: 0.593

```
Precision:1.0
F1_Score:0.744
Batch 111:DT
Accuracy :0.625
Recall: 0.593
Precision:0.941
F1_Score:0.727
Batch 111:MLP
Accuracy :0.781
Recall: 0.741
Precision:1.0
F1_Score:0.851
Batch 112:LogReg
Accuracy :0.688
Recall: 1.0
Precision:0.677
F1_Score:0.808
Batch 112:RF
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 112:KNN
Accuracy :0.844
Recall: 1.0
Precision:0.808
F1_Score:0.894
Batch 112:SVM
Accuracy :0.688
Recall: 1.0
Precision:0.677
F1_Score:0.808
Batch 112:GNB
Accuracy :0.406
Recall: 0.095
Precision:1.0
F1_Score:0.174
Batch 112:XGB
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 112:DT
Accuracy :0.625
Recall: 0.952
Precision:0.645
F1_Score:0.769
Batch 112:MLP
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 113:LogReg
Accuracy :0.75
Recall: 0.882
Precision:0.714
F1_Score:0.789
Batch 113:RF
Accuracy :0.719
Recall: 0.941
Precision:0.667
F1_Score:0.78
```

```
Batch 113:KNN
Accuracy :0.781
Recall: 0.941
Precision:0.727
F1_Score:0.821
Batch 113:SVM
Accuracy :0.75
Recall: 0.882
Precision:0.714
F1_Score:0.789
Batch 113:GNB
Accuracy :0.719
Recall: 0.471
Precision:1.0
F1_Score:0.64
Batch 113:XGB
Accuracy :0.781
Recall: 1.0
Precision:0.708
F1_Score:0.829
Batch 113:DT
Accuracy :0.656
Recall: 0.765
Precision:0.65
F1_Score:0.703
Batch 113:MLP
Accuracy :0.688
Recall: 0.882
Precision:0.652
F1_Score:0.75
Batch 114:LogReg
Accuracy :0.438
Recall: 0.75
Precision:0.15
F1_Score:0.25
Batch 114:RF
Accuracy :0.312
Recall: 1.0
Precision:0.154
F1_Score:0.267
Batch 114:KNN
Accuracy :0.594
Recall: 0.75
Precision:0.2
F1_Score:0.316
Batch 114:SVM
Accuracy :0.438
Recall: 0.75
Precision:0.15
F1_Score:0.25
Batch 114:GNB
Accuracy :0.906
Recall: 0.25
Precision:1.0
F1_Score:0.4
Batch 114:XGB
Accuracy :0.375
Recall: 1.0
Precision:0.167
F1_Score:0.286
Batch 114:DT
Accuracy :0.375
```

Recall: 1.0  
Precision:0.167  
F1\_Score:0.286  
Batch 114:MLP  
Accuracy :0.375  
Recall: 1.0  
Precision:0.167  
F1\_Score:0.286  
Batch 115:LogReg  
Accuracy :0.281  
Recall: 1.0  
Precision:0.281  
F1\_Score:0.439  
Batch 115:RF  
Accuracy :0.281  
Recall: 1.0  
Precision:0.281  
F1\_Score:0.439  
Batch 115:KNN  
Accuracy :0.469  
Recall: 1.0  
Precision:0.346  
F1\_Score:0.514  
Batch 115:SVM  
Accuracy :0.281  
Recall: 1.0  
Precision:0.281  
F1\_Score:0.439  
Batch 115:GNB  
Accuracy :0.938  
Recall: 0.778  
Precision:1.0  
F1\_Score:0.875  
Batch 115:XGB  
Accuracy :0.281  
