

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
45310	0.9158	7	0.978723	0.066651	0.329366	0.004630	0.345417	0.206579	UP
45311	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      0.205631
        vicprice      0.080610
        period        0.070572
        nswdemand     0.064648
        vicdemand     0.033055
        transfer       0.005387
        day           0.000000
        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()`

	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 [21]: 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 [22]: 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 [23]: encoder_pos_class, history_positive_class ,encoder_neg_class,history_negative_class=
```

```
Training Autoencoder on Positive Examples  
Epoch 1/100  
377/377 [=====] - 3s 6ms/step - loss: 0.0665 - val_loss: 0.0  
371  
Epoch 2/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0197 - val_loss: 0.0  
286  
Epoch 3/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0130 - val_loss: 0.0  
240  
Epoch 4/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0088 - val_loss: 0.0  
218  
Epoch 5/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0072 - val_loss: 0.0  
210  
Epoch 6/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0063 - val_loss: 0.0  
208  
Epoch 7/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0057 - val_loss: 0.0  
211  
Epoch 8/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0  
200  
Epoch 9/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0  
203  
Epoch 10/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0  
210  
Epoch 11/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0057 - val_loss: 0.0  
209  
Epoch 12/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0  
210  
Epoch 13/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0057 - val_loss: 0.0  
211  
Epoch 14/100
```

```
377/377 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0  
209  
Epoch 15/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0  
210  
Epoch 16/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0  
207  
Epoch 17/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0  
202  
Epoch 18/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0  
204  
Epoch 19/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0  
206  
Epoch 20/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0  
208  
Epoch 21/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0054 - val_loss: 0.0  
206  
Epoch 22/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0  
206  
Epoch 23/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0  
204  
Epoch 24/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0  
203  
Epoch 25/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0  
209  
Epoch 26/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0054 - val_loss: 0.0  
197  
Epoch 27/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0  
197  
Epoch 28/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0057 - val_loss: 0.0  
203  
Epoch 29/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0055 - val_loss: 0.0  
199  
Epoch 30/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0056 - val_loss: 0.0  
212  
Epoch 31/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0  
213  
Epoch 32/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0  
202  
Epoch 33/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0  
205  
Epoch 34/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0  
202
```

```
Epoch 35/100
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0
211
Epoch 36/100
377/377 [=====] - 1s 3ms/step - loss: 0.0054 - val_loss: 0.0
200
Epoch 37/100
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0
205
Epoch 38/100
377/377 [=====] - 1s 2ms/step - loss: 0.0055 - val_loss: 0.0
200
Epoch 39/100
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0
204
Epoch 40/100
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0
205
Epoch 41/100
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0
209
Epoch 42/100
377/377 [=====] - 1s 2ms/step - loss: 0.0055 - val_loss: 0.0
211
Epoch 43/100
377/377 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0
204
Epoch 44/100
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0
207
Epoch 45/100
377/377 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0
210
Epoch 46/100
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0
201
Epoch 47/100
377/377 [=====] - 1s 2ms/step - loss: 0.0055 - val_loss: 0.0
208
Epoch 48/100
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0
207
Epoch 49/100
377/377 [=====] - 1s 2ms/step - loss: 0.0055 - val_loss: 0.0
204
Epoch 50/100
377/377 [=====] - 1s 2ms/step - loss: 0.0054 - val_loss: 0.0
198
Epoch 51/100
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0
202
Epoch 52/100
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0
207
Epoch 53/100
377/377 [=====] - 1s 2ms/step - loss: 0.0054 - val_loss: 0.0
206
Epoch 54/100
377/377 [=====] - 1s 2ms/step - loss: 0.0055 - val_loss: 0.0
205
Epoch 55/100
377/377 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0
```

```
206
Epoch 56/100
377/377 [=====] - 1s 2ms/step - loss: 0.0056 - val_loss: 0.0
206
Epoch 57/100
377/377 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0
204
Epoch 58/100
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0
210
Epoch 59/100
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0
205
Epoch 60/100
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0
203
Epoch 61/100
377/377 [=====] - 1s 3ms/step - loss: 0.0054 - val_loss: 0.0
205
Epoch 62/100
377/377 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0
209
Epoch 63/100
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0
210
Epoch 64/100
377/377 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0
202
Epoch 65/100
377/377 [=====] - ETA: 0s - loss: 0.005 - 1s 3ms/step - loss
: 0.0055 - val_loss: 0.0203
Epoch 66/100
377/377 [=====] - 1s 3ms/step - loss: 0.0054 - val_loss: 0.0
211
Epoch 67/100
377/377 [=====] - 1s 3ms/step - loss: 0.0057 - val_loss: 0.0
204
Epoch 68/100
377/377 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0
206
Epoch 69/100
377/377 [=====] - 1s 2ms/step - loss: 0.0056 - val_loss: 0.0
207
Epoch 70/100
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0
203
Epoch 71/100
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0
209
Epoch 72/100
377/377 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0
206
Epoch 73/100
377/377 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0
203
Epoch 74/100
377/377 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0
202
Epoch 75/100
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0
205
Epoch 76/100
```

```
377/377 [=====] - 1s 3ms/step - loss: 0.0054 - val_loss: 0.0  
206  
Epoch 77/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0  
204  
Epoch 78/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0  
210  
Epoch 79/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0  
207  
Epoch 80/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0  
207  
Epoch 81/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0056 - val_loss: 0.0  
206  
Epoch 82/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0054 - val_loss: 0.0  
201  
Epoch 83/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0  
205  
Epoch 84/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0  
212  
Epoch 85/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0  
201  
Epoch 86/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0  
207  
Epoch 87/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0  
213  
Epoch 88/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0  
210  
Epoch 89/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0  
200  
Epoch 90/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0  
210  
Epoch 91/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0  
204  
Epoch 92/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0  
209  
Epoch 93/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0  
207  
Epoch 94/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0  
207  
Epoch 95/100  
377/377 [=====] - 1s 2ms/step - loss: 0.0055 - val_loss: 0.0  
207  
Epoch 96/100  
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0  
209
```

```
Epoch 97/100
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0
209
Epoch 98/100
377/377 [=====] - 1s 2ms/step - loss: 0.0055 - val_loss: 0.0
207
Epoch 99/100
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0
198
Epoch 100/100
377/377 [=====] - 1s 3ms/step - loss: 0.0055 - val_loss: 0.0
205
Training Autoencoder on Negative Examples
Epoch 1/100
516/516 [=====] - 2s 3ms/step - loss: 0.0705 - val_loss: 0.0
359
Epoch 2/100
516/516 [=====] - 1s 2ms/step - loss: 0.0216 - val_loss: 0.0
337
Epoch 3/100
516/516 [=====] - 1s 3ms/step - loss: 0.0182 - val_loss: 0.0
259
Epoch 4/100
516/516 [=====] - 1s 3ms/step - loss: 0.0097 - val_loss: 0.0
214
Epoch 5/100
516/516 [=====] - 1s 3ms/step - loss: 0.0069 - val_loss: 0.0
198
Epoch 6/100
516/516 [=====] - 1s 3ms/step - loss: 0.0064 - val_loss: 0.0
186
Epoch 7/100
516/516 [=====] - 1s 2ms/step - loss: 0.0062 - val_loss: 0.0
191
Epoch 8/100
516/516 [=====] - 1s 2ms/step - loss: 0.0060 - val_loss: 0.0
181
Epoch 9/100
516/516 [=====] - 1s 2ms/step - loss: 0.0058 - val_loss: 0.0
173
Epoch 10/100
516/516 [=====] - 1s 2ms/step - loss: 0.0058 - val_loss: 0.0
174
Epoch 11/100
516/516 [=====] - 1s 3ms/step - loss: 0.0056 - val_loss: 0.0
163
Epoch 12/100
516/516 [=====] - 1s 2ms/step - loss: 0.0057 - val_loss: 0.0
179
Epoch 13/100
516/516 [=====] - 1s 2ms/step - loss: 0.0057 - val_loss: 0.0
174
Epoch 14/100
516/516 [=====] - 1s 2ms/step - loss: 0.0056 - val_loss: 0.0
178
Epoch 15/100
516/516 [=====] - 1s 3ms/step - loss: 0.0054 - val_loss: 0.0
163
Epoch 16/100
516/516 [=====] - 1s 2ms/step - loss: 0.0053 - val_loss: 0.0
178
Epoch 17/100
```

```
516/516 [=====] - 1s 2ms/step - loss: 0.0053 - val_loss: 0.0  
172  
Epoch 18/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0053 - val_loss: 0.0  
167  
Epoch 19/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0052 - val_loss: 0.0  
164  
Epoch 20/100  
516/516 [=====] - 1s 2ms/step - loss: 0.0052 - val_loss: 0.0  
173  
Epoch 21/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0052 - val_loss: 0.0  
168  
Epoch 22/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0052 - val_loss: 0.0  
167  
Epoch 23/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0  
166  
Epoch 24/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0052 - val_loss: 0.0  
162  
Epoch 25/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0052 - val_loss: 0.0  
164  
Epoch 26/100  
516/516 [=====] - 1s 2ms/step - loss: 0.0053 - val_loss: 0.0  
171  
Epoch 27/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0  
165  
Epoch 28/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0052 - val_loss: 0.0  
165  
Epoch 29/100  
516/516 [=====] - 1s 2ms/step - loss: 0.0052 - val_loss: 0.0  
163  
Epoch 30/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0052 - val_loss: 0.0  
168  
Epoch 31/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0  
161  
Epoch 32/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0  
172  
Epoch 33/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0052 - val_loss: 0.0  
164  
Epoch 34/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0052 - val_loss: 0.0  
166  
Epoch 35/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0  
167  
Epoch 36/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0052 - val_loss: 0.0  
166  
Epoch 37/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0052 - val_loss: 0.0  
173
```

```
Epoch 38/100
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0
166
Epoch 39/100
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0
165
Epoch 40/100
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0
163
Epoch 41/100
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0
168
Epoch 42/100
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0
164
Epoch 43/100
516/516 [=====] - 1s 3ms/step - loss: 0.0052 - val_loss: 0.0
169
Epoch 44/100
516/516 [=====] - 1s 2ms/step - loss: 0.0051 - val_loss: 0.0
158
Epoch 45/100
516/516 [=====] - 1s 3ms/step - loss: 0.0052 - val_loss: 0.0
170
Epoch 46/100
516/516 [=====] - 1s 3ms/step - loss: 0.0052 - val_loss: 0.0
168
Epoch 47/100
516/516 [=====] - 1s 2ms/step - loss: 0.0052 - val_loss: 0.0
169
Epoch 48/100
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0
164
Epoch 49/100
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0
171
Epoch 50/100
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0
164
Epoch 51/100
516/516 [=====] - 1s 2ms/step - loss: 0.0051 - val_loss: 0.0
171
Epoch 52/100
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0
166
Epoch 53/100
516/516 [=====] - 1s 3ms/step - loss: 0.0052 - val_loss: 0.0
162
Epoch 54/100
516/516 [=====] - 1s 3ms/step - loss: 0.0052 - val_loss: 0.0
165
Epoch 55/100
516/516 [=====] - 1s 3ms/step - loss: 0.0052 - val_loss: 0.0
170
Epoch 56/100
516/516 [=====] - 1s 2ms/step - loss: 0.0052 - val_loss: 0.0
161
Epoch 57/100
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0
167
Epoch 58/100
516/516 [=====] - 1s 3ms/step - loss: 0.0050 - val_loss: 0.0
```

```
162
Epoch 59/100
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0
163
Epoch 60/100
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0
161
Epoch 61/100
516/516 [=====] - 1s 2ms/step - loss: 0.0052 - val_loss: 0.0
167
Epoch 62/100
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0
157
Epoch 63/100
516/516 [=====] - 1s 2ms/step - loss: 0.0051 - val_loss: 0.0
162
Epoch 64/100
516/516 [=====] - 1s 2ms/step - loss: 0.0051 - val_loss: 0.0
164
Epoch 65/100
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0
170
Epoch 66/100
516/516 [=====] - 1s 3ms/step - loss: 0.0052 - val_loss: 0.0
172
Epoch 67/100
516/516 [=====] - 1s 3ms/step - loss: 0.0050 - val_loss: 0.0
164
Epoch 68/100
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0
170
Epoch 69/100
516/516 [=====] - 1s 3ms/step - loss: 0.0052 - val_loss: 0.0
163
Epoch 70/100
516/516 [=====] - 1s 2ms/step - loss: 0.0051 - val_loss: 0.0
153
Epoch 71/100
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0
164
Epoch 72/100
516/516 [=====] - 1s 3ms/step - loss: 0.0052 - val_loss: 0.0
166
Epoch 73/100
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0
158
Epoch 74/100
516/516 [=====] - 1s 2ms/step - loss: 0.0051 - val_loss: 0.0
163
Epoch 75/100
516/516 [=====] - 1s 2ms/step - loss: 0.0051 - val_loss: 0.0
162
Epoch 76/100
516/516 [=====] - 1s 2ms/step - loss: 0.0051 - val_loss: 0.0
163
Epoch 77/100
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0
171
Epoch 78/100
516/516 [=====] - 1s 3ms/step - loss: 0.0052 - val_loss: 0.0
168
Epoch 79/100
```

```
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0  
167  
Epoch 80/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0  
163  
Epoch 81/100  
516/516 [=====] - 1s 2ms/step - loss: 0.0051 - val_loss: 0.0  
159  
Epoch 82/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0  
166  
Epoch 83/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0  
158  
Epoch 84/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0  
169  
Epoch 85/100  
516/516 [=====] - 1s 2ms/step - loss: 0.0051 - val_loss: 0.0  
167  
Epoch 86/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0  
162  
Epoch 87/100  
516/516 [=====] - 1s 2ms/step - loss: 0.0051 - val_loss: 0.0  
172  
Epoch 88/100  
516/516 [=====] - 1s 2ms/step - loss: 0.0052 - val_loss: 0.0  
163  
Epoch 89/100  
516/516 [=====] - 1s 2ms/step - loss: 0.0051 - val_loss: 0.0  
165  
Epoch 90/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0  
157  
Epoch 91/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0052 - val_loss: 0.0  
164  
Epoch 92/100  
516/516 [=====] - 1s 2ms/step - loss: 0.0051 - val_loss: 0.0  
165  
Epoch 93/100  
516/516 [=====] - 1s 2ms/step - loss: 0.0051 - val_loss: 0.0  
163  
Epoch 94/100  
516/516 [=====] - 1s 2ms/step - loss: 0.0050 - val_loss: 0.0  
159  
Epoch 95/100  
516/516 [=====] - 1s 2ms/step - loss: 0.0051 - val_loss: 0.0  
167  
Epoch 96/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0  
161  
Epoch 97/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0  
164  
Epoch 98/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0  
167  
Epoch 99/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0  
156
```

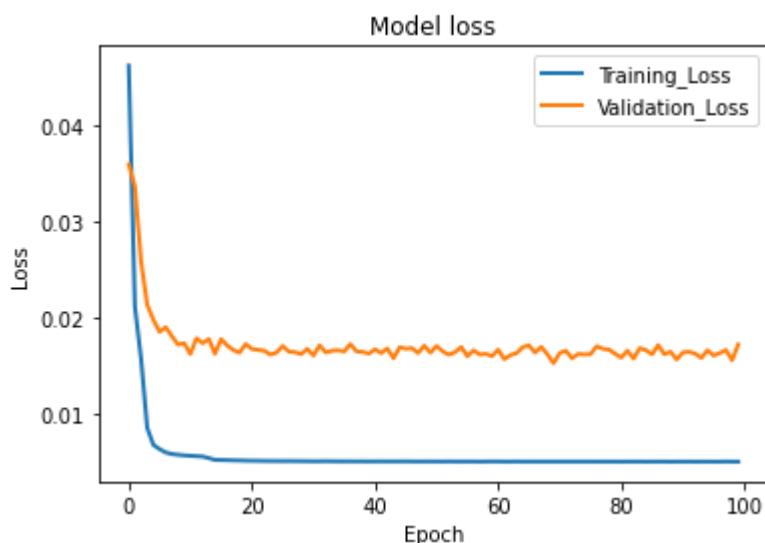
```
Epoch 100/100  
516/516 [=====] - 1s 3ms/step - loss: 0.0051 - val_loss: 0.0  
173
```

In [24]:

```
#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()
```

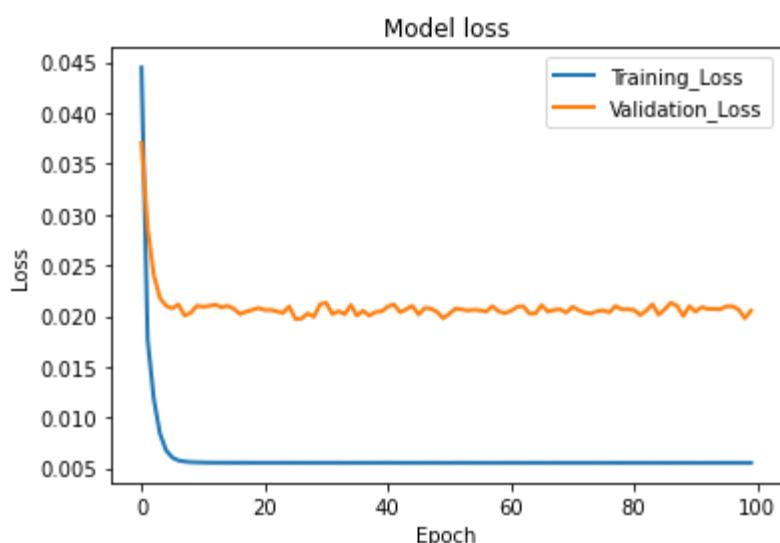
In [25]:

```
plot_loss(history_negative_class)
```



In [26]:

```
plot_loss(history_positive_class)
```



5 Threshold Computation & Plotting

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

In [27]:

```
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 [28]:

```
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 [29]:

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

In [30]:

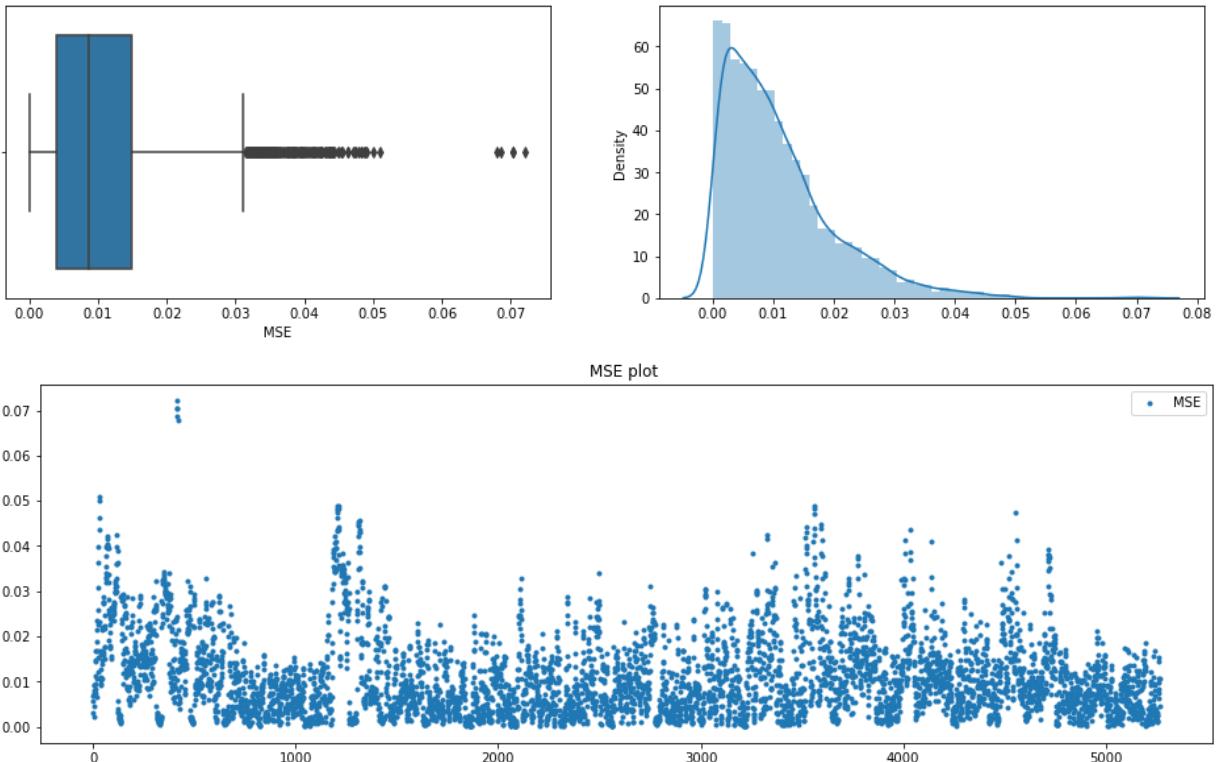
```
del test_pos_class['class']
del test_neg_class['class']
```

5. A) Negative Class Data

```
In [31]: predictions_neg=mse_predictions(test_neg_class,encoder_neg_class)
```

```
In [32]: plot_results(predictions_neg)
```

mean=0.0108220623, median=0.008644 , max=0.072097, min=6.7e-05, variance=8.19588e-05
Boxplots and Distribution plot for Reconstruction Error



```
In [33]: 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 [34]: batches_neg=make_batches(test_neg_class)
```

Functions to test normality of batch loss values

In [35]:

```
# 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 [36]:

```
# 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 [37]:

```
# 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 [38]:

```
# 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 [39]:

```
# 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 [40]:

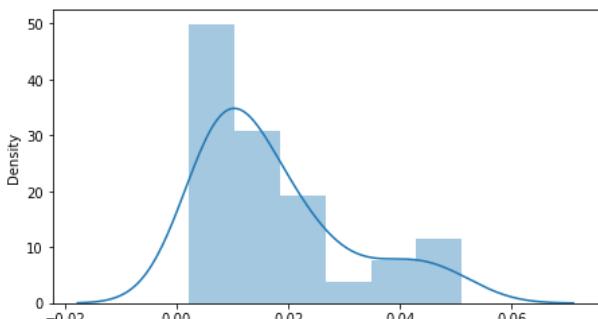
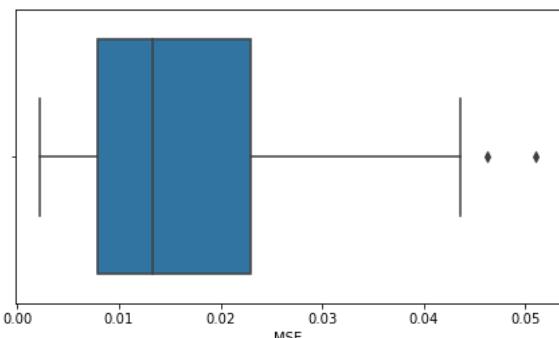
```
batch_avg_mse_neg_en_neg,batch_mse_values_neg_en_neg=check_all_batch_normality(batches)
```

```
*****
```

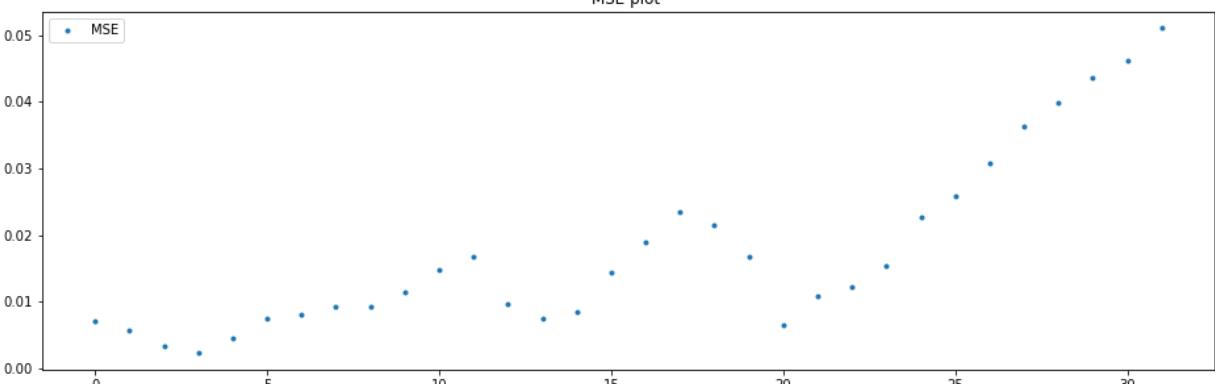
Batch: 0

mean=0.0175303125, median=0.013255 , max=0.05105, min=0.00224, variance=0.0001717724

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 1.622

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)

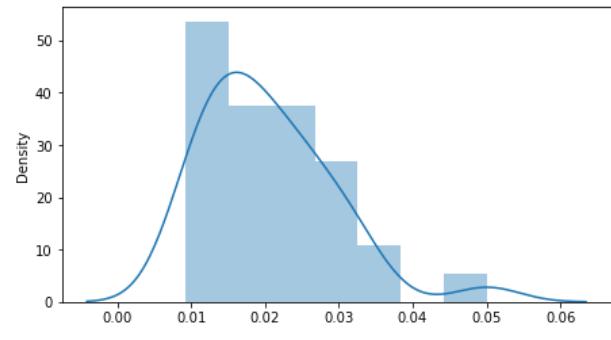
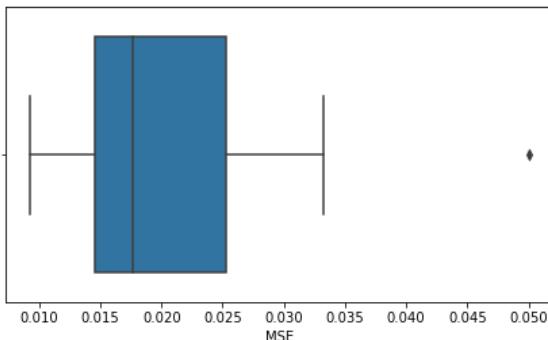
2.500: 0.834, data does not look normal (reject H0)

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

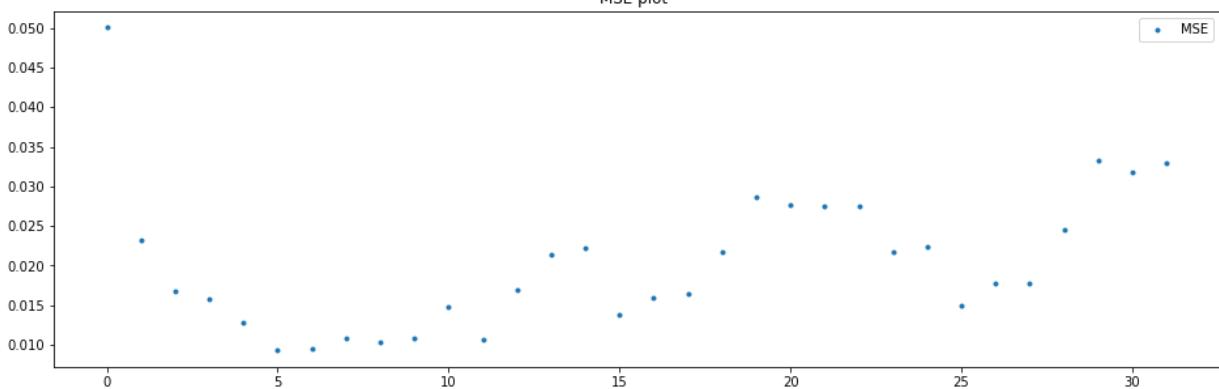
Batch: 1

mean=0.0203634375, median=0.017695 , max=0.05006, min=0.00926, variance=7.73021e-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)

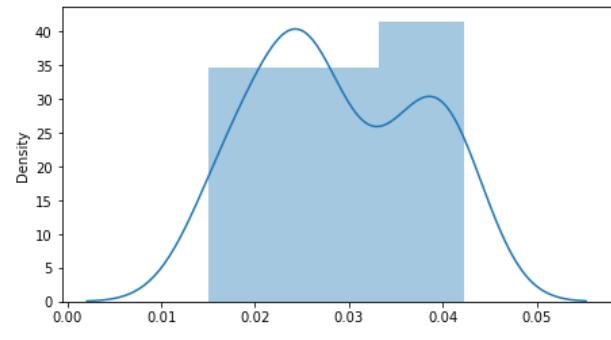
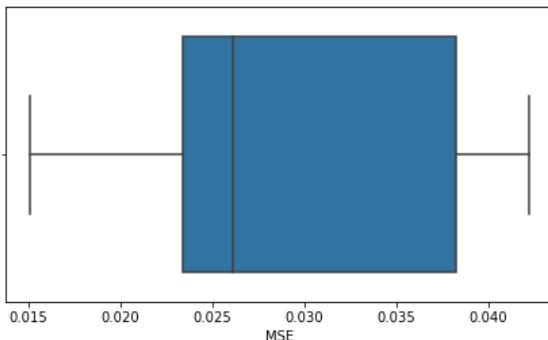
2.500: 0.834, data looks normal (fail to reject H0)

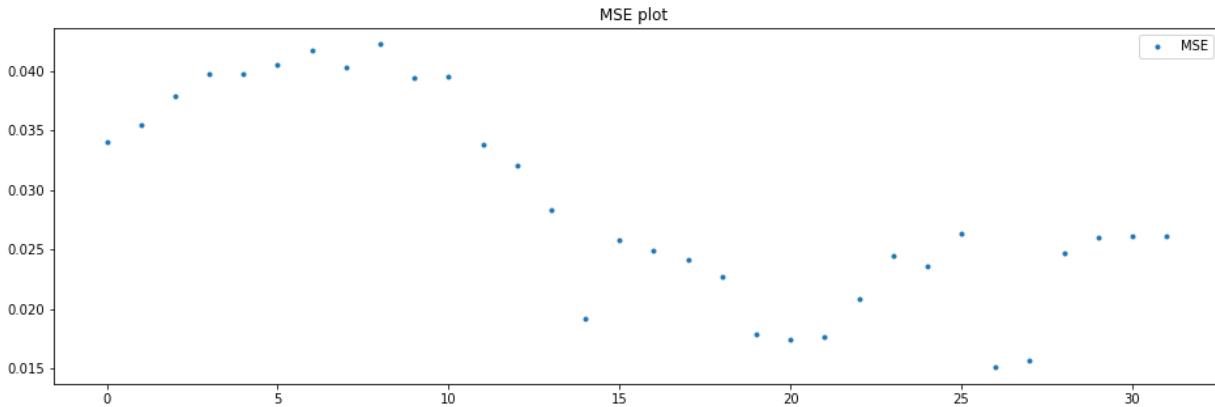
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 2

mean=0.0288446875, median=0.02608 , max=0.04222, min=0.01509, variance=7.27886e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

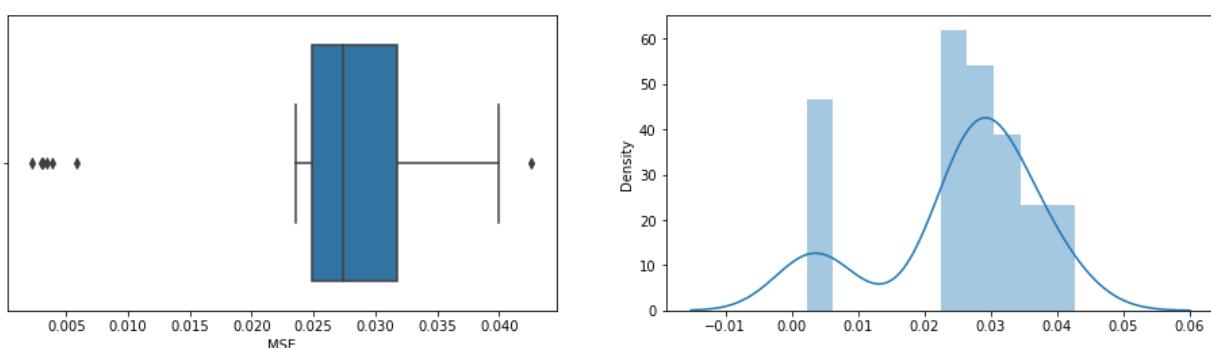
Statistic: 0.947

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)

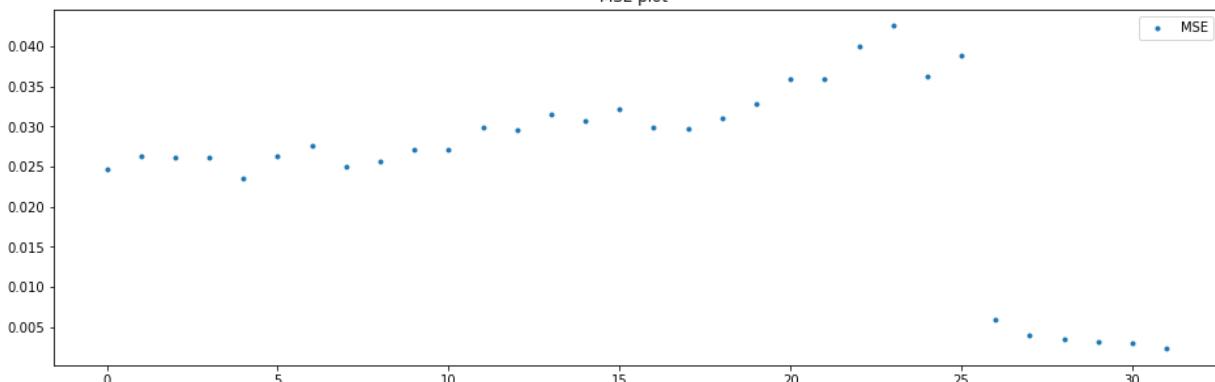
Batch: 3

mean=0.02545375, median=0.027385 , max=0.04259, min=0.00225, variance=0.0001308918

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

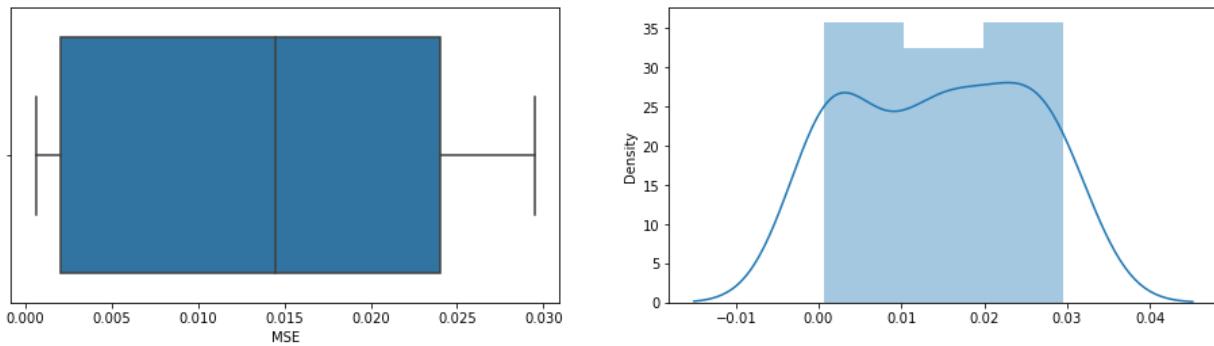
Statistic: 2.297

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)

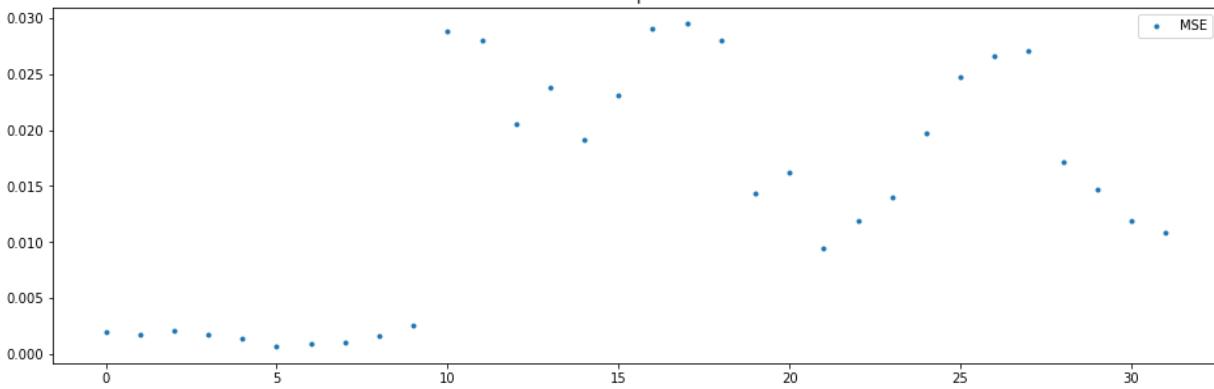
Batch: 4

mean=0.014523125, median=0.014505 , max=0.02948, min=0.00065, variance=0.0001061002

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**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)

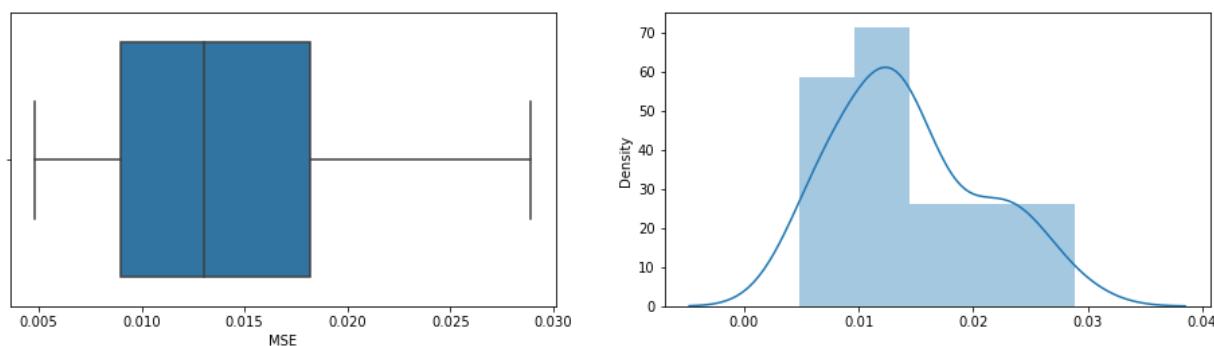
2.500: 0.834, data does not look normal (reject H0)

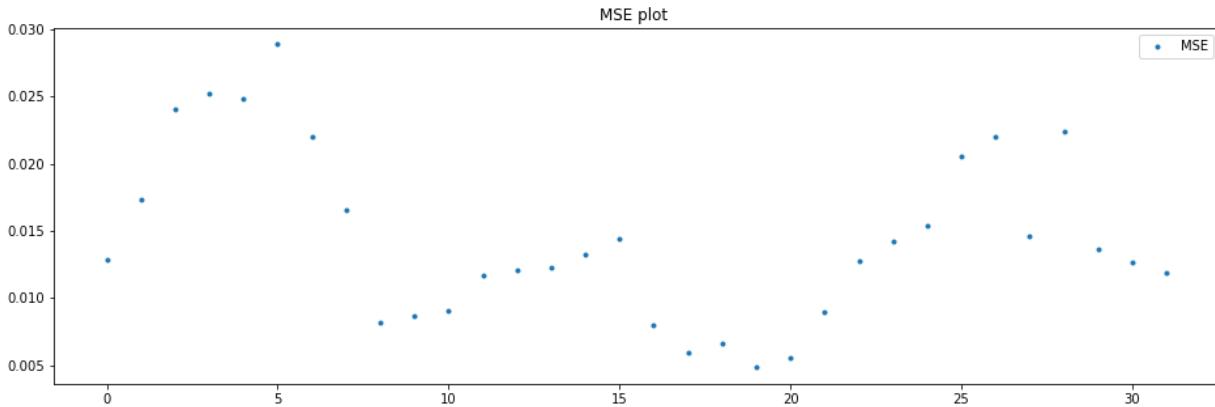
1.000: 0.992, data does not look normal (reject H0)

Batch: 5

mean=0.014411875, median=0.01304 , max=0.02889, min=0.00482, variance=3.96445e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.675

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)

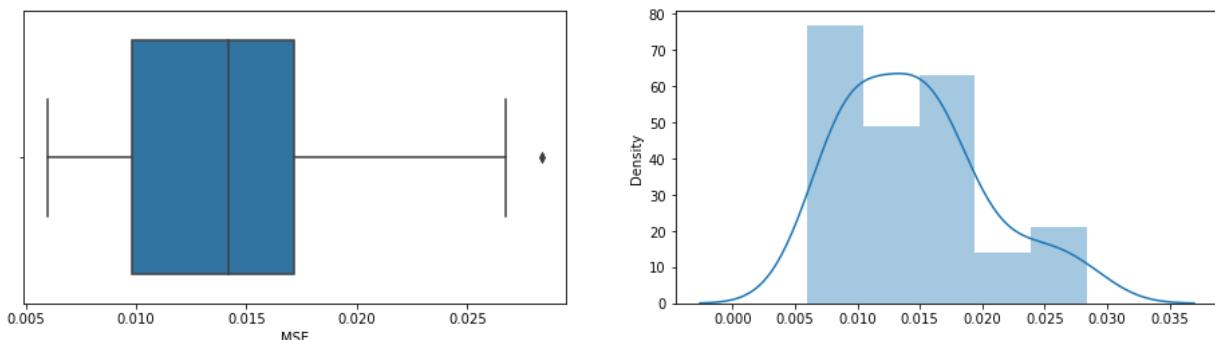
2.500: 0.834, data looks normal (fail to reject H0)

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

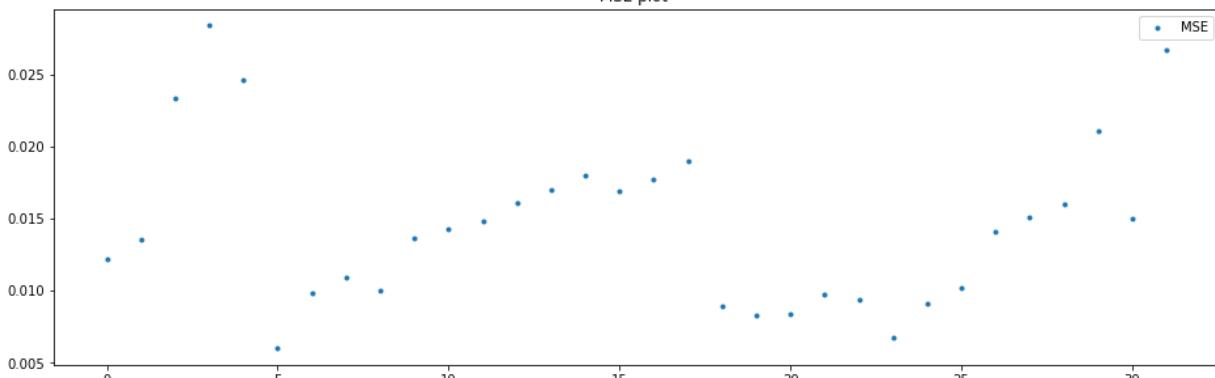
Batch: 6

mean=0.0145371875, median=0.014185 , max=0.02837, min=0.006, variance=3.19055e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 0.591

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)

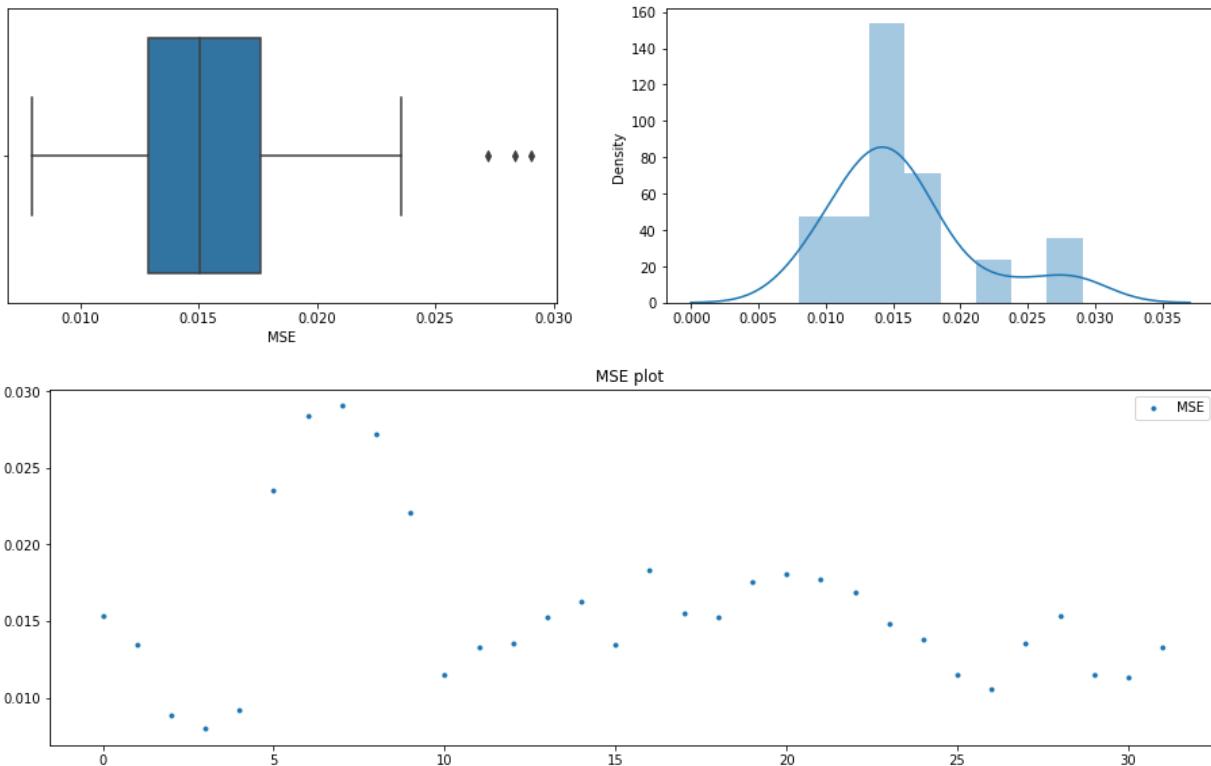
2.500: 0.834, data looks normal (fail to reject H0)

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

Batch: 7

mean=0.01573625, median=0.015015 , max=0.02906, min=0.00796, variance=2.75076e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

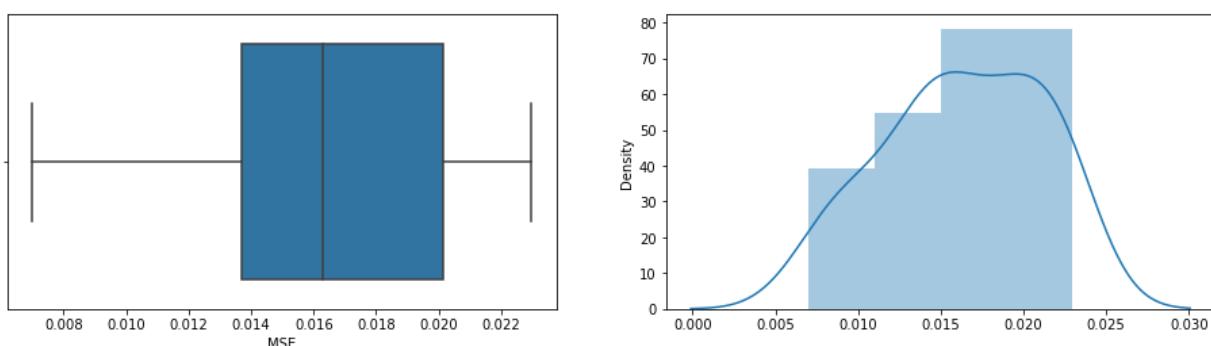
Statistic: 1.267

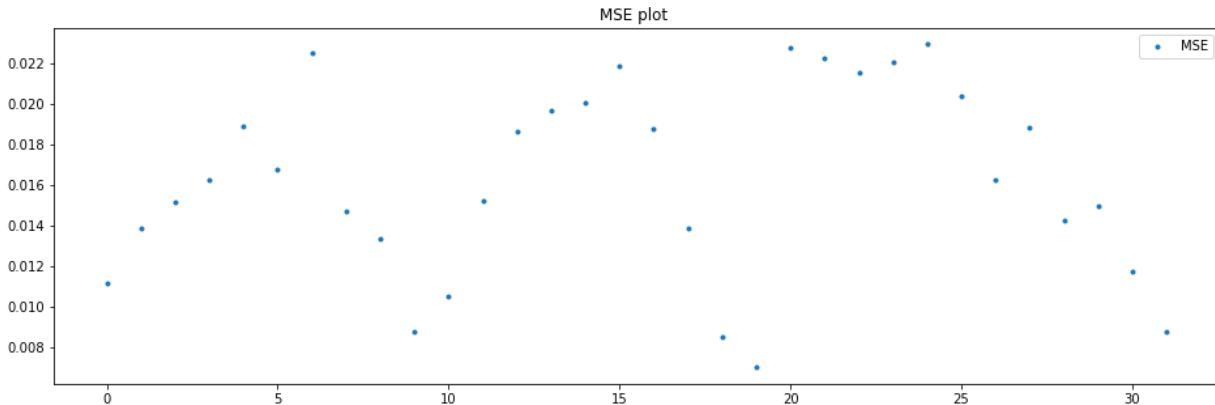
15.000: 0.523, data does not look normal (reject H0)
 10.000: 0.596, data does not look normal (reject H0)
 5.000: 0.715, data does not look normal (reject H0)
 2.500: 0.834, data does not look normal (reject H0)
 1.000: 0.992, data does not look normal (reject H0)

Batch: 8

mean=0.0163265625, median=0.01627 , max=0.02296, min=0.00699, variance=2.16991e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.469

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)

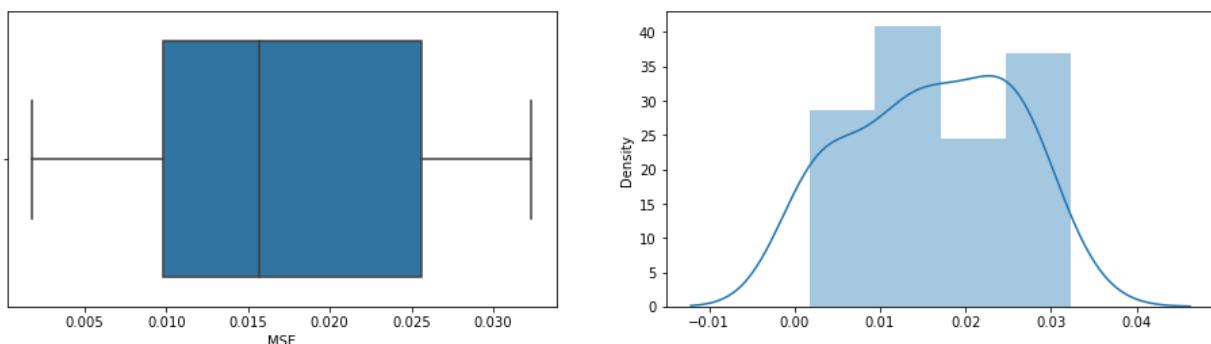
2.500: 0.834, data looks normal (fail to reject H0)