Recall: 1.0  
Precision:0.281  
F1\_Score:0.439  
Batch 115:DT  
Accuracy :0.188  
Recall: 0.667  
Precision:0.207  
F1\_Score:0.316  
Batch 115:MLP  
Accuracy :0.281  
Recall: 1.0  
Precision:0.281  
F1\_Score:0.439  
Batch 116:LogReg  
Accuracy :0.75  
Recall: 1.0  
Precision:0.68  
F1\_Score:0.81  
Batch 116:RF  
Accuracy :0.75  
Recall: 1.0  
Precision:0.68  
F1\_Score:0.81  
Batch 116:KNN  
Accuracy :0.625  
Recall: 0.765  
Precision:0.619

F1\_Score:0.684  
Batch 116:SVM  
Accuracy :0.75  
Recall: 1.0  
Precision:0.68  
F1\_Score:0.81  
Batch 116:GNB  
Accuracy :0.75  
Recall: 0.529  
Precision:1.0  
F1\_Score:0.692  
Batch 116:XGB  
Accuracy :0.719  
Recall: 1.0  
Precision:0.654  
F1\_Score:0.791  
Batch 116:DT  
Accuracy :0.562  
Recall: 0.765  
Precision:0.565  
F1\_Score:0.65  
Batch 116:MLP  
Accuracy :0.75  
Recall: 1.0  
Precision:0.68  
F1\_Score:0.81  
Batch 117:LogReg  
Accuracy :0.5  
Recall: 1.0  
Precision:0.333  
F1\_Score:0.5  
Batch 117:RF  
Accuracy :0.469  
Recall: 1.0  
Precision:0.32  
F1\_Score:0.485  
Batch 117:KNN  
Accuracy :0.656  
Recall: 0.75  
Precision:0.4  
F1\_Score:0.522  
Batch 117:SVM  
Accuracy :0.469  
Recall: 0.875  
Precision:0.304  
F1\_Score:0.452  
Batch 117:GNB  
Accuracy :0.812  
Recall: 0.25  
Precision:1.0  
F1\_Score:0.4  
Batch 117:XGB  
Accuracy :0.438  
Recall: 1.0  
Precision:0.308  
F1\_Score:0.471  
Batch 117:DT  
Accuracy :0.375  
Recall: 1.0  
Precision:0.286  
F1\_Score:0.444  
Batch 117:MLP

Accuracy :0.469  
Recall: 1.0  
Precision:0.32  
F1\_Score:0.485  
Batch 118:LogReg  
Accuracy :0.438  
Recall: 1.0  
Precision:0.419  
F1\_Score:0.591  
Batch 118:RF  
Accuracy :0.375  
Recall: 0.923  
Precision:0.387  
F1\_Score:0.545  
Batch 118:KNN  
Accuracy :0.625  
Recall: 1.0  
Precision:0.52  
F1\_Score:0.684  
Batch 118:SVM  
Accuracy :0.438  
Recall: 1.0  
Precision:0.419  
F1\_Score:0.591  
Batch 118:GNB  
Accuracy :0.875  
Recall: 0.692  
Precision:1.0  
F1\_Score:0.818  
Batch 118:XGB  
Accuracy :0.406  
Recall: 1.0  
Precision:0.406  
F1\_Score:0.578  
Batch 118:DT  
Accuracy :0.312  
Recall: 0.769  
Precision:0.345  
F1\_Score:0.476  
Batch 118:MLP  
Accuracy :0.406  
Recall: 1.0  
Precision:0.406  
F1\_Score:0.578  
Batch 119:LogReg  
Accuracy :0.938  
Recall: 1.0  
Precision:0.9  
F1\_Score:0.947  
Batch 119:RF  
Accuracy :0.812  
Recall: 0.944  
Precision:0.773  
F1\_Score:0.85  
Batch 119:KNN  