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

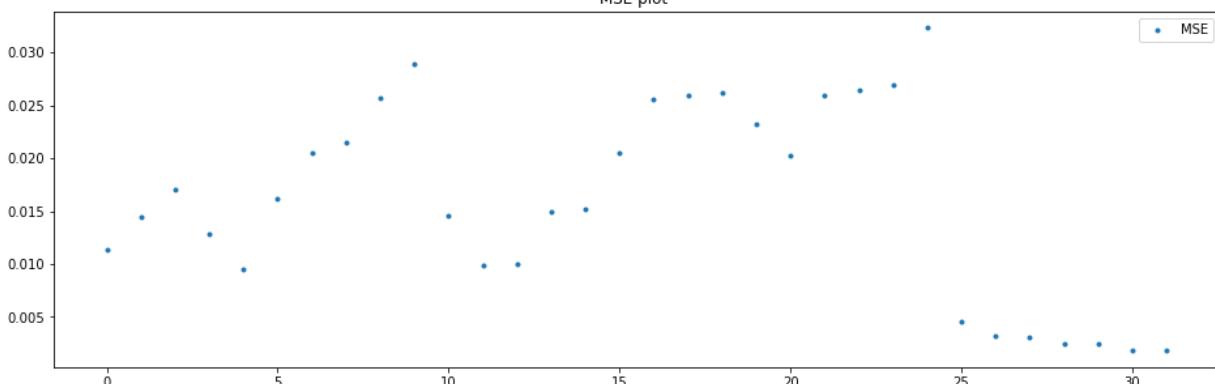
Batch: 9

mean=0.01611875, median=0.015715 , max=0.03233, min=0.00179, variance=8.34328e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 0.667

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)

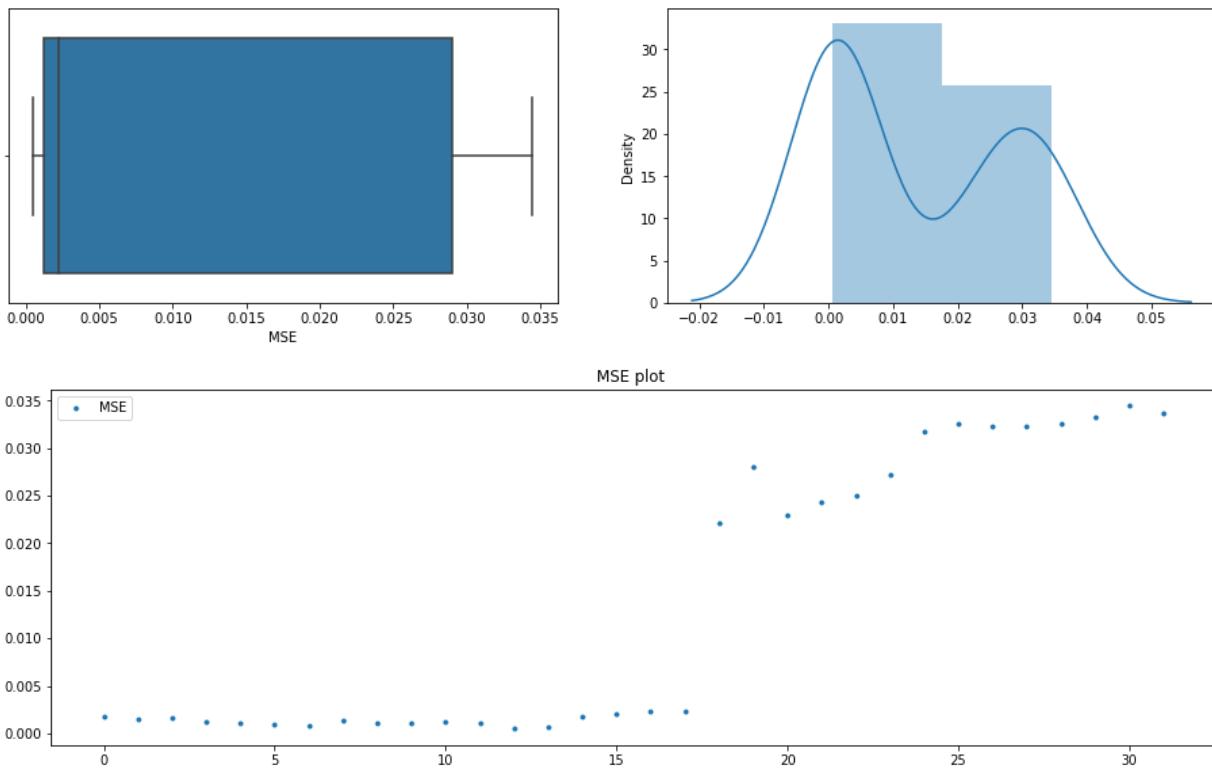
2.500: 0.834, data looks normal (fail to reject H0)

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

Batch: 10

mean=0.013671875, median=0.00224 , max=0.03445, min=0.00049, variance=0.0002019092

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

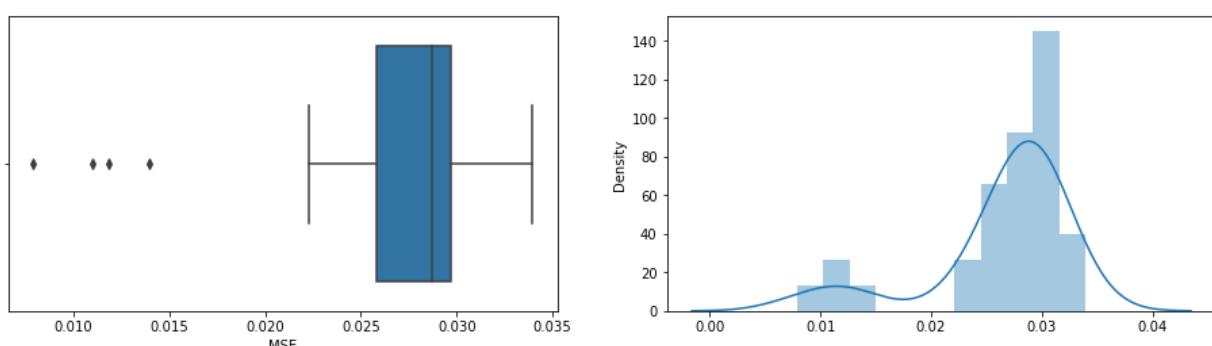
Statistic: 3.907

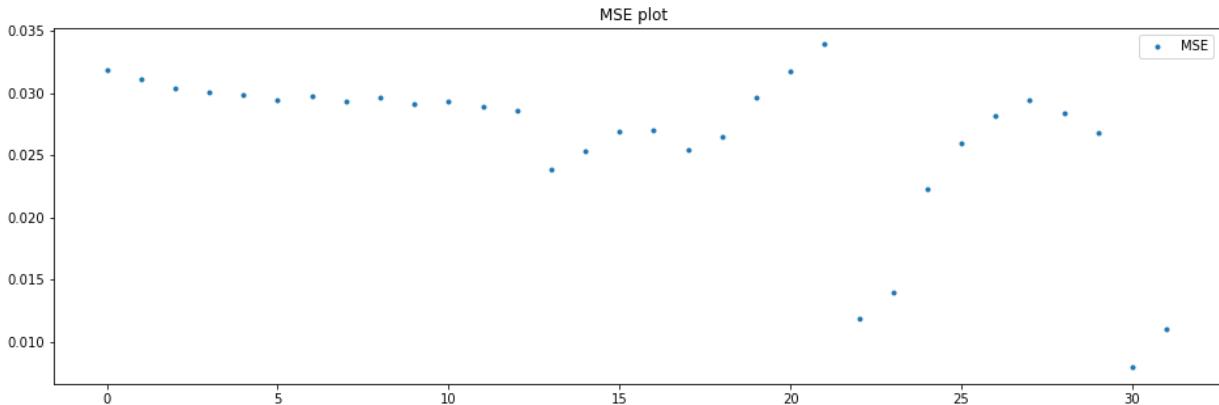
15.000: 0.523, data does not look normal (reject H₀)
 10.000: 0.596, data does not look normal (reject H₀)
 5.000: 0.715, data does not look normal (reject H₀)
 2.500: 0.834, data does not look normal (reject H₀)
 1.000: 0.992, data does not look normal (reject H₀)

Batch: 11

mean=0.0263621875, median=0.028745 , max=0.03394, min=0.0079, variance=3.88571e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 3.246

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)

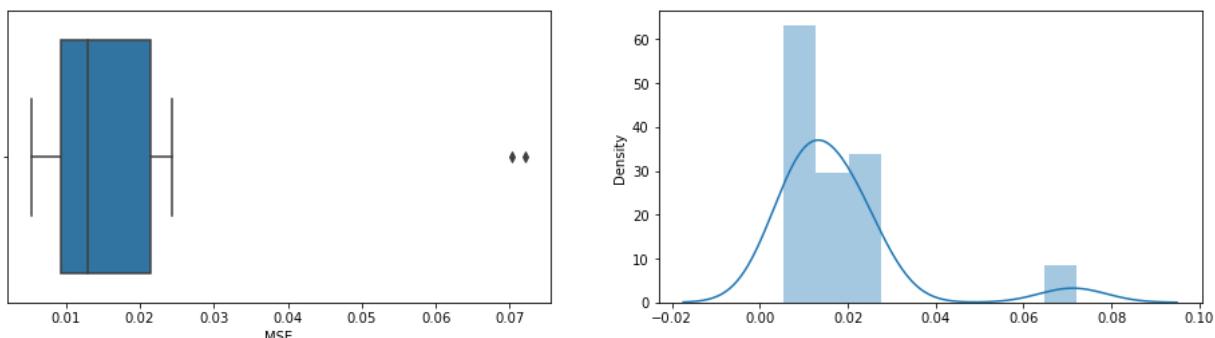
2.500: 0.834, data does not look normal (reject H0)

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

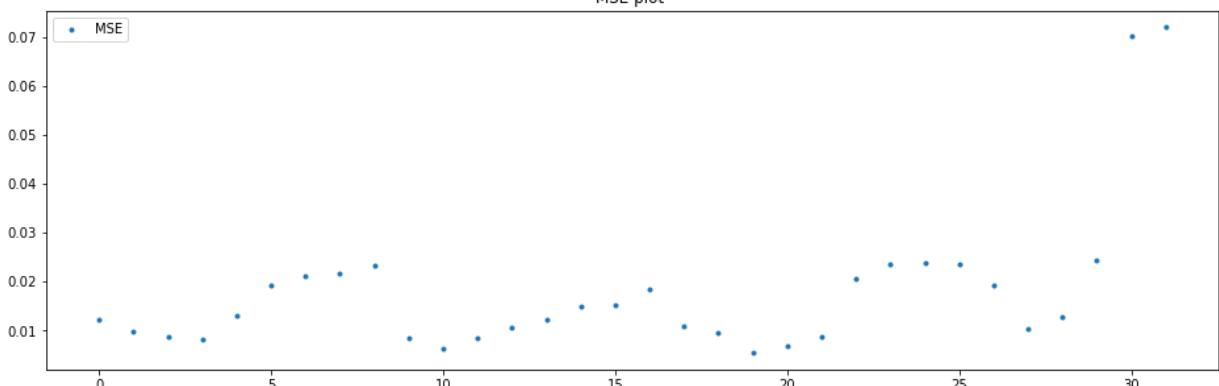
Batch: 12

mean=0.017909375, median=0.012905 , max=0.0721, min=0.00537, variance=0.0002242353

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 3.659

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)

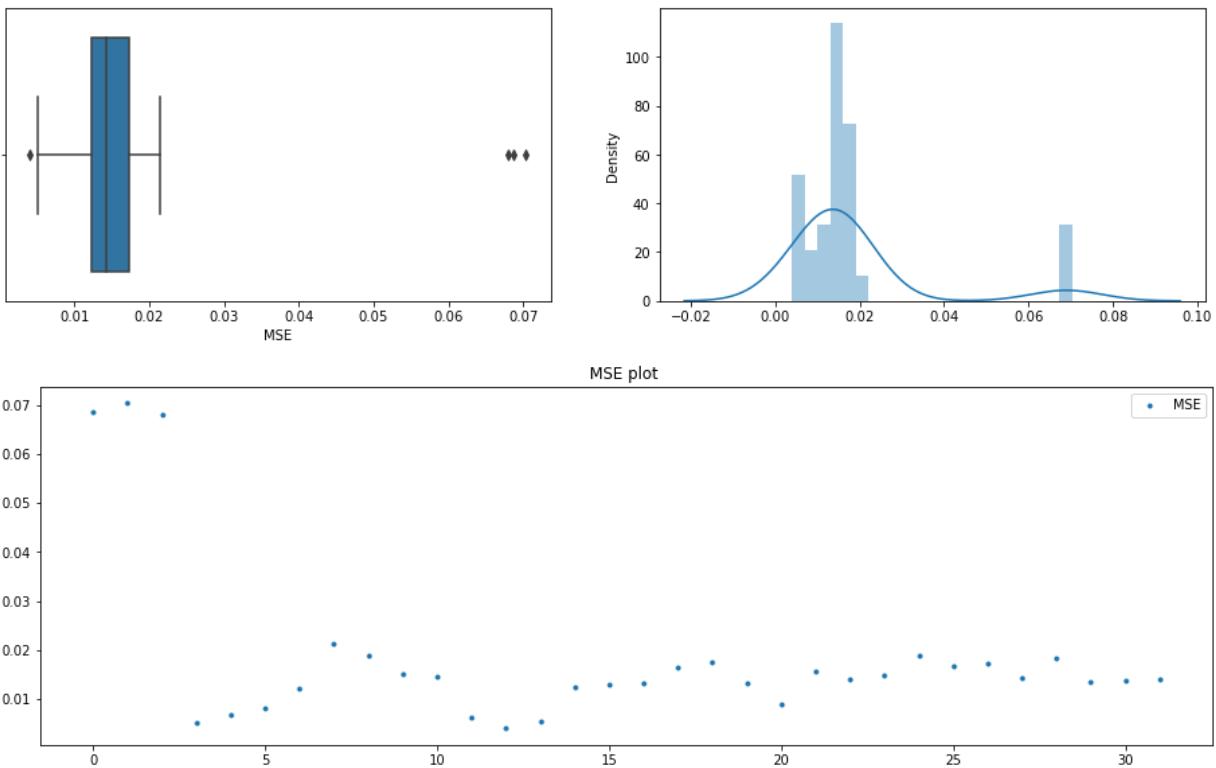
2.500: 0.834, data does not look normal (reject H0)

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

Batch: 13

mean=0.018515, median=0.01426 , max=0.07034, min=0.00405, variance=0.0002813077

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

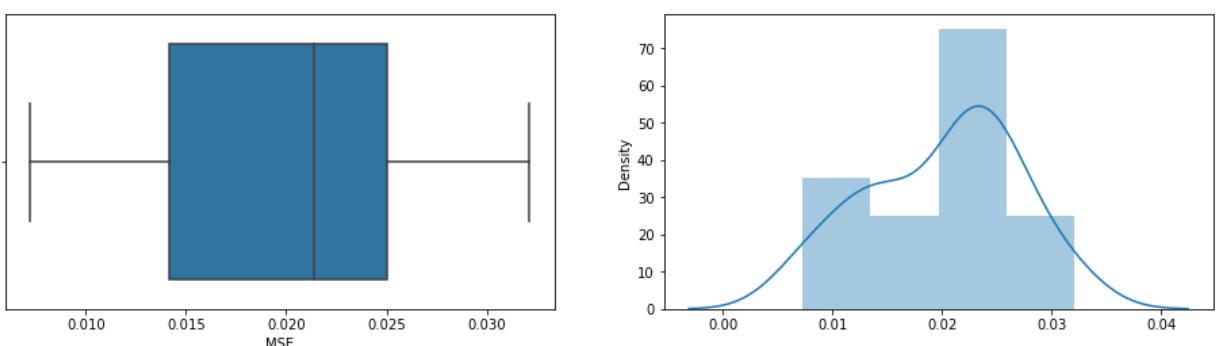
Statistic: 5.424

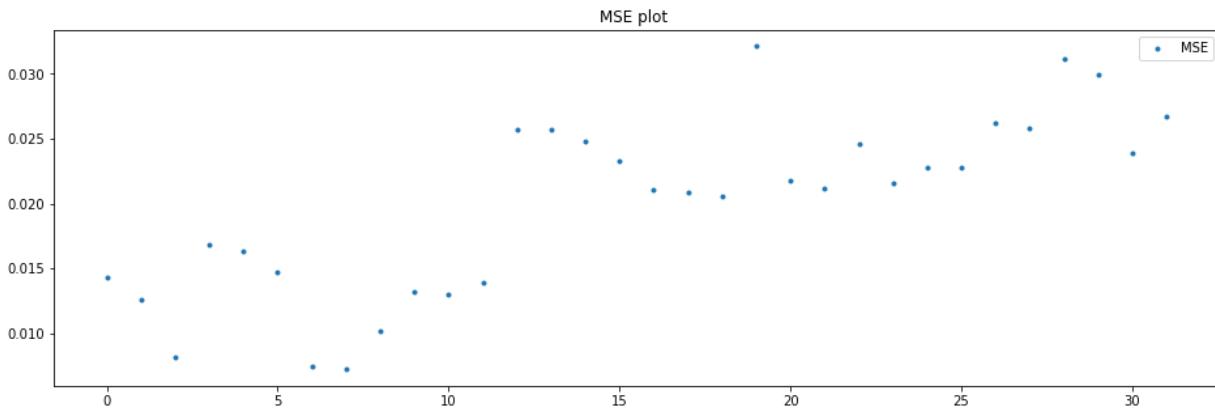
15.000: 0.523, data does not look normal (reject H₀)
 10.000: 0.596, data does not look normal (reject H₀)
 5.000: 0.715, data does not look normal (reject H₀)
 2.500: 0.834, data does not look normal (reject H₀)
 1.000: 0.992, data does not look normal (reject H₀)

Batch: 14

mean=0.02002125, median=0.021405 , max=0.03212, min=0.00722, variance=4.6096e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.556

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)

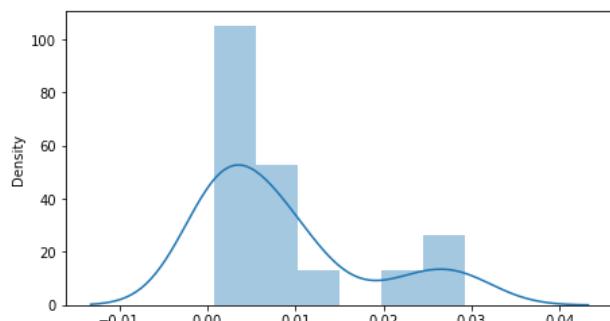
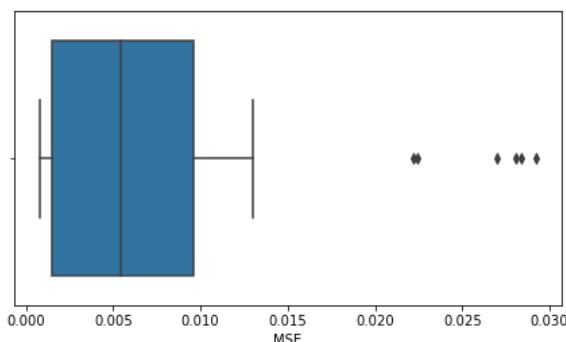
2.500: 0.834, data looks normal (fail to reject H0)

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

Batch: 15

mean=0.0086078125, median=0.005405 , max=0.02926, min=0.00077, variance=8.44494e-05

Boxplots and Distribution plot for Reconstruction Error



Anderson_Darling Test

Statistic: 2.735

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)

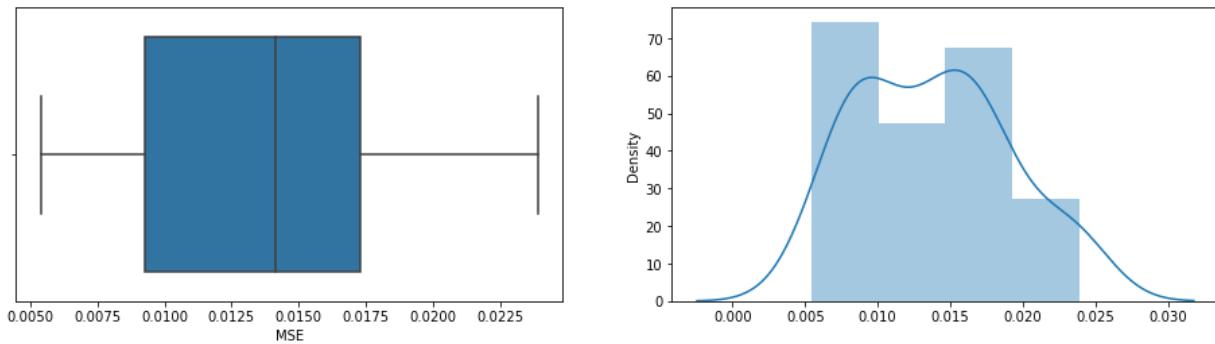
2.500: 0.834, data does not look normal (reject H0)

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

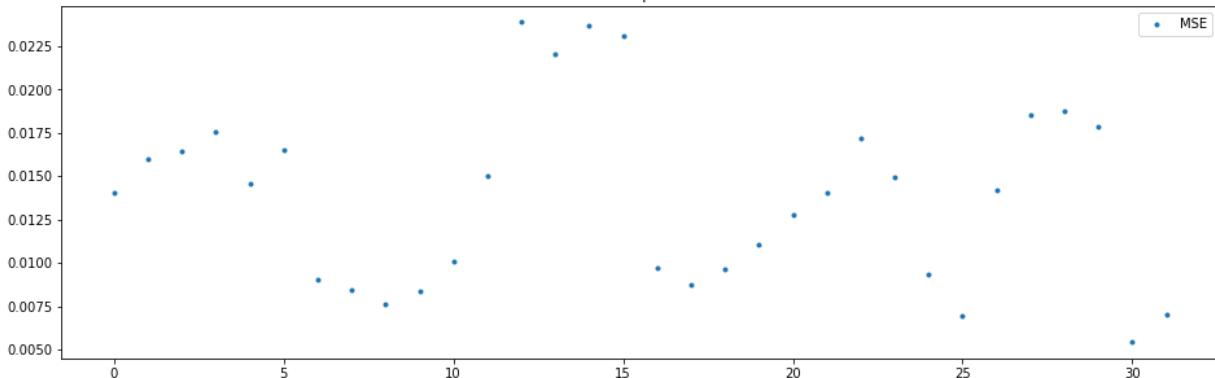
Batch: 16

mean=0.0138353125, median=0.01412 , max=0.0239, min=0.00541, variance=2.66849e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson_Darling Test**

Statistic: 0.517

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)

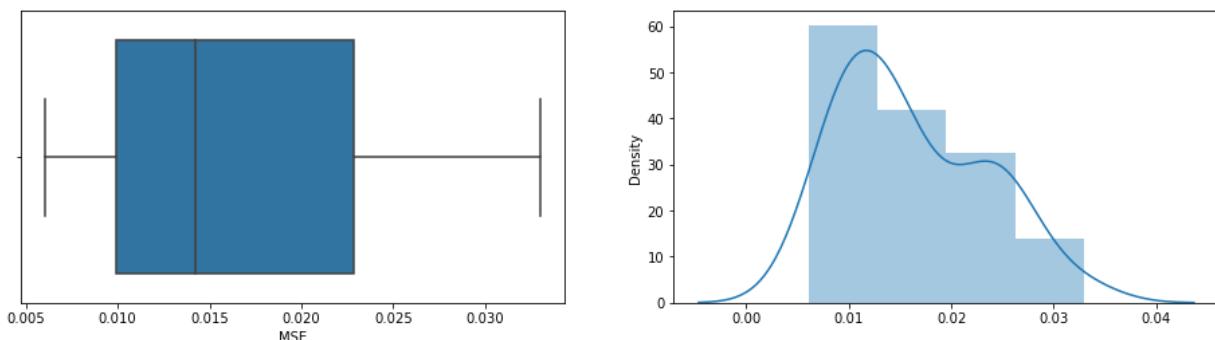
2.500: 0.834, data looks normal (fail to reject H0)

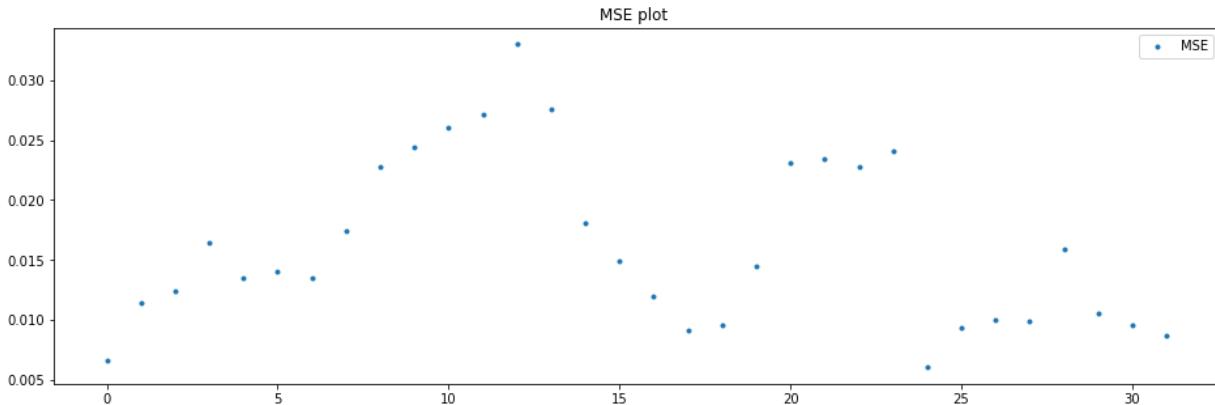
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 17

mean=0.016193125, median=0.014265 , max=0.03299, min=0.00605, variance=4.92459e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.918

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)

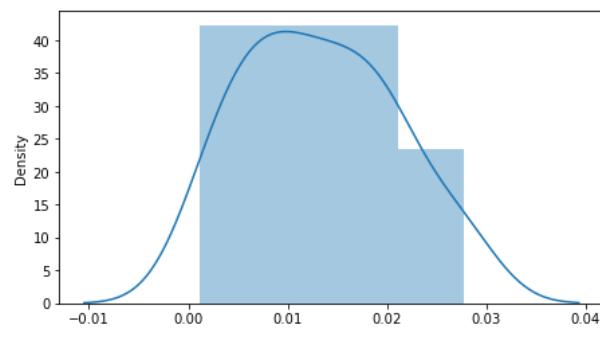
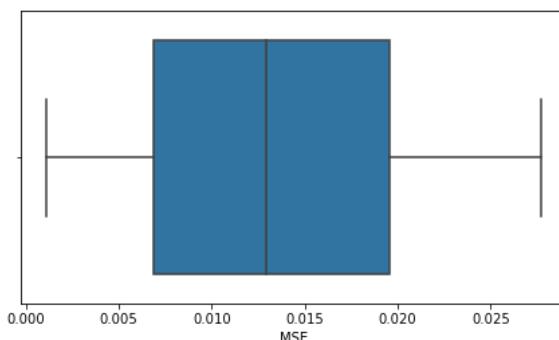
2.500: 0.834, data does not look normal (reject H0)

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

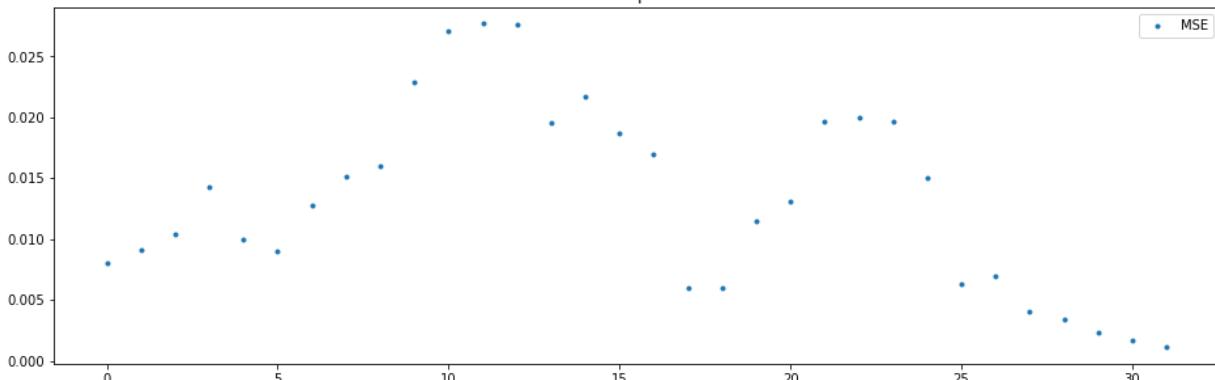
Batch: 18

mean=0.013238125, median=0.01293 , max=0.02769, min=0.0011, variance=5.78708e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 0.301

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)

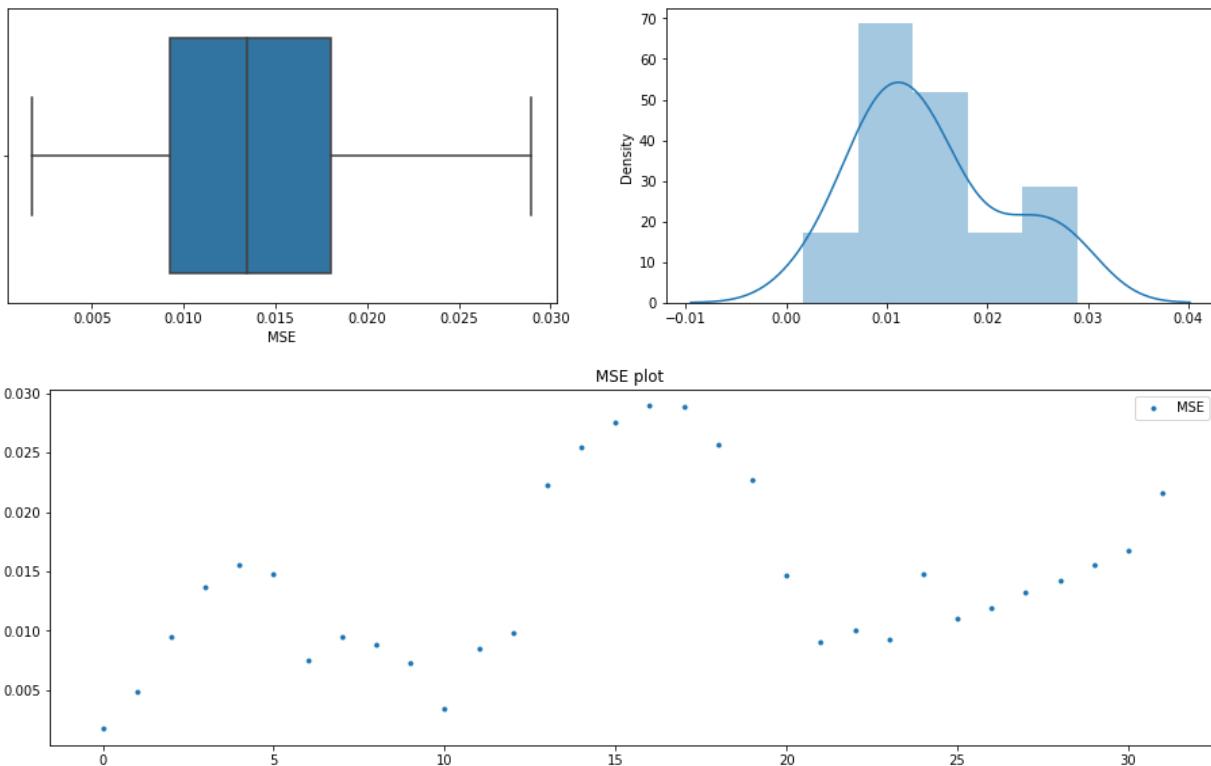
2.500: 0.834, data looks normal (fail to reject H0)

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

Batch: 19

mean=0.014344375, median=0.01347 , max=0.02895, min=0.00174, variance=5.40924e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

Statistic: 0.843

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)

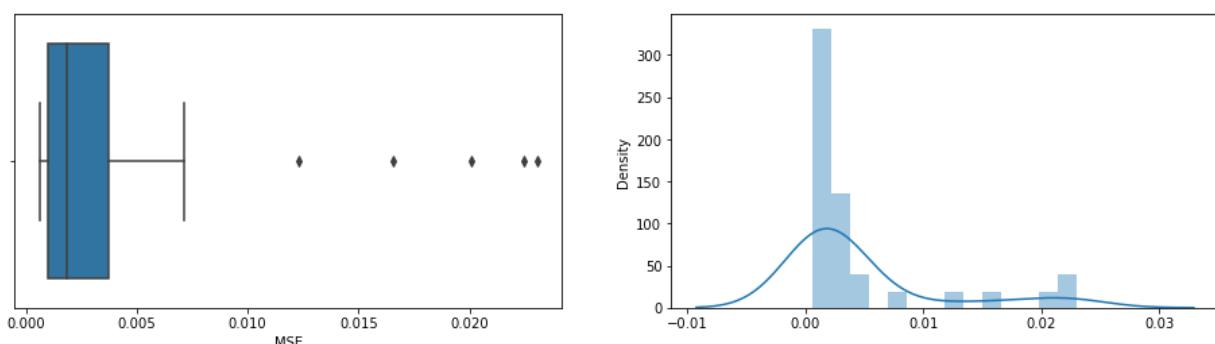
2.500: 0.834, data does not look normal (reject H0)

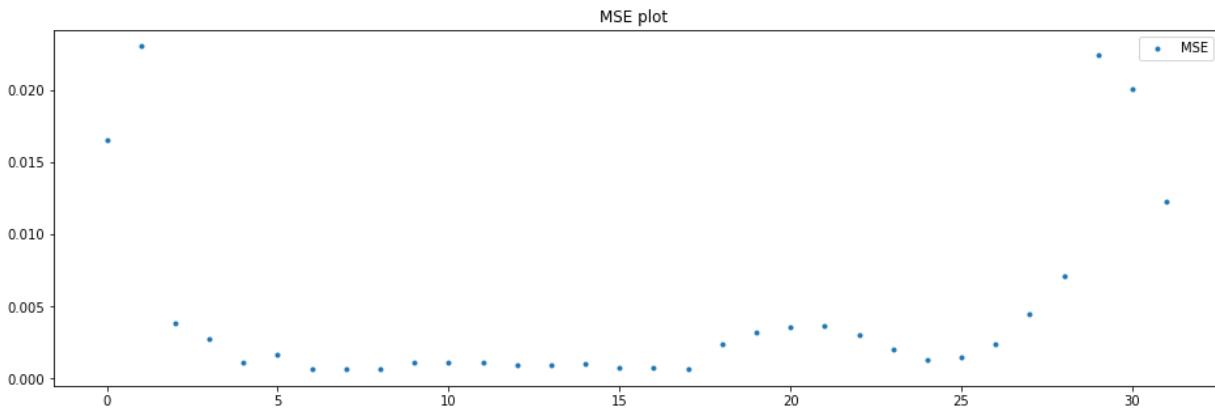
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 20

mean=0.0046459375, median=0.00182 , max=0.02306, min=0.00063, variance=4.19435e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 5.094

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)

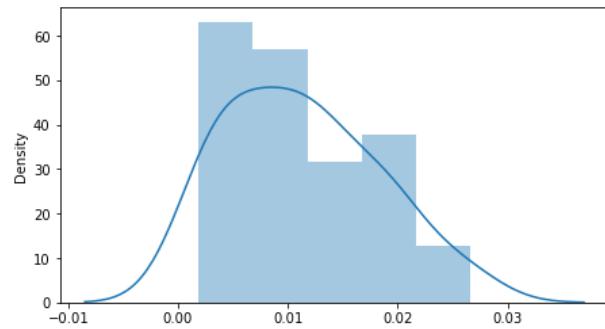
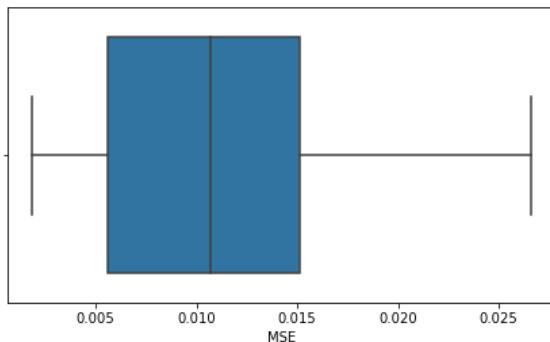
2.500: 0.834, data does not look normal (reject H0)

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

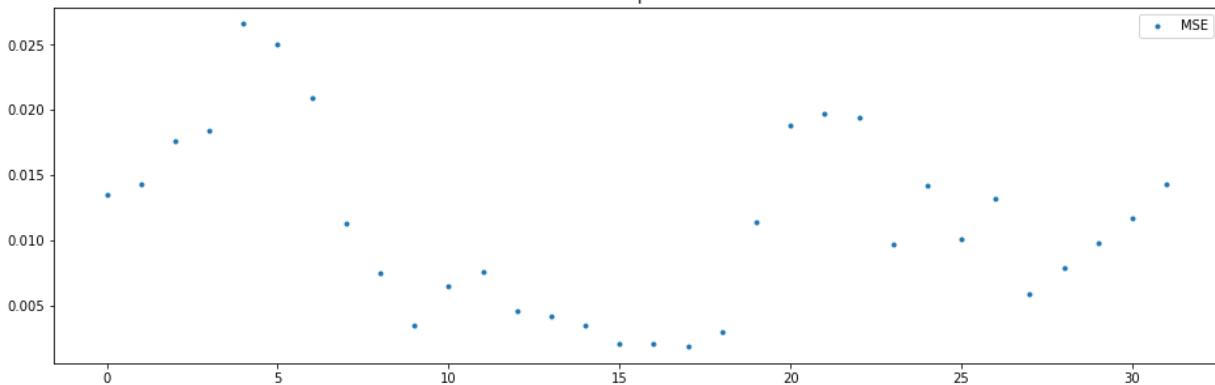
Batch: 21

mean=0.01127, median=0.010705 , max=0.0266, min=0.00186, variance=4.61235e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 0.429

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)

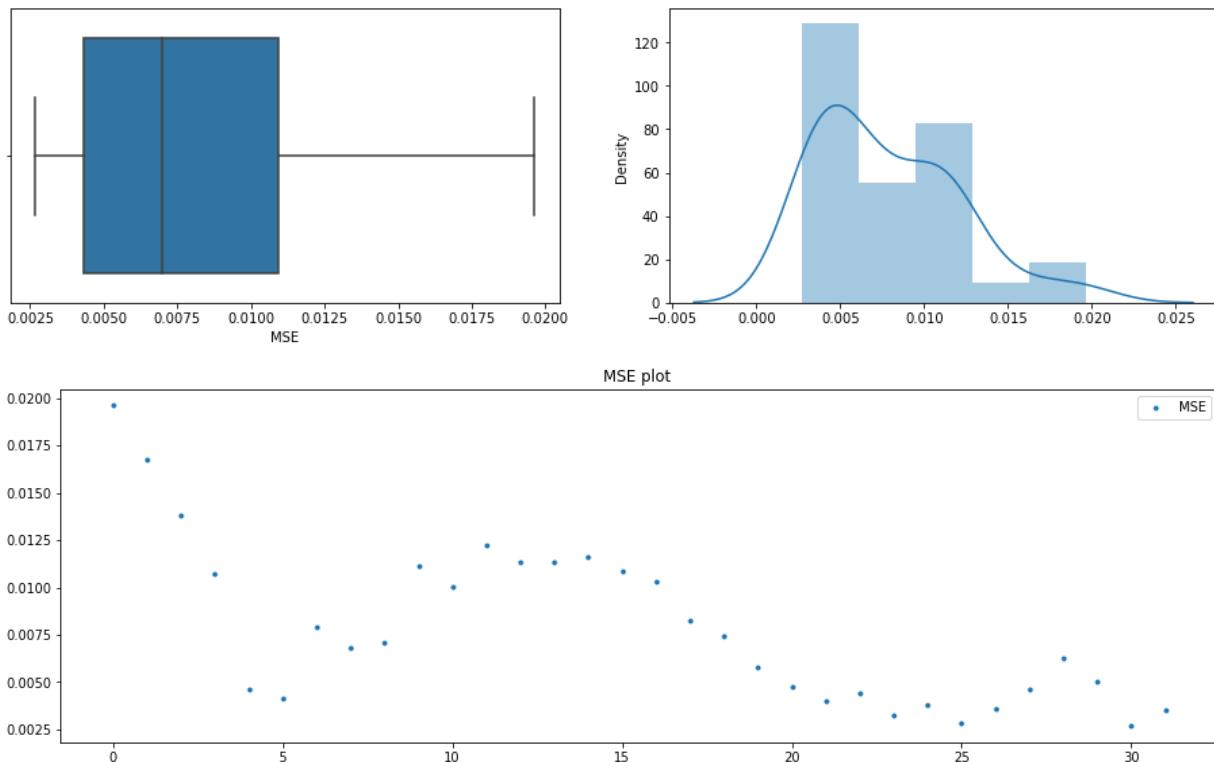
2.500: 0.834, data looks normal (fail to reject H0)

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

Batch: 22

mean=0.007831875, median=0.00697 , max=0.01962, min=0.00267, variance=1.76574e-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)

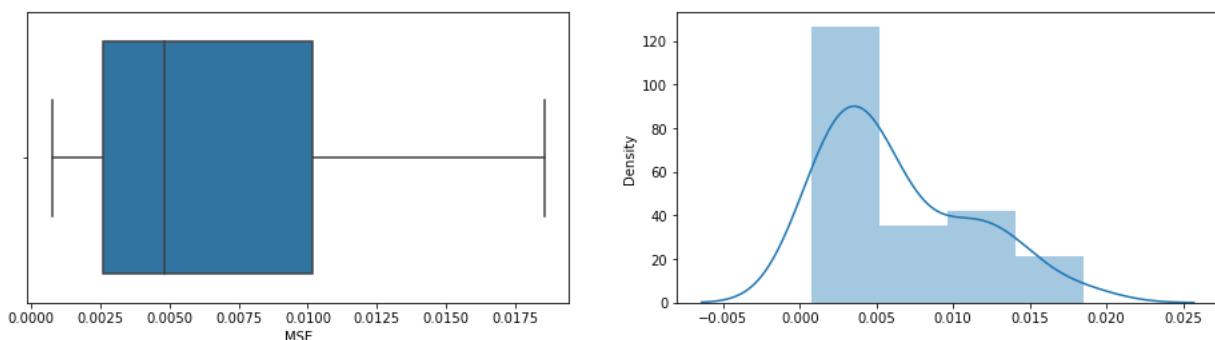
2.500: 0.834, data does not look normal (reject H0)

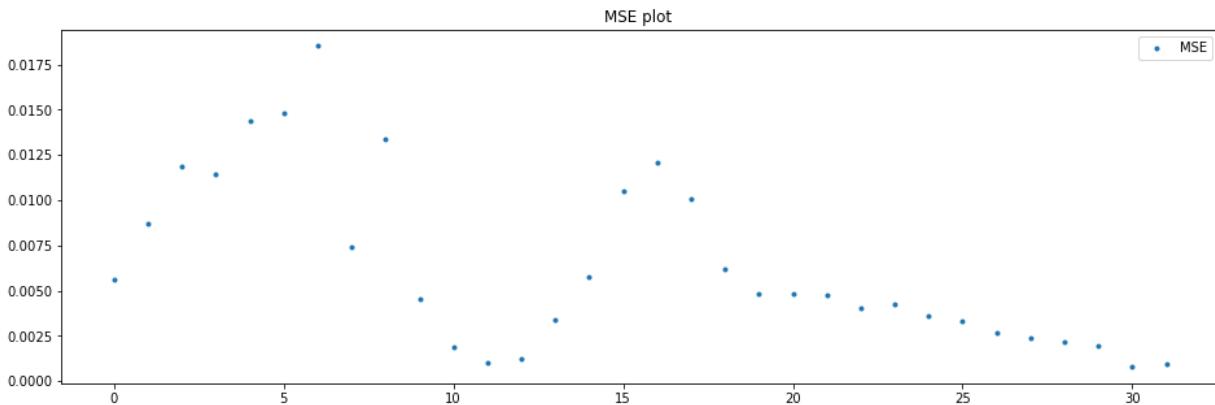
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 23

mean=0.006358125, median=0.004815 , max=0.01853, min=0.00077, variance=2.21036e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

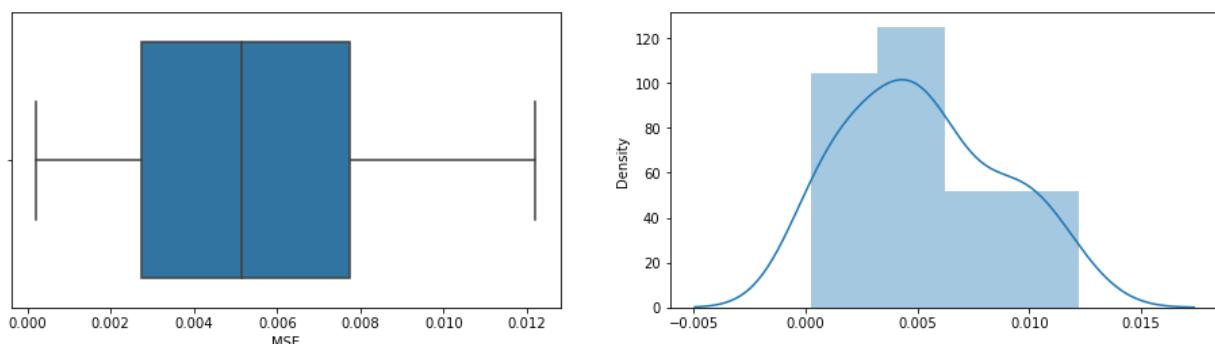
Statistic: 1.176

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)

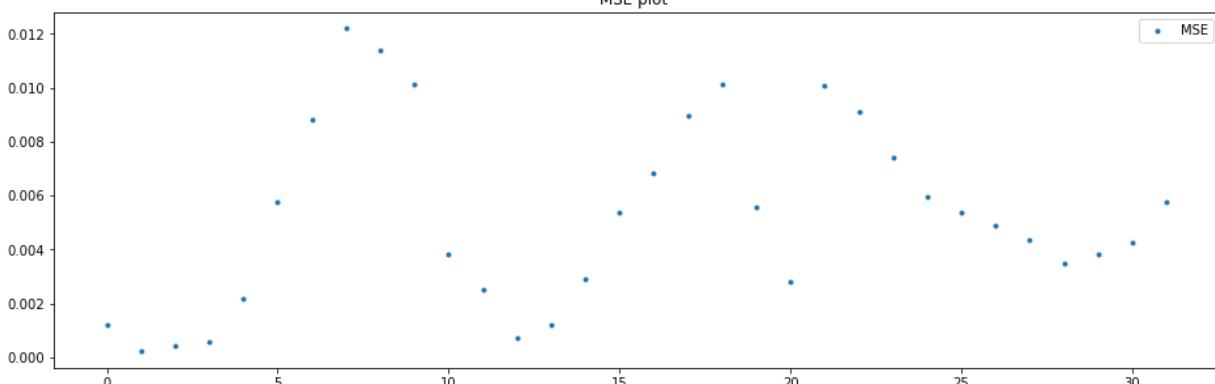
Batch: 24

mean=0.0052578125, median=0.00513 , max=0.0122, min=0.00021, variance=1.15098e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

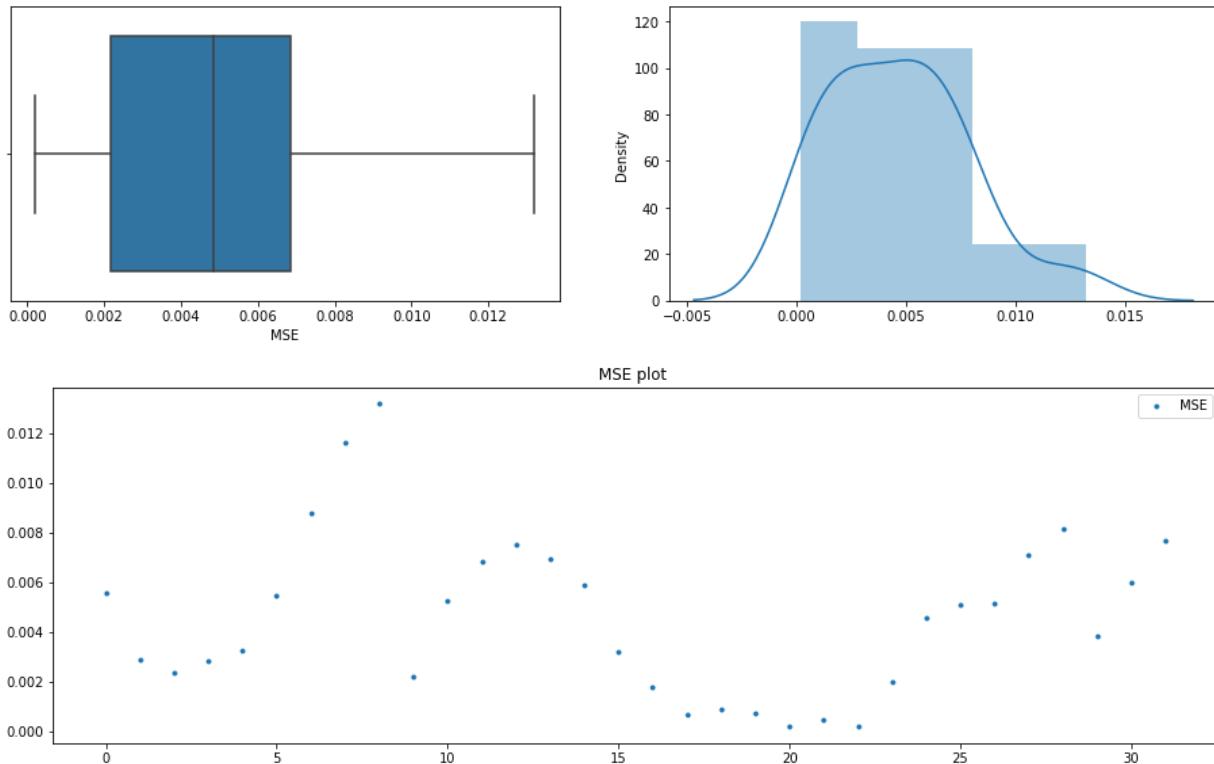
Statistic: 0.445

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: 25

mean=0.0046509375, median=0.00485 , max=0.0132, min=0.0002, variance=1.03148e-05

Boxplots and Distribution plot for Reconstruction Error



Anderson_Darling Test

Statistic: 0.392

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)