Accuracy :0.812  
Recall: 0.833  
Precision:0.833  
F1\_Score:0.833  
Batch 119:SVM  
Accuracy :0.875  
Recall: 1.0

```
Precision:0.818
F1_Score:0.9
Batch 119:GNB
Accuracy :0.656
Recall: 0.389
Precision:1.0
F1_Score:0.56
Batch 119:XGB
Accuracy :0.844
Recall: 1.0
Precision:0.783
F1_Score:0.878
Batch 119:DT
Accuracy :0.562
Recall: 0.778
Precision:0.583
F1_Score:0.667
Batch 119:MLP
Accuracy :0.844
Recall: 1.0
Precision:0.783
F1_Score:0.878
Batch 120:LogReg
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 120:RF
Accuracy :0.344
Recall: 1.0
Precision:0.045
F1_Score:0.087
Batch 120:KNN
Accuracy :0.75
Recall: 1.0
Precision:0.111
F1_Score:0.2
Batch 120:SVM
Accuracy :0.688
Recall: 1.0
Precision:0.091
F1_Score:0.167
Batch 120:GNB
Accuracy :0.969
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 120:XGB
Accuracy :0.406
Recall: 1.0
Precision:0.05
F1_Score:0.095
Batch 120:DT
Accuracy :0.375
Recall: 1.0
Precision:0.048
F1_Score:0.091
Batch 120:MLP
Accuracy :0.406
Recall: 1.0
Precision:0.05
F1_Score:0.095
```

```
Batch 121:LogReg
Accuracy :0.281
Recall: 0.115
Precision:1.0
F1_Score:0.207
Batch 121:RF
Accuracy :0.906
Recall: 1.0
Precision:0.897
F1_Score:0.945
Batch 121:KNN
Accuracy :0.594
Recall: 0.615
Precision:0.842
F1_Score:0.711
Batch 121:SVM
Accuracy :0.281
Recall: 0.115
Precision:1.0
F1_Score:0.207
Batch 121:GNB
Accuracy :0.188
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 121:XGB
Accuracy :0.719
Recall: 0.654
Precision:1.0
F1_Score:0.791
Batch 121:DT
Accuracy :0.625
Recall: 0.769
Precision:0.769
F1_Score:0.769
Batch 121:MLP
Accuracy :0.906
Recall: 1.0
Precision:0.897
F1_Score:0.945
Batch 122:LogReg
Accuracy :0.75
Recall: 0.704
Precision:1.0
F1_Score:0.826
Batch 122:RF
Accuracy :0.969
Recall: 0.963
Precision:1.0
F1_Score:0.981
Batch 122:KNN
Accuracy :0.688
Recall: 0.63
Precision:1.0
F1_Score:0.773
Batch 122:SVM
Accuracy :0.75
Recall: 0.704
Precision:1.0
F1_Score:0.826
Batch 122:GNB
Accuracy :0.688
```

Recall: 0.63  
Precision:1.0  
F1\_Score:0.773  
Batch 122:XGB  
Accuracy :0.875  
Recall: 0.852  
Precision:1.0  
F1\_Score:0.92  
Batch 122:DT  
Accuracy :0.875  
Recall: 0.889  
Precision:0.96  
F1\_Score:0.923  
Batch 122:MLP  
Accuracy :0.844  
Recall: 0.815  
Precision:1.0  
F1\_Score:0.898  
Batch 123:LogReg  
Accuracy :0.531  
Recall: 1.0  
Precision:0.375  
F1\_Score:0.545  
Batch 123:RF  
Accuracy :0.5  
Recall: 1.0  
Precision:0.36  
F1\_Score:0.529  