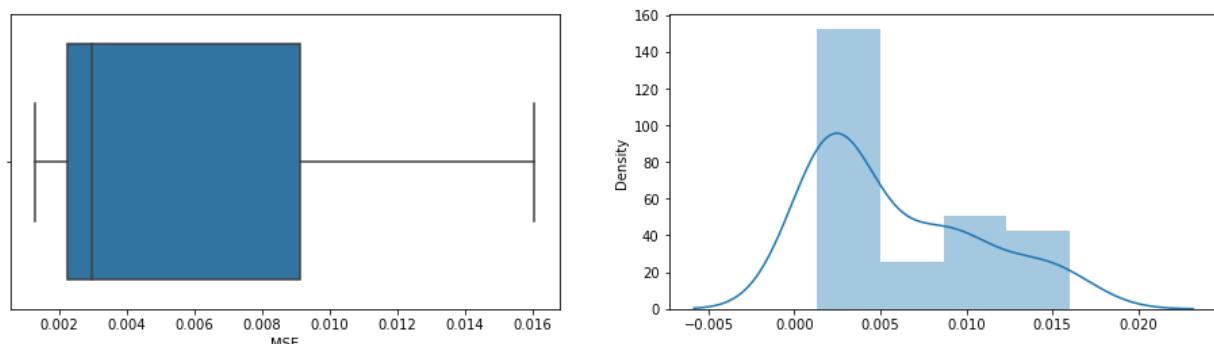
2.500: 0.834, data looks normal (fail to reject H0)

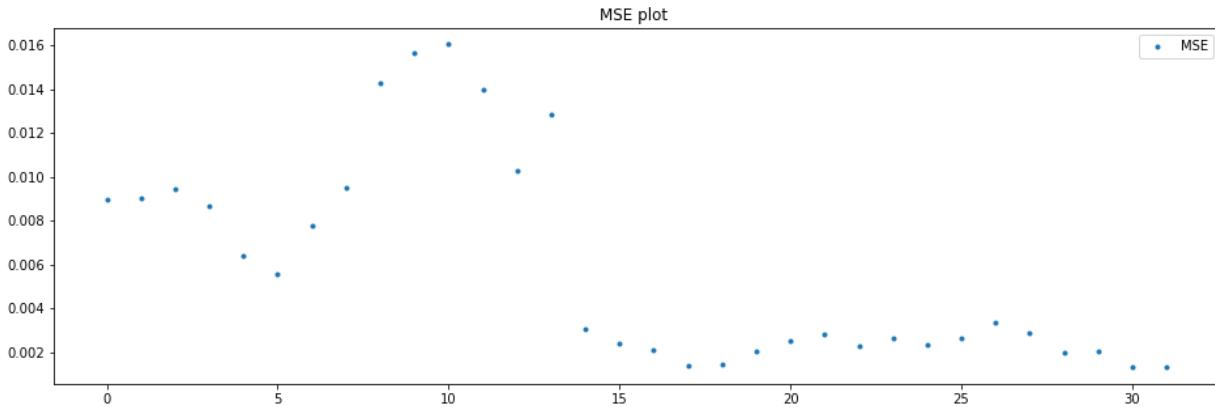
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 26

mean=0.0059003125, median=0.00296 , max=0.01604, min=0.00129, variance=2.19646e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 2.166

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)

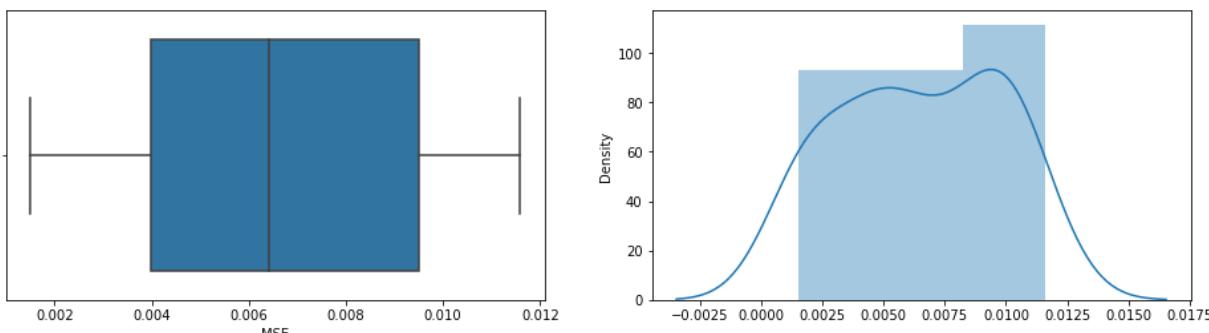
2.500: 0.834, data does not look normal (reject H0)

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

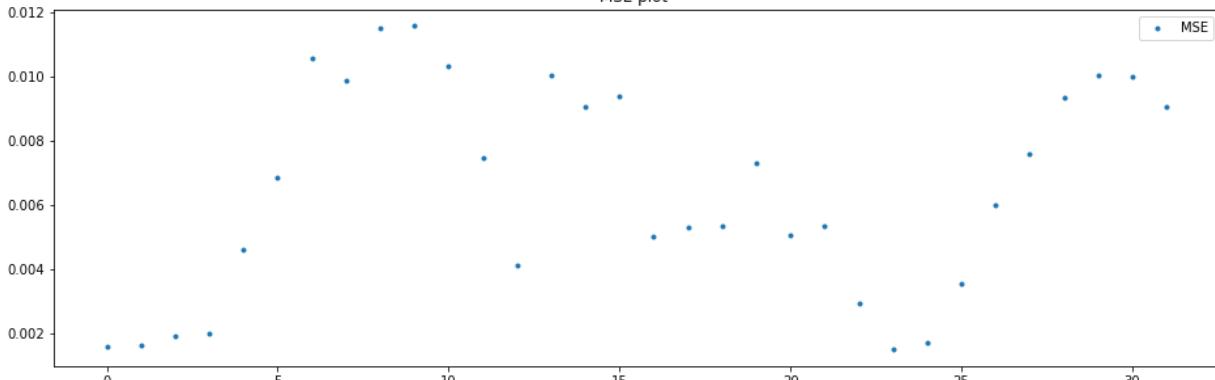
Batch: 27

mean=0.006494375, median=0.006425 , max=0.01158, min=0.0015, variance=1.05695e-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)

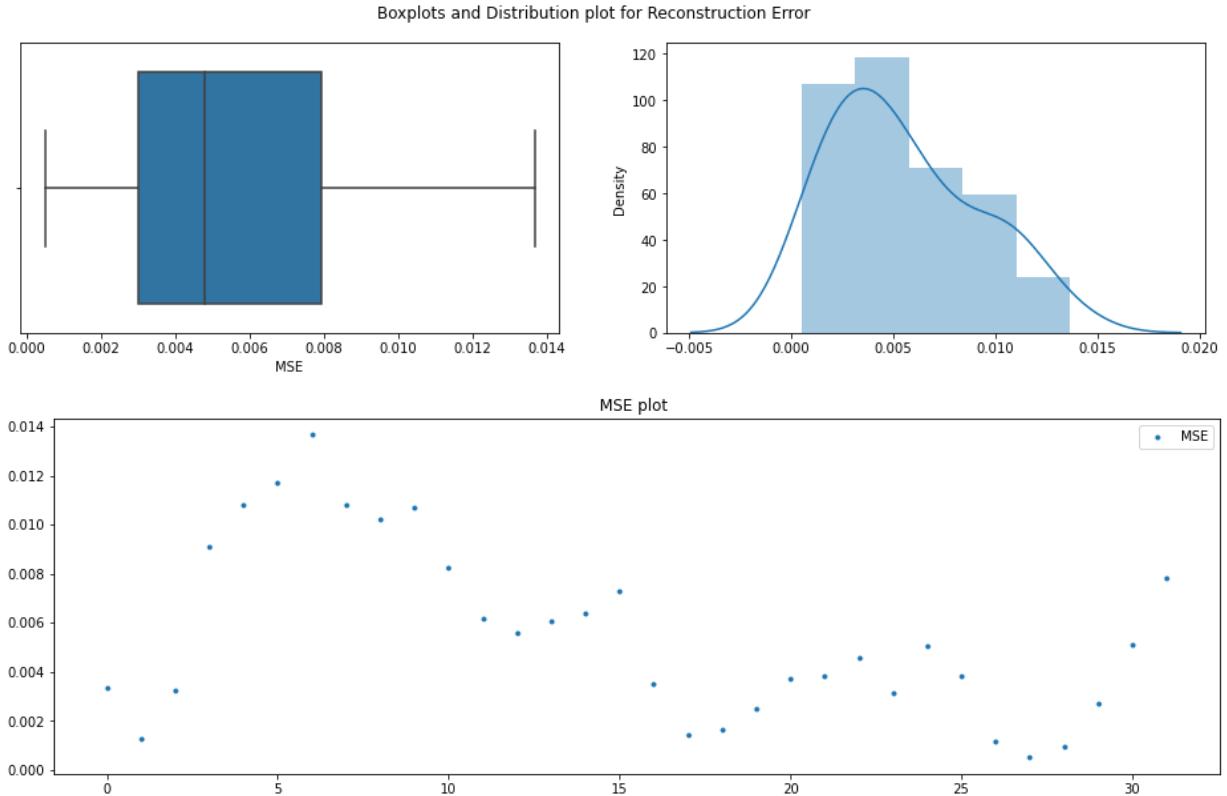
5.000: 0.715, data does not look normal (reject H0)

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

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

Batch: 28

mean=0.0055025, median=0.004815 , max=0.01367, min=0.0005, variance=1.25905e-05



Anderson_Darling Test

Statistic: 0.675

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)

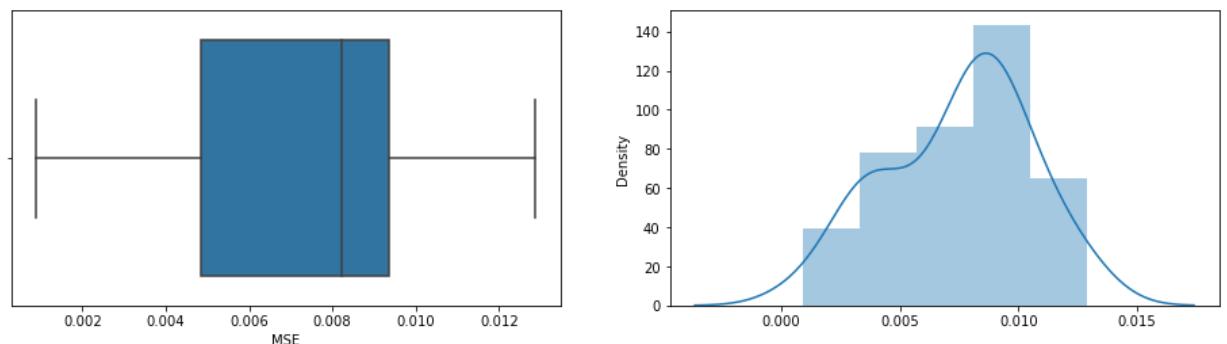
2.500: 0.834, data looks normal (fail to reject H0)

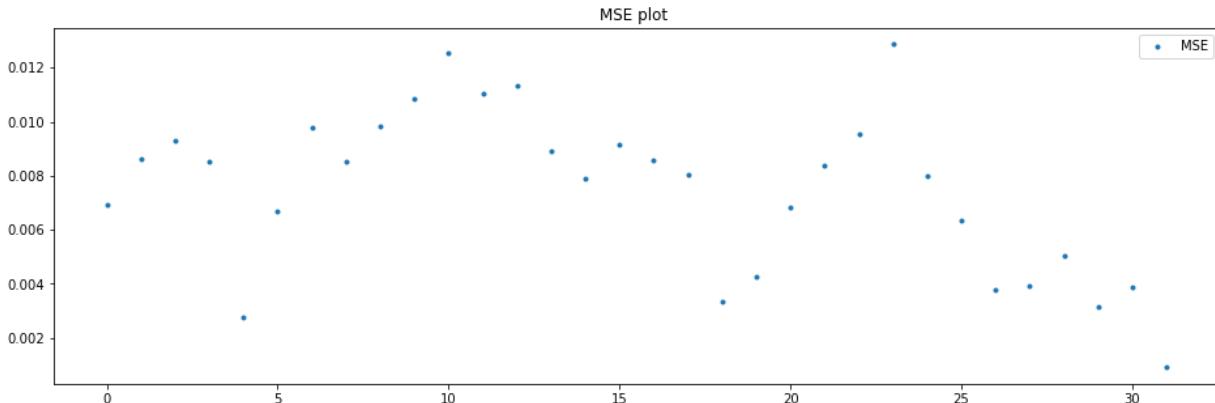
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 29

mean=0.007483125, median=0.00821 , max=0.01287, min=0.00089, variance=8.8355e-06

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.555

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)

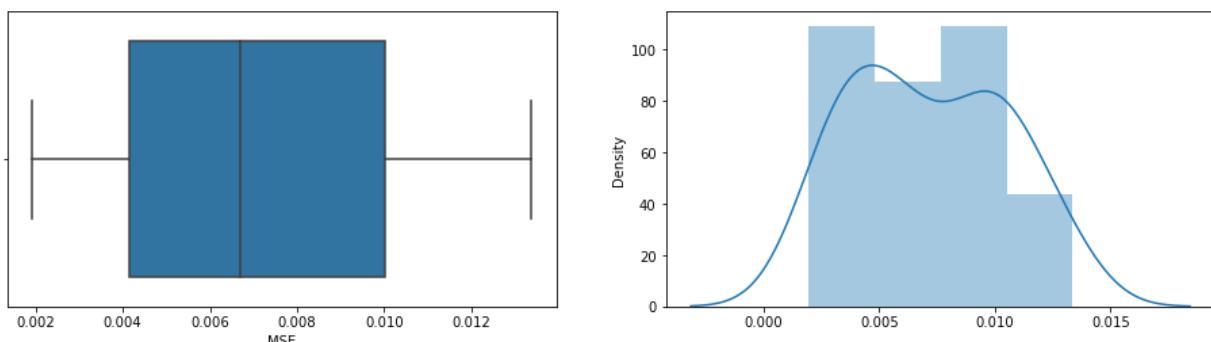
2.500: 0.834, data looks normal (fail to reject H0)

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

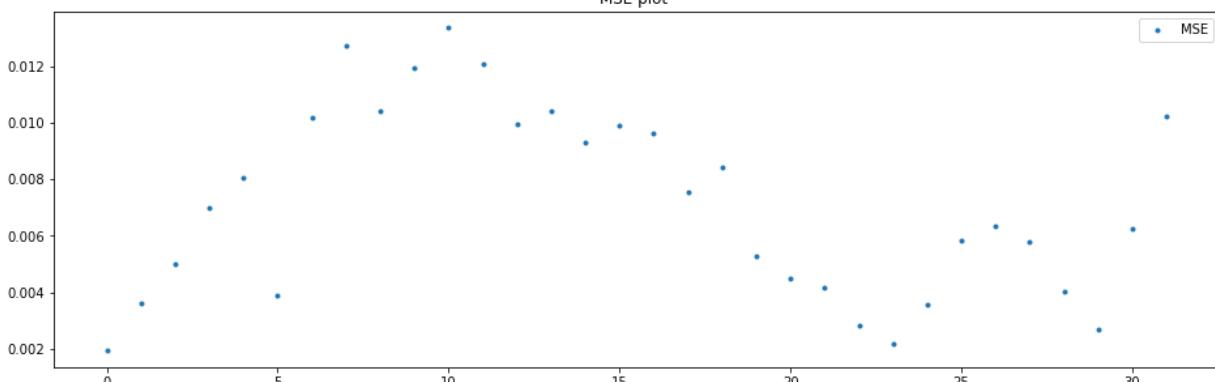
Batch: 30

mean=0.007158125, median=0.00668 , max=0.01337, min=0.00192, variance=1.10449e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 0.543

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)

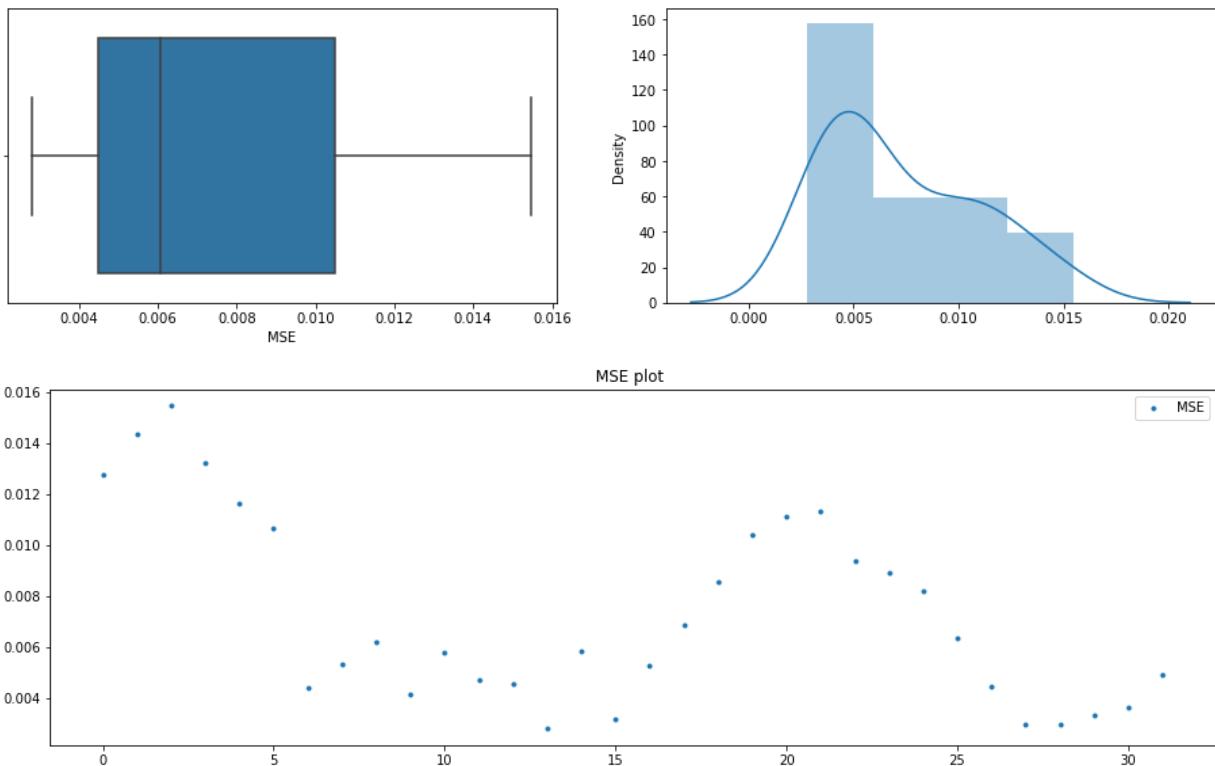
2.500: 0.834, data looks normal (fail to reject H0)

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

Batch: 31

mean=0.0073203125, median=0.006055 , max=0.01547, min=0.00281, variance=1.33017e-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)

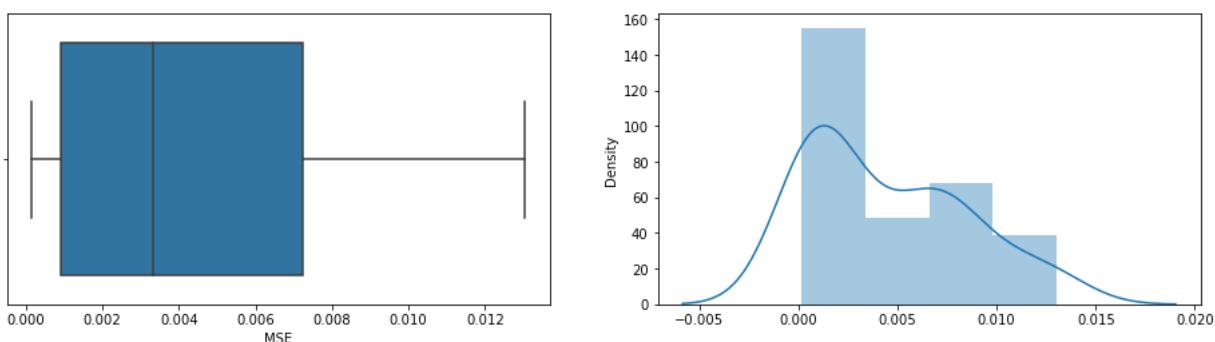
2.500: 0.834, data does not look normal (reject H0)

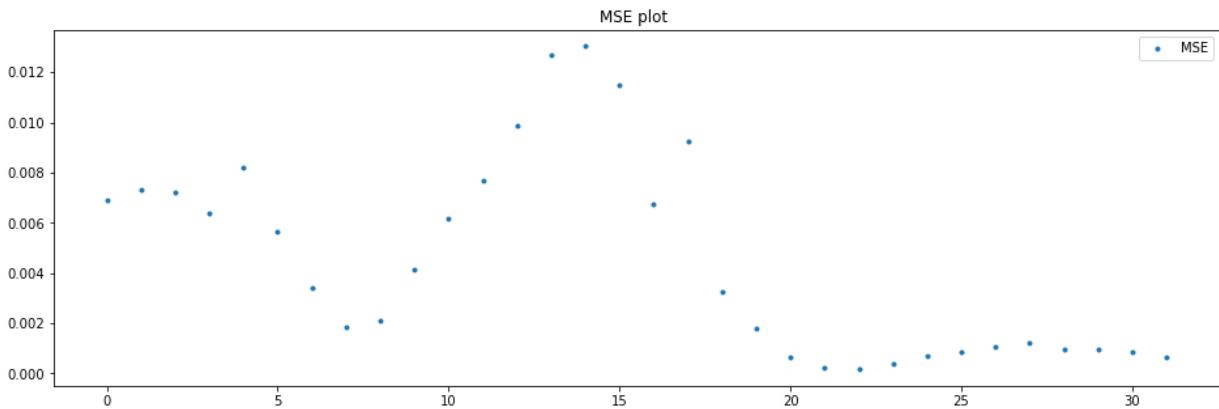
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 32

mean=0.004490625, median=0.003335 , max=0.01304, min=0.00015, variance=1.54333e-05

Boxplots and Distribution plot for Reconstruction Error





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)

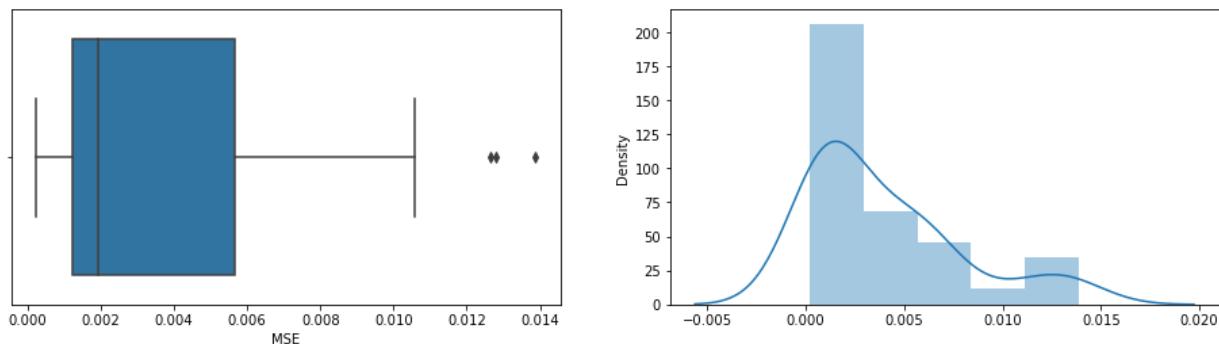
2.500: 0.834, data does not look normal (reject H0)

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

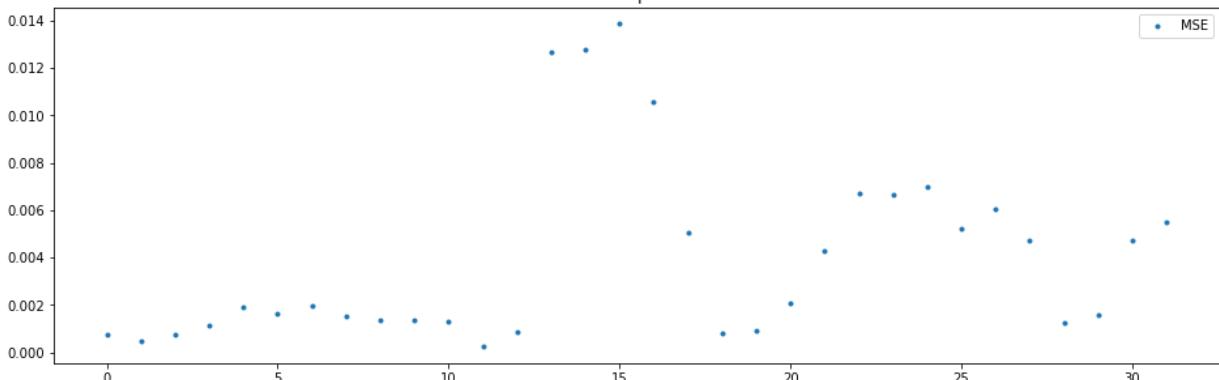
Batch: 33

mean=0.00399625, median=0.00194 , max=0.01387, min=0.00023, variance=1.47042e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 2.201

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

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

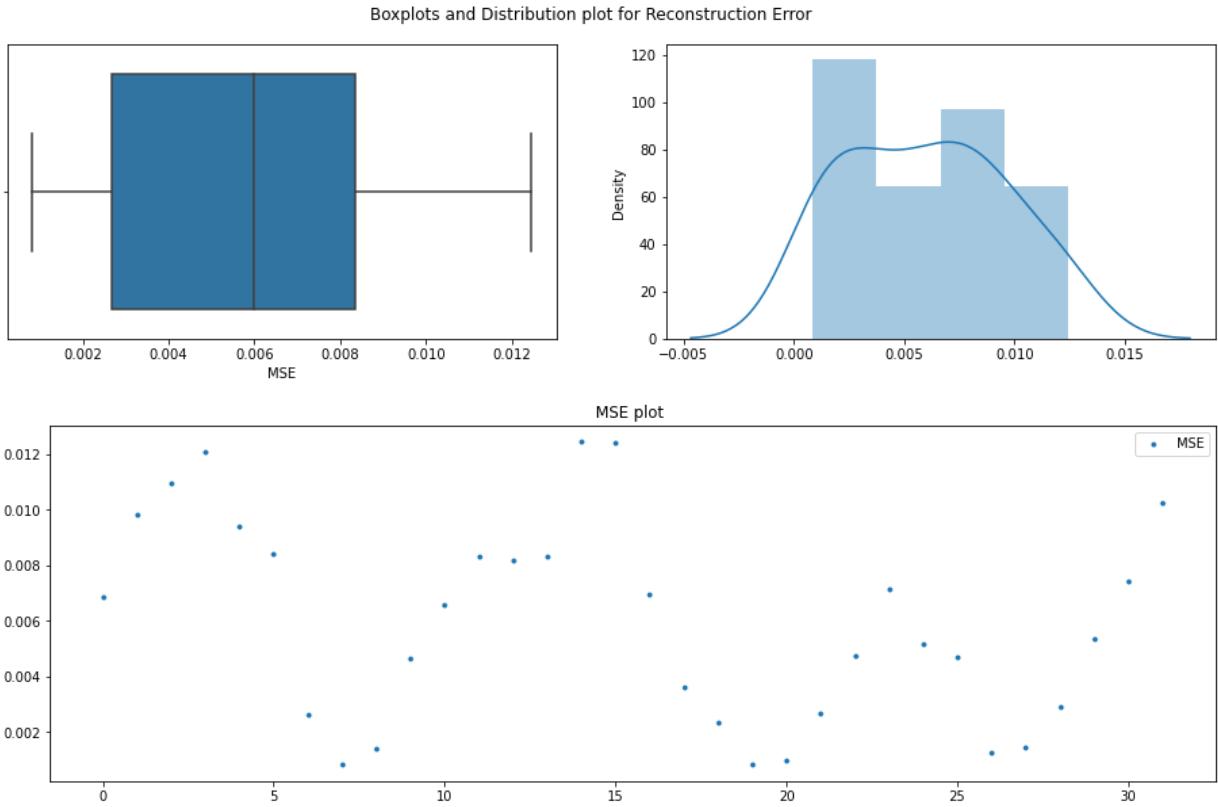
5.000: 0.715, data does not look normal (reject H0)

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=0.0059765625, median=0.005975 , max=0.01245, min=0.00082, variance=1.2994e-05



Anderson_Darling Test

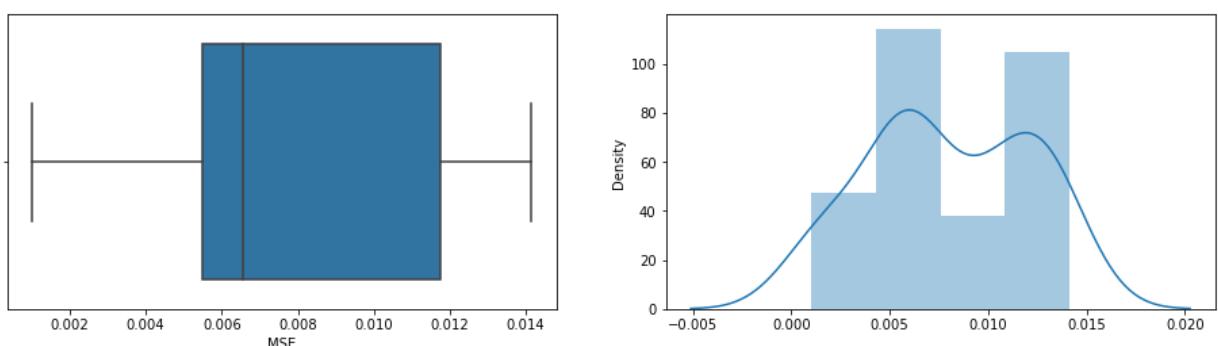
Statistic: 0.457

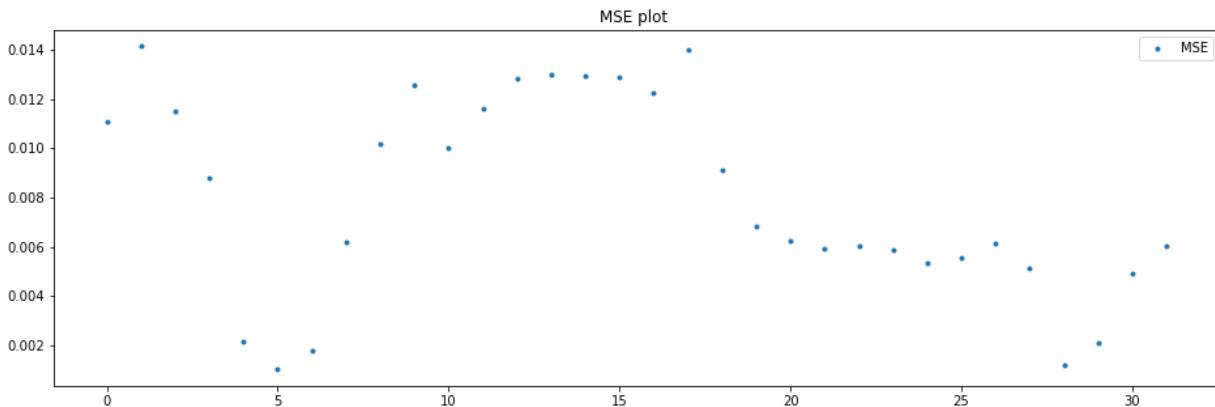
15.000: 0.523, data looks normal (fail to reject H₀)
 10.000: 0.596, data looks normal (fail to reject H₀)
 5.000: 0.715, data looks normal (fail to reject H₀)
 2.500: 0.834, data looks normal (fail to reject H₀)
 1.000: 0.992, data looks normal (fail to reject H₀)

Batch: 35

mean=0.007985625, median=0.006545 , max=0.01414, min=0.00101, variance=1.60996e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.861

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)

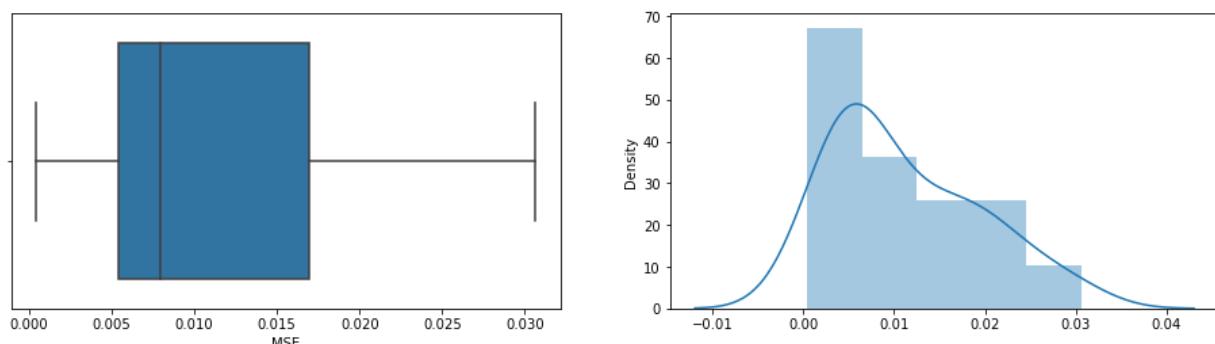
2.500: 0.834, data does not look normal (reject H0)

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

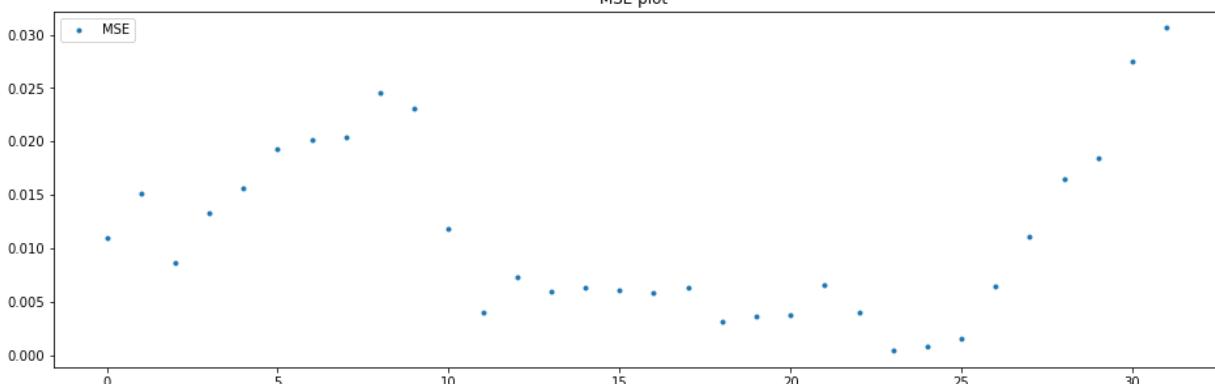
Batch: 36

mean=0.011243125, median=0.007955 , max=0.03063, min=0.00042, variance=6.5758e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 0.942

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)

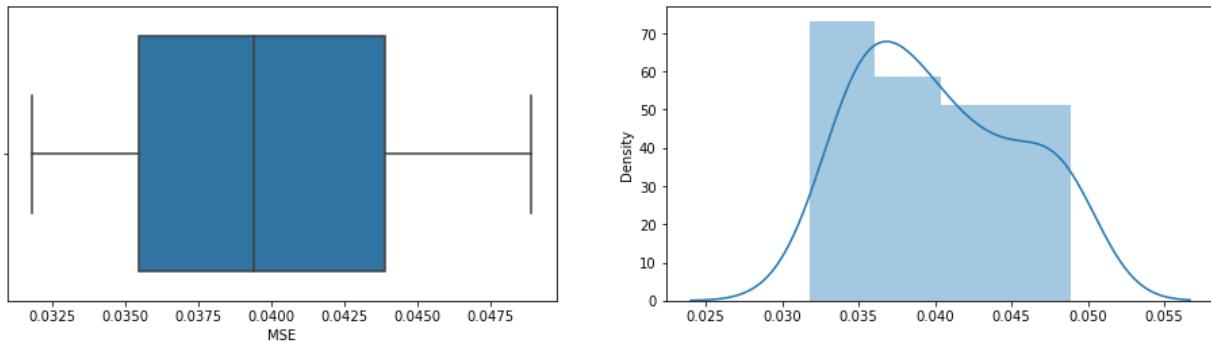
2.500: 0.834, data does not look normal (reject H0)

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

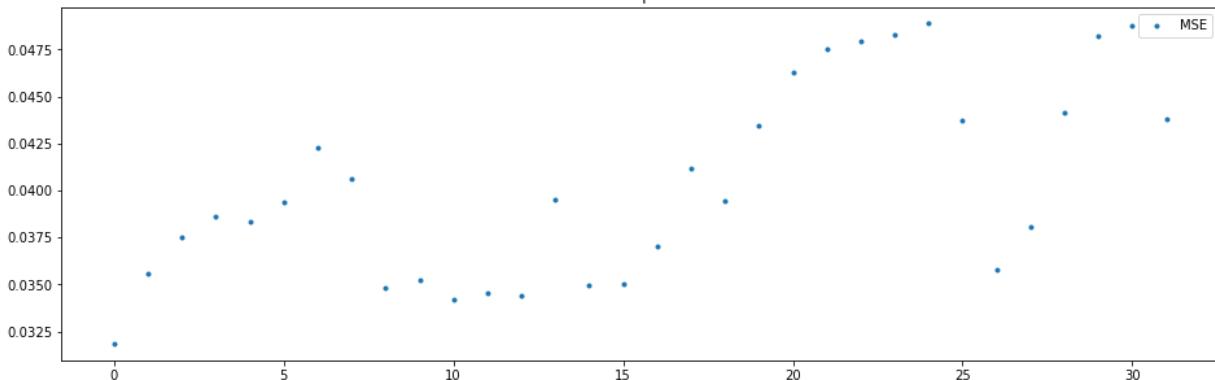
Batch: 37

mean=0.040290625, median=0.0394 , max=0.04888, min=0.03182, variance=2.61147e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson_Darling Test**

Statistic: 0.808

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)

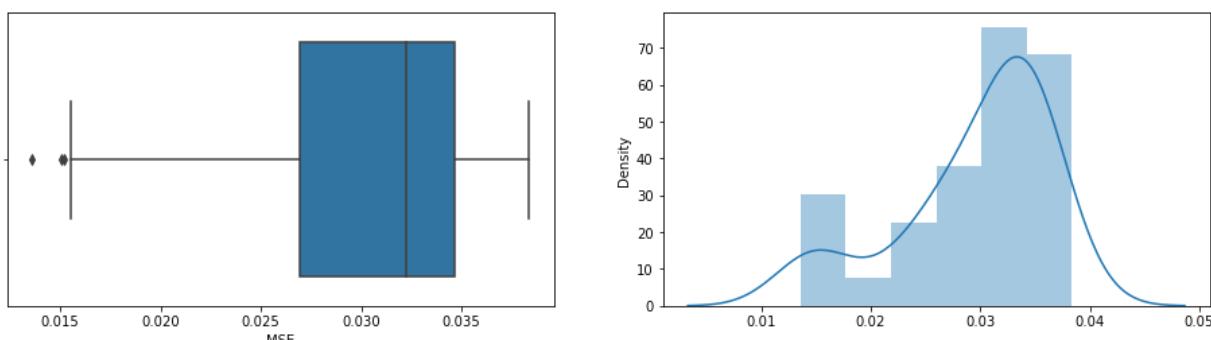
2.500: 0.834, data looks normal (fail to reject H0)

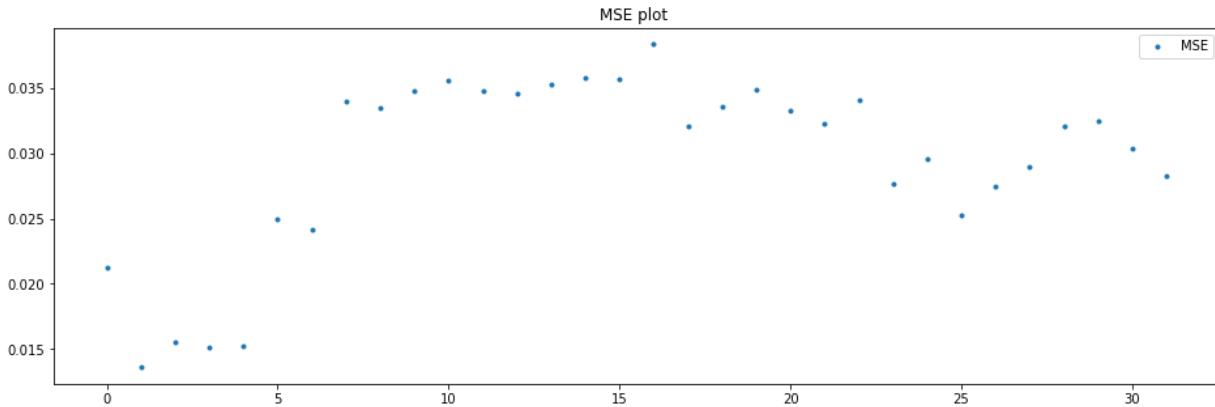
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 38

mean=0.0295165625, median=0.03221 , max=0.03835, min=0.01359, variance=4.56625e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

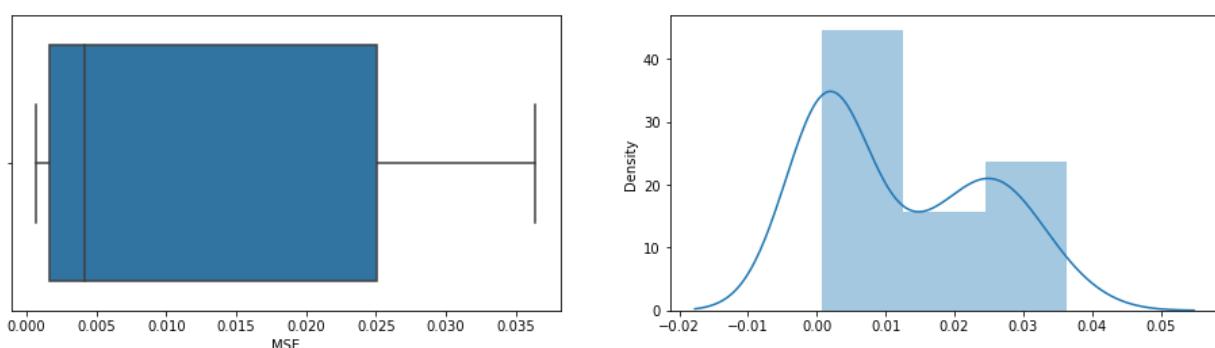
Statistic: 1.785

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)

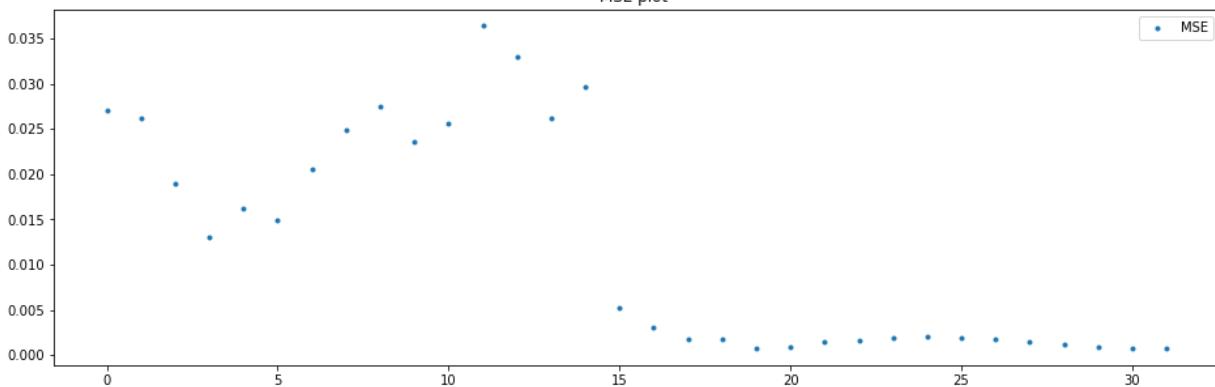
Batch: 39

mean=0.012265625, median=0.004165 , max=0.0364, min=0.00069, variance=0.0001459421

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

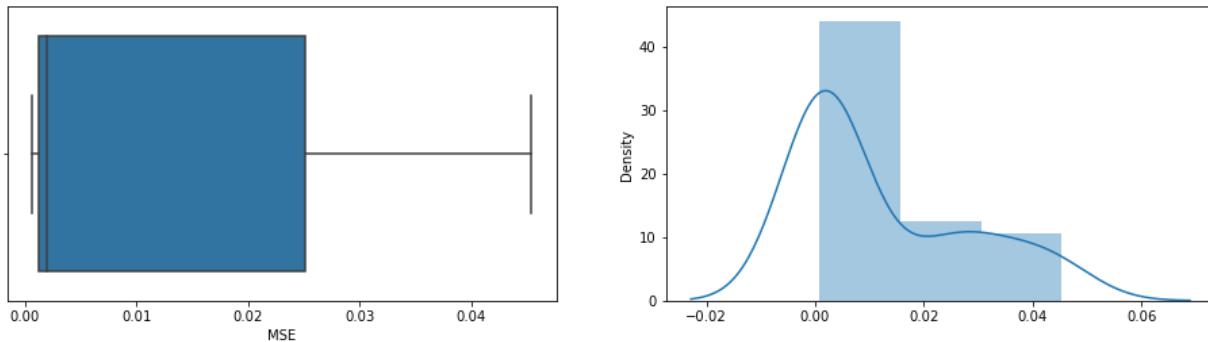
Statistic: 2.597

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)

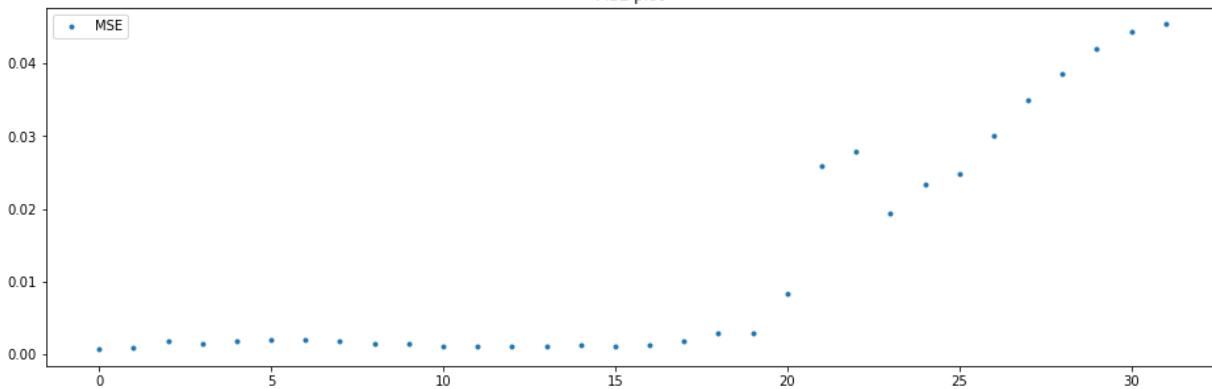
Batch: 40

mean=0.01239875, median=0.001945 , max=0.04538, min=0.00067, variance=0.000238156

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 3.960

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)

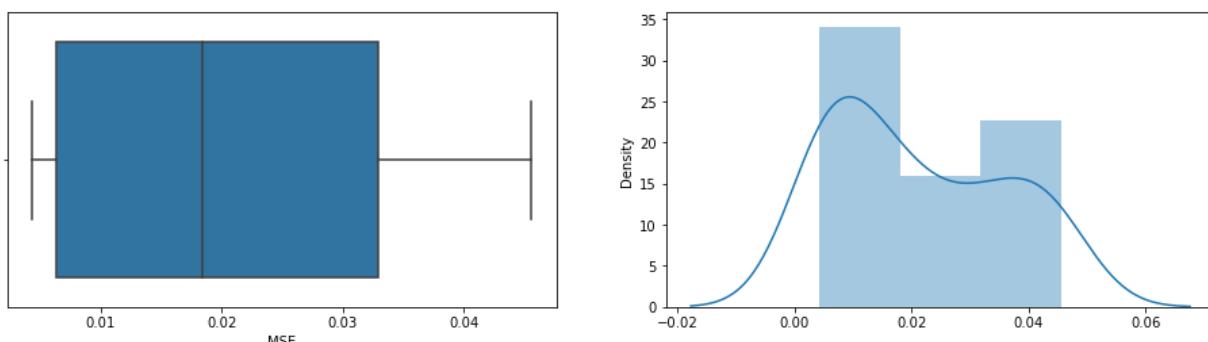
2.500: 0.834, data does not look normal (reject H0)

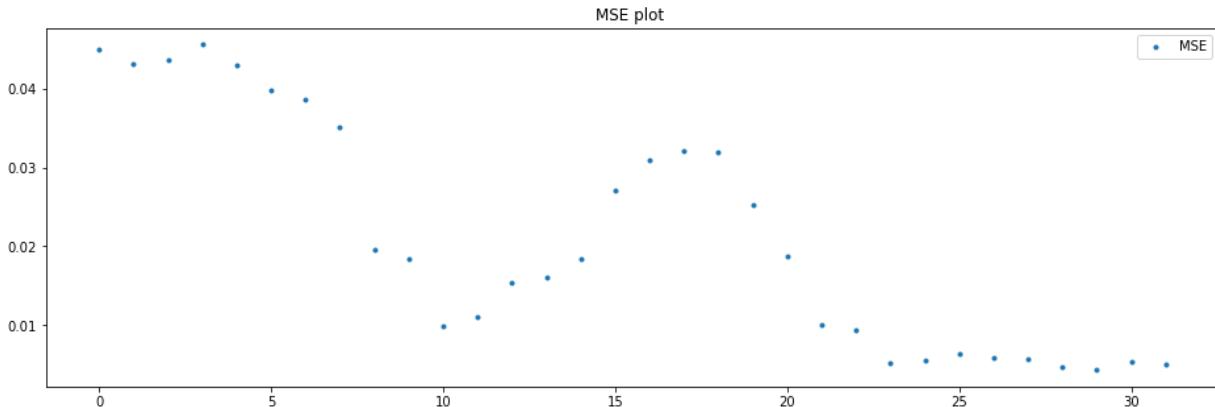
1.000: 0.992, data does not look normal (reject H0)

Batch: 41

mean=0.0211321875, median=0.01839 , max=0.04554, min=0.00432, variance=0.0002080543

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 1.299

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)

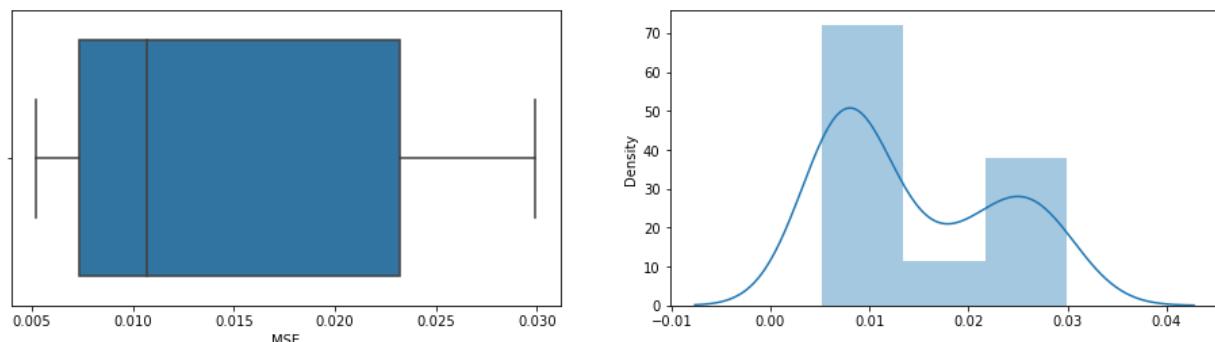
2.500: 0.834, data does not look normal (reject H0)

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

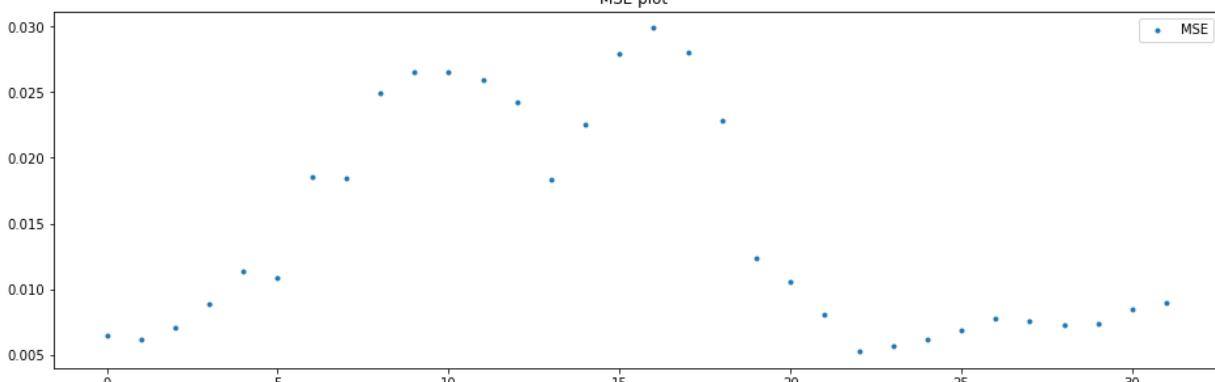
Batch: 42

mean=0.0146275, median=0.010695 , max=0.02991, min=0.00521, variance=7.09822e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 2.122

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)

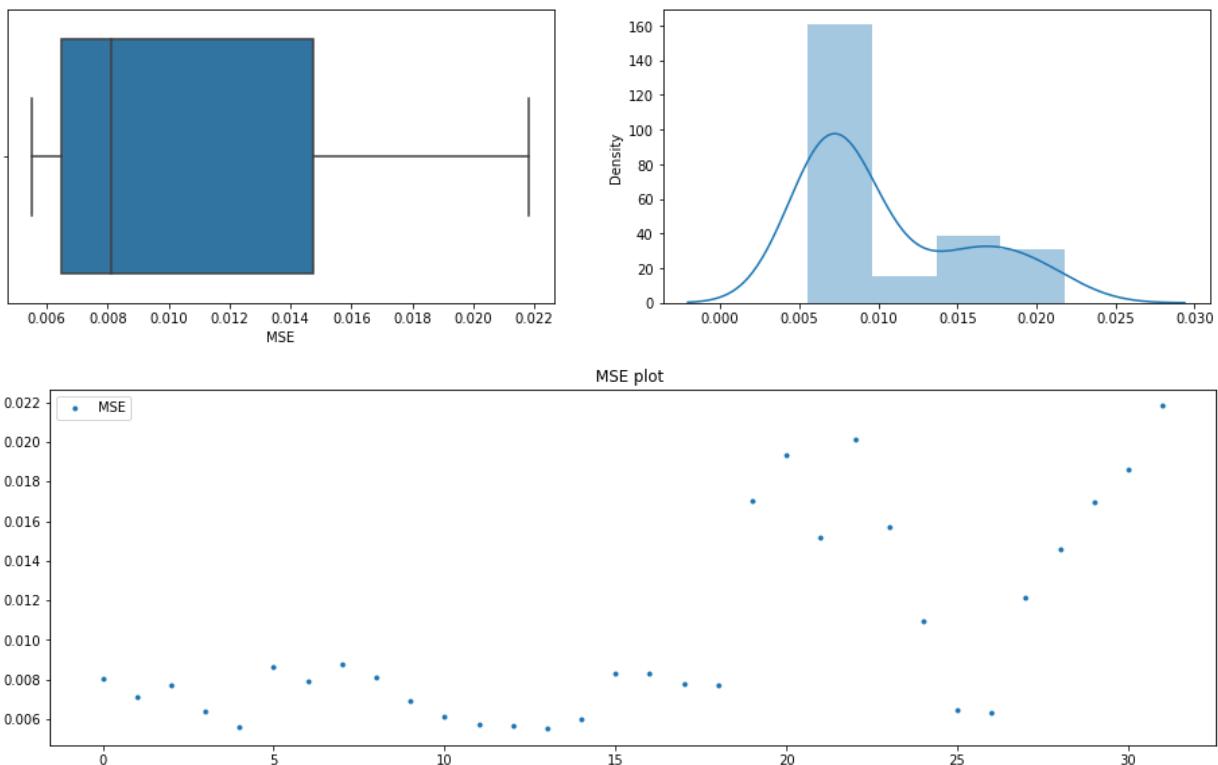
2.500: 0.834, data does not look normal (reject H0)

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

Batch: 43

mean=0.010365, median=0.00809 , max=0.02182, min=0.00551, variance=2.45272e-05

Boxplots and Distribution plot for Reconstruction Error



Anderson_Darling Test

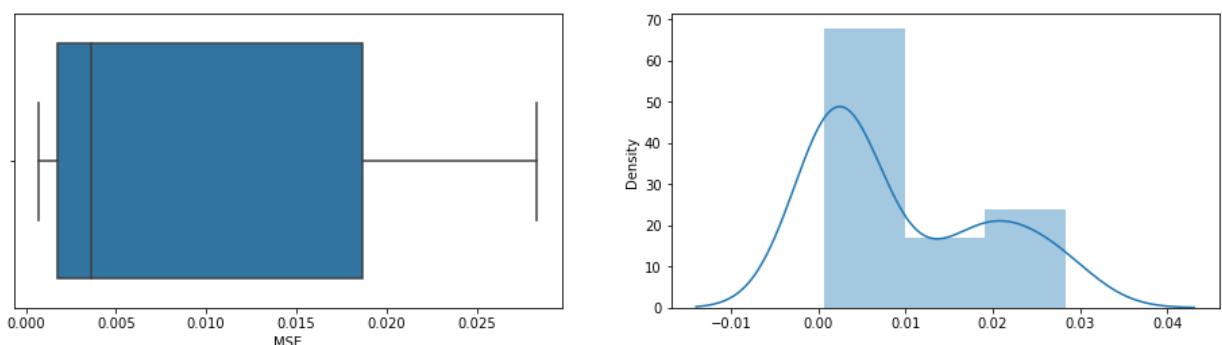
Statistic: 2.382

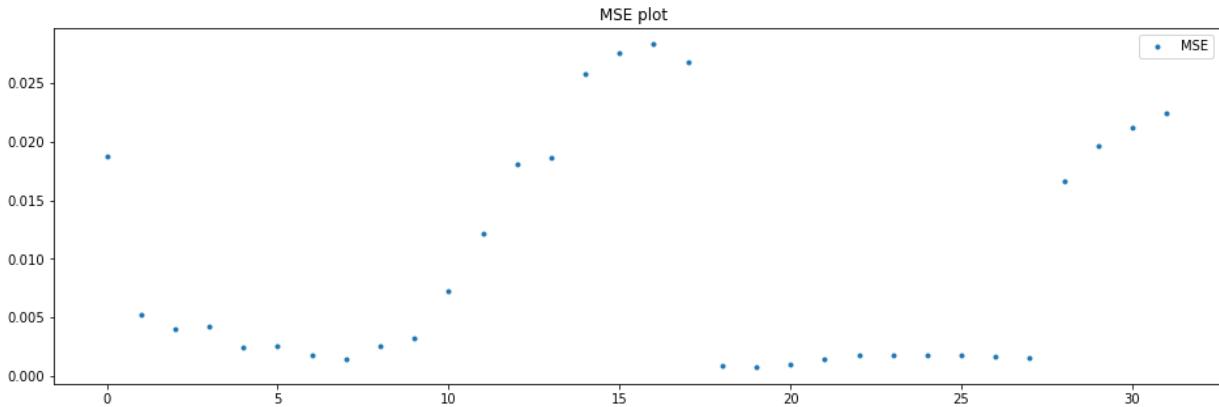
15.000: 0.523, data does not look normal (reject H₀)
 10.000: 0.596, data does not look normal (reject H₀)
 5.000: 0.715, data does not look normal (reject H₀)
 2.500: 0.834, data does not look normal (reject H₀)
 1.000: 0.992, data does not look normal (reject H₀)

Batch: 44

mean=0.009543125, median=0.0036 , max=0.02834, min=0.00072, variance=9.36523e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 2.939

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)

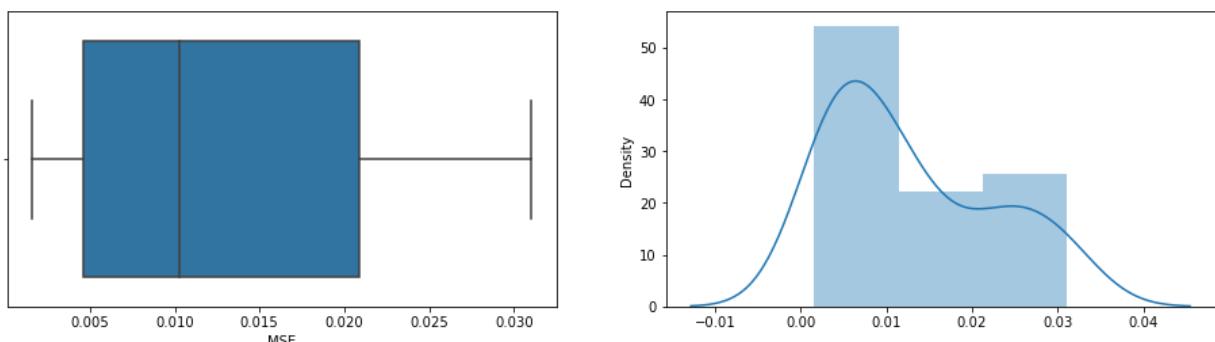
2.500: 0.834, data does not look normal (reject H0)

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

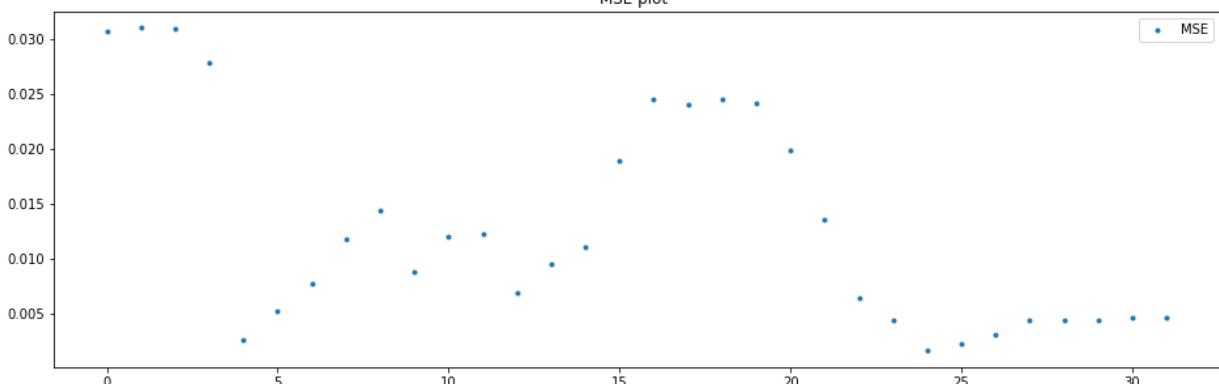
Batch: 45

mean=0.0128865625, median=0.01026 , max=0.03101, min=0.0016, variance=8.94651e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 1.437

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)

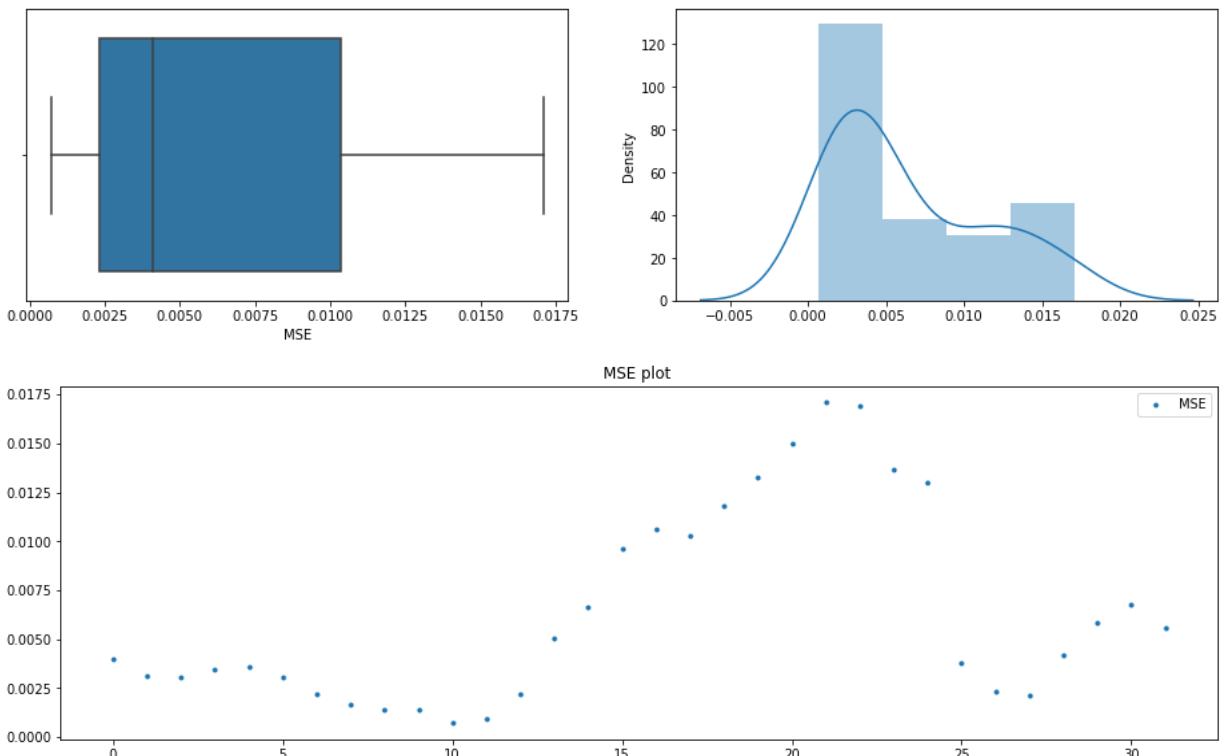
2.500: 0.834, data does not look normal (reject H0)

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

Batch: 46

mean=0.00638375, median=0.00408 , max=0.01709, min=0.00071, variance=2.47066e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

Statistic: 1.632

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)

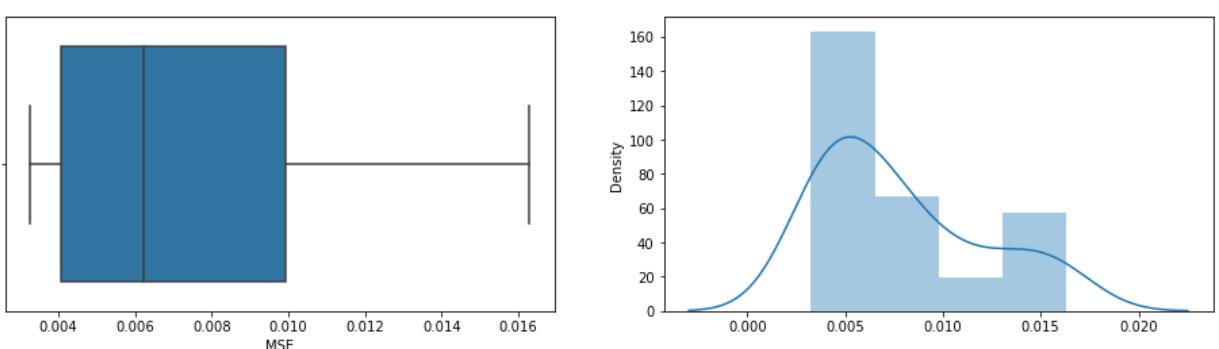
2.500: 0.834, data does not look normal (reject H0)

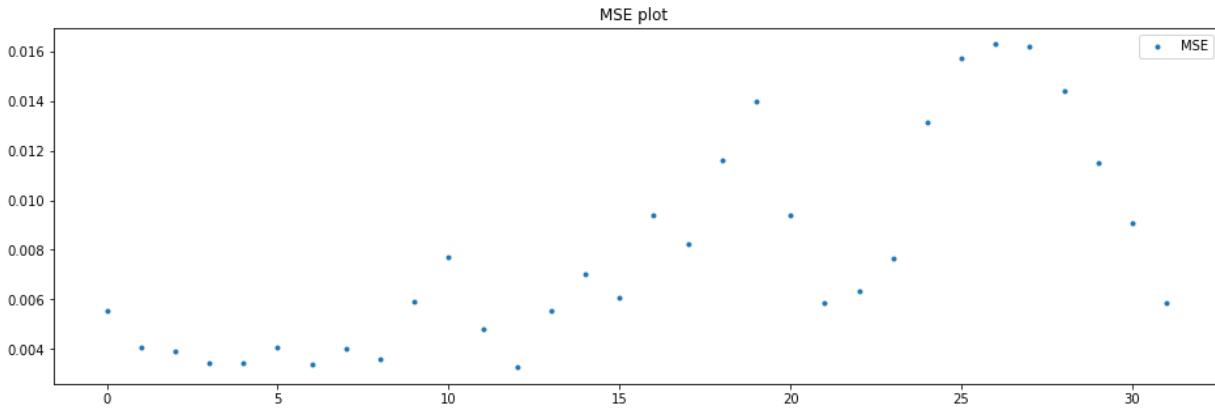
1.000: 0.992, data does not look normal (reject H0)

Batch: 47

mean=0.0078290625, median=0.00621 , max=0.01628, min=0.00326, variance=1.68069e-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)

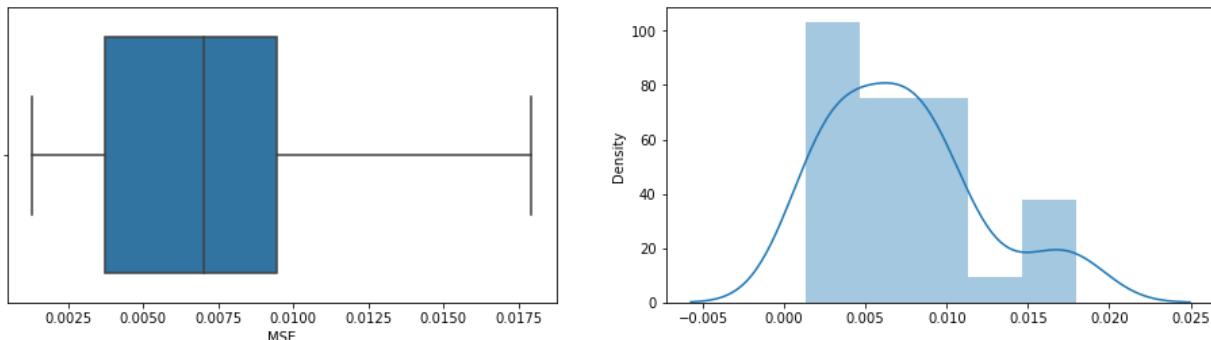
2.500: 0.834, data does not look normal (reject H0)

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

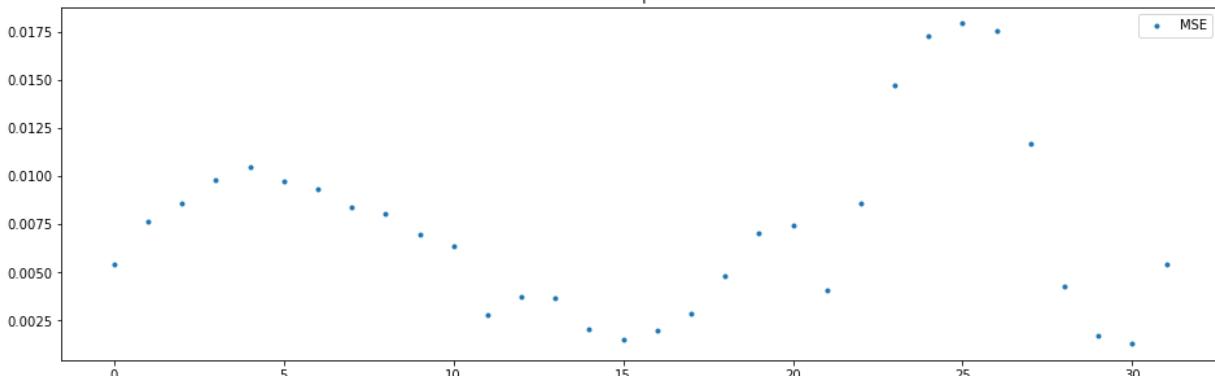
Batch: 48

mean=0.007290625, median=0.007015 , max=0.01793, min=0.00129, variance=2.1265e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 0.760

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)

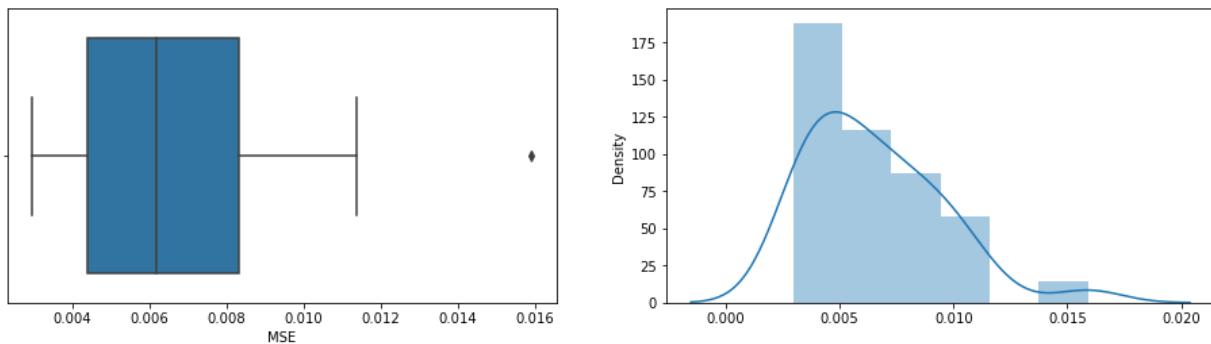
2.500: 0.834, data looks normal (fail to reject H0)

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

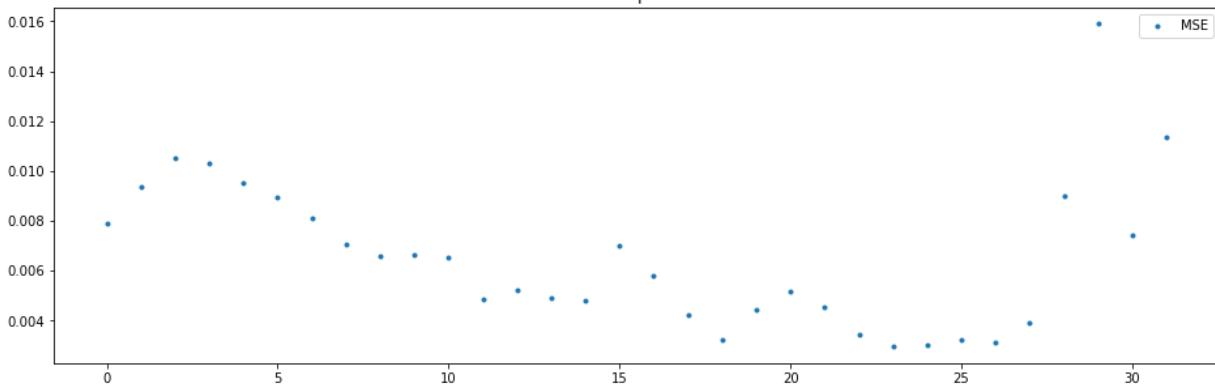
Batch: 49

mean=0.0065371875, median=0.00617 , max=0.0159, min=0.00295, variance=8.6372e-06

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**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)

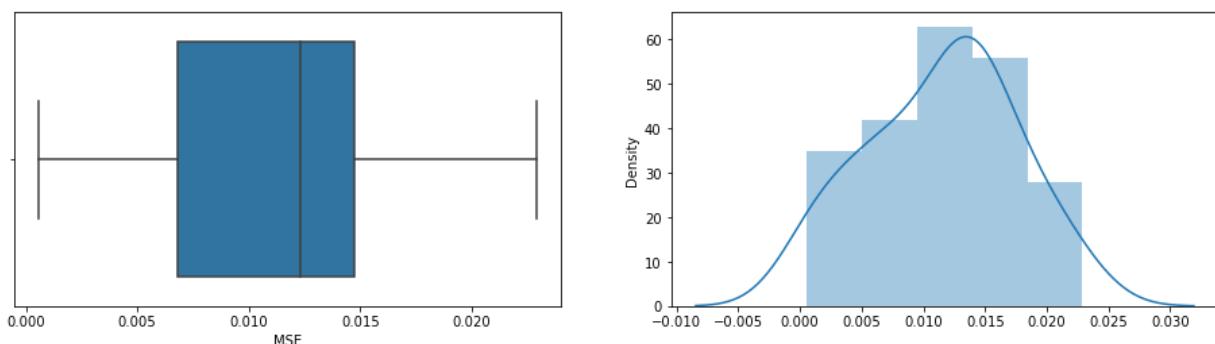
2.500: 0.834, data looks normal (fail to reject H0)

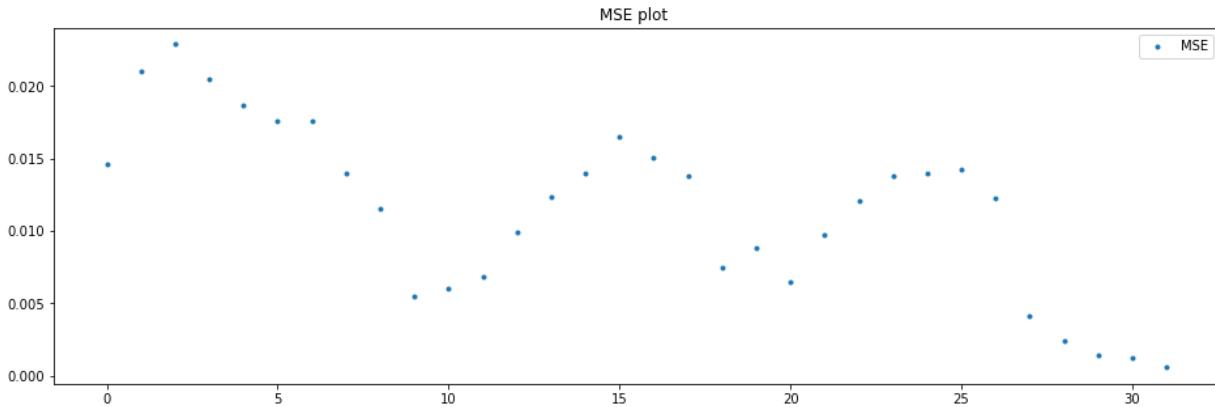
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 50

mean=0.0114734375, median=0.01234 , max=0.0229, min=0.00057, variance=3.50071e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

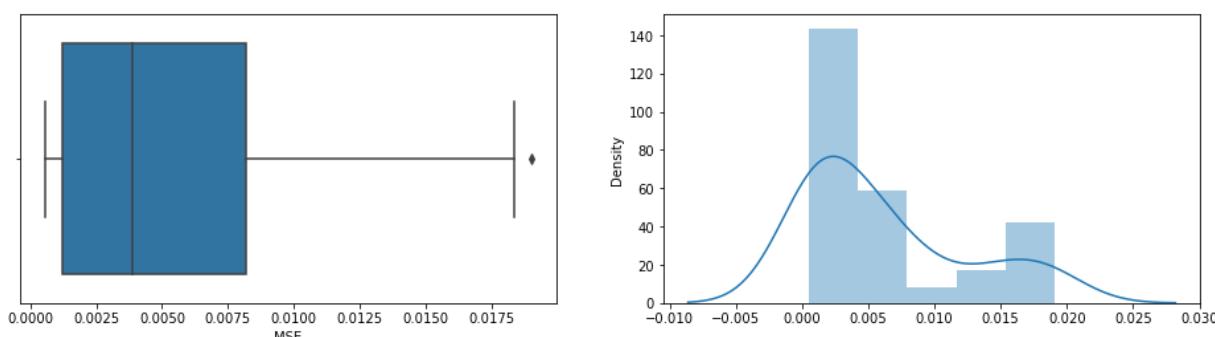
Statistic: 0.324

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)

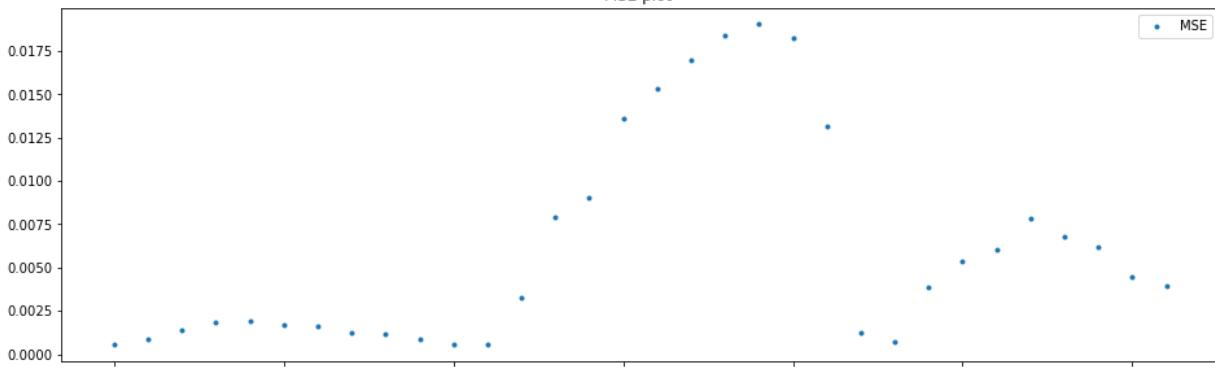
Batch: 51

mean=0.0061146875, median=0.003885 , max=0.01904, min=0.00054, variance=3.60952e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

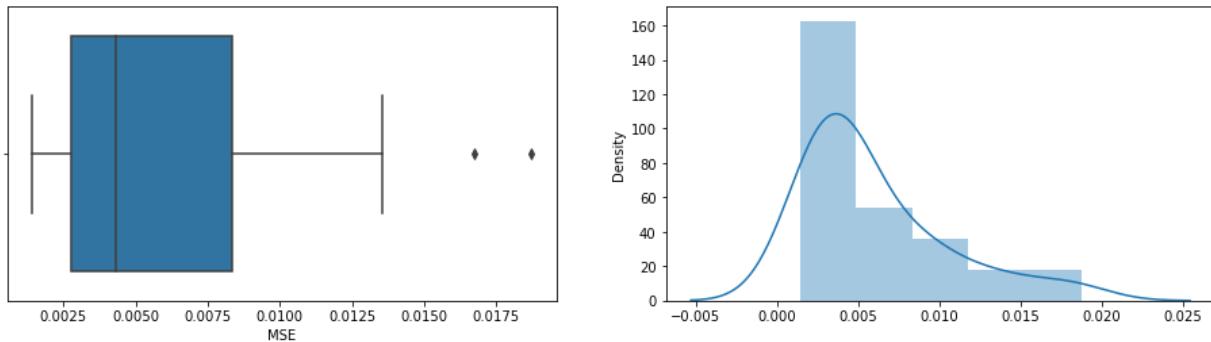
Statistic: 2.171

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)

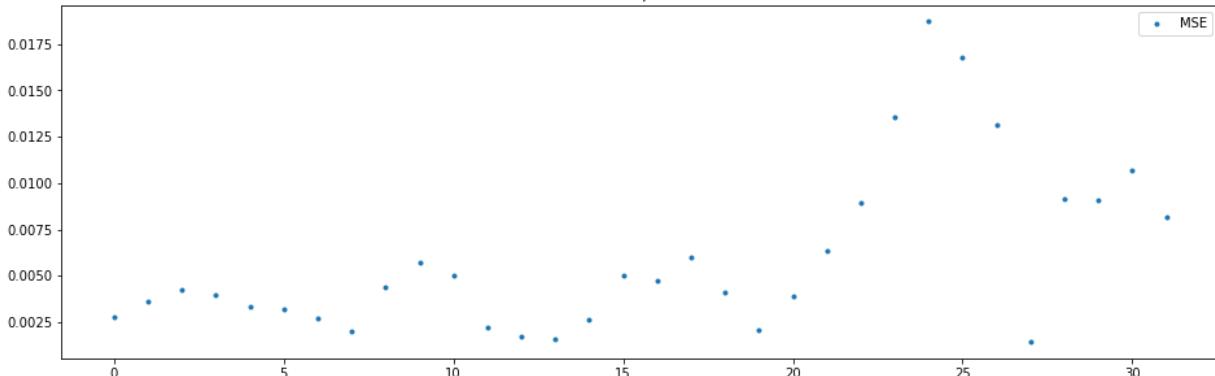
Batch: 52

mean=0.0059703125, median=0.004315 , max=0.01871, min=0.00142, variance=1.93385e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 1.809

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)

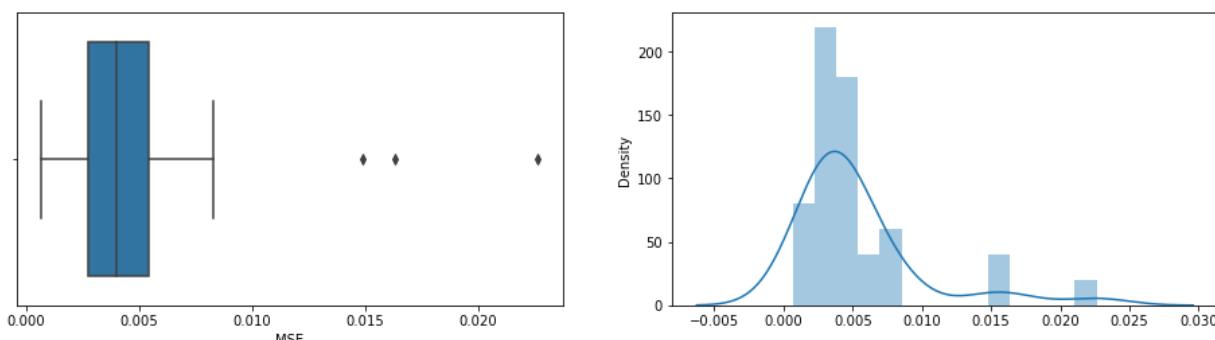
2.500: 0.834, data does not look normal (reject H0)

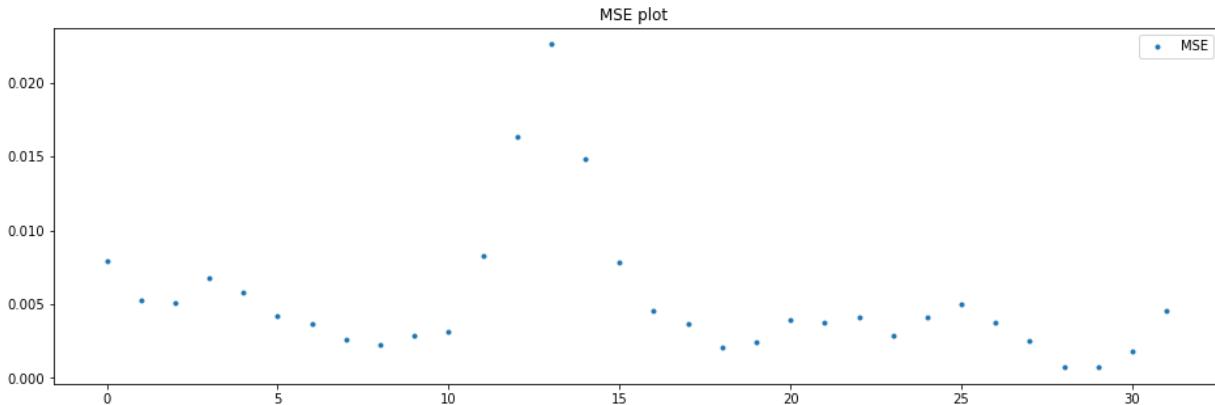
1.000: 0.992, data does not look normal (reject H0)

Batch: 53

mean=0.005315, median=0.004005 , max=0.02262, min=0.0007, variance=2.0909e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

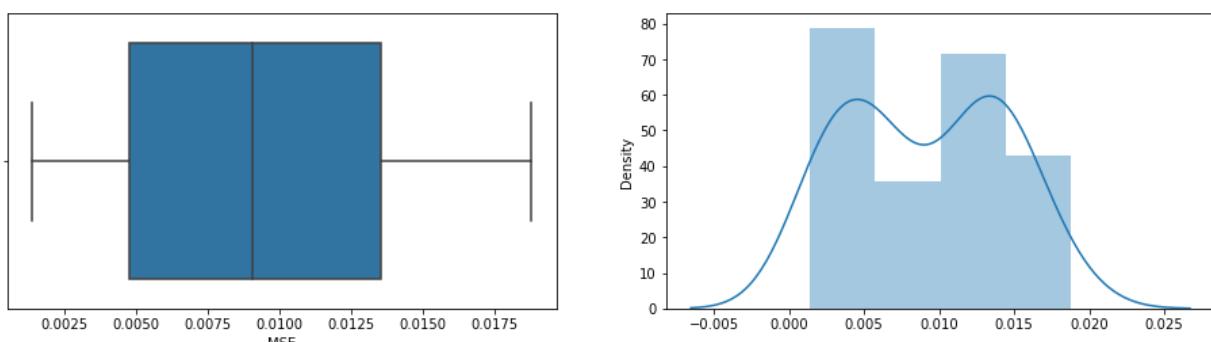
Statistic: 3.107

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)

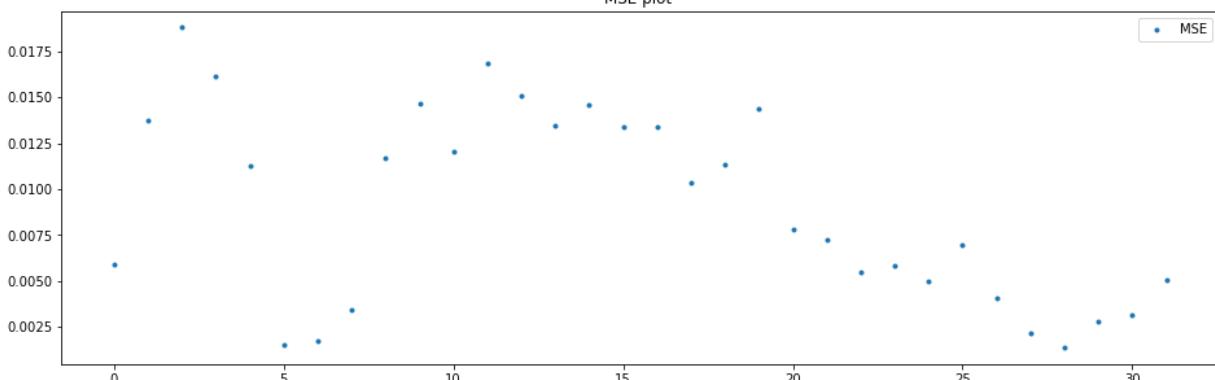
Batch: 54

mean=0.00909125, median=0.009075 , max=0.0188, min=0.00136, variance=2.69097e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

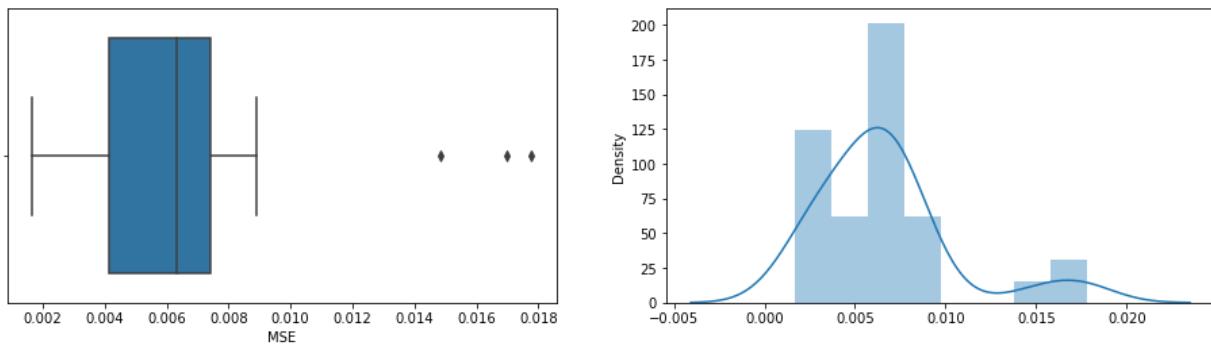
Statistic: 0.828

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)

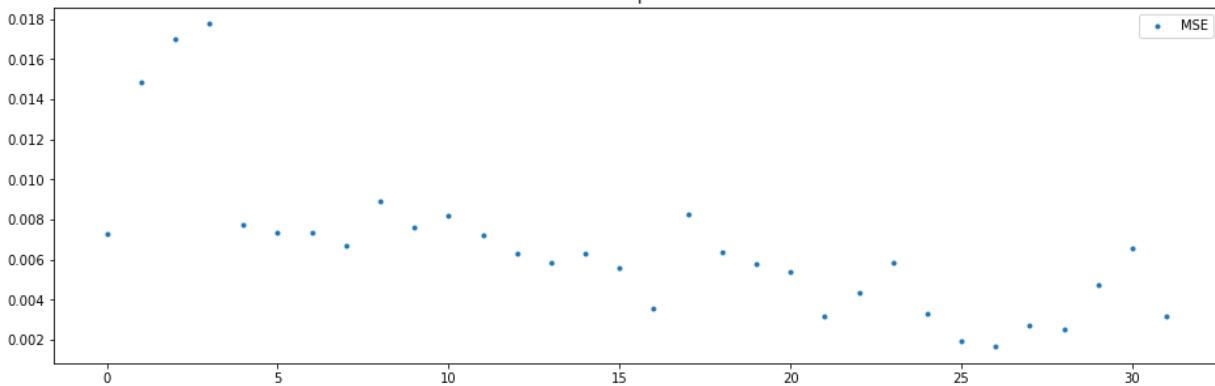
Batch: 55

mean=0.006611875, median=0.006325 , max=0.01777, min=0.00165, variance=1.40419e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson_Darling Test**

Statistic: 1.732

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)

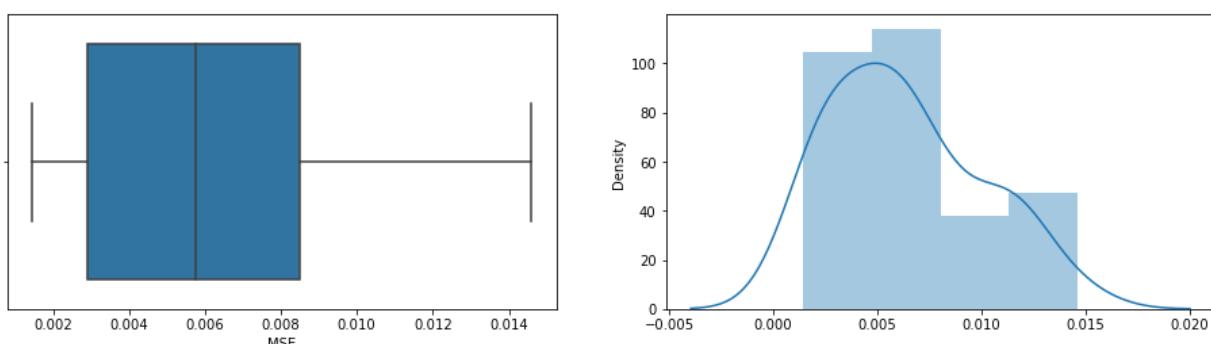
2.500: 0.834, data does not look normal (reject H0)

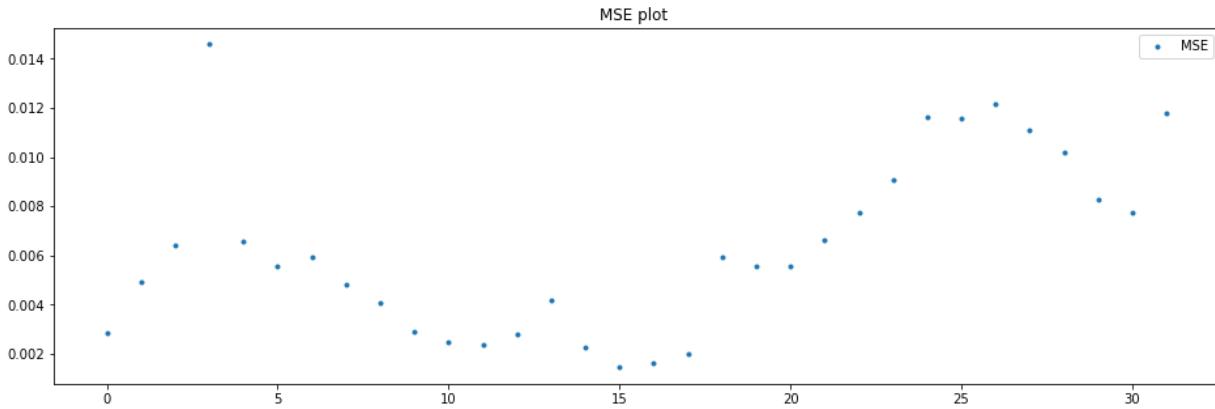
1.000: 0.992, data does not look normal (reject H0)

Batch: 56

mean=0.0063421875, median=0.005755 , max=0.01459, min=0.00145, variance=1.26347e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.664

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 looks normal (fail to reject H0)

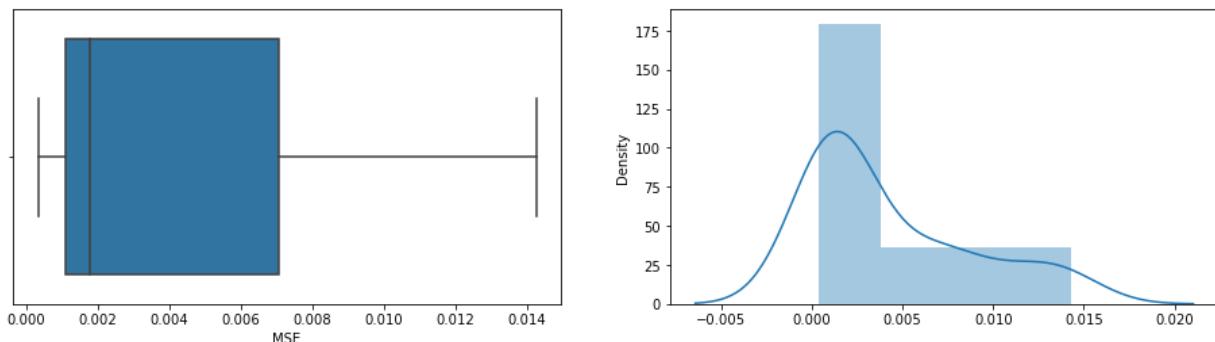
2.500: 0.834, data looks normal (fail to reject H0)

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

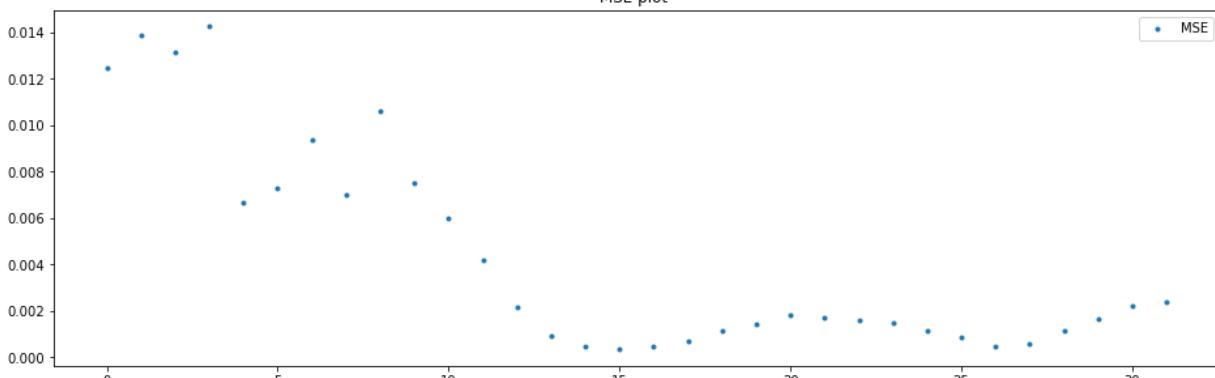
Batch: 57

mean=0.004295625, median=0.001775 , max=0.01426, min=0.00034, variance=1.976e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 2.737

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)