Batch 123:KNN  
Accuracy :0.781  
Recall: 0.889  
Precision:0.571  
F1\_Score:0.696  
Batch 123:SVM  
Accuracy :0.562  
Recall: 1.0  
Precision:0.391  
F1\_Score:0.562  
Batch 123:GNB  
Accuracy :0.969  
Recall: 1.0  
Precision:0.9  
F1\_Score:0.947  
Batch 123:XGB  
Accuracy :0.531  
Recall: 1.0  
Precision:0.375  
F1\_Score:0.545  
Batch 123:DT  
Accuracy :0.406  
Recall: 1.0  
Precision:0.321  
F1\_Score:0.486  
Batch 123:MLP  
Accuracy :0.5  
Recall: 1.0  
Precision:0.36  
F1\_Score:0.529  
Batch 124:LogReg  
Accuracy :0.562  
Recall: 1.0  
Precision:0.548

F1\_Score:0.708  
Batch 124:RF  
Accuracy :0.531  
Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 124:KNN  
Accuracy :0.719  
Recall: 1.0  
Precision:0.654  
F1\_Score:0.791  
Batch 124:SVM  
Accuracy :0.531  
Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 124:GNB  
Accuracy :0.906  
Recall: 1.0  
Precision:0.85  
F1\_Score:0.919  
Batch 124:XGB  
Accuracy :0.531  
Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 124:DT  
Accuracy :0.531  
Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 124:MLP  
Accuracy :0.531  
Recall: 1.0  
Precision:0.531  
F1\_Score:0.694  
Batch 125:LogReg  
Accuracy :0.812  
Recall: 1.0  
Precision:0.75  
F1\_Score:0.857  
Batch 125:RF  
Accuracy :0.812  
Recall: 1.0  
Precision:0.75  
F1\_Score:0.857  
Batch 125:KNN  
Accuracy :0.875  
Recall: 1.0  
Precision:0.818  
F1\_Score:0.9  
Batch 125:SVM  
Accuracy :0.812  
Recall: 1.0  
Precision:0.75  
F1\_Score:0.857  
Batch 125:GNB  
Accuracy :0.906  
Recall: 0.944  
Precision:0.895  
F1\_Score:0.919  
Batch 125:XGB

Accuracy :0.75  
Recall: 1.0  
Precision:0.692  
F1\_Score:0.818  
Batch 125:DT  
Accuracy :0.75  
Recall: 1.0  
Precision:0.692  
F1\_Score:0.818  
Batch 125:MLP  
Accuracy :0.781  
Recall: 1.0  
Precision:0.72  
F1\_Score:0.837  
Batch 126:LogReg  
Accuracy :0.5  
Recall: 1.0  
Precision:0.385  
F1\_Score:0.556  
Batch 126:RF  
Accuracy :0.562  
Recall: 1.0  
Precision:0.417  
F1\_Score:0.588  
Batch 126:KNN  
Accuracy :0.875  
Recall: 1.0  
Precision:0.714  
F1\_Score:0.833  
Batch 126:SVM  
Accuracy :0.562  
Recall: 1.0  
Precision:0.417  
F1\_Score:0.588  
Batch 126:GNB  
Accuracy :0.969  
Recall: 0.9  
Precision:1.0  
F1\_Score:0.947  
Batch 126:XGB  
Accuracy :0.5  
Recall: 1.0  
Precision:0.385  
F1\_Score:0.556  
Batch 126:DT  
Accuracy :0.469  
Recall: 0.9  
Precision:0.36  