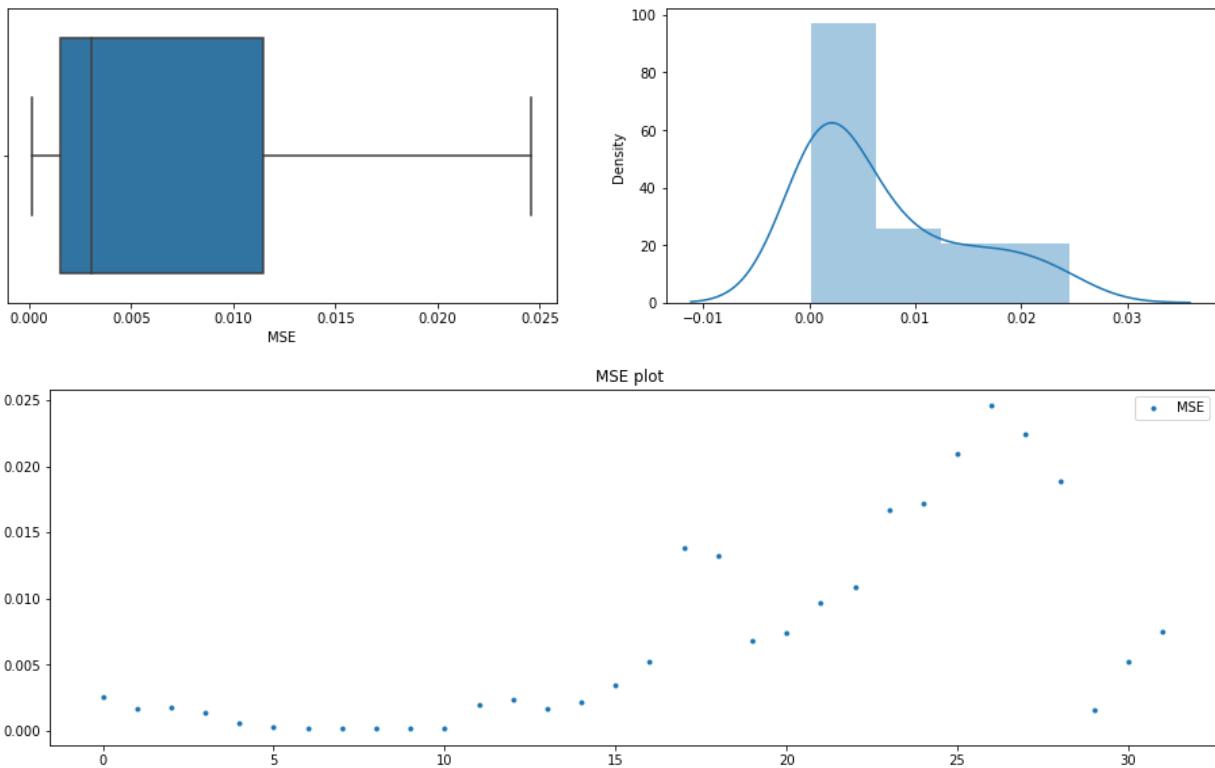
2.500: 0.834, data does not look normal (reject H0)

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

Batch: 58

mean=0.006966875, median=0.003035 , max=0.02458, min=0.00015, variance=5.51738e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

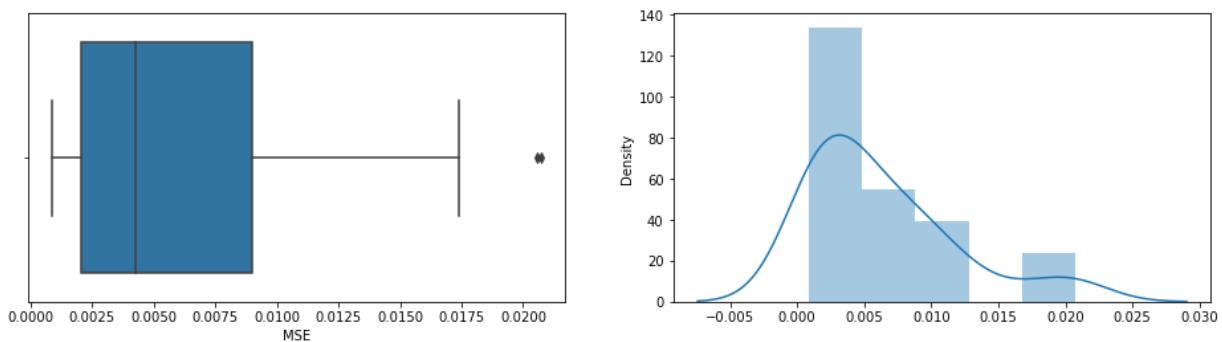
Statistic: 2.093

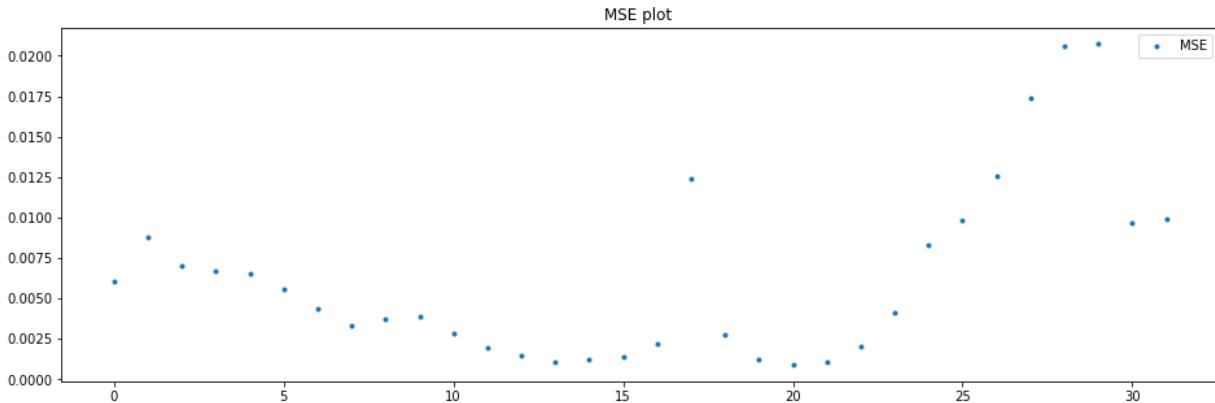
15.000: 0.523, data does not look normal (reject H0)
 10.000: 0.596, data does not look normal (reject H0)
 5.000: 0.715, data does not look normal (reject H0)
 2.500: 0.834, data does not look normal (reject H0)
 1.000: 0.992, data does not look normal (reject H0)

Batch: 59

mean=0.0063021875, median=0.00424 , max=0.02073, min=0.00088, variance=2.96785e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 1.541

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)

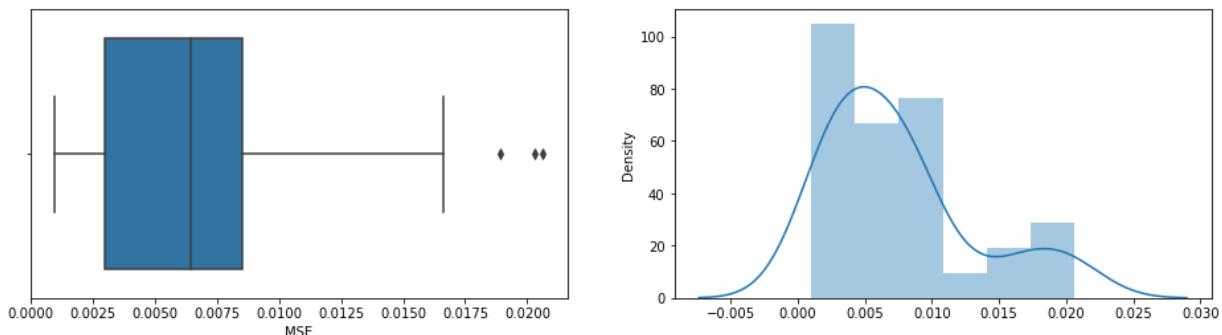
2.500: 0.834, data does not look normal (reject H0)

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

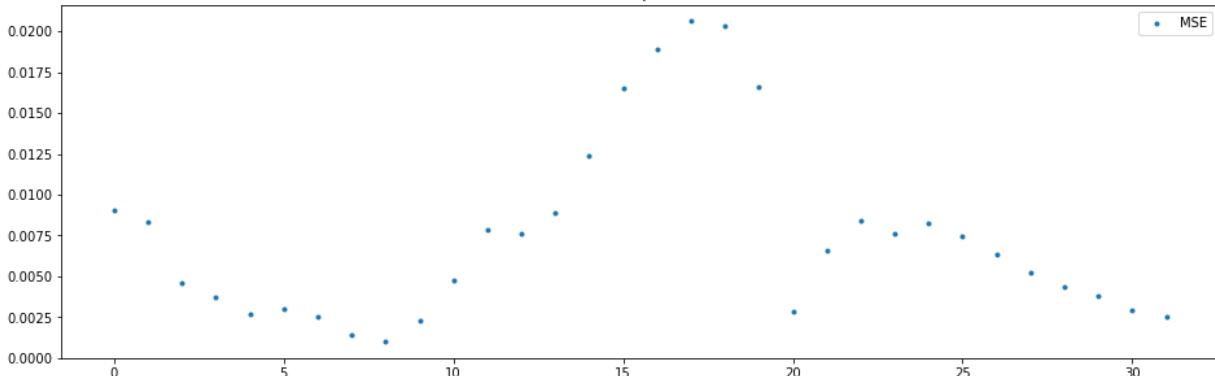
Batch: 60

mean=0.0074784375, median=0.00646 , max=0.02062, min=0.00098, variance=3.01023e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 1.702

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)

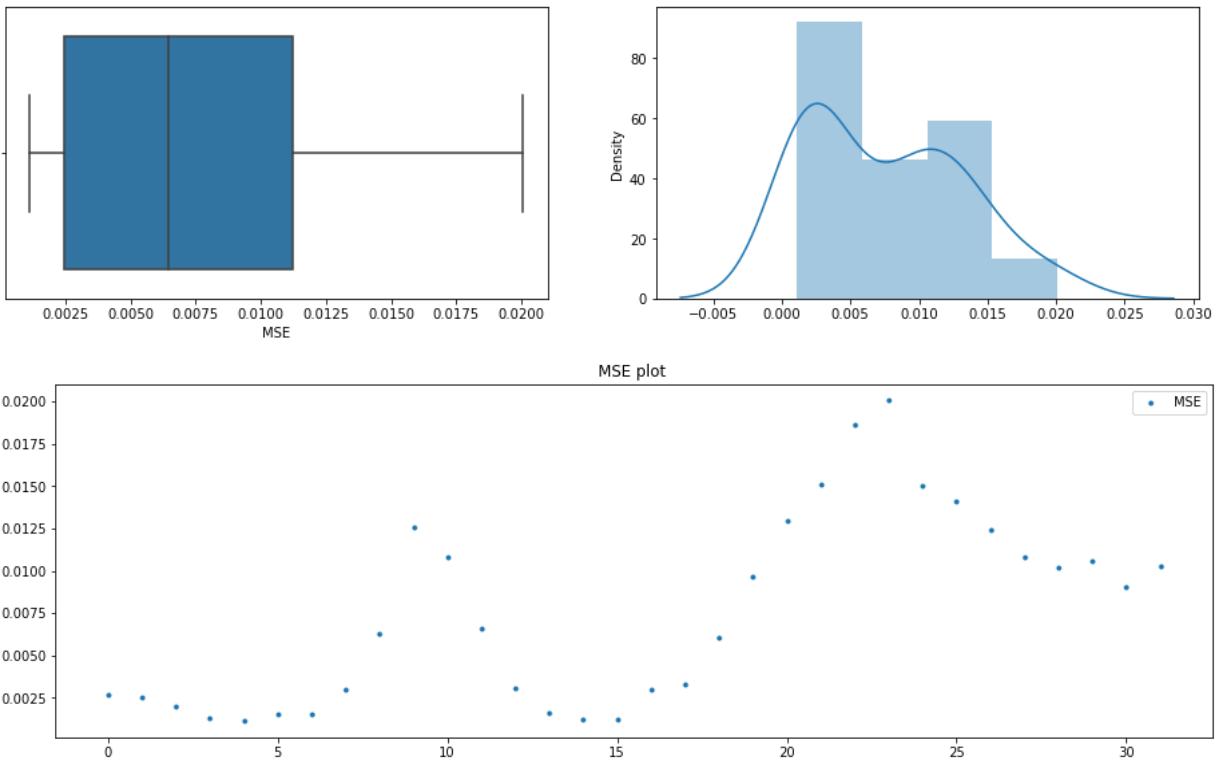
2.500: 0.834, data does not look normal (reject H0)

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

Batch: 61

mean=0.0075125, median=0.006435 , max=0.02006, min=0.00112, variance=3.11682e-05

Boxplots and Distribution plot for Reconstruction Error



Anderson_Darling Test

Statistic: 1.172

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)

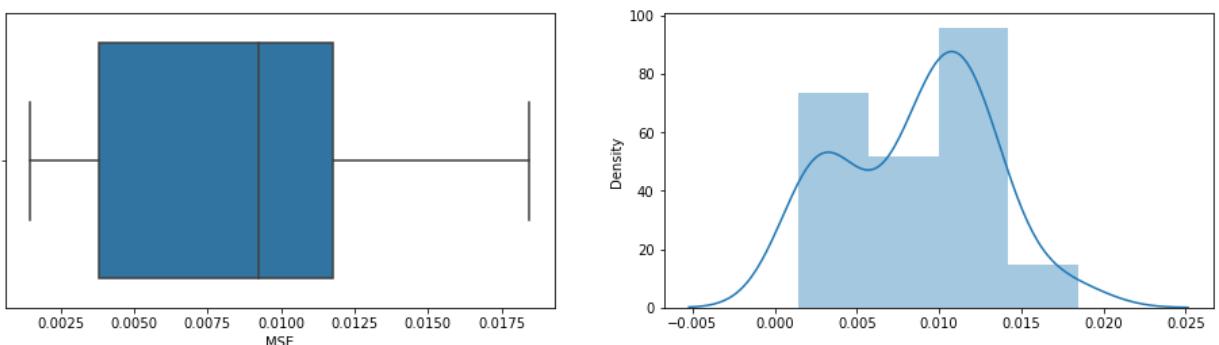
2.500: 0.834, data does not look normal (reject H0)

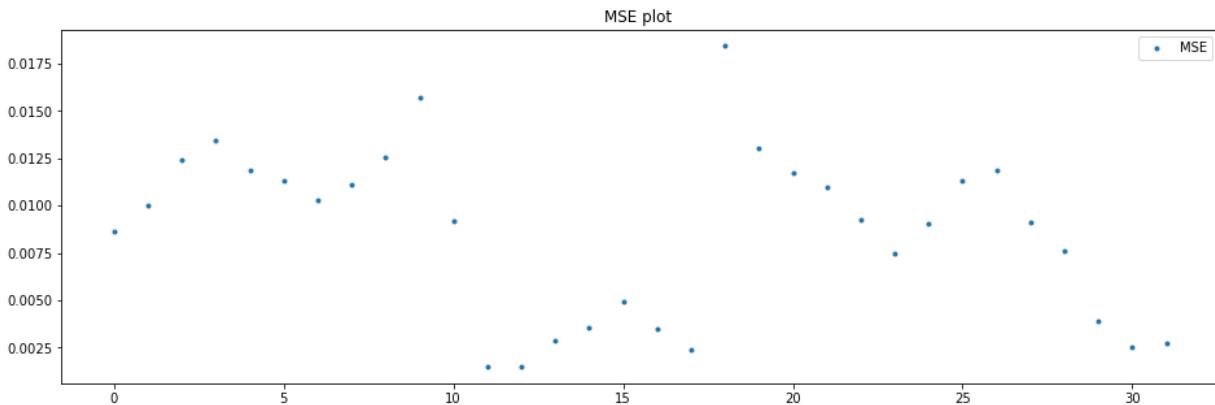
1.000: 0.992, data does not look normal (reject H0)

Batch: 62

mean=0.0086190625, median=0.00922 , max=0.01844, min=0.00147, variance=1.9293e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.838

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)

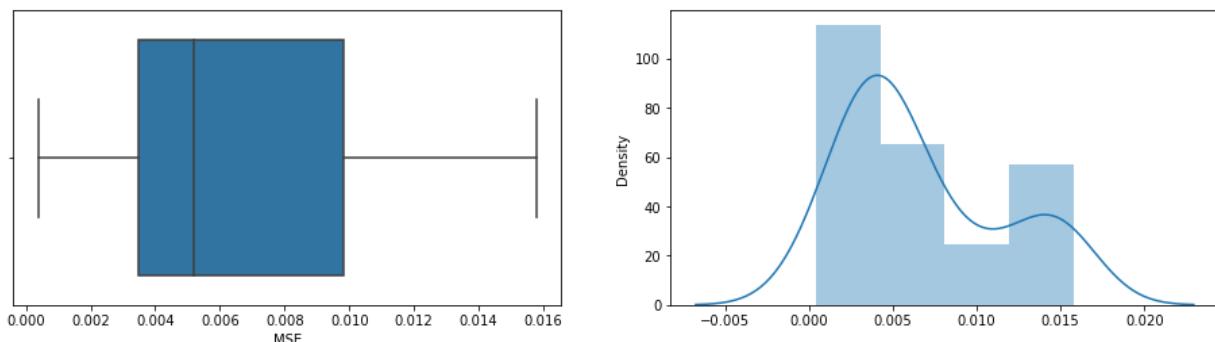
2.500: 0.834, data does not look normal (reject H0)

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

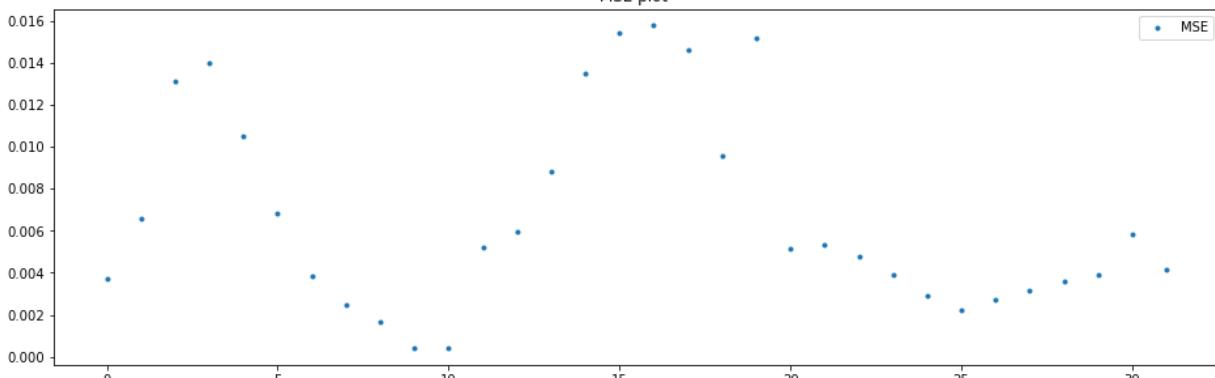
Batch: 63

mean=0.0067275,median=0.00519 ,max=0.01578,min=0.00039,variance=2.20871e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 1.560

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)

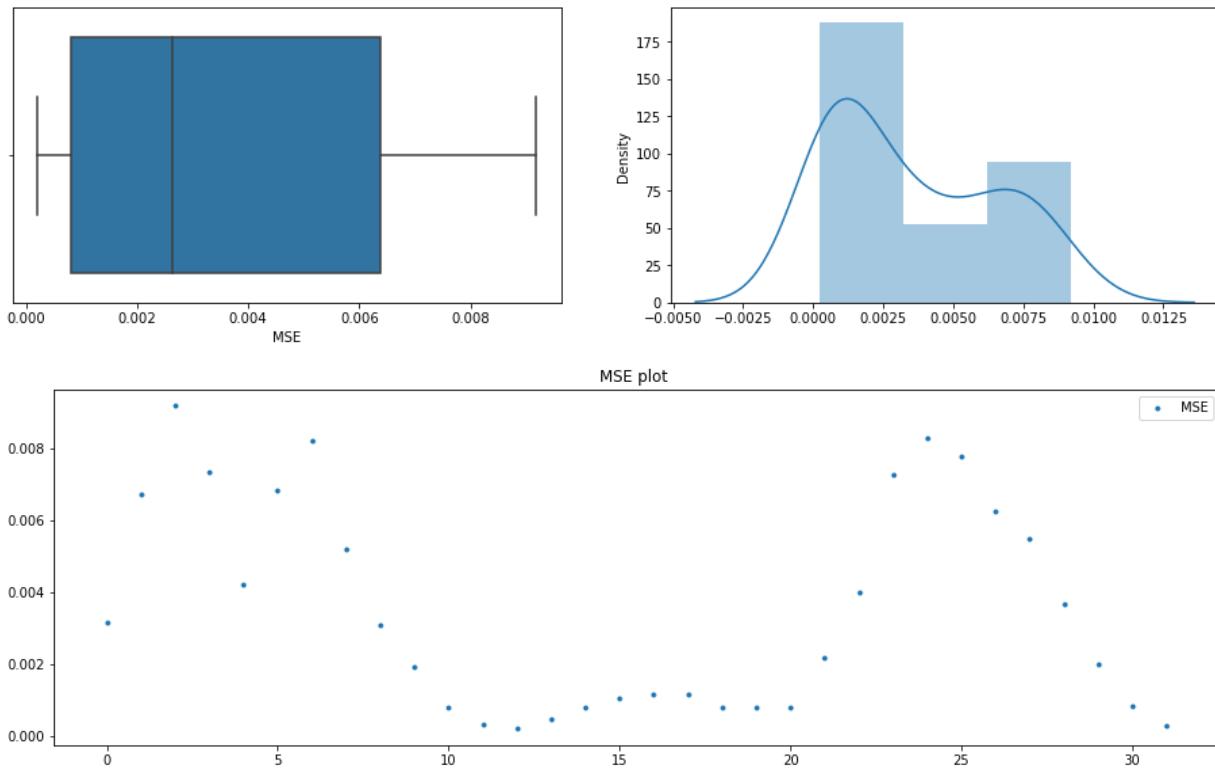
2.500: 0.834, data does not look normal (reject H0)

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

Batch: 64

mean=0.003514375,median=0.002625 ,max=0.00918,min=0.00021,variance=8.3822e-06

Boxplots and Distribution plot for Reconstruction Error



Anderson_Darling Test

Statistic: 1.511

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)

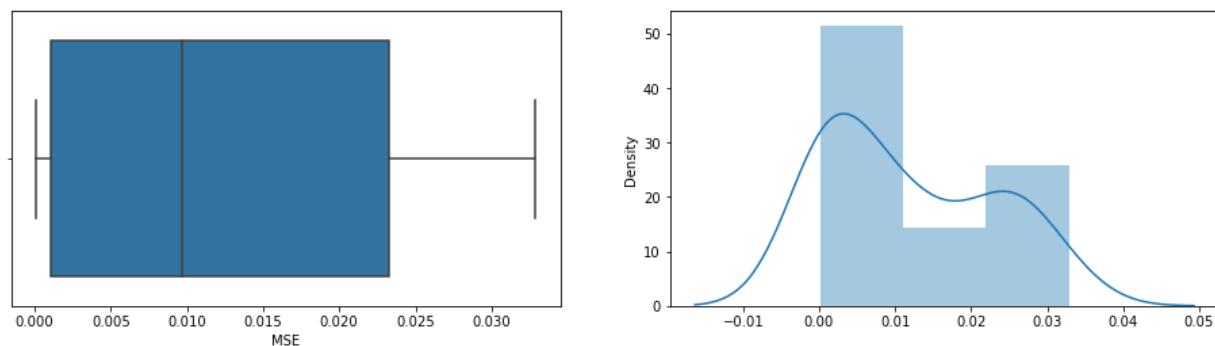
2.500: 0.834, data does not look normal (reject H0)

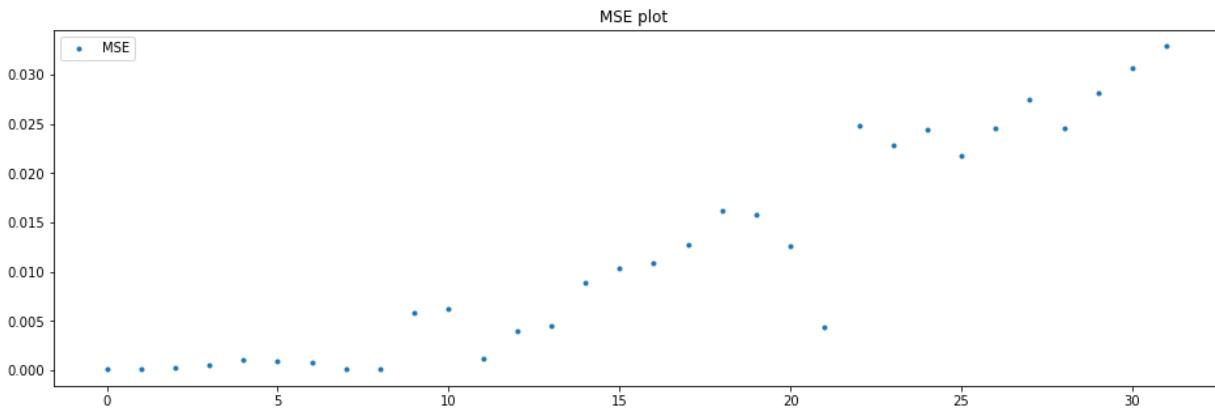
1.000: 0.992, data does not look normal (reject H0)

Batch: 65

mean=0.01187625, median=0.009655 , max=0.03286, min=0.0001, variance=0.0001167852

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)

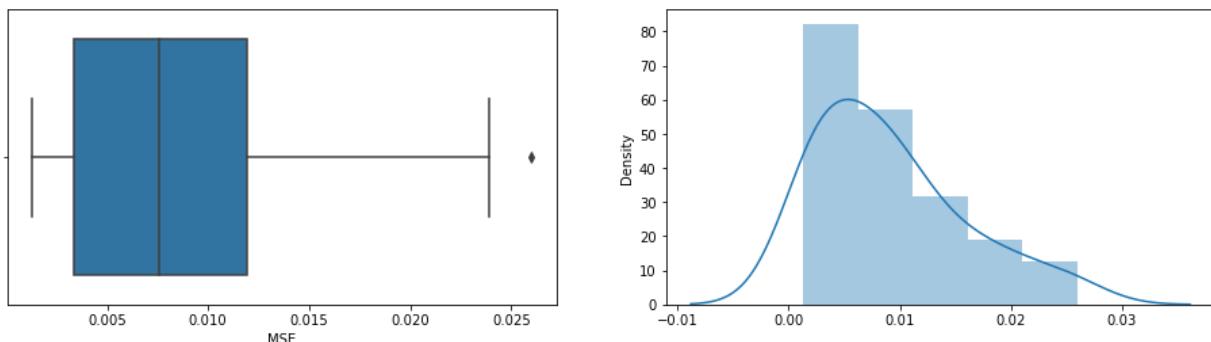
2.500: 0.834, data does not look normal (reject H0)

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

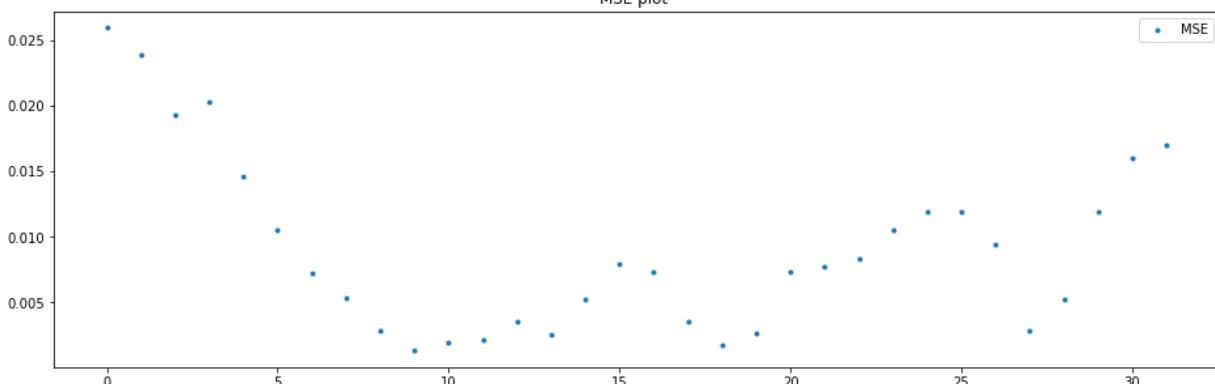
Batch: 66

mean=0.00907, median=0.007545 , max=0.02599, min=0.00129, variance=4.38913e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 0.977

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)

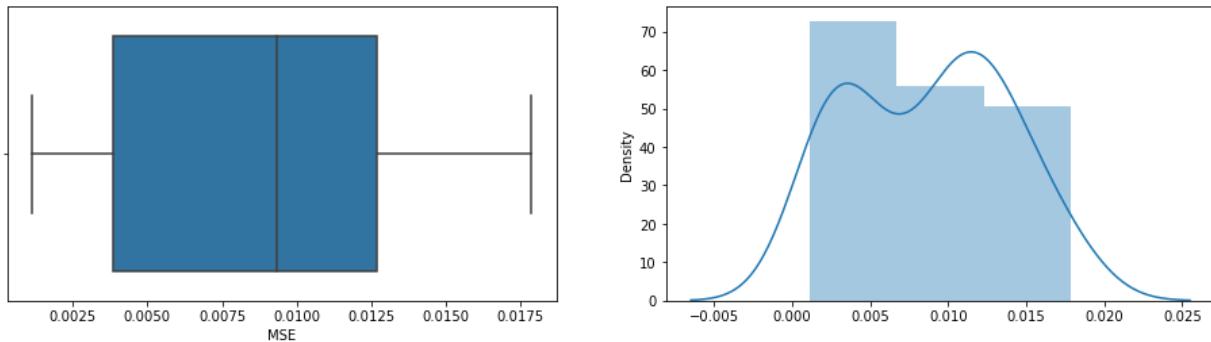
2.500: 0.834, data does not look normal (reject H0)

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

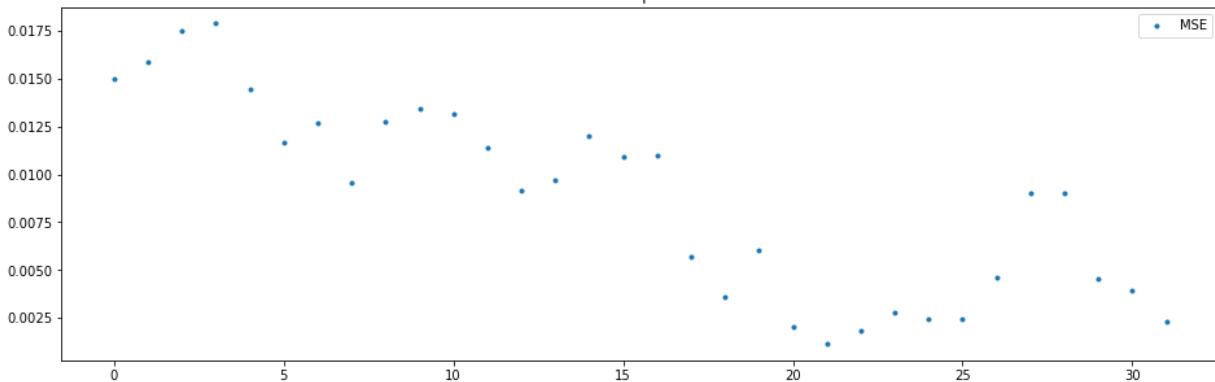
Batch: 67

mean=0.0087340625, median=0.009355 , max=0.01787, min=0.00113, variance=2.5022e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson_Darling Test**

Statistic: 0.714

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)

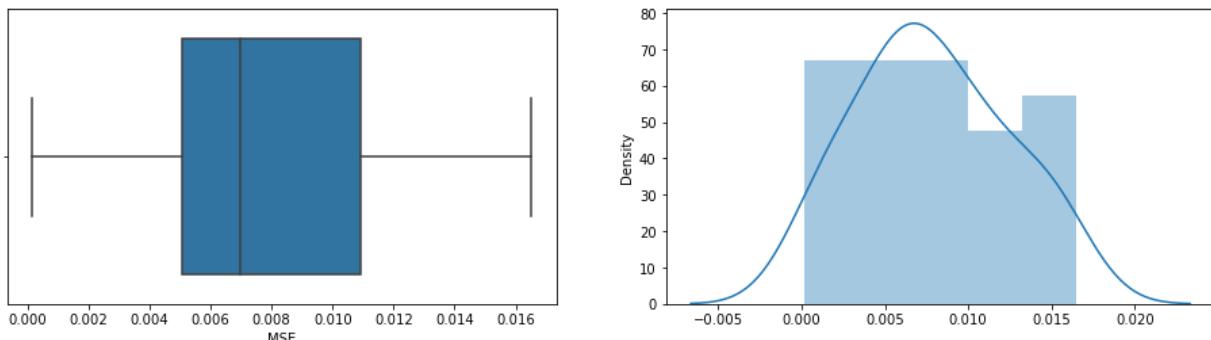
2.500: 0.834, data looks normal (fail to reject H0)

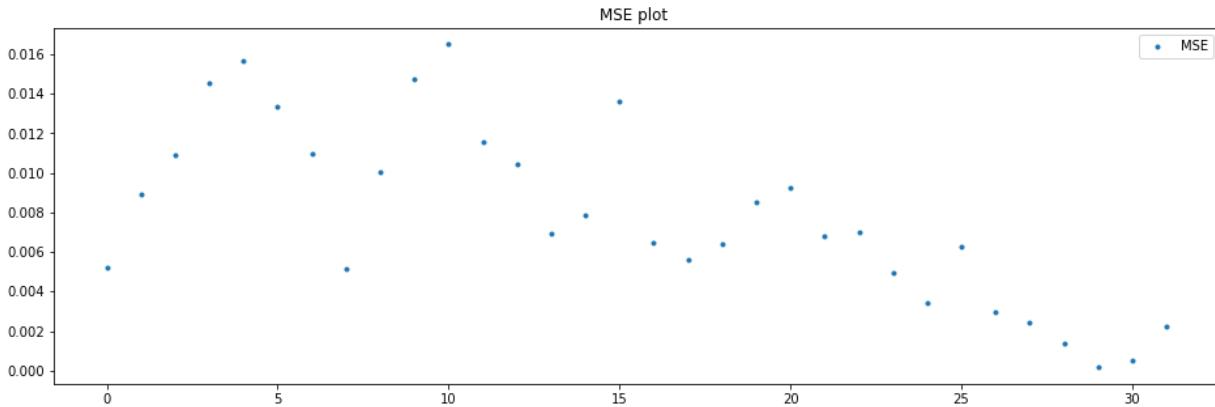
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 68

mean=0.0078346875, median=0.00696 , max=0.01651, min=0.00015, variance=1.98662e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.246

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)

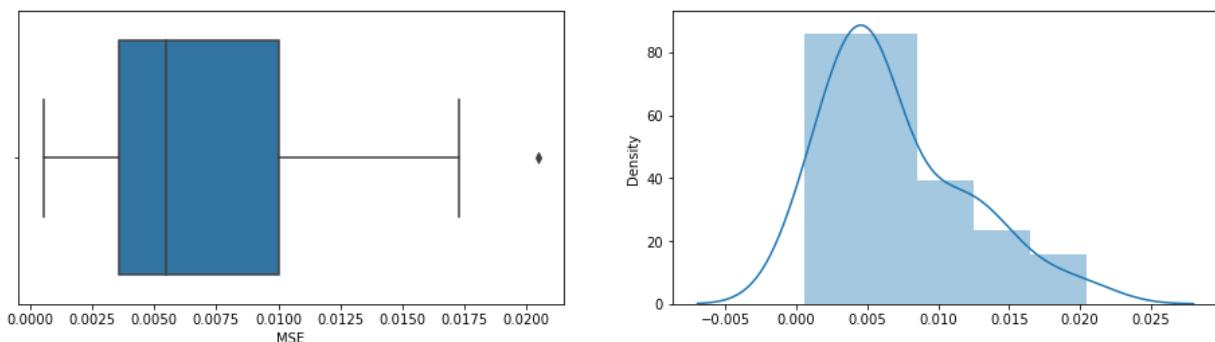
2.500: 0.834, data looks normal (fail to reject H0)

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

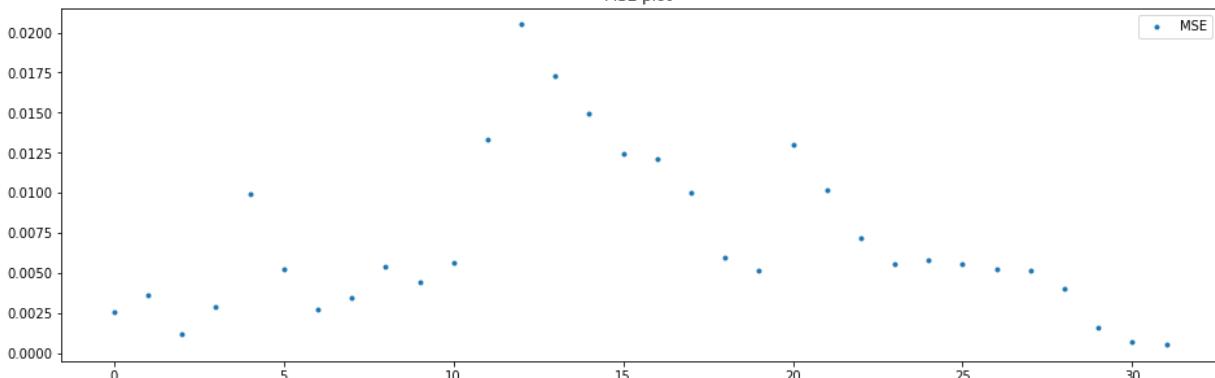
Batch: 69

mean=0.0069934375, median=0.00549 , max=0.0205, min=0.00053, variance=2.41769e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 1.218

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

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

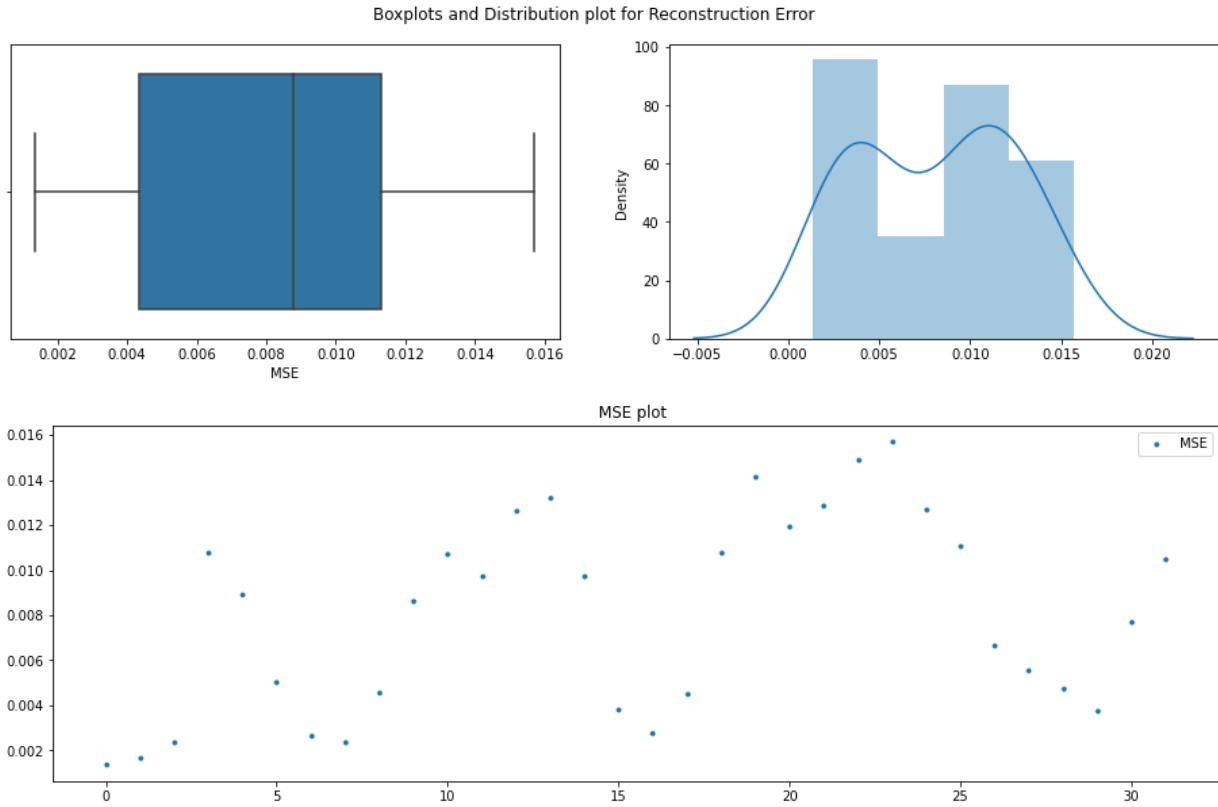
5.000: 0.715, data does not look normal (reject H0)

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

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

Batch: 70

mean=0.008086875, median=0.008795 , max=0.0157, min=0.00136, variance=1.84942e-05



Anderson_Darling Test

Statistic: 0.706

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)

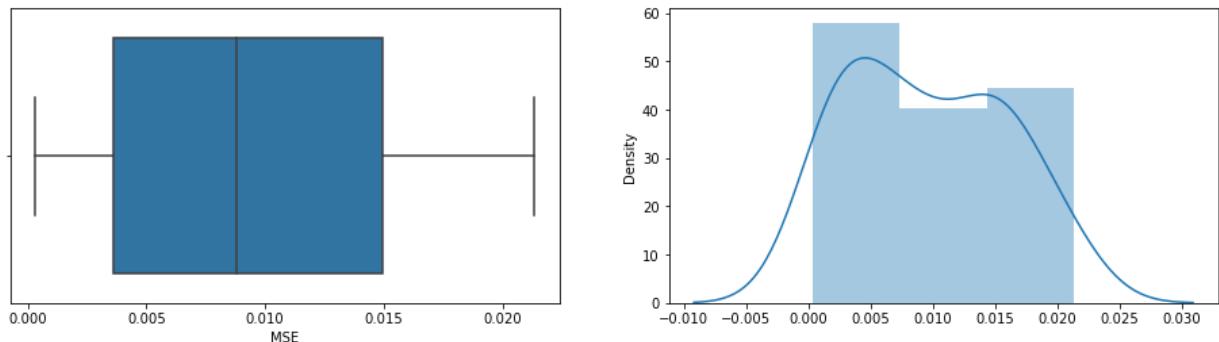
2.500: 0.834, data looks normal (fail to reject H0)

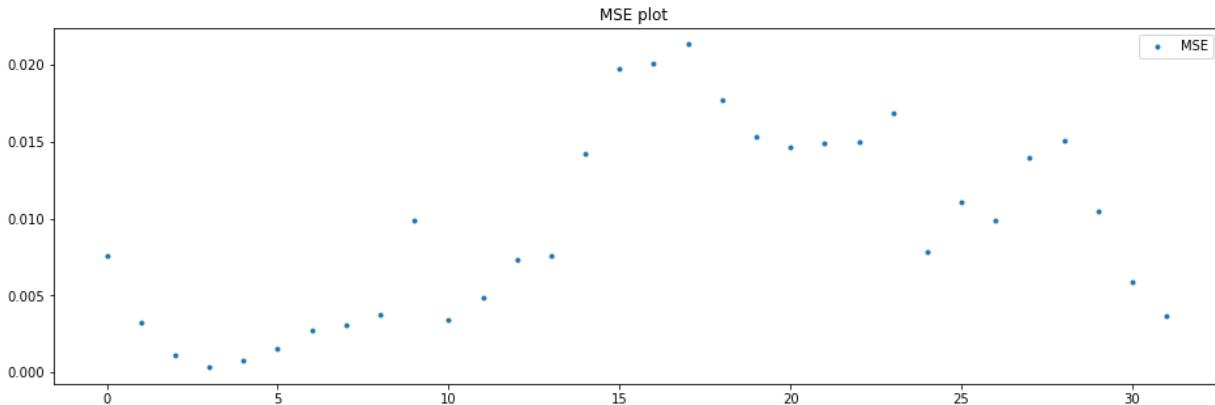
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 71

mean=0.00953, median=0.008825 , max=0.02133, min=0.00032, variance=3.90441e-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)

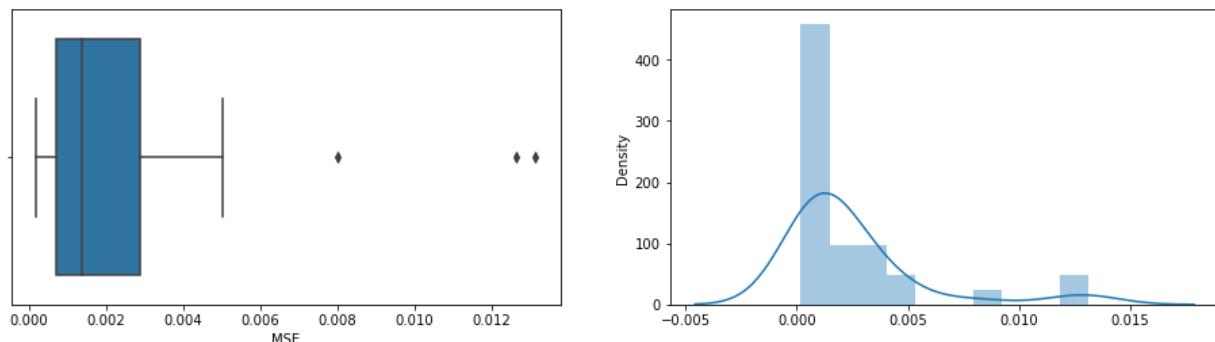
2.500: 0.834, data looks normal (fail to reject H0)

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

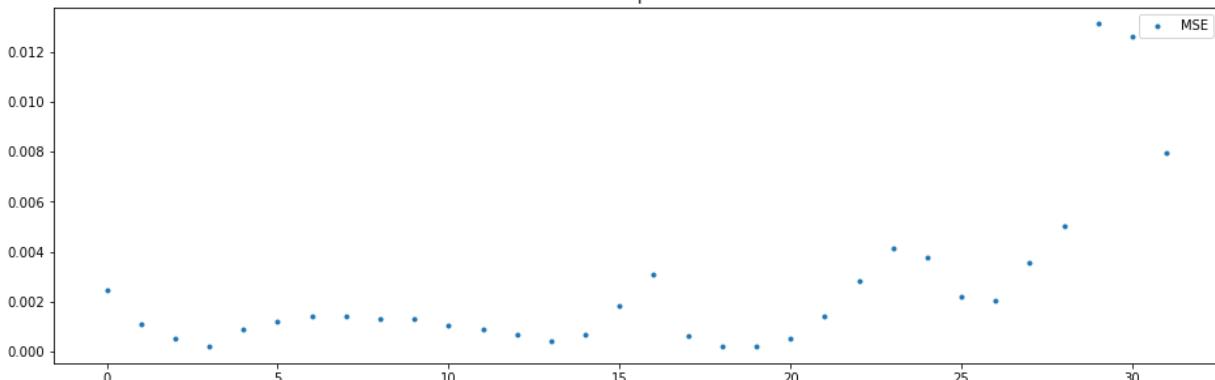
Batch: 72

mean=0.00251875, median=0.00136 , max=0.01312, min=0.00018, variance=9.8118e-06

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 3.704

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

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

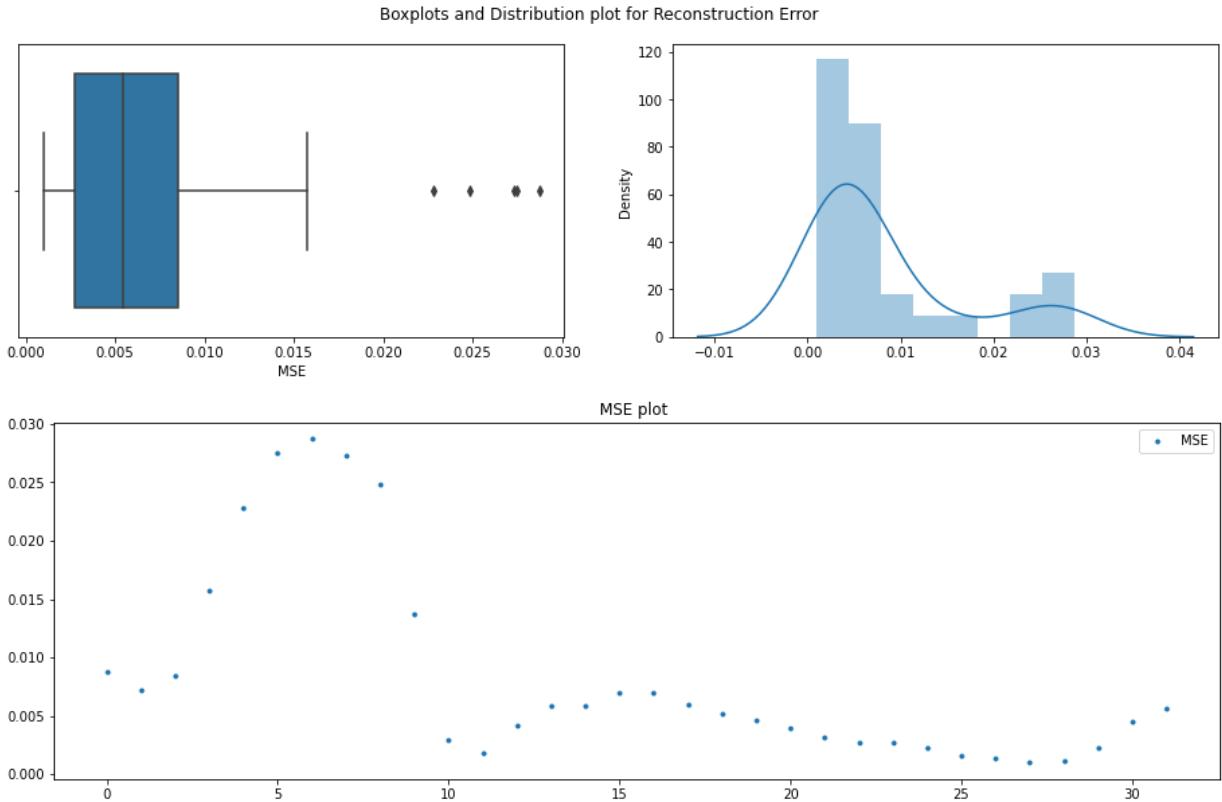
5.000: 0.715, data does not look normal (reject H0)

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

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

Batch: 73

mean=0.008358125, median=0.00541 , max=0.02871, min=0.00098, variance=7.02289e-05



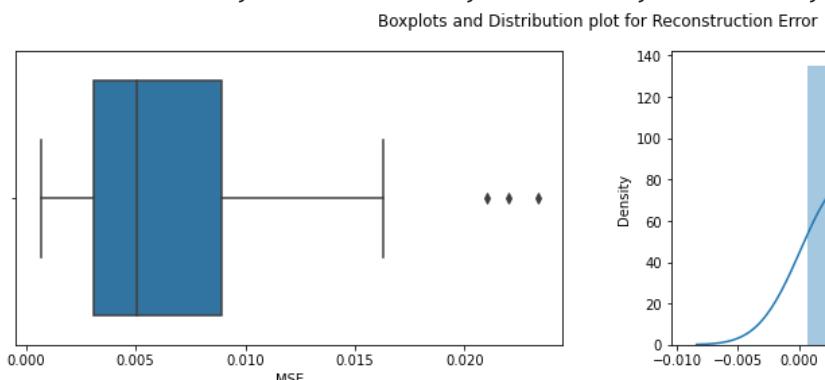
Anderson_Darling Test

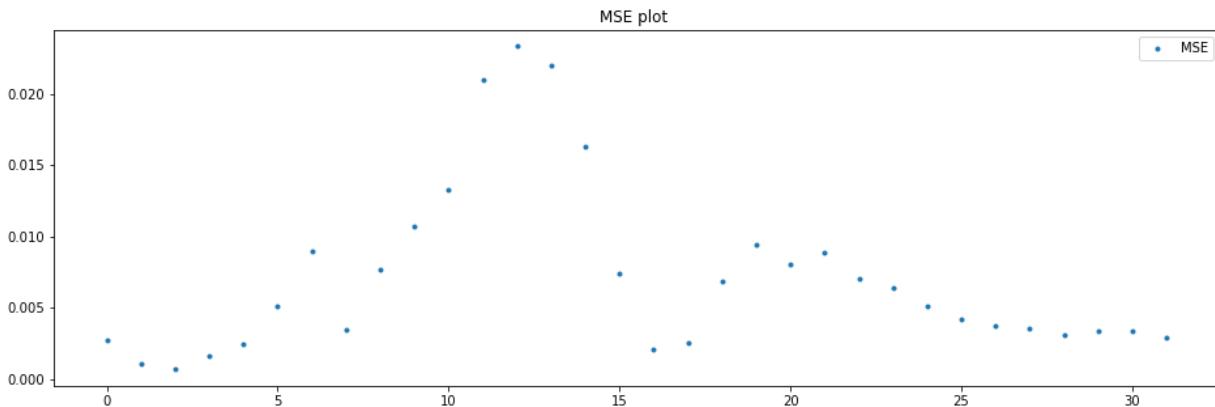
Statistic: 3.266

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=0.007144375, median=0.00508 , max=0.02332, min=0.00068, variance=3.55606e-05





Anderson_Darling Test

Statistic: 2.004

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)

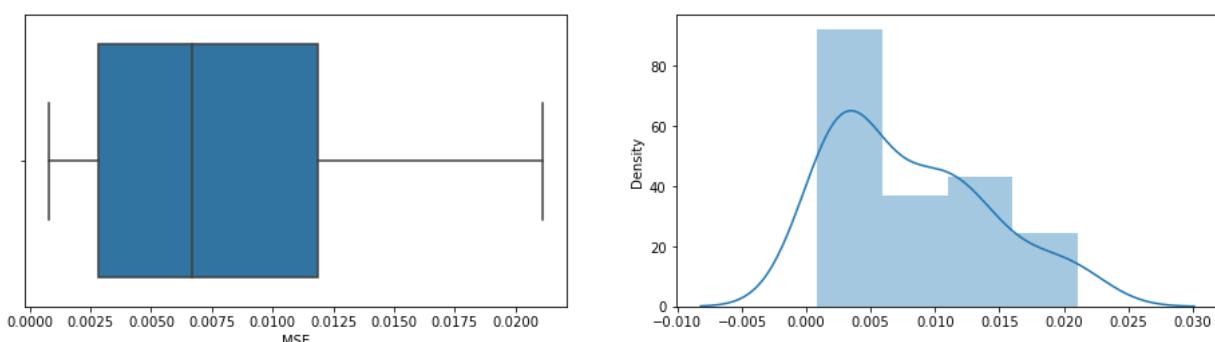
2.500: 0.834, data does not look normal (reject H0)

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

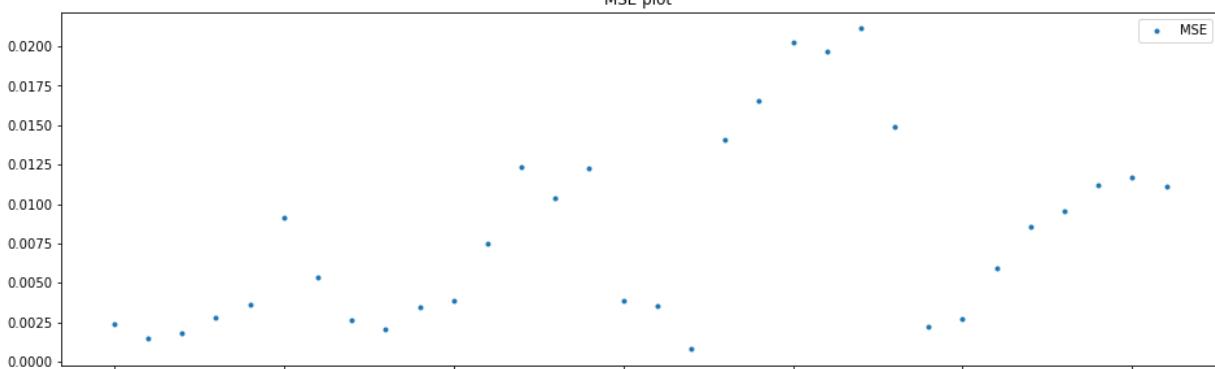
Batch: 75

mean=0.008083125, median=0.006685 , max=0.02112, min=0.00079, variance=3.48994e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 1.088

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)

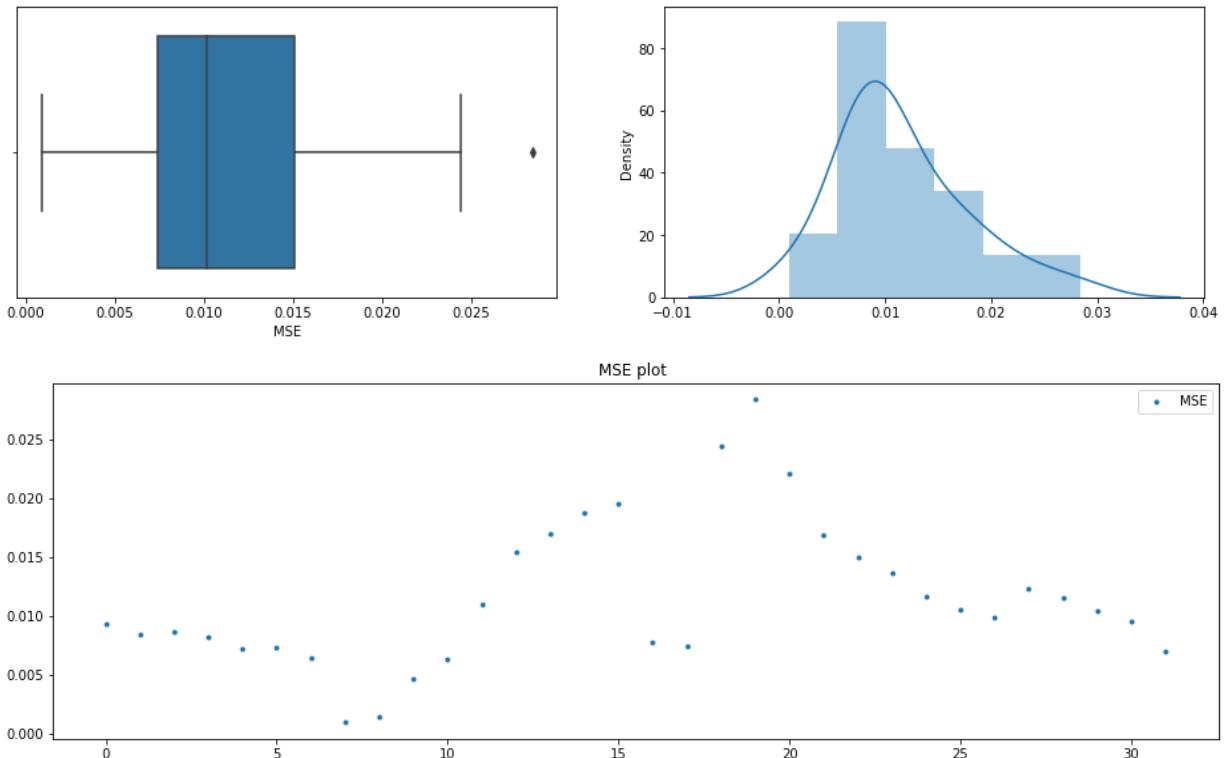
2.500: 0.834, data does not look normal (reject H0)

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

Batch: 76

mean=0.0115190625, median=0.010135 , max=0.02839, min=0.00091, variance=3.79226e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

Statistic: 0.748

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)

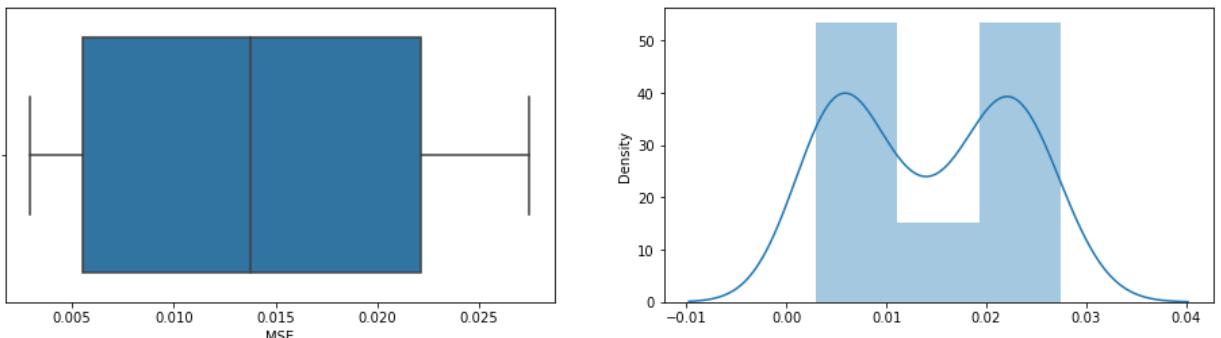
2.500: 0.834, data looks normal (fail to reject H0)

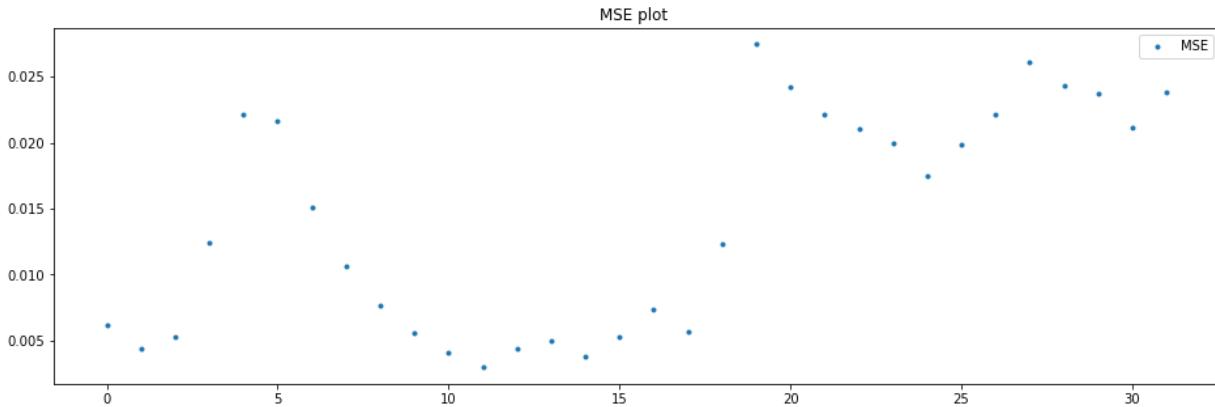
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 77

mean=0.0142334375, median=0.01375 , max=0.02746, min=0.00295, variance=6.93447e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

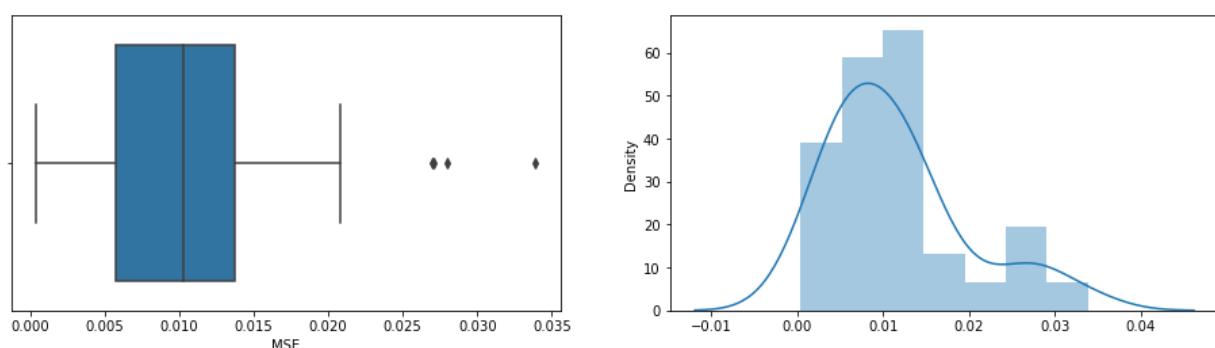
Statistic: 1.700

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)

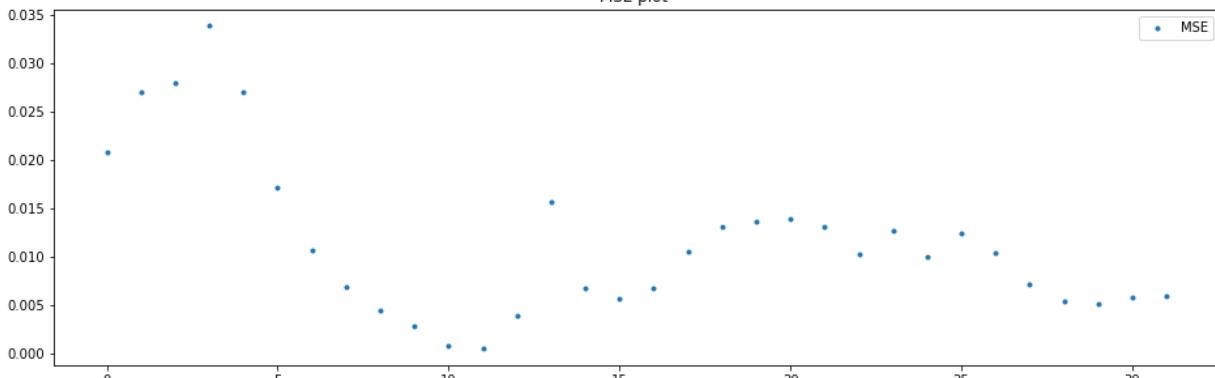
Batch: 78

mean=0.011479375, median=0.010315 , max=0.03388, min=0.00042, variance=6.57319e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

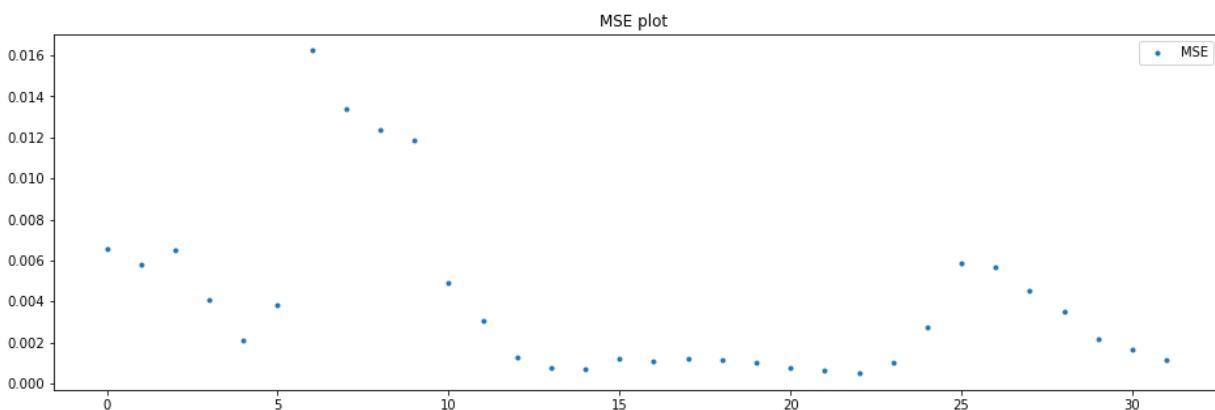
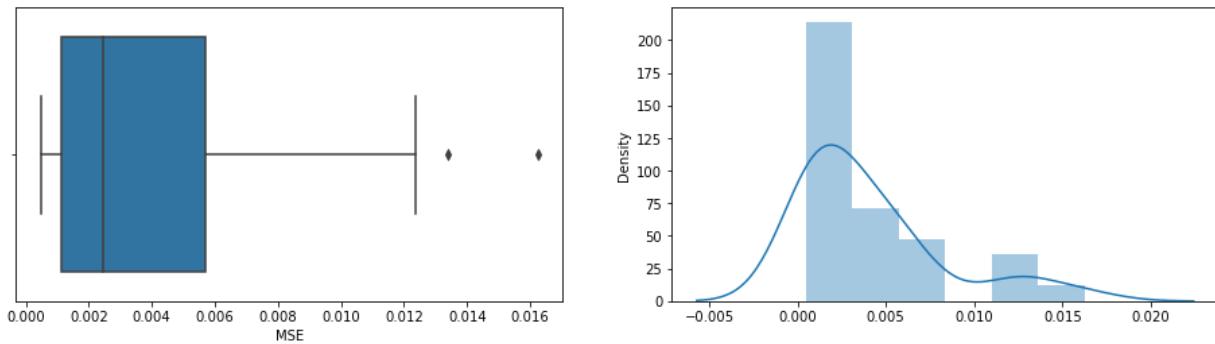
Statistic: 1.225

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=0.004044375, median=0.002465 , max=0.01624, min=0.00048, variance=1.65326e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

Statistic: 2.438

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)

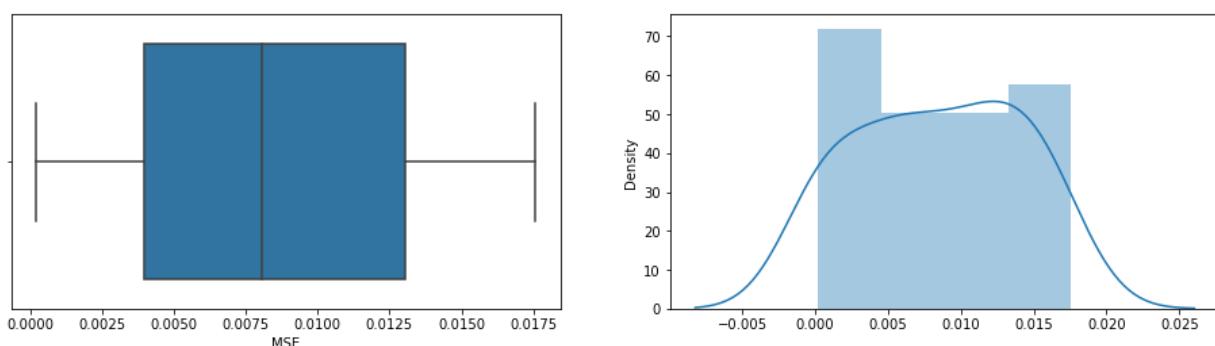
2.500: 0.834, data does not look normal (reject H0)

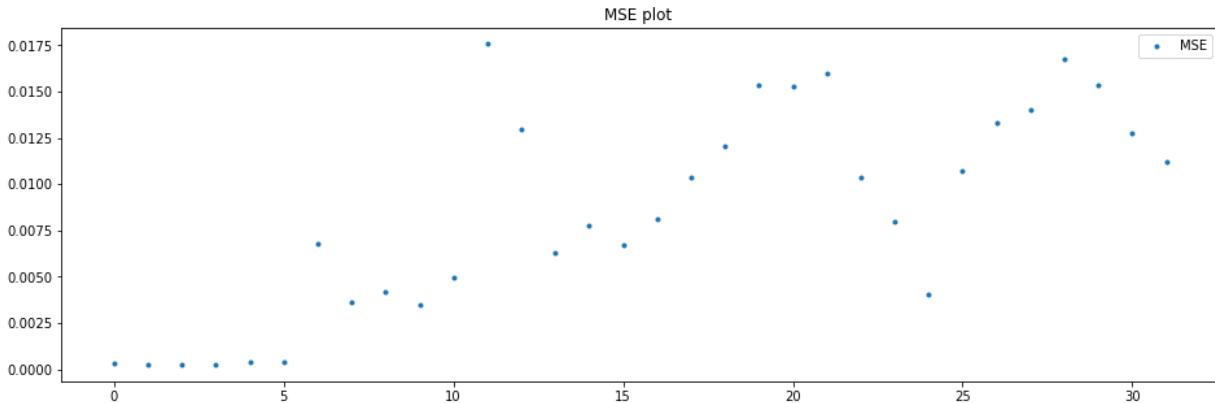
1.000: 0.992, data does not look normal (reject H0)

Batch: 80

mean=0.008440625, median=0.008055 , max=0.01758, min=0.00022, variance=3.07424e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

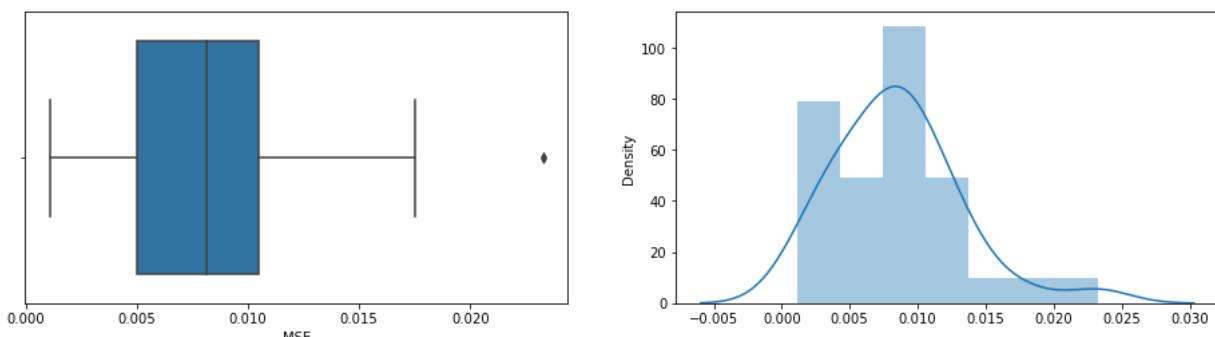
Statistic: 0.595

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)

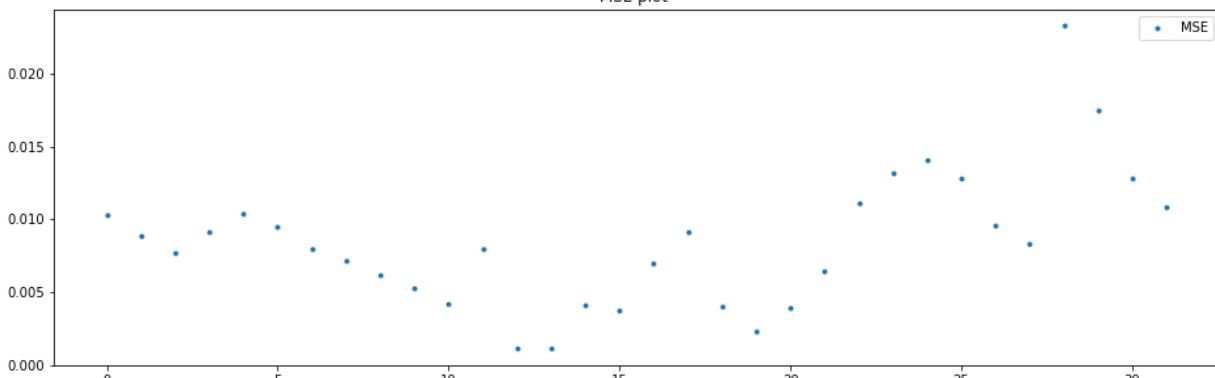
Batch: 81

mean=0.0084628125, median=0.00814 , max=0.02327, min=0.0011, variance=2.14022e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

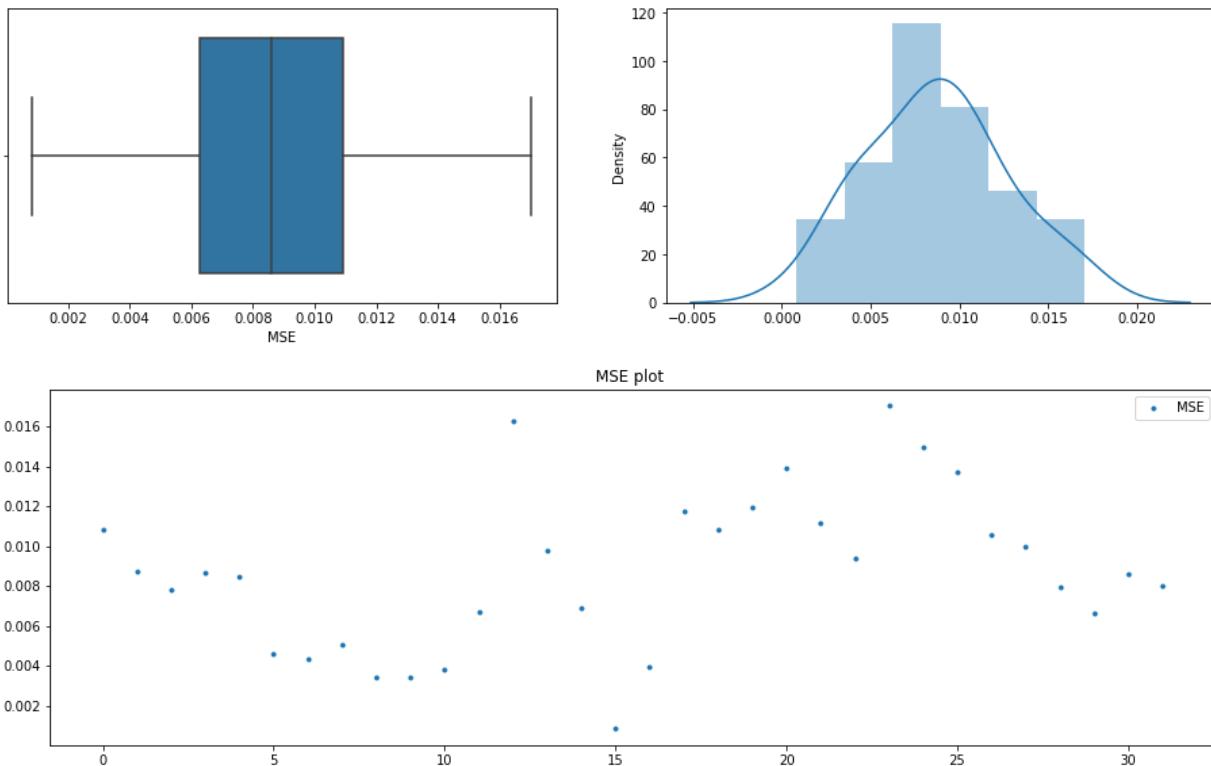
Statistic: 0.416

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: 82

mean=0.0087446875, median=0.008605 , max=0.01703, min=0.00083, variance=1.51856e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

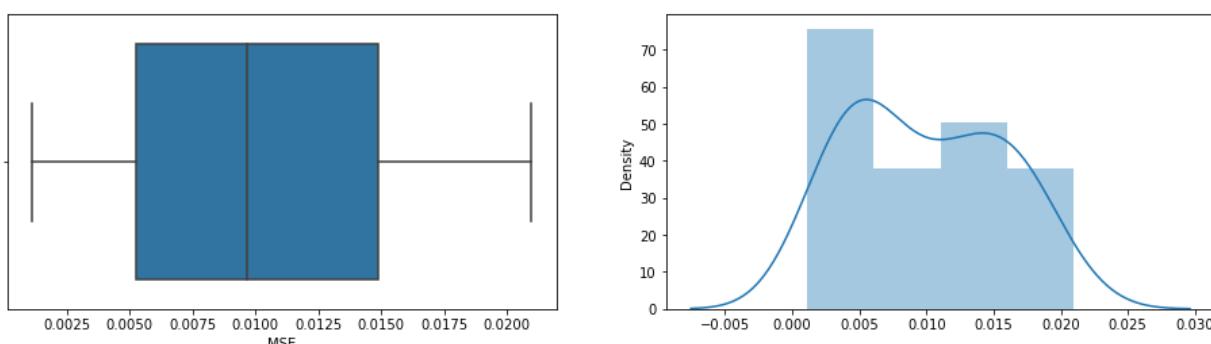
Statistic: 0.212

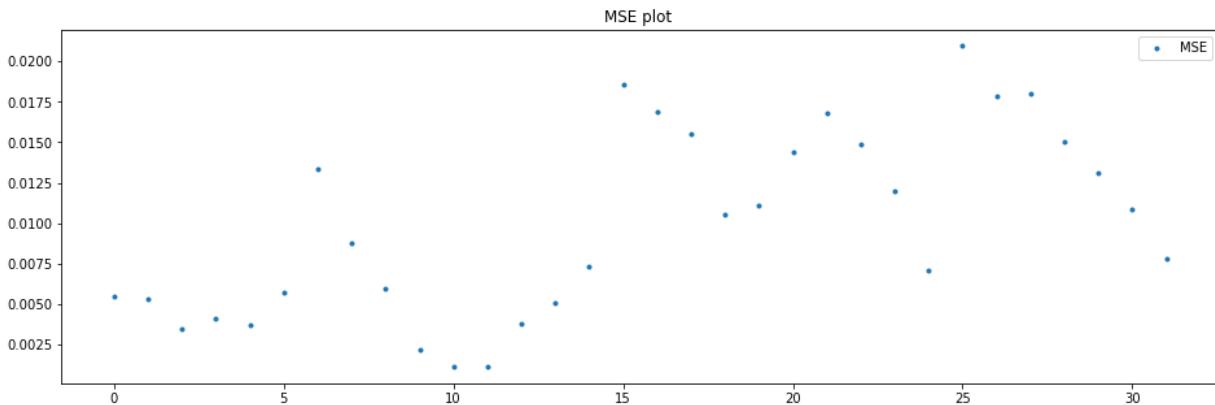
```
15.000: 0.523, data looks normal (fail to reject H0)
10.000: 0.596, data looks normal (fail to reject H0)
5.000: 0.715, data looks normal (fail to reject H0)
2.500: 0.834, data looks normal (fail to reject H0)
1.000: 0.992, data looks normal (fail to reject H0)
```

Batch: 83

mean=0.0099371875, median=0.009665 , max=0.02095, min=0.00112, variance=3.23296e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.579

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)

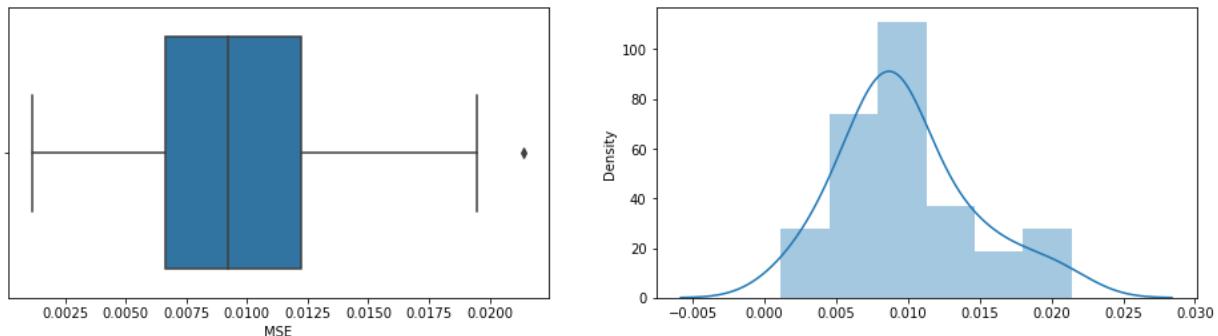
2.500: 0.834, data looks normal (fail to reject H0)

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

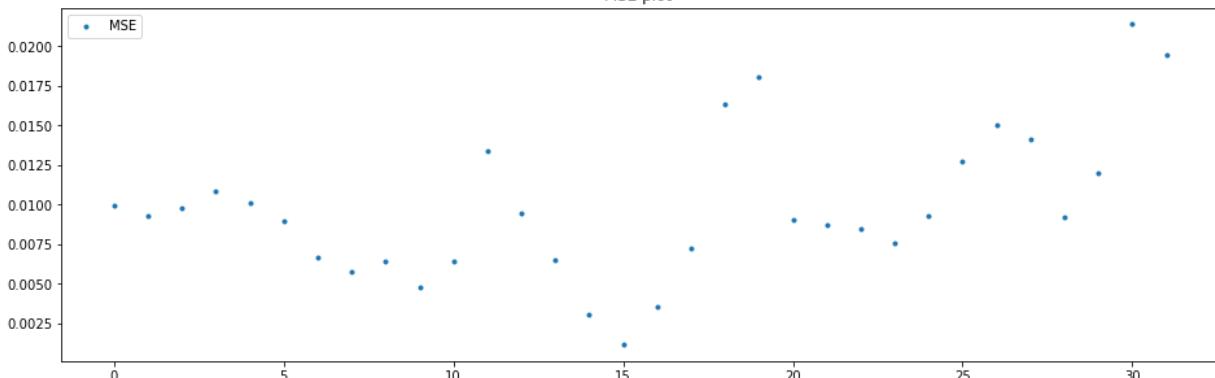
Batch: 84

mean=0.0098446875, median=0.00923 , max=0.0214, min=0.00115, variance=2.10107e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 0.591

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)

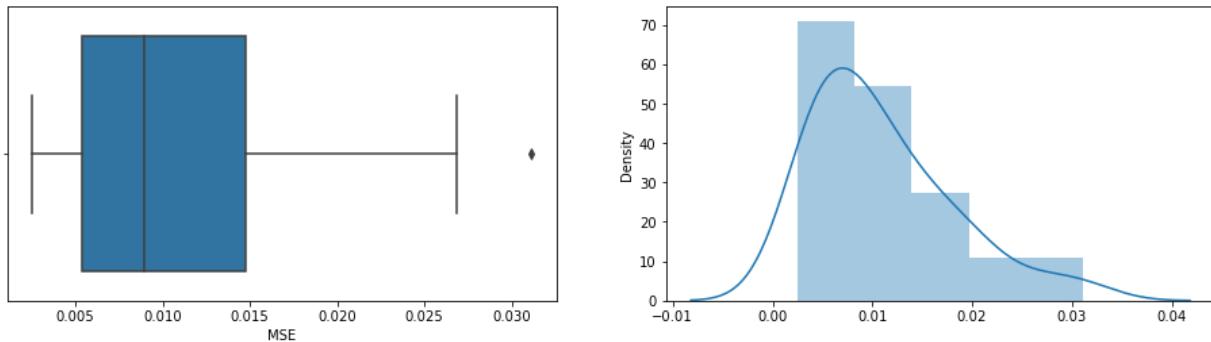
2.500: 0.834, data looks normal (fail to reject H0)

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

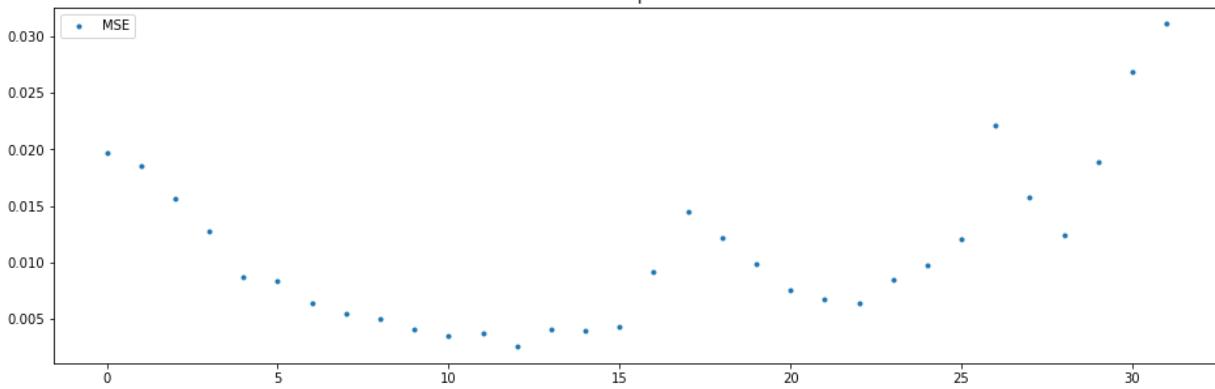
Batch: 85

mean=0.010949375, median=0.008945 , max=0.03113, min=0.00251, variance=4.92533e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson_Darling Test**

Statistic: 0.995

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)

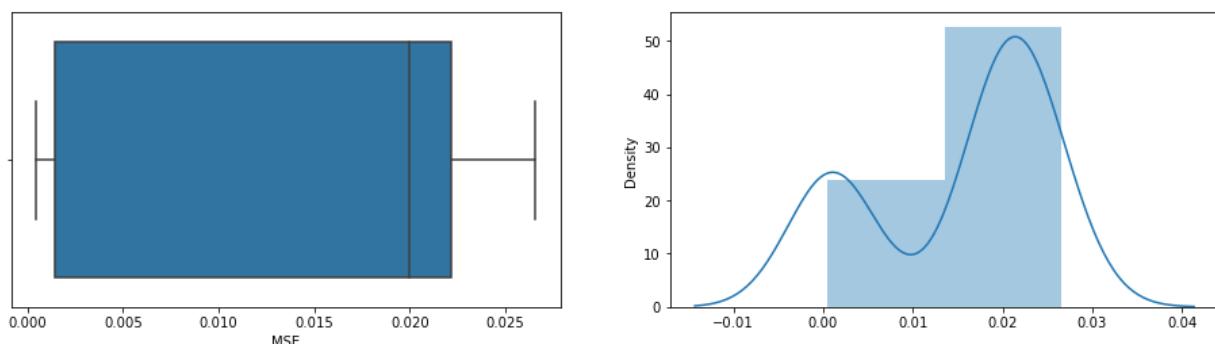
2.500: 0.834, data does not look normal (reject H0)

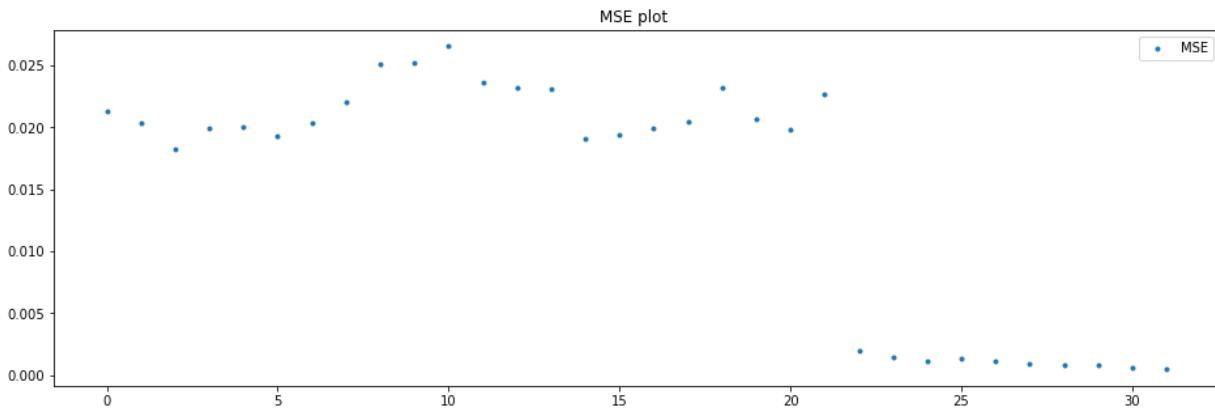
1.000: 0.992, data does not look normal (reject H0)

Batch: 86

mean=0.0151390625, median=0.019955 , max=0.02656, min=0.00045, variance=9.36526e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

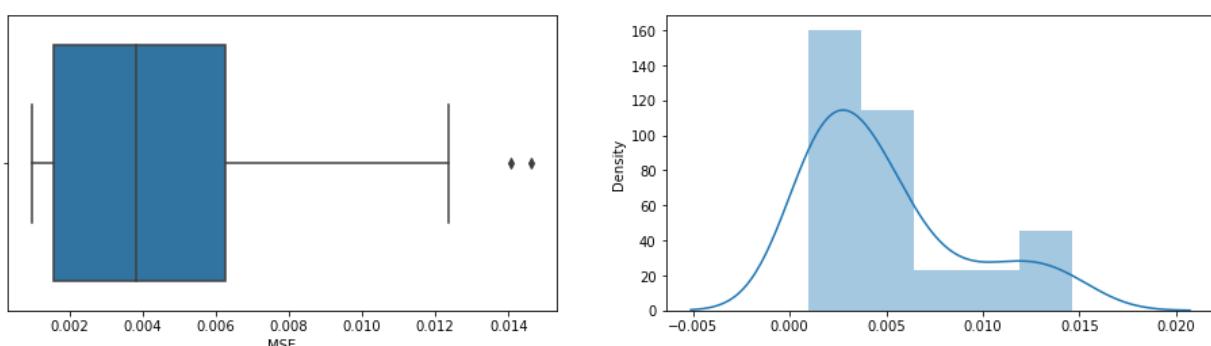
Statistic: 3.766

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: 87

mean=0.0049696875, median=0.00381 , max=0.01462, min=0.00098, variance=1.60013e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

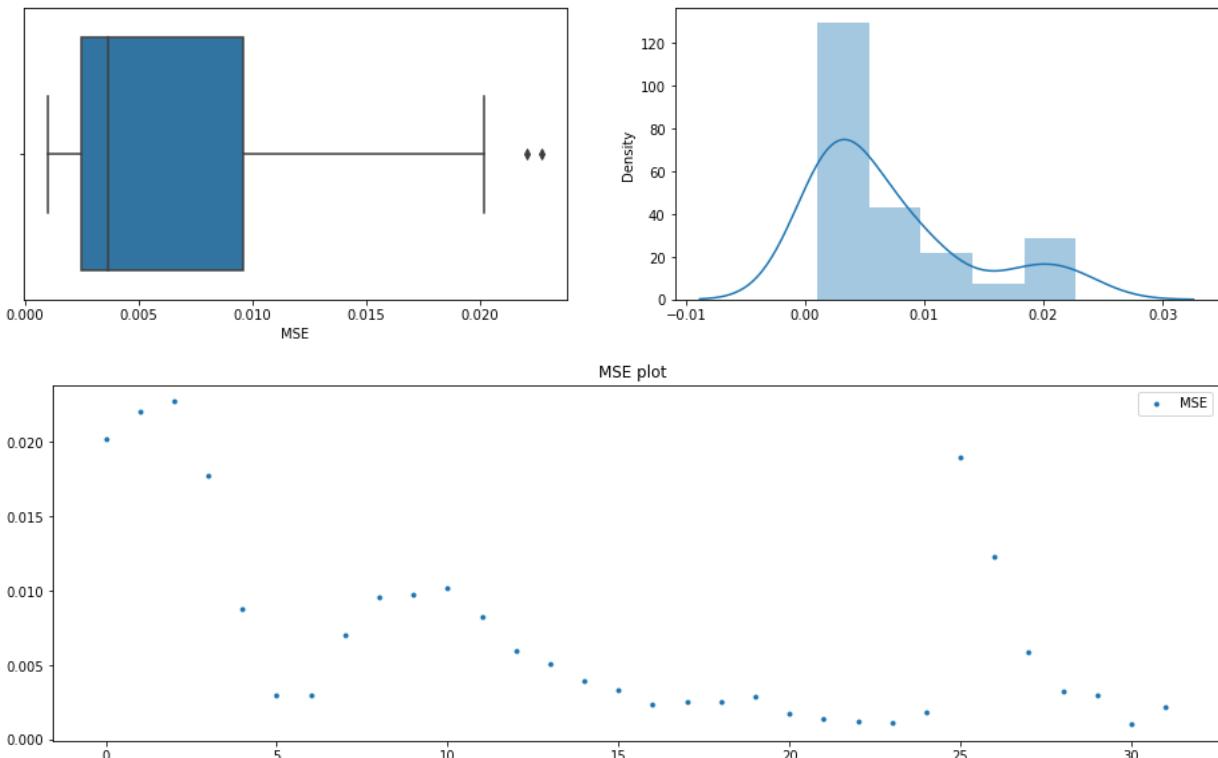
Statistic: 1.885

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=0.0070496875, median=0.003675 , max=0.02272, min=0.00104, variance=4.19239e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

Statistic: 2.418

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)

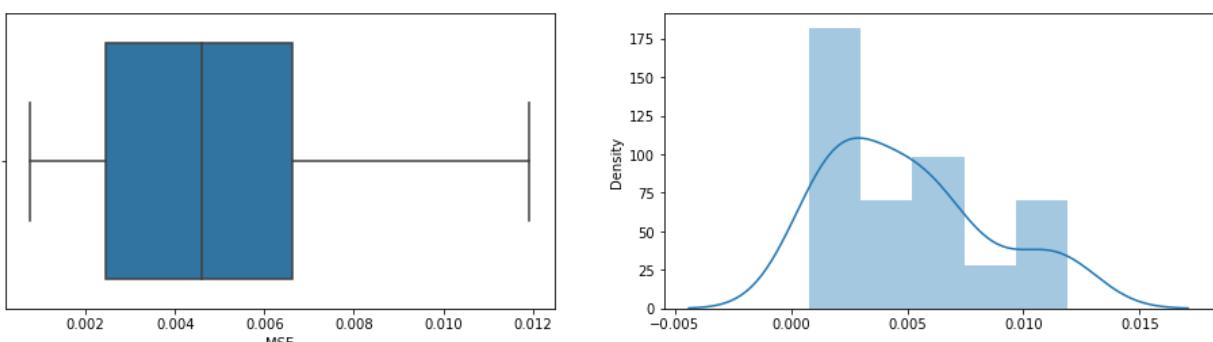
2.500: 0.834, data does not look normal (reject H0)

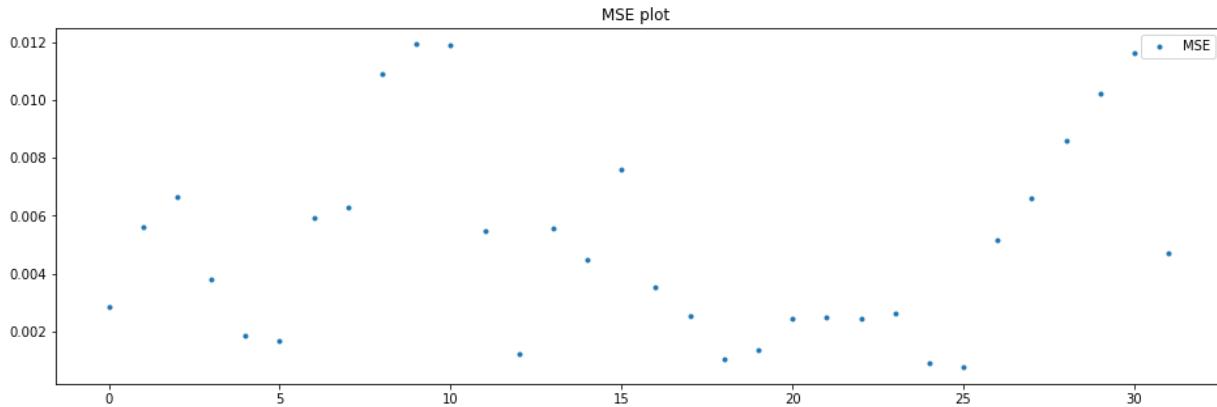
1.000: 0.992, data does not look normal (reject H0)

Batch: 89

mean=0.00502625, median=0.004595 , max=0.01192, min=0.00076, variance=1.14814e-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)

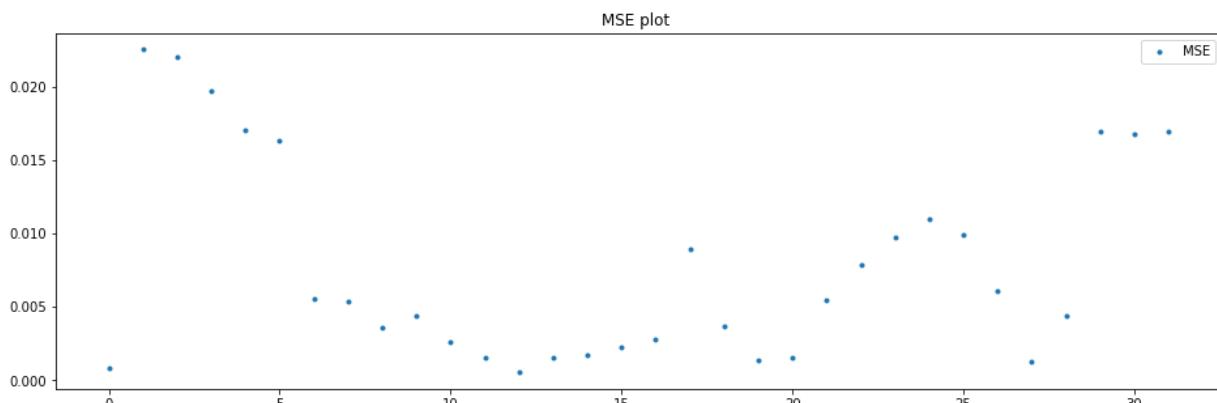
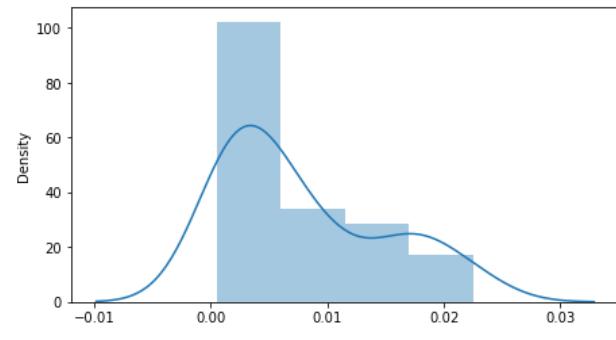
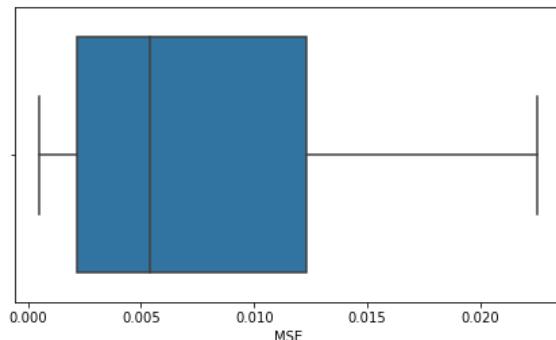
2.500: 0.834, data does not look normal (reject H0)