F1\_Score:0.514  
Batch 126:MLP  
Accuracy :0.5  
Recall: 1.0  
Precision:0.385  
F1\_Score:0.556  
Batch 127:LogReg  
Accuracy :0.625  
Recall: 1.0  
Precision:0.625  
F1\_Score:0.769  
Batch 127:RF  
Accuracy :0.625  
Recall: 1.0

```
Precision:0.625
F1_Score:0.769
Batch 127:KNN
Accuracy :0.812
Recall: 1.0
Precision:0.769
F1_Score:0.87
Batch 127:SVM
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 127:GNB
Accuracy :0.969
Recall: 1.0
Precision:0.952
F1_Score:0.976
Batch 127:XGB
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 127:DT
Accuracy :0.656
Recall: 1.0
Precision:0.645
F1_Score:0.784
Batch 127:MLP
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 128:LogReg
Accuracy :0.656
Recall: 1.0
Precision:0.56
F1_Score:0.718
Batch 128:RF
Accuracy :0.594
Recall: 1.0
Precision:0.519
F1_Score:0.683
Batch 128:KNN
Accuracy :0.719
Recall: 0.929
Precision:0.619
F1_Score:0.743
Batch 128:SVM
Accuracy :0.719
Recall: 1.0
Precision:0.609
F1_Score:0.757
Batch 128:GNB
Accuracy :0.812
Recall: 0.929
Precision:0.722
F1_Score:0.813
Batch 128:XGB
Accuracy :0.594
Recall: 1.0
Precision:0.519
F1_Score:0.683
```

```
Batch 128:DT
Accuracy :0.594
Recall: 0.786
Precision:0.524
F1_Score:0.629
Batch 128:MLP
Accuracy :0.625
Recall: 1.0
Precision:0.538
F1_Score:0.7
Batch 129:LogReg
Accuracy :0.562
Recall: 1.0
Precision:0.176
F1_Score:0.3
Batch 129:RF
Accuracy :0.375
Recall: 1.0
Precision:0.13
F1_Score:0.231
Batch 129:KNN
Accuracy :0.656
Recall: 1.0
Precision:0.214
F1_Score:0.353
Batch 129:SVM
Accuracy :0.469
Recall: 1.0
Precision:0.15
F1_Score:0.261
Batch 129:GNB
Accuracy :0.938
Recall: 0.333
Precision:1.0
F1_Score:0.5
Batch 129:XGB
Accuracy :0.344
Recall: 1.0
Precision:0.125
F1_Score:0.222
Batch 129:DT
Accuracy :0.219
Recall: 0.667
Precision:0.077
F1_Score:0.138
Batch 129:MLP
Accuracy :0.344
Recall: 1.0
Precision:0.125
F1_Score:0.222
Batch 130:LogReg
Accuracy :0.844
Recall: 1.0
Precision:0.167
F1_Score:0.286
Batch 130:RF
Accuracy :0.062
Recall: 1.0
Precision:0.032
F1_Score:0.062
Batch 130:KNN
Accuracy :0.406
```

Recall: 1.0  
Precision:0.05  
F1\_Score:0.095  
Batch 130:SVM  
Accuracy :0.219  
Recall: 1.0  
Precision:0.038  
F1\_Score:0.074  
Batch 130:GNB  
Accuracy :0.969  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 130:XGB  
Accuracy :0.125  
Recall: 1.0  
Precision:0.034  
F1\_Score:0.067  
Batch 130:DT  
Accuracy :0.25  
Recall: 1.0  
Precision:0.04  
F1\_Score:0.077  