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

Batch: 90

mean=0.0078878125, median=0.0054 , max=0.02252, min=0.00053, variance=4.63121e-05

Boxplots and Distribution plot for Reconstruction Error



Anderson_Darling Test

Statistic: 1.748

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

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

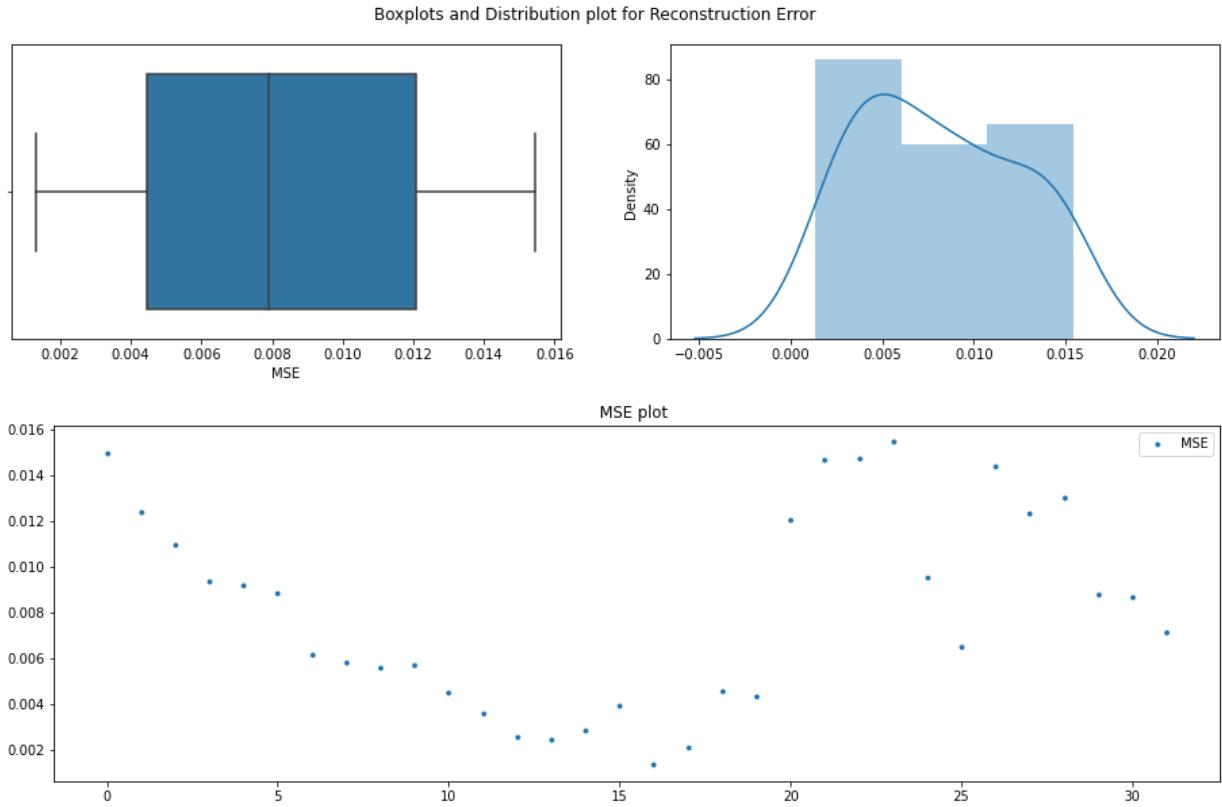
5.000: 0.715, data does not look normal (reject H0)

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=0.0080625, median=0.007895 , max=0.01545, min=0.00132, variance=1.85043e-05



Anderson_Darling Test

Statistic: 0.592

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)

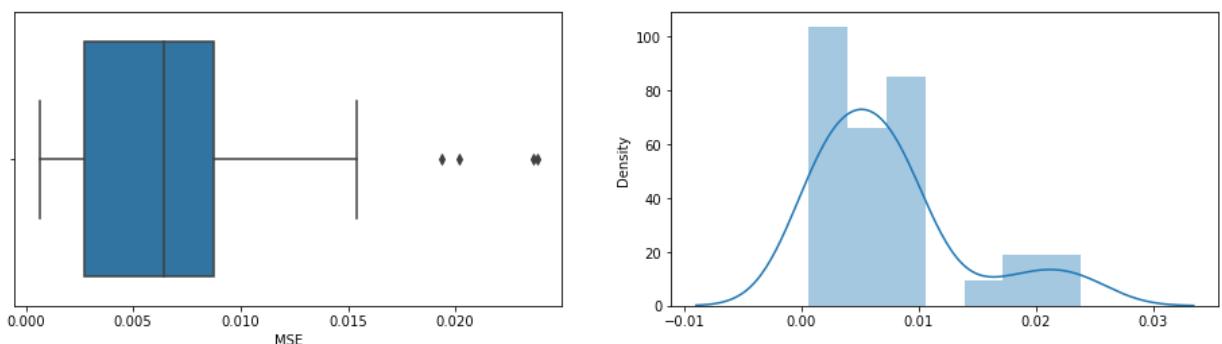
2.500: 0.834, data looks normal (fail to reject H0)

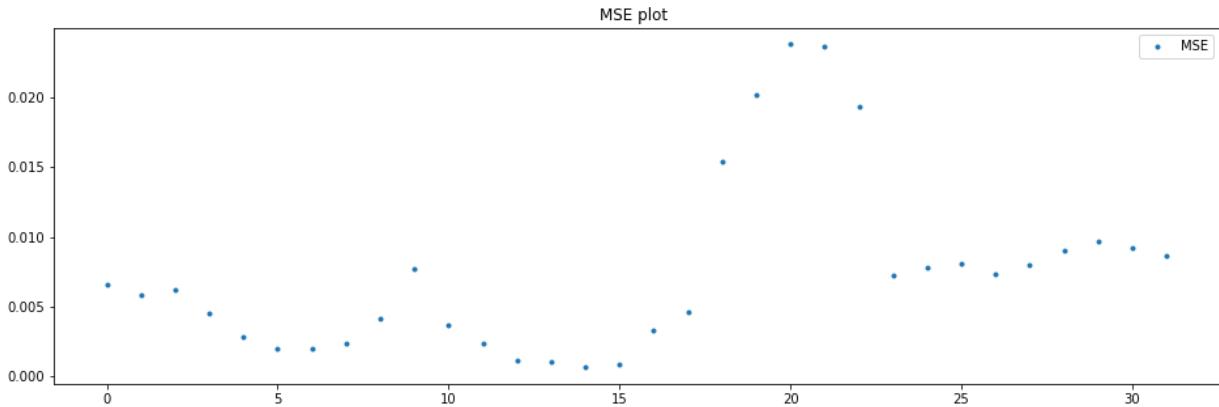
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 92

mean=0.0074825, median=0.00641 , max=0.0238, min=0.00064, variance=3.98263e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

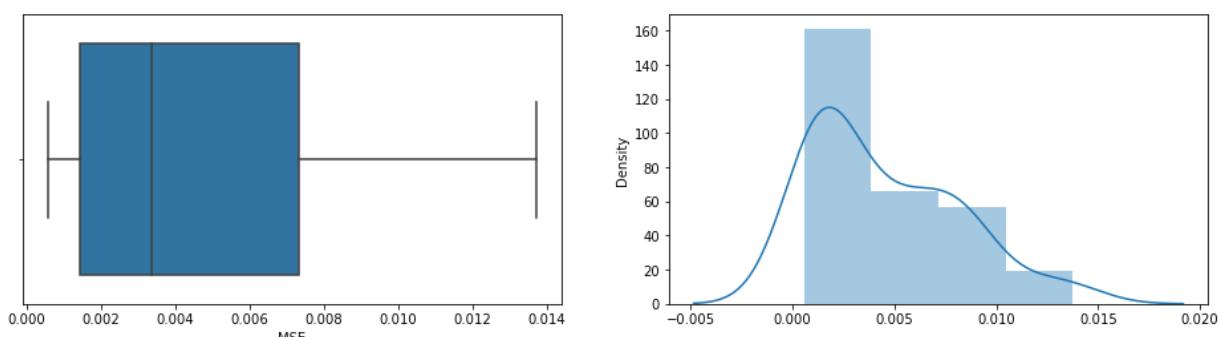
Statistic: 1.861

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)

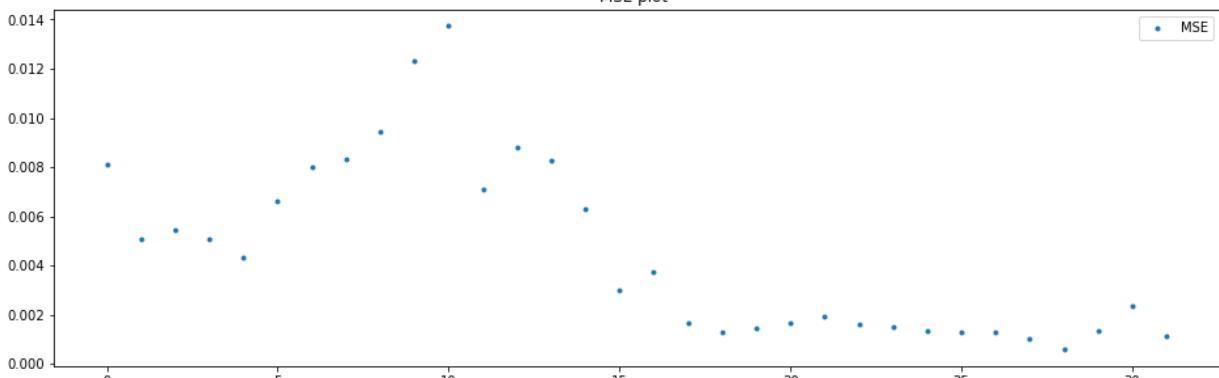
Batch: 93

mean=0.0045315625, median=0.00337 , max=0.01374, min=0.00057, variance=1.27122e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

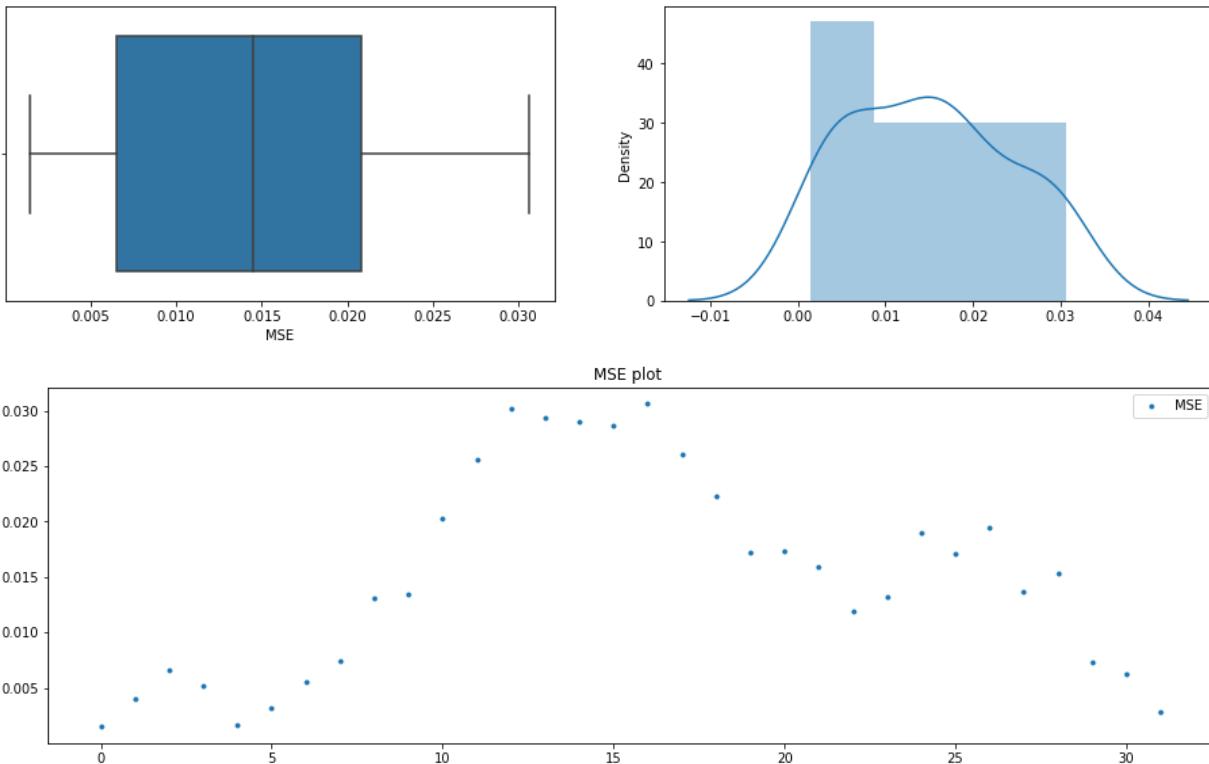
Statistic: 1.524

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=0.0150090625, median=0.01451 , max=0.03063, min=0.00148, variance=8.34523e-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)

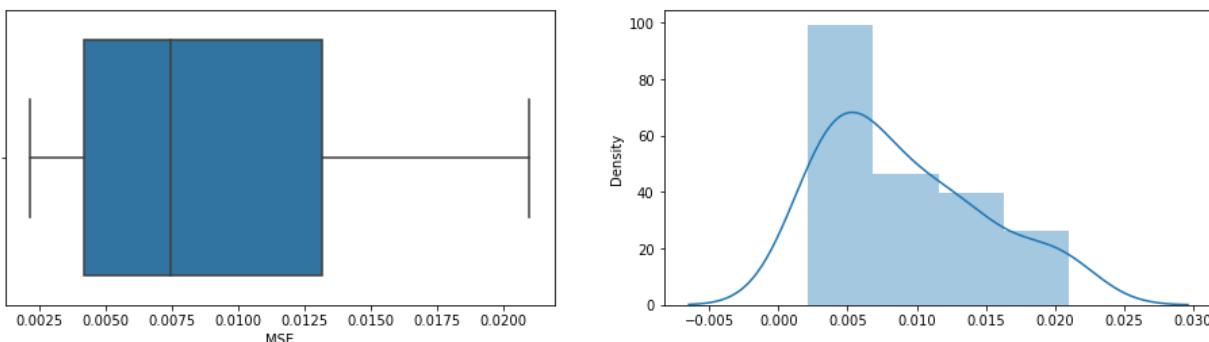
2.500: 0.834, data looks normal (fail to reject H0)

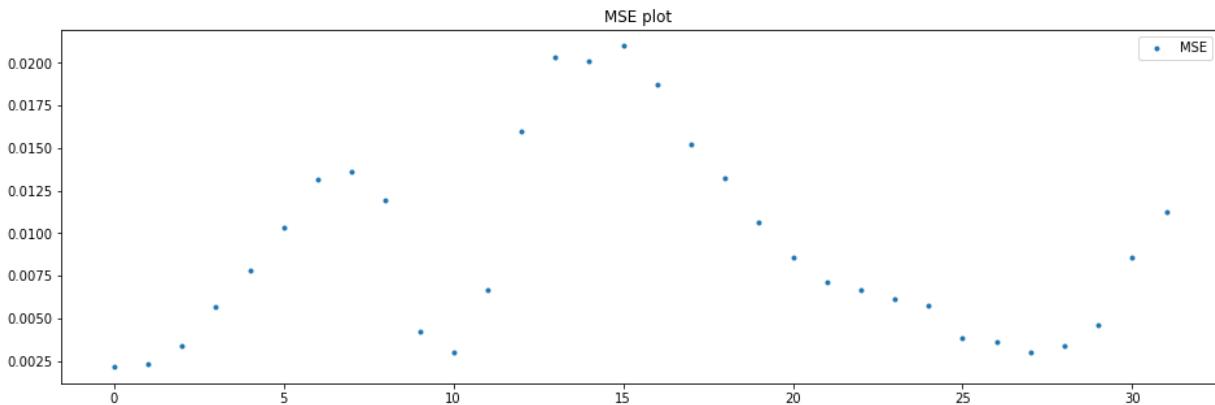
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 95

mean=0.009135, median=0.00747 , max=0.021, min=0.00214, variance=3.19106e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.913

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)

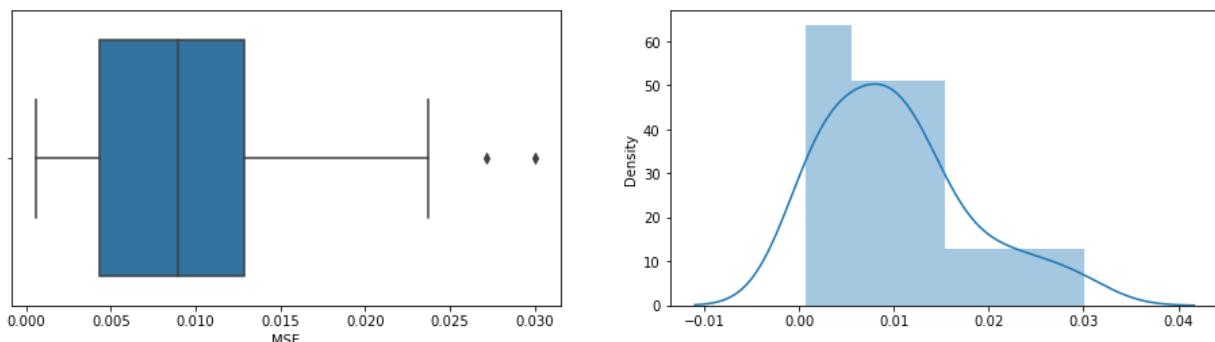
2.500: 0.834, data does not look normal (reject H0)

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

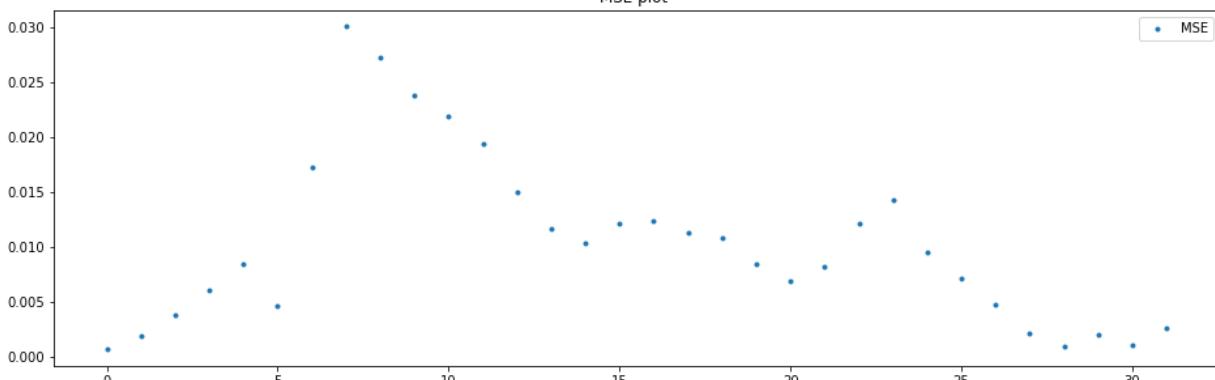
Batch: 96

mean=0.010224375, median=0.00895 , max=0.03002, min=0.00061, variance=5.83416e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 0.719

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)

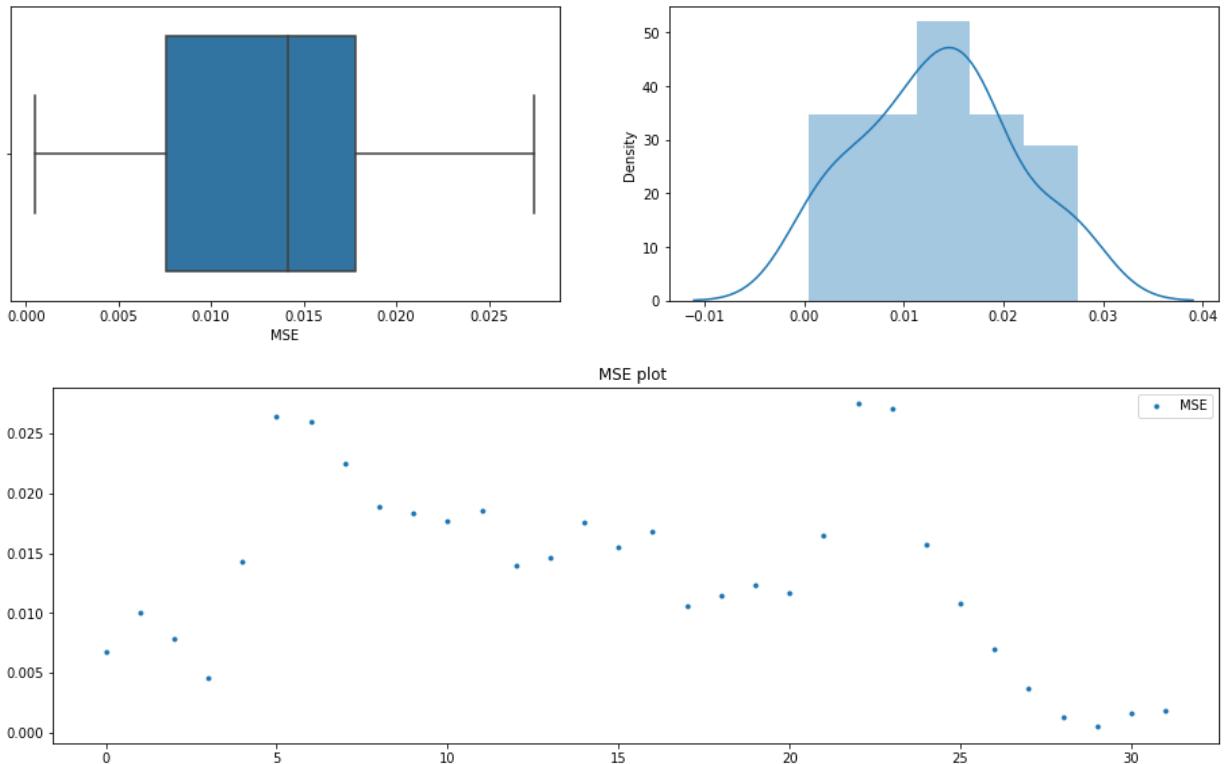
2.500: 0.834, data looks normal (fail to reject H0)

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

Batch: 97

mean=0.013425625, median=0.014115 , max=0.02745, min=0.0005, variance=5.77556e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

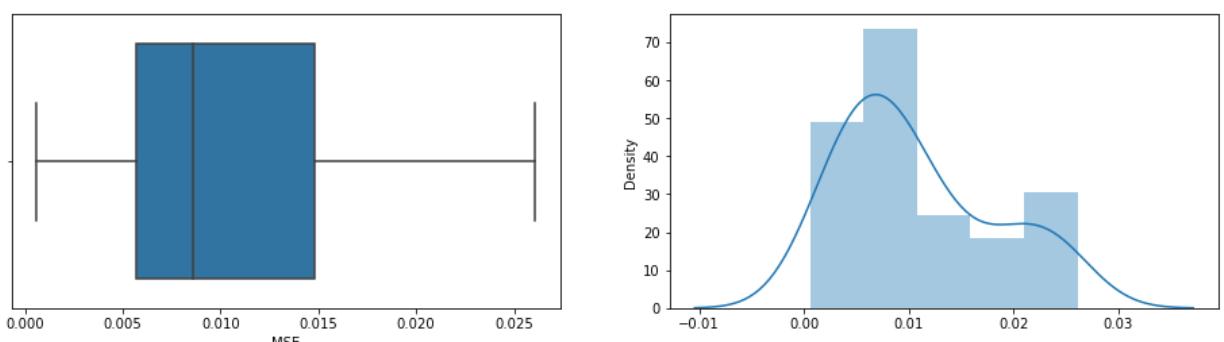
Statistic: 0.294

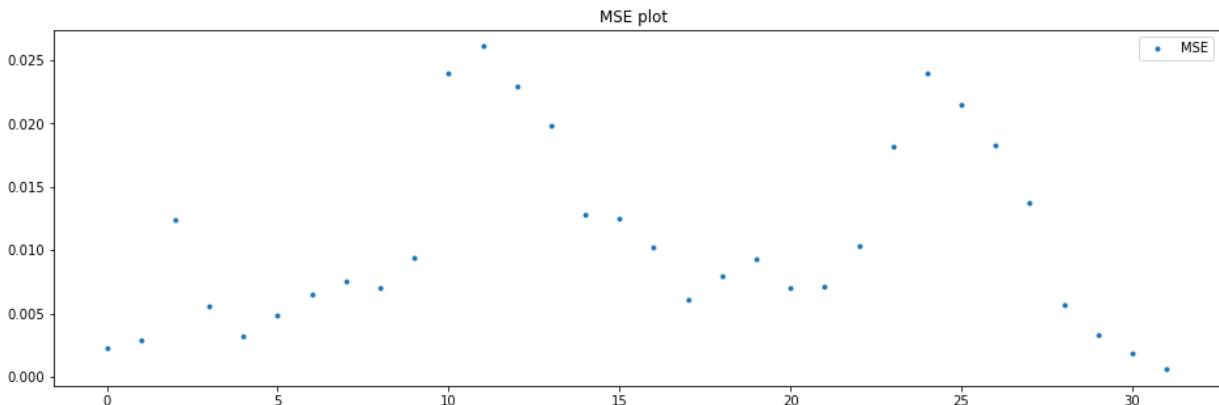
15.000: 0.523, data looks normal (fail to reject H0)
 10.000: 0.596, data looks normal (fail to reject H0)
 5.000: 0.715, data looks normal (fail to reject H0)
 2.500: 0.834, data looks normal (fail to reject H0)
 1.000: 0.992, data looks normal (fail to reject H0)

Batch: 98

mean=0.0107815625, median=0.00862 , max=0.02608, min=0.0006, variance=5.23383e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

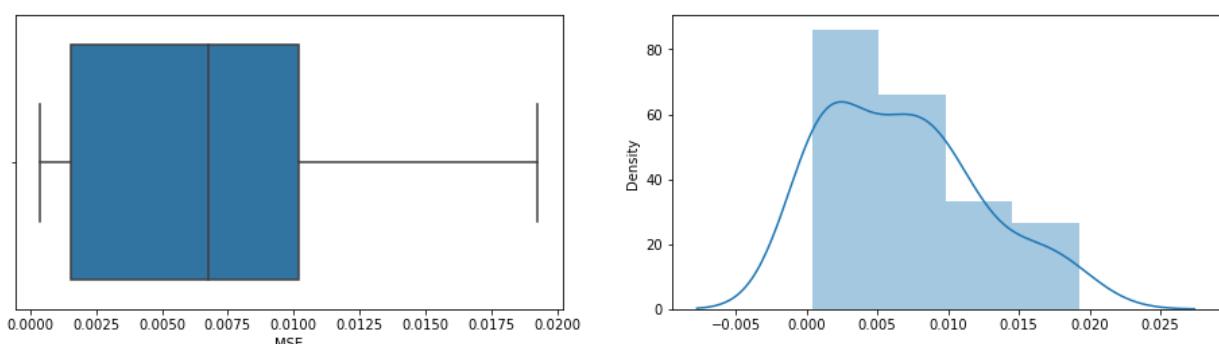
Statistic: 1.042

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)

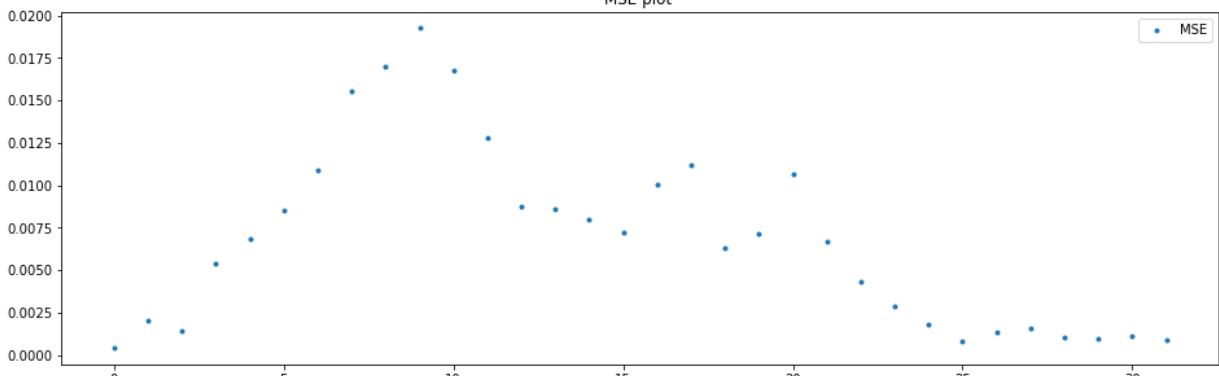
Batch: 99

mean=0.0068125, median=0.006745 , max=0.01926, min=0.00039, variance=2.85525e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

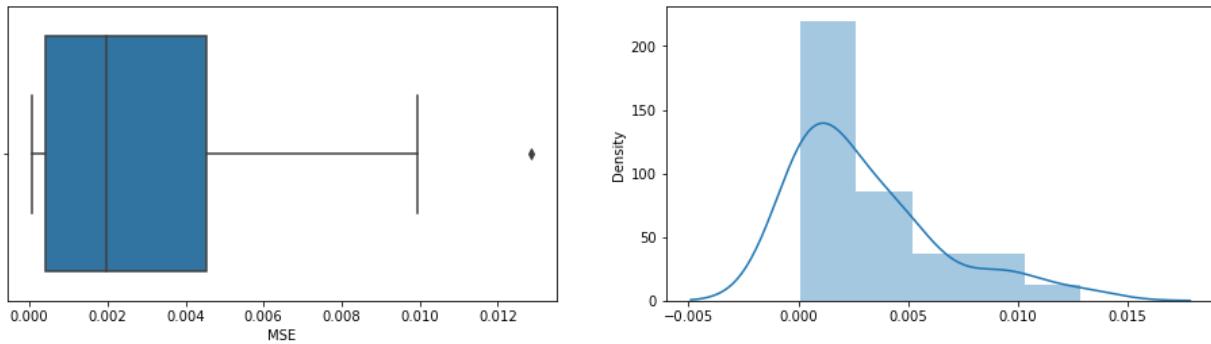
Statistic: 0.881

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)

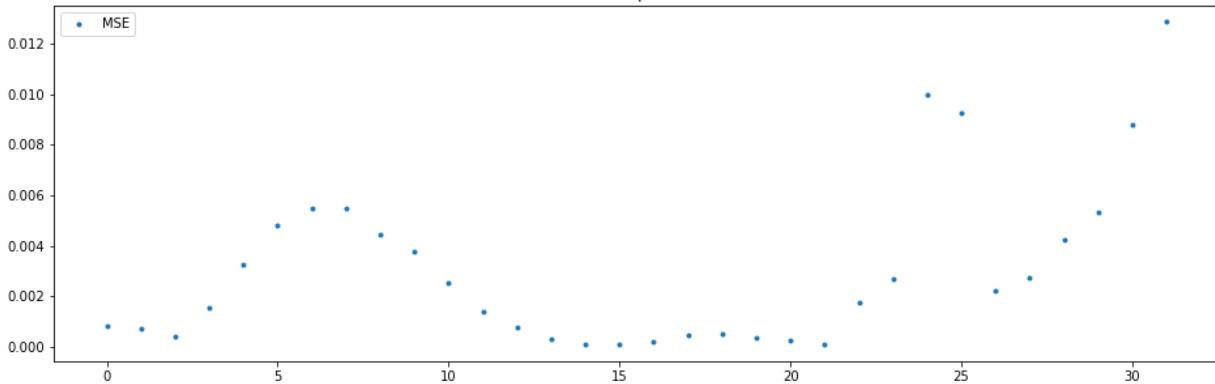
Batch: 100

mean=0.003041875, median=0.001965 , max=0.01286, min=7e-05, variance=1.06335e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson_Darling Test**

Statistic: 1.823

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)

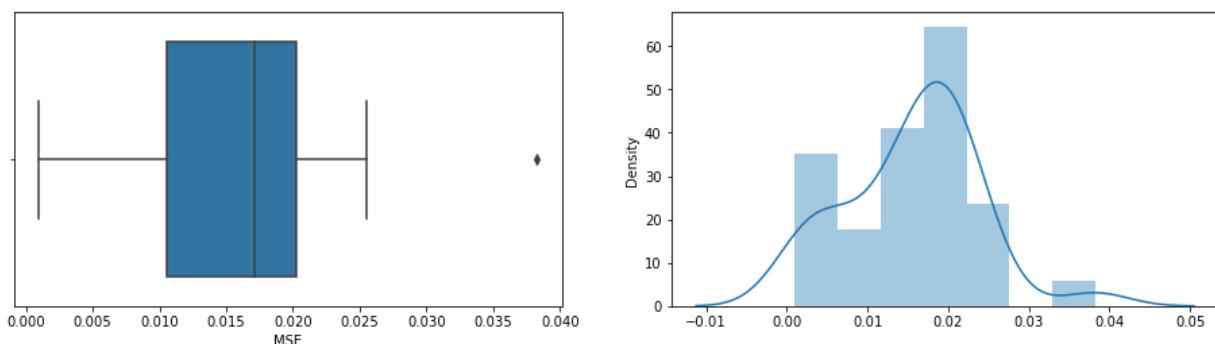
2.500: 0.834, data does not look normal (reject H0)

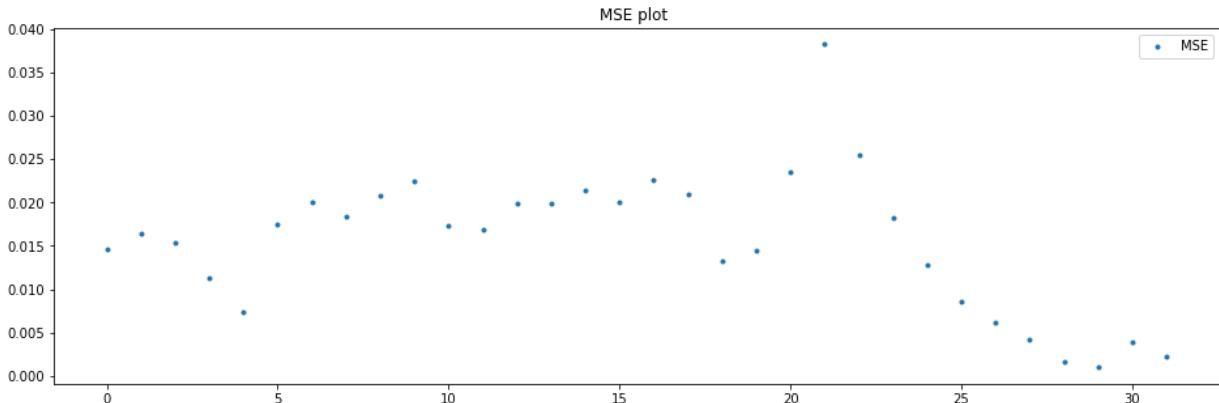
1.000: 0.992, data does not look normal (reject H0)

Batch: 101

mean=0.0155225, median=0.017085 , max=0.03825, min=0.00097, variance=6.44882e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.651

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)

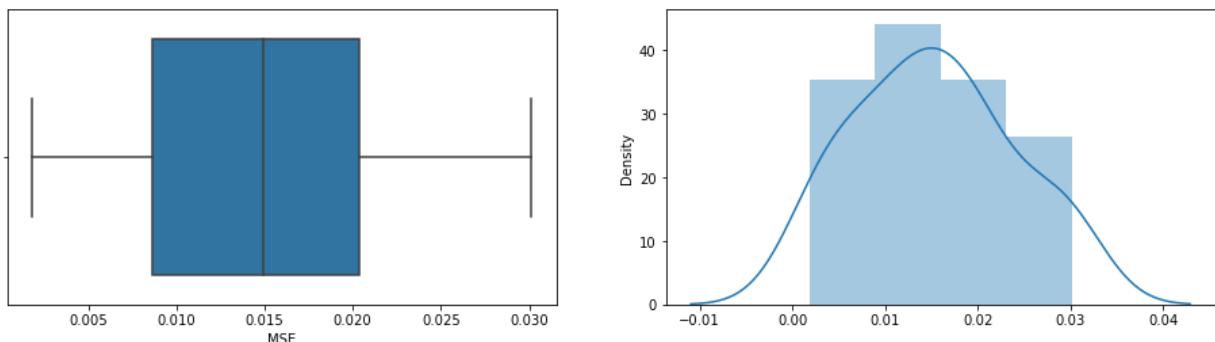
2.500: 0.834, data looks normal (fail to reject H0)

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

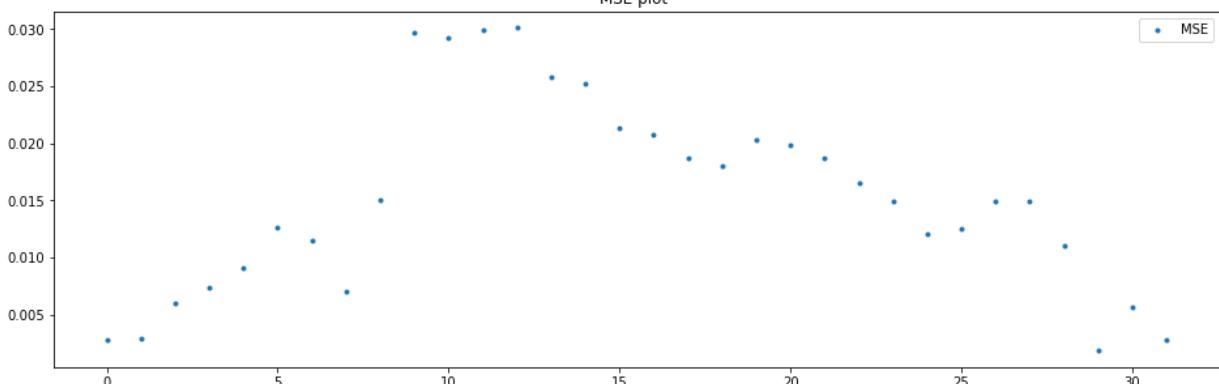
Batch: 102

mean=0.015283125, median=0.014935 , max=0.03011, min=0.00182, variance=7.01193e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 0.326

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)

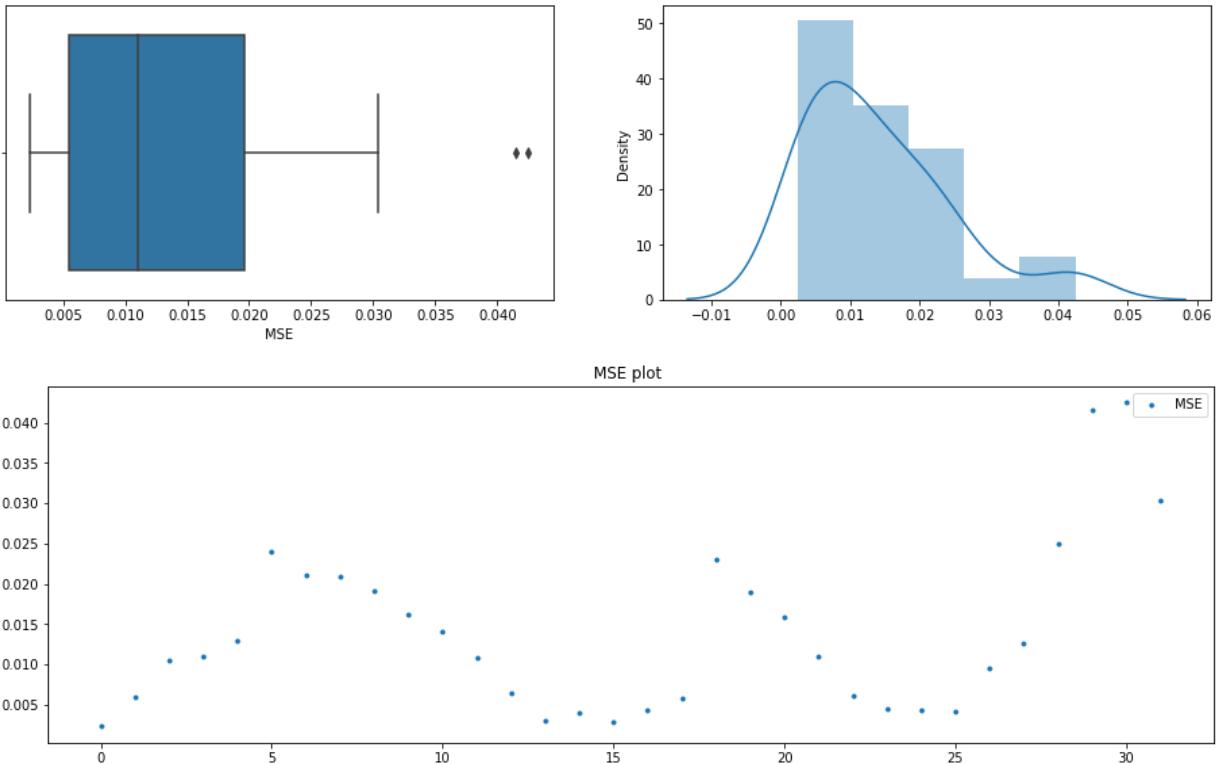
2.500: 0.834, data looks normal (fail to reject H0)

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

Batch: 103

mean=0.013915, median=0.01101 , max=0.04247, min=0.00234, variance=0.000108043

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)

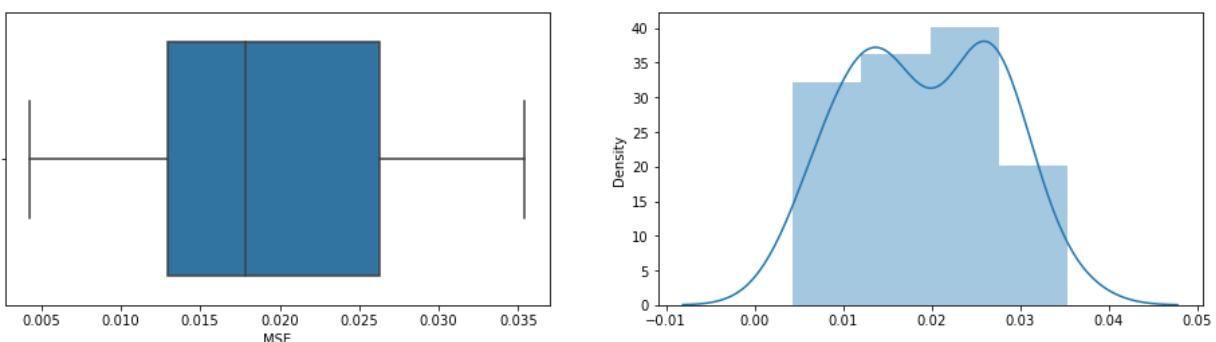
2.500: 0.834, data does not look normal (reject H0)

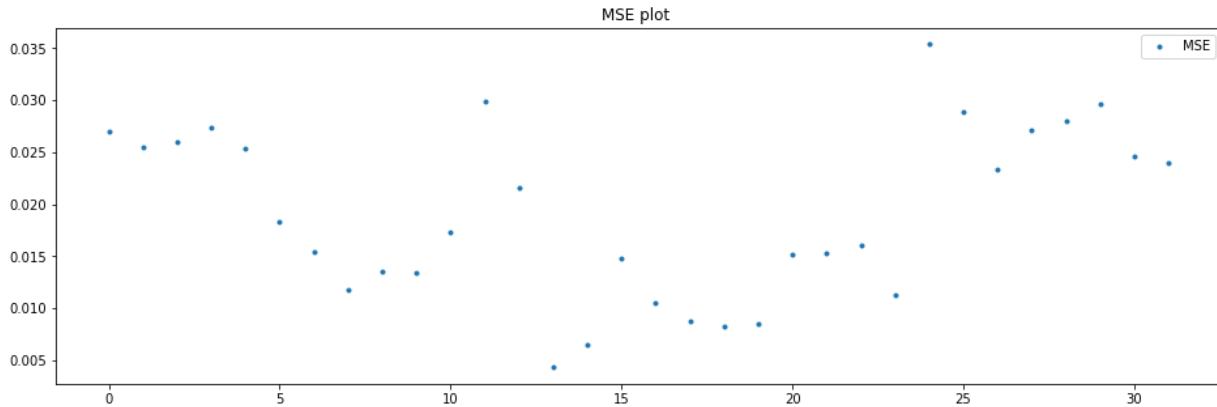
1.000: 0.992, data does not look normal (reject H0)

Batch: 104

mean=0.0191434375, median=0.01781 , max=0.03539, min=0.00429, variance=6.59894e-05

Boxplots and Distribution plot for Reconstruction Error





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)

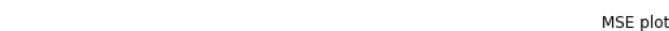
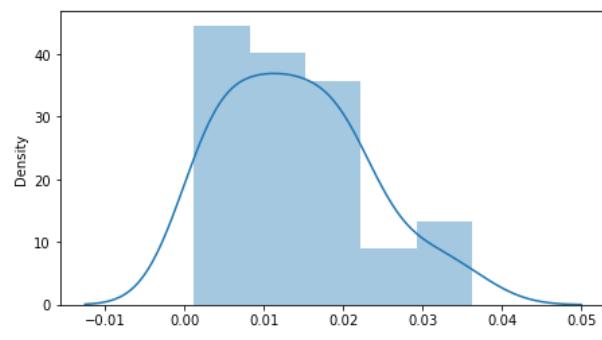
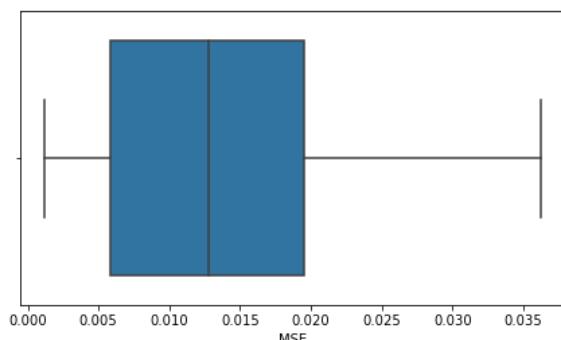
2.500: 0.834, data looks normal (fail to reject H0)

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

Batch: 105

mean=0.014003125, median=0.01274 , max=0.03626, min=0.00121, variance=8.10145e-05

Boxplots and Distribution plot for Reconstruction Error



Anderson_Darling Test

Statistic: 0.406

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)

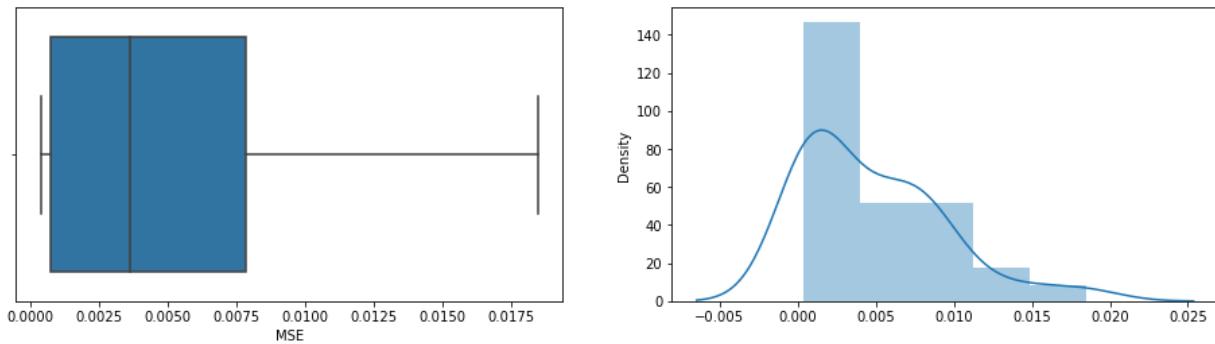
2.500: 0.834, data looks normal (fail to reject H0)

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

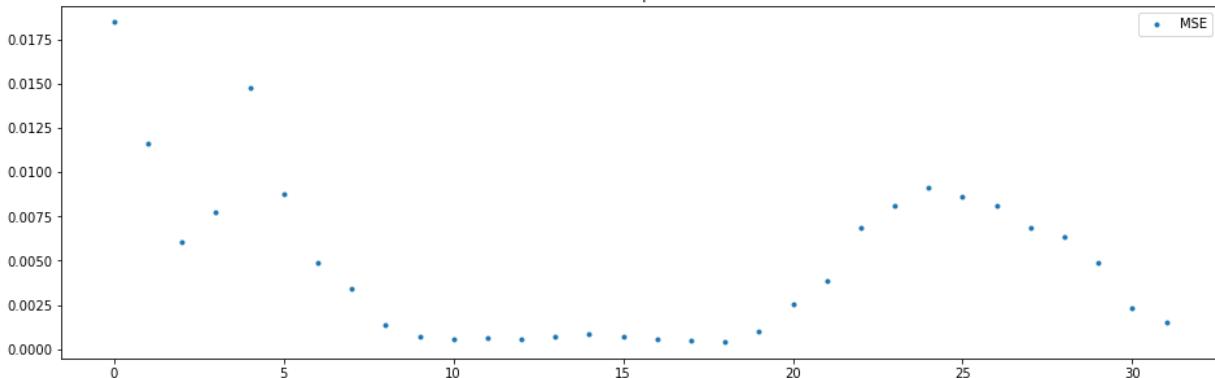
Batch: 106

mean=0.004795, median=0.003625 , max=0.01848, min=0.00039, variance=2.03679e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson_Darling Test**

Statistic: 1.396

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)