Batch 130:MLP  
Accuracy :0.094  
Recall: 1.0  
Precision:0.033  
F1\_Score:0.065  
Batch 131:LogReg  
Accuracy :0.594  
Recall: 0.071  
Precision:1.0  
F1\_Score:0.133  
Batch 131:RF  
Accuracy :0.812  
Recall: 0.929  
Precision:0.722  
F1\_Score:0.813  
Batch 131:KNN  
Accuracy :0.75  
Recall: 0.643  
Precision:0.75  
F1\_Score:0.692  
Batch 131:SVM  
Accuracy :0.625  
Recall: 0.214  
Precision:0.75  
F1\_Score:0.333  
Batch 131:GNB  
Accuracy :0.562  
Recall: 0.0  
Precision:0.0  
F1\_Score:0.0  
Batch 131:XGB  
Accuracy :0.75  
Recall: 0.714  
Precision:0.714  
F1\_Score:0.714  
Batch 131:DT  
Accuracy :0.594  
Recall: 0.929  
Precision:0.52

```
F1_Score:0.667
Batch 131:MLP
Accuracy :0.875
Recall: 1.0
Precision:0.778
F1_Score:0.875
Batch 132:LogReg
Accuracy :0.281
Recall: 0.115
Precision:1.0
F1_Score:0.207
Batch 132:RF
Accuracy :0.875
Recall: 0.846
Precision:1.0
F1_Score:0.917
Batch 132:KNN
Accuracy :0.312
Recall: 0.154
Precision:1.0
F1_Score:0.267
Batch 132:SVM
Accuracy :0.469
Recall: 0.346
Precision:1.0
F1_Score:0.514
Batch 132:GNB
Accuracy :0.219
Recall: 0.038
Precision:1.0
F1_Score:0.074
Batch 132:XGB
Accuracy :0.781
Recall: 0.731
Precision:1.0
F1_Score:0.844
Batch 132:DT
Accuracy :0.719
Recall: 0.692
Precision:0.947
F1_Score:0.8
Batch 132:MLP
Accuracy :0.875
Recall: 0.846
Precision:1.0
F1_Score:0.917
Batch 133:LogReg
Accuracy :0.719
Recall: 1.0
Precision:0.7
F1_Score:0.824
Batch 133:RF
Accuracy :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
Batch 133:KNN
Accuracy :0.844
Recall: 1.0
Precision:0.808
F1_Score:0.894
Batch 133:SVM
```

Accuracy :0.656  
Recall: 1.0  
Precision:0.656  
F1\_Score:0.792  
Batch 133:GNB  
Accuracy :0.906  
Recall: 0.857  
Precision:1.0  
F1\_Score:0.923  
Batch 133:XGB  
Accuracy :0.656  
Recall: 1.0  
Precision:0.656  
F1\_Score:0.792  
Batch 133:DT  
Accuracy :0.594  
Recall: 0.905  
Precision:0.633  
F1\_Score:0.745  
Batch 133:MLP  
Accuracy :0.656  
Recall: 1.0  
Precision:0.656  
F1\_Score:0.792  
Batch 134:LogReg  
Accuracy :0.781  
Recall: 1.0  
Precision:0.731  
F1\_Score:0.844  
Batch 134:RF  
Accuracy :0.781  
Recall: 1.0  
Precision:0.731  
F1\_Score:0.844  
Batch 134:KNN  
Accuracy :0.719  
Recall: 0.842  
Precision:0.727  
F1\_Score:0.78  
Batch 134:SVM  
Accuracy :0.781  
Recall: 1.0  
Precision:0.731  
F1\_Score:0.844  
Batch 134:GNB  
Accuracy :0.875  
Recall: 0.789  
Precision:1.0  
F1\_Score:0.882  