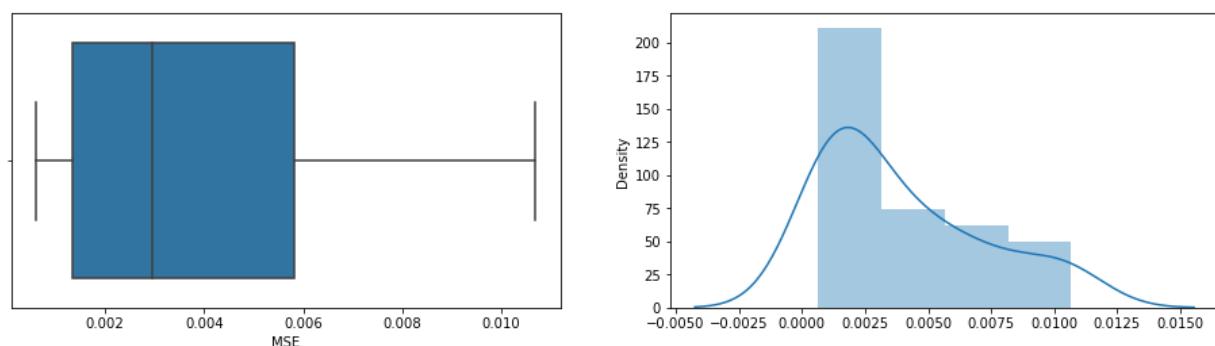
2.500: 0.834, data does not look normal (reject H0)

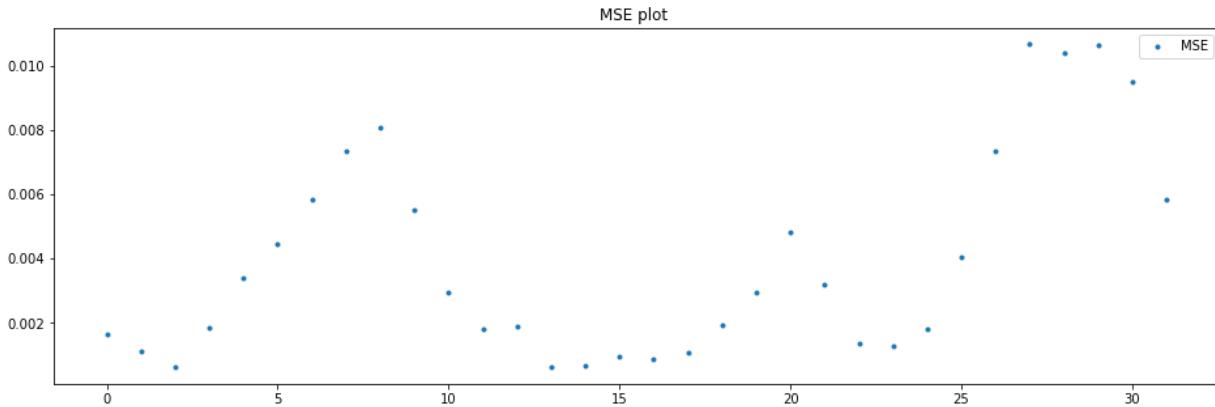
1.000: 0.992, data does not look normal (reject H0)

Batch: 107

mean=0.0039559375, median=0.00294 , max=0.01068, min=0.00061, variance=1.01516e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

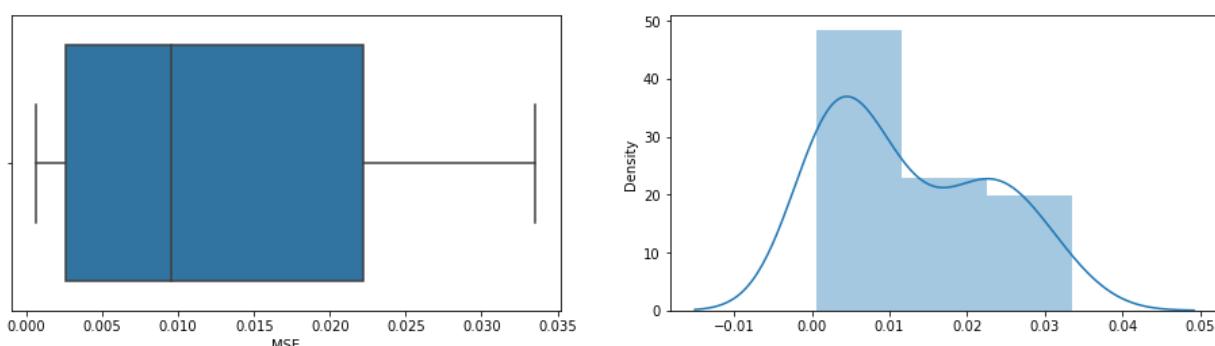
Statistic: 1.566

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)

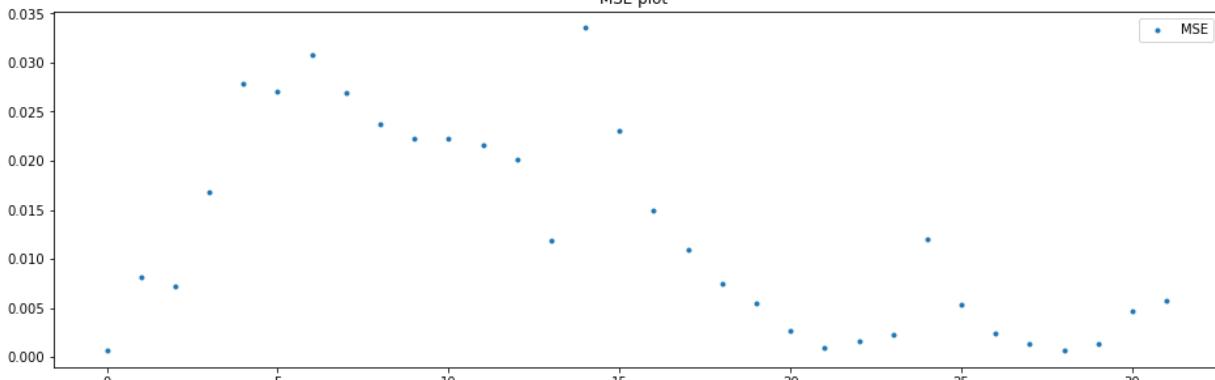
Batch: 108

mean=0.012629375, median=0.00956 , max=0.03353, min=0.00063, variance=0.0001060237

Boxplots and Distribution plot for Reconstruction Error



MSE plot



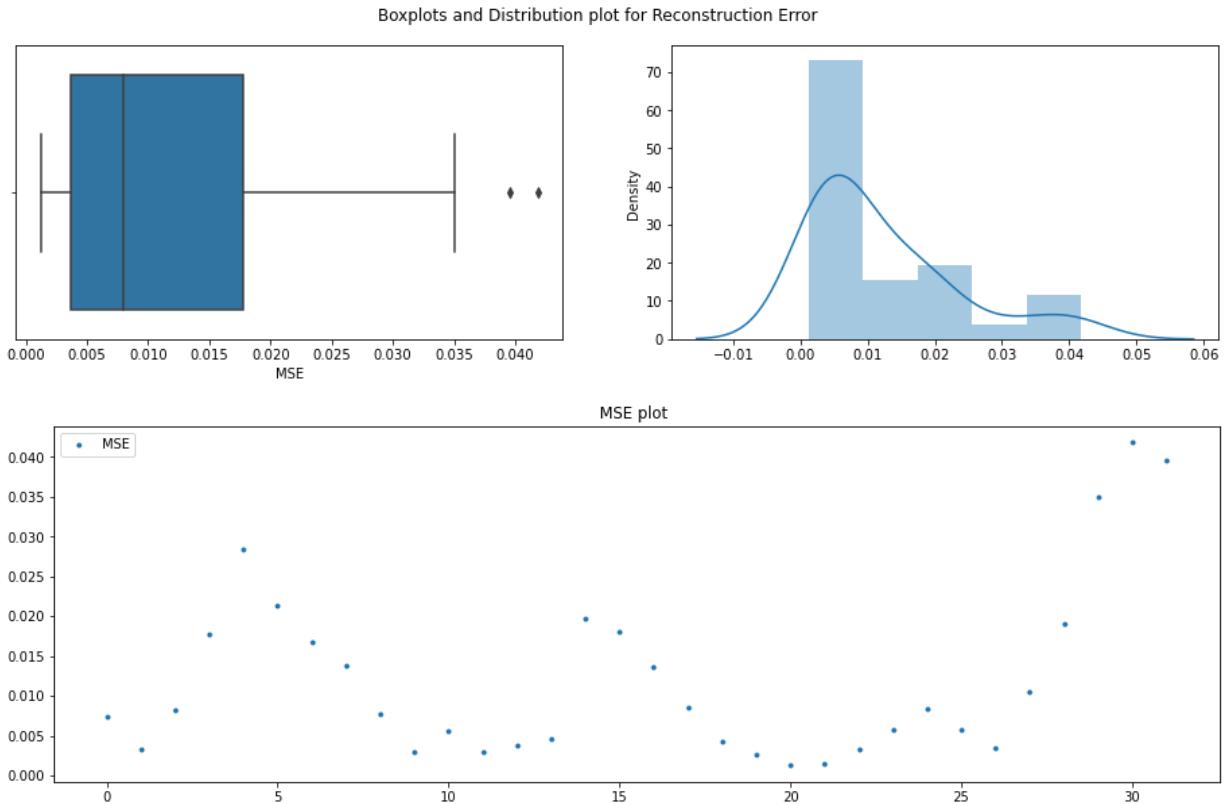
Anderson_Darling Test

Statistic: 1.196

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=0.0120715625, median=0.007975 , max=0.04183, min=0.00123, variance=0.0001195897



Anderson_Darling Test

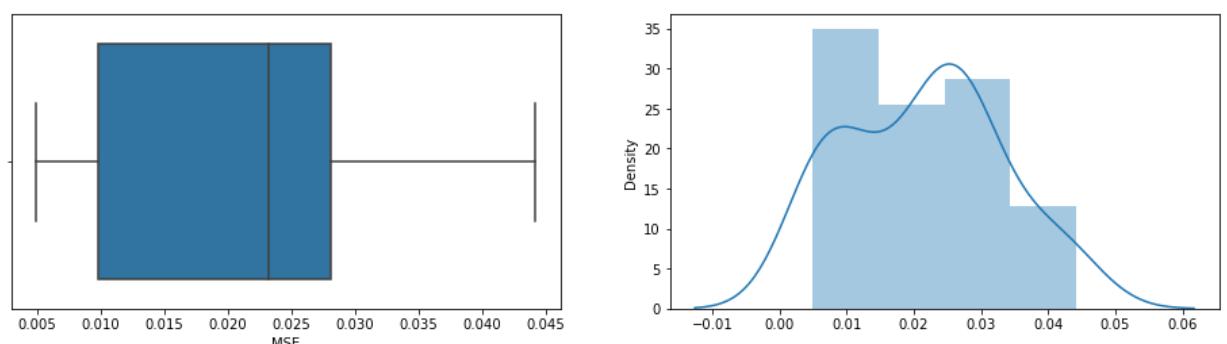
Statistic: 1.938

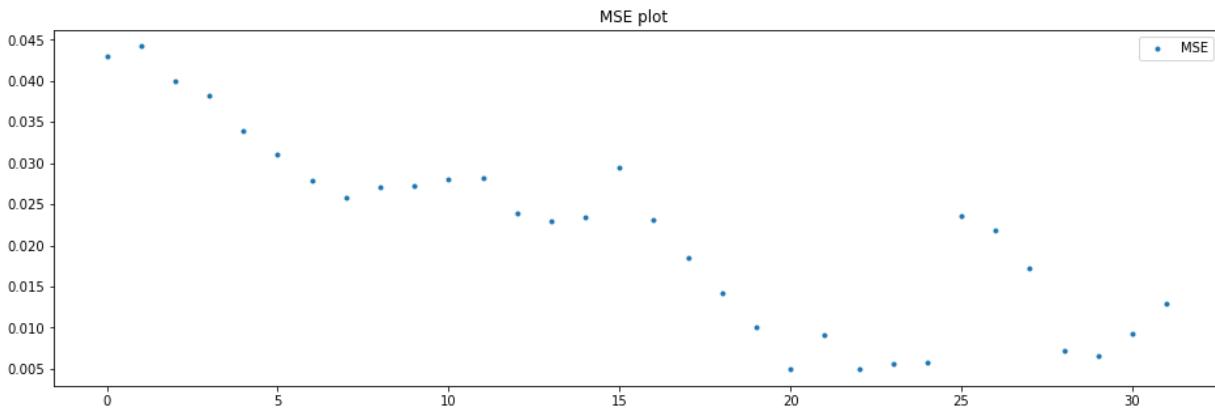
15.000: 0.523, data does not look normal (reject H₀)
 10.000: 0.596, data does not look normal (reject H₀)
 5.000: 0.715, data does not look normal (reject H₀)
 2.500: 0.834, data does not look normal (reject H₀)
 1.000: 0.992, data does not look normal (reject H₀)

Batch: 110

mean=0.0215321875, median=0.023265 , max=0.0442, min=0.00491, variance=0.0001314467

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.557

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)

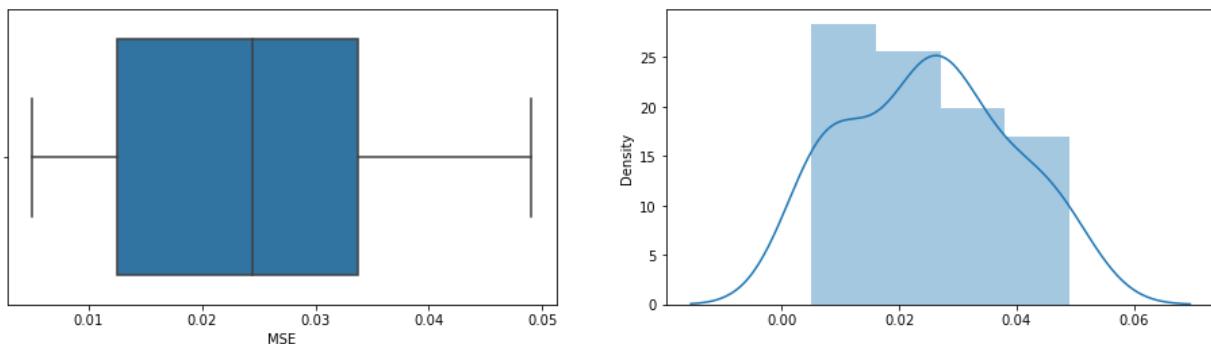
2.500: 0.834, data looks normal (fail to reject H0)

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

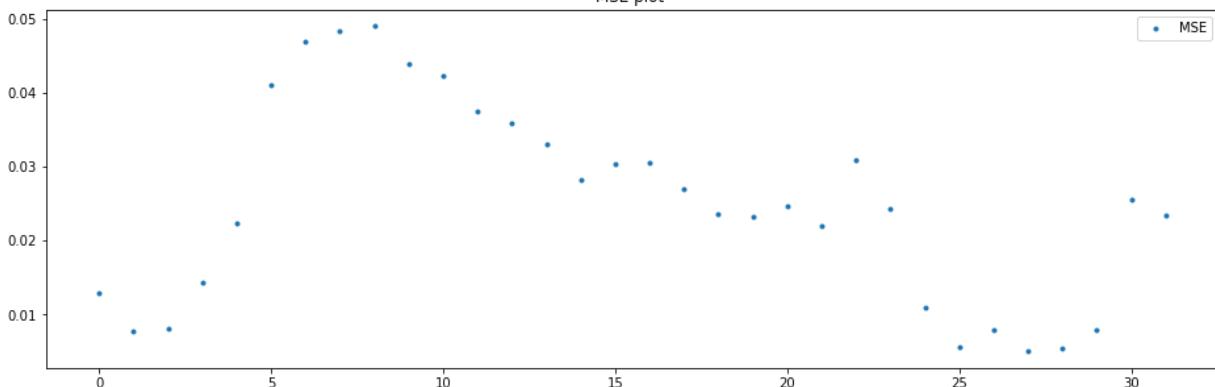
Batch: 111

mean=0.02500875, median=0.024465 , max=0.04902, min=0.005, variance=0.0001807332

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 0.523

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)

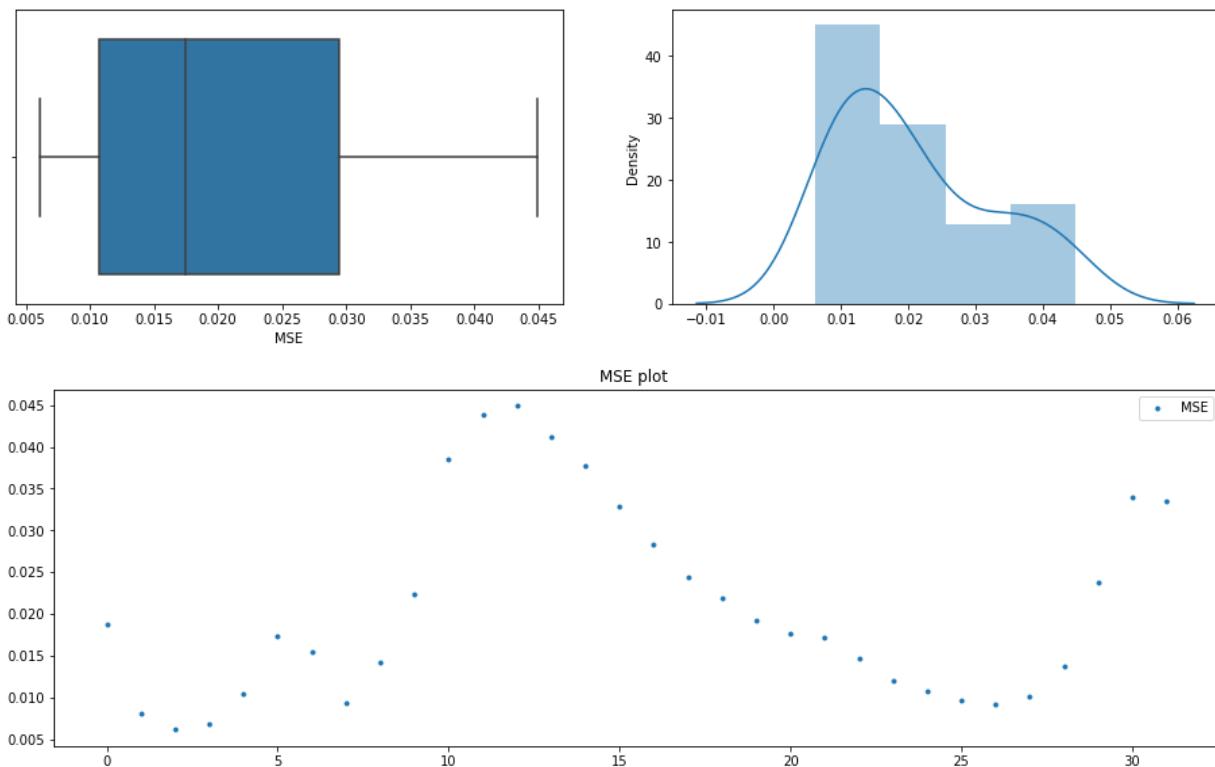
2.500: 0.834, data looks normal (fail to reject H0)

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

Batch: 112

mean=0.020859375, median=0.017455 , max=0.04491, min=0.00611, variance=0.0001331252

Boxplots and Distribution plot for Reconstruction Error



Anderson_Darling Test

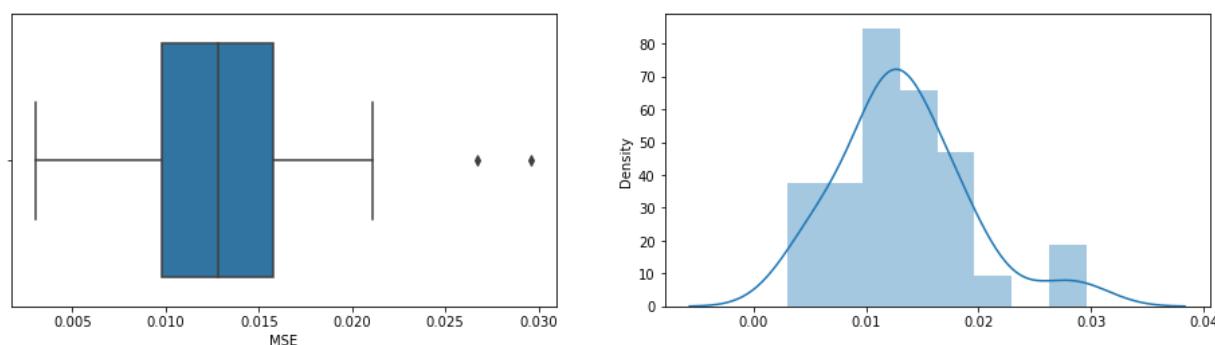
Statistic: 1.053

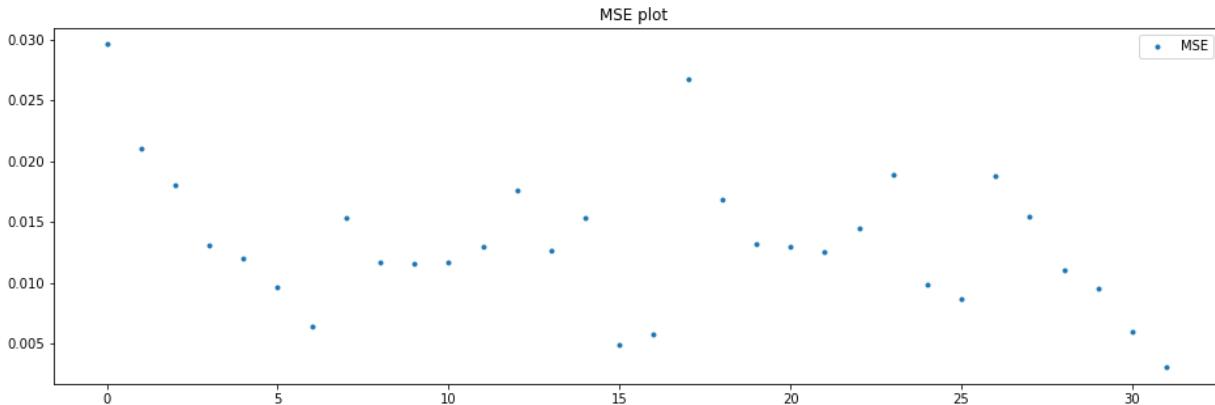
15.000: 0.523, data does not look normal (reject H₀)
 10.000: 0.596, data does not look normal (reject H₀)
 5.000: 0.715, data does not look normal (reject H₀)
 2.500: 0.834, data does not look normal (reject H₀)
 1.000: 0.992, data does not look normal (reject H₀)

Batch: 113

mean=0.013363125, median=0.01283 , max=0.0296, min=0.00304, variance=3.26379e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.500

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)

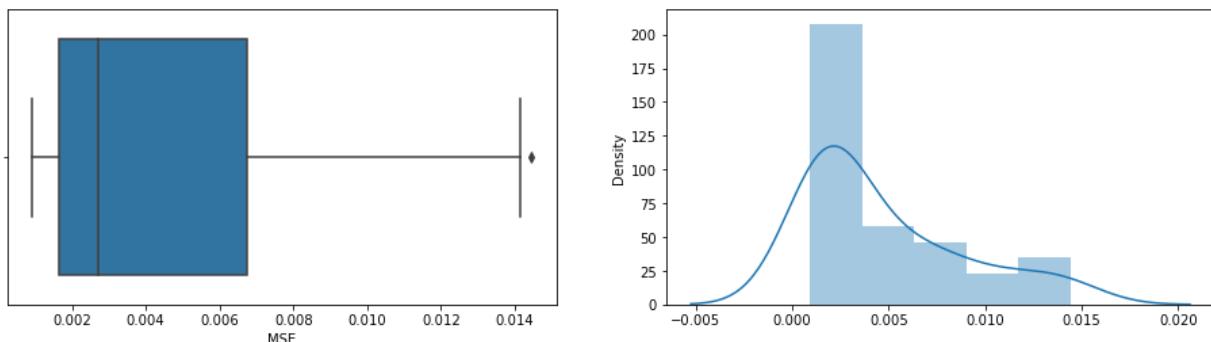
2.500: 0.834, data looks normal (fail to reject H0)

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

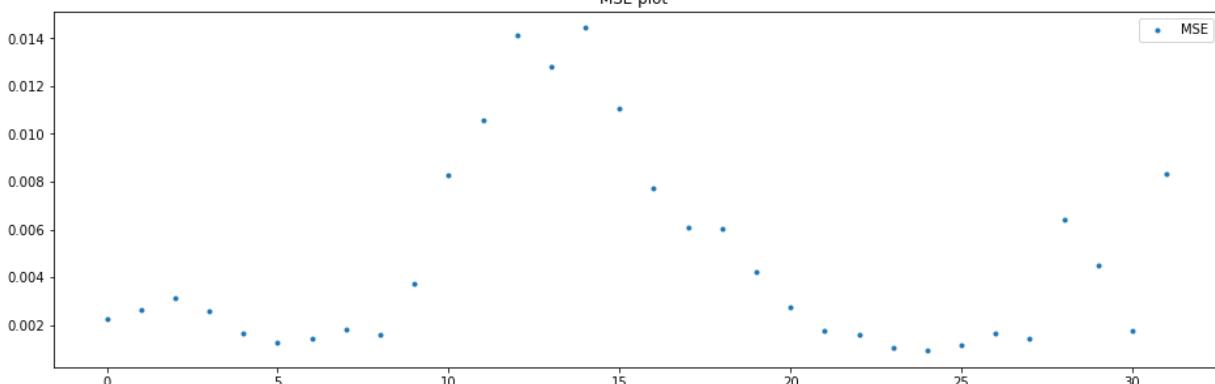
Batch: 114

mean=0.0047178125, median=0.002705 , max=0.01444, min=0.00092, variance=1.6425e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 2.242

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)

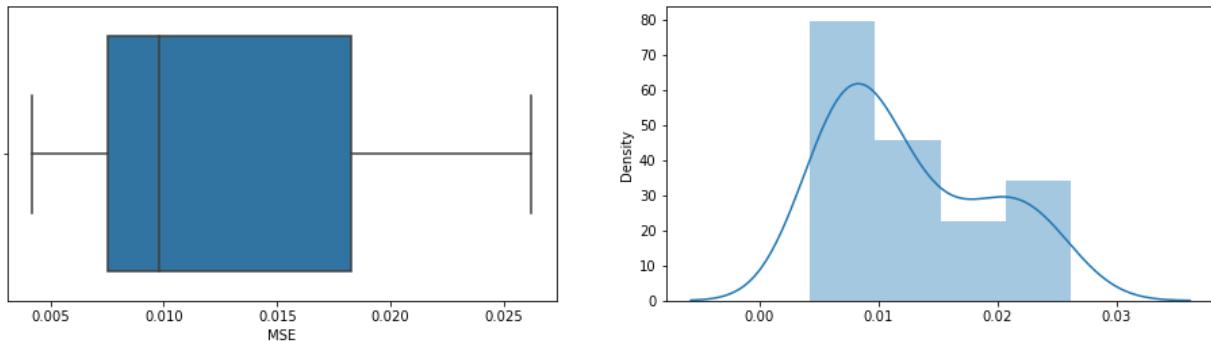
2.500: 0.834, data does not look normal (reject H0)

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

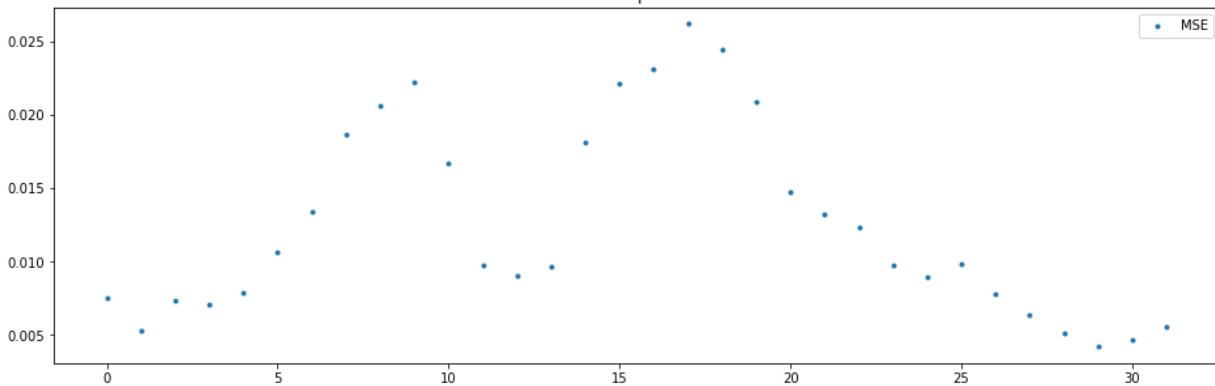
Batch: 115

mean=0.0126140625, median=0.009825 , max=0.0262, min=0.0042, variance=4.2641e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**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)

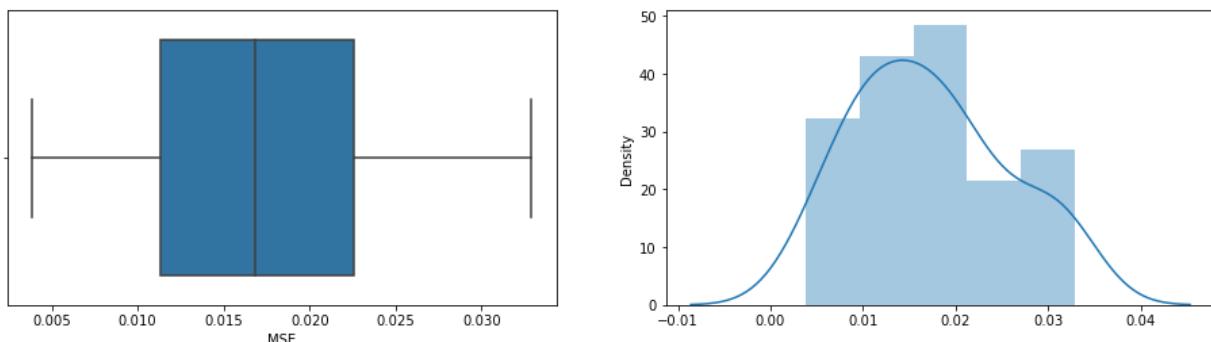
2.500: 0.834, data does not look normal (reject H0)

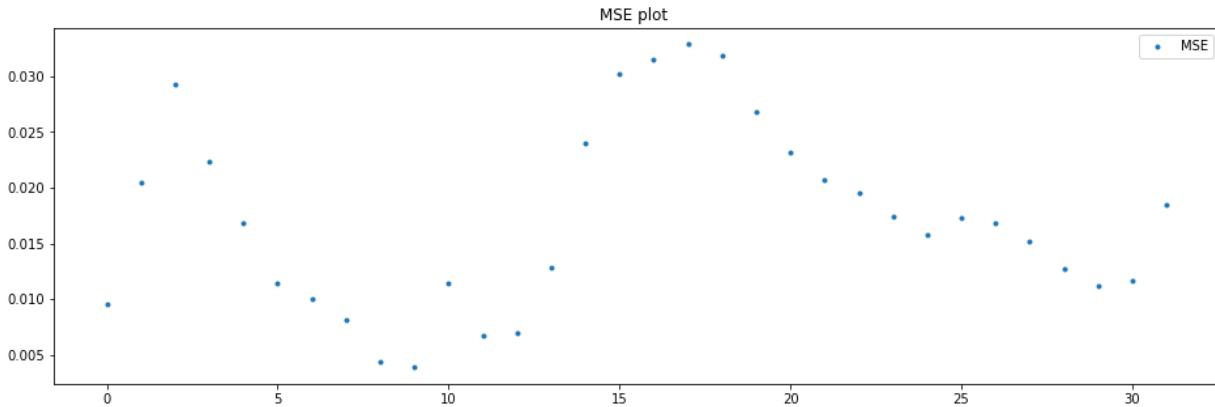
1.000: 0.992, data does not look normal (reject H0)

Batch: 116

mean=0.017241875, median=0.016835 , max=0.03288, min=0.00387, variance=6.68901e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

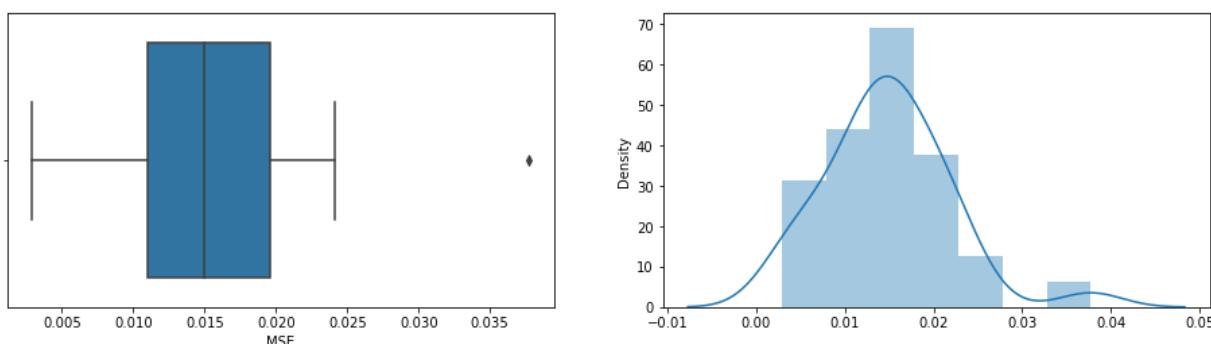
Statistic: 0.394

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)

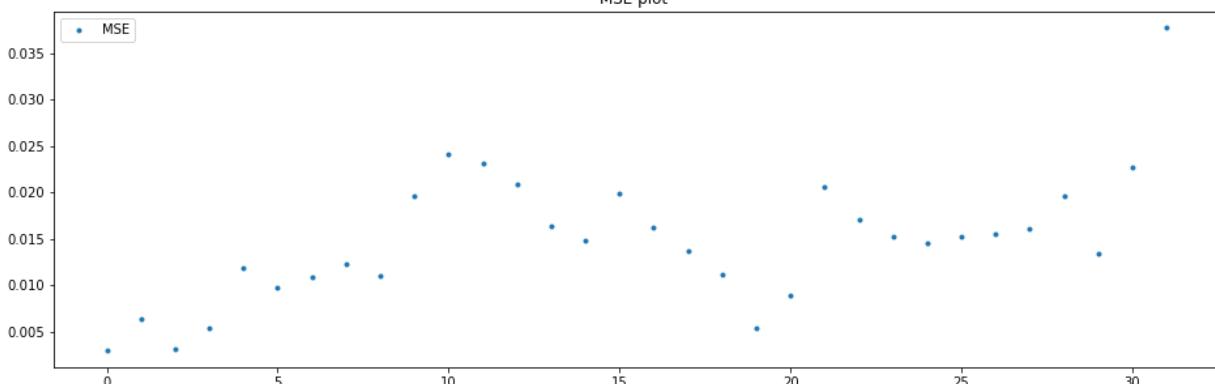
Batch: 117

mean=0.014846875, median=0.01501 , max=0.03772, min=0.00291, variance=4.82932e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

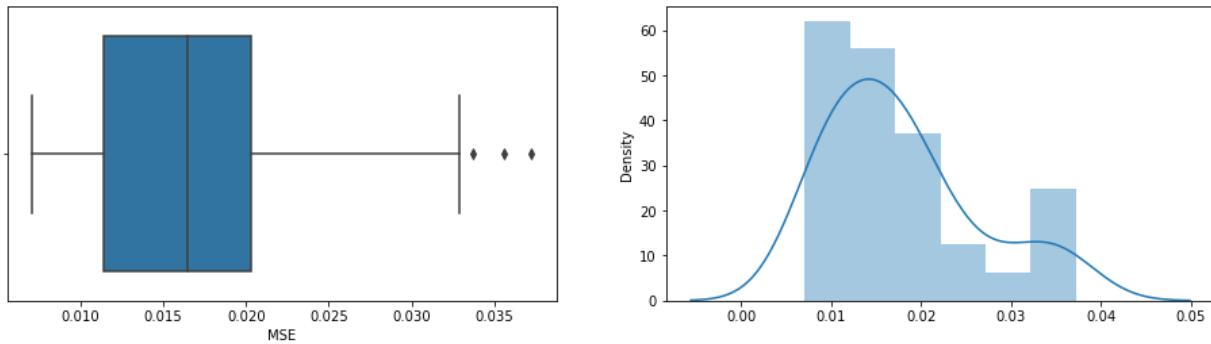
Statistic: 0.372

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)

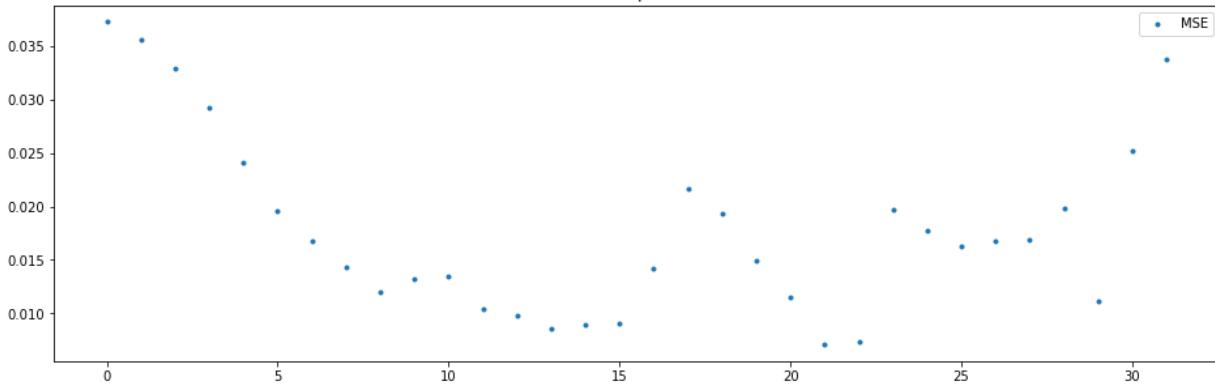
Batch: 118

mean=0.017768125, median=0.016495 , max=0.03724, min=0.00706, variance=6.89896e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson_Darling Test**

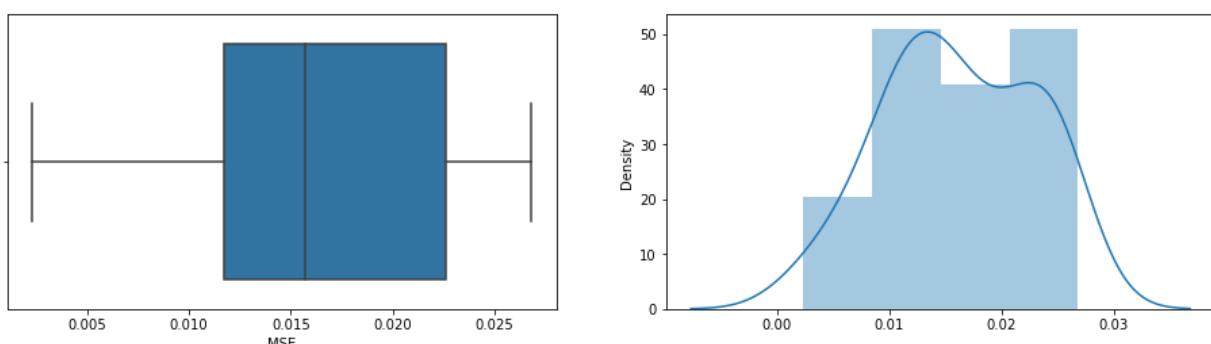
Statistic: 0.987

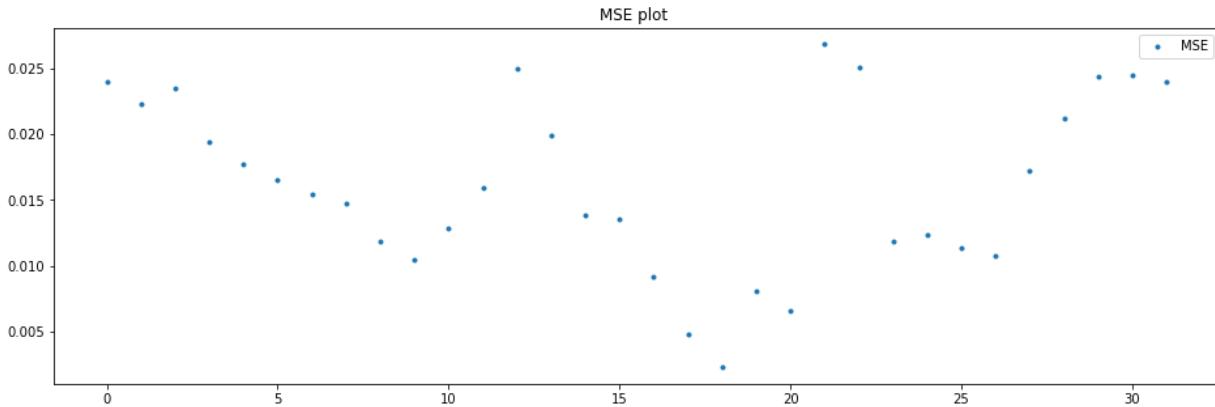
15.000: 0.523, data does not look normal (reject H₀)
 10.000: 0.596, data does not look normal (reject H₀)
 5.000: 0.715, data does not look normal (reject H₀)
 2.500: 0.834, data does not look normal (reject H₀)
 1.000: 0.992, data looks normal (fail to reject H₀)

Batch: 119

mean=0.0161703125, median=0.01568 , max=0.02681, min=0.0023, variance=4.24979e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

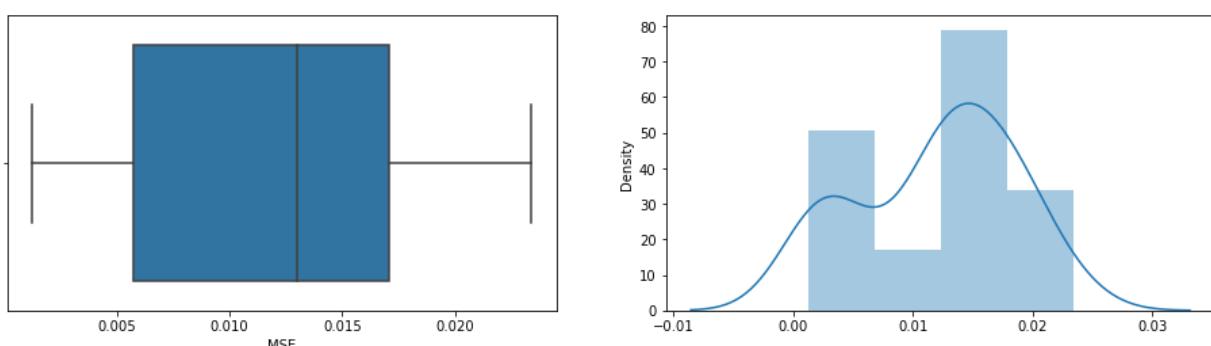
Statistic: 0.432

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)

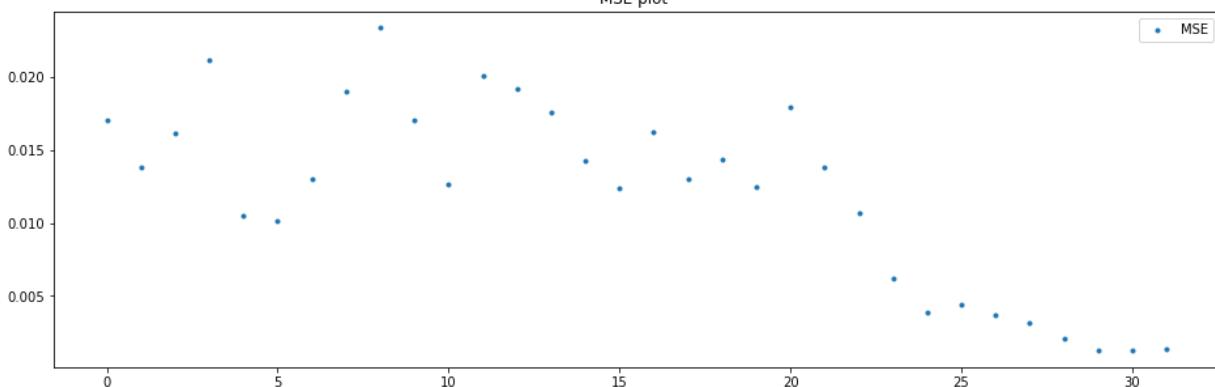
Batch: 120

mean=0.01197875, median=0.013005 , max=0.02339, min=0.00123, variance=4.09846e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

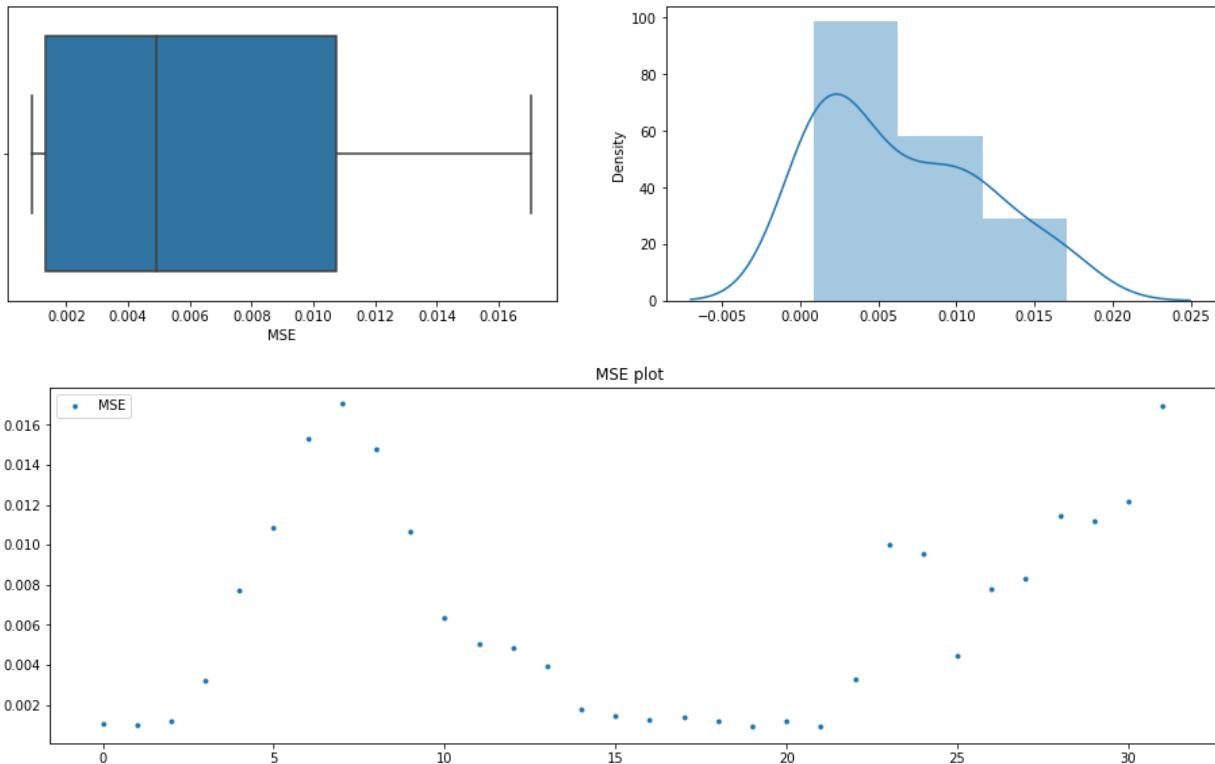
Statistic: 0.787

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: 121

mean=0.0065065625, median=0.00493 , max=0.01705, min=0.0009, variance=2.67334e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

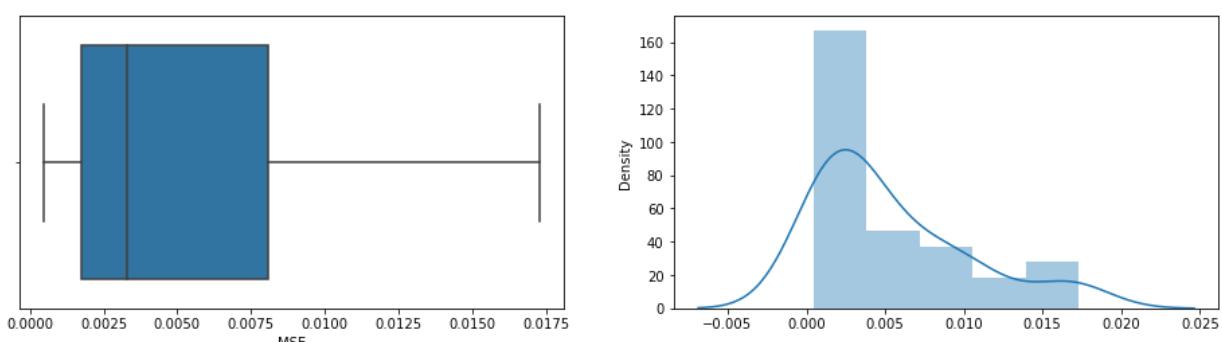
Statistic: 1.204

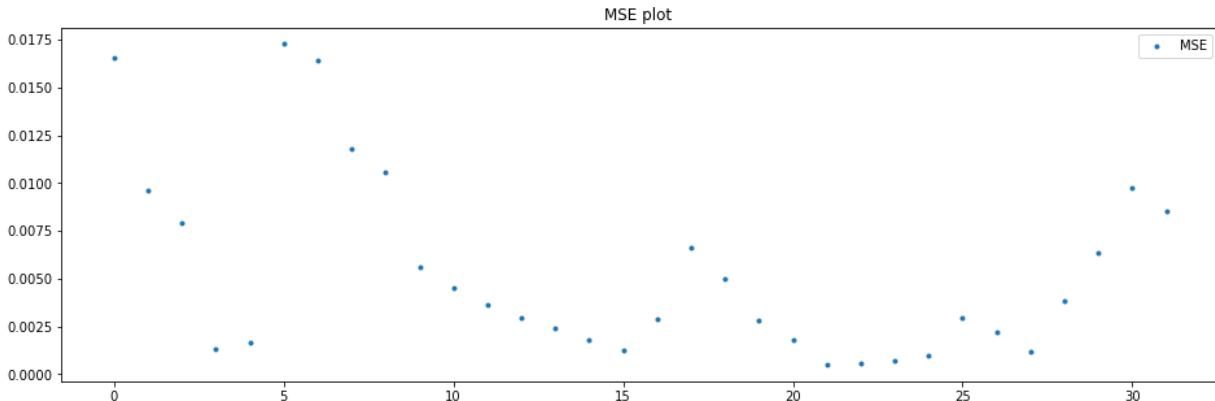
15.000: 0.523, data does not look normal (reject H0)
 10.000: 0.596, data does not look normal (reject H