Batch 134:XGB  
Accuracy :0.75  
Recall: 1.0  
Precision:0.704  
F1\_Score:0.826  
Batch 134:DT  
Accuracy :0.562  
Recall: 0.737  
Precision:0.609  
F1\_Score:0.667  
Batch 134:MLP  
Accuracy :0.781  
Recall: 1.0

Precision:0.731  
F1\_Score:0.844  
Batch 135:LogReg  
Accuracy :0.594  
Recall: 1.0  
Precision:0.5  
F1\_Score:0.667  
Batch 135:RF  
Accuracy :0.562  
Recall: 0.923  
Precision:0.48  
F1\_Score:0.632  
Batch 135:KNN  
Accuracy :0.656  
Recall: 0.615  
Precision:0.571  
F1\_Score:0.593  
Batch 135:SVM  
Accuracy :0.594  
Recall: 1.0  
Precision:0.5  
F1\_Score:0.667  
Batch 135:GNB  
Accuracy :0.812  
Recall: 0.538  
Precision:1.0  
F1\_Score:0.7  
Batch 135:XGB  
Accuracy :0.594  
Recall: 1.0  
Precision:0.5  
F1\_Score:0.667  
Batch 135:DT  
Accuracy :0.438  
Recall: 0.769  
Precision:0.4  
F1\_Score:0.526  
Batch 135:MLP  
Accuracy :0.594  
Recall: 1.0  
Precision:0.5  
F1\_Score:0.667  
Batch 136:LogReg  
Accuracy :0.594  
Recall: 1.0  
Precision:0.594  
F1\_Score:0.745  
Batch 136:RF  
Accuracy :0.594  
Recall: 1.0  
Precision:0.594  
F1\_Score:0.745  
Batch 136:KNN  
Accuracy :0.781  
Recall: 1.0  
Precision:0.731  
F1\_Score:0.844  
Batch 136:SVM  
Accuracy :0.594  
Recall: 1.0  
Precision:0.594  
F1\_Score:0.745

```
Batch 136:GNB
Accuracy :0.969
Recall: 1.0
Precision:0.95
F1_Score:0.974
Batch 136:XGB
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 136:DT
Accuracy :0.562
Recall: 0.895
Precision:0.586
F1_Score:0.708
Batch 136:MLP
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 137:LogReg
Accuracy :0.844
Recall: 1.0
Precision:0.8
F1_Score:0.889
Batch 137:RF
Accuracy :0.812
Recall: 1.0
Precision:0.769
F1_Score:0.87
Batch 137:KNN
Accuracy :0.781
Recall: 0.85
Precision:0.81
F1_Score:0.829
Batch 137:SVM
Accuracy :0.844
Recall: 1.0
Precision:0.8
F1_Score:0.889
Batch 137:GNB
Accuracy :0.906
Recall: 0.85
Precision:1.0
F1_Score:0.919
Batch 137:XGB
Accuracy :0.812
Recall: 1.0
Precision:0.769
F1_Score:0.87
Batch 137:DT
Accuracy :0.719
Recall: 0.9
Precision:0.72
F1_Score:0.8
Batch 137:MLP
Accuracy :0.812
Recall: 1.0
Precision:0.769
F1_Score:0.87
Batch 138:LogReg
Accuracy :0.5
```

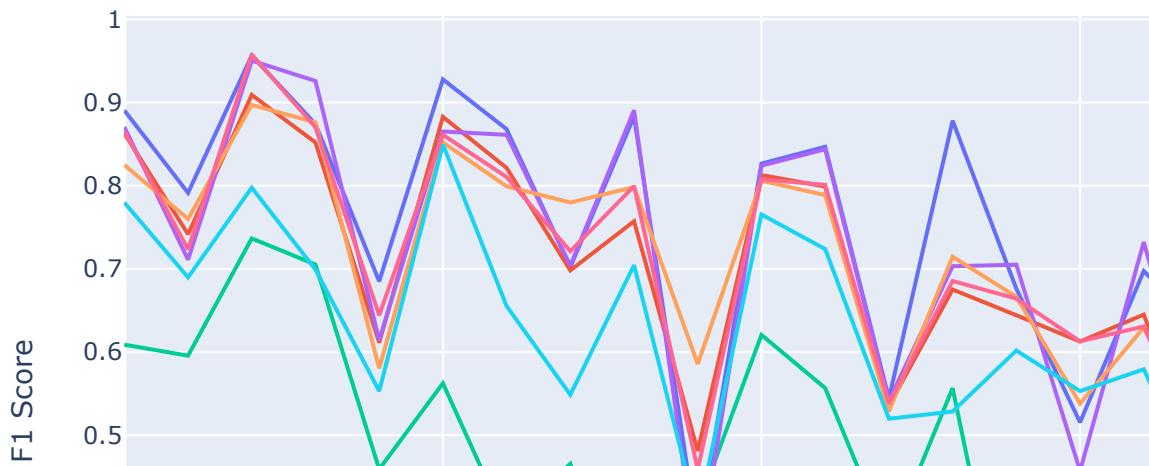
Recall: 1.0  
Precision:0.36  
F1\_Score:0.529  
Batch 138:RF  
Accuracy :0.562  
Recall: 1.0  
Precision:0.391  
F1\_Score:0.562  
Batch 138:KNN  
Accuracy :0.75  
Recall: 0.889  
Precision:0.533  
F1\_Score:0.667  
Batch 138:SVM  
Accuracy :0.531  
Recall: 1.0  
Precision:0.375  
F1\_Score:0.545  
Batch 138:GNB  
Accuracy :0.844  
Recall: 1.0  
Precision:0.643  
F1\_Score:0.783  
Batch 138:XGB  
Accuracy :0.469  
Recall: 1.0  
Precision:0.346  
F1\_Score:0.514  
Batch 138:DT  
Accuracy :0.594  
Recall: 1.0  
Precision:0.409  
F1\_Score:0.581  
Batch 138:MLP  
Accuracy :0.5  
Recall: 1.0  
Precision:0.36  
F1\_Score:0.529  
Batch 139:LogReg  
Accuracy :0.625  
Recall: 1.0  
Precision:0.625  
F1\_Score:0.769  
Batch 139:RF  
Accuracy :0.656  
Recall: 1.0  
Precision:0.645  
F1\_Score:0.784  
Batch 139:KNN  
Accuracy :0.812  
Recall: 1.0  
Precision:0.769  
F1\_Score:0.87  
Batch 139:SVM  
Accuracy :0.625  
Recall: 1.0  
Precision:0.625  
F1\_Score:0.769  
Batch 139:GNB  
Accuracy :0.969  
Recall: 1.0  
Precision:0.952

F1\_Score:0.976  
Batch 139:XGB  
Accuracy :0.625  
Recall: 1.0  
Precision:0.625  
F1\_Score:0.769  
Batch 139:DT  
Accuracy :0.719  
Recall: 1.0  
Precision:0.69  
F1\_Score:0.816  
Batch 139:MLP  
Accuracy :0.625  
Recall: 1.0  
Precision:0.625  
F1\_Score:0.769  
Batch 140:LogReg  
Accuracy :0.625  
Recall: 1.0  
Precision:0.478  
F1\_Score:0.647  
Batch 140:RF  
Accuracy :0.625  
Recall: 1.0  
Precision:0.478  
F1\_Score:0.647  
Batch 140:KNN  
Accuracy :0.688  
Recall: 0.818  
Precision:0.529  
F1\_Score:0.643  
Batch 140:SVM  
Accuracy :0.625  
Recall: 1.0  
Precision:0.478  
F1\_Score:0.647  
Batch 140:GNB  
Accuracy :0.844  
Recall: 0.545  
Precision:1.0  
F1\_Score:0.706  
Batch 140:XGB  
Accuracy :0.594  
Recall: 1.0  
Precision:0.458  
F1\_Score:0.629  
Batch 140:DT  
Accuracy :0.312  
Recall: 0.364  
Precision:0.211  
F1\_Score:0.267  
Batch 140:MLP  
Accuracy :0.594  
Recall: 1.0  
Precision:0.458  
F1\_Score:0.629  
Batch 141:LogReg  
Accuracy :0.5  
Recall: 1.0  
Precision:0.167  
F1\_Score:0.286  
Batch 141:RF

```
Accuracy :0.1
Recall: 1.0
Precision:0.1
F1_Score:0.182
Batch 141:KNN
Accuracy :0.65
Recall: 1.0
Precision:0.222
F1_Score:0.364
Batch 141:SVM
Accuracy :0.1
Recall: 1.0
Precision:0.1
F1_Score:0.182
Batch 141:GNB
Accuracy :0.9
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 141:XGB
Accuracy :0.1
Recall: 1.0
Precision:0.1
F1_Score:0.182
Batch 141:DT
Accuracy :0.1
Recall: 1.0
Precision:0.1
F1_Score:0.182
Batch 141:MLP
Accuracy :0.1
Recall: 1.0
Precision:0.1
F1_Score:0.182
```

In [127...]

```
plt_classification_results(df,df2)
```



In [ ]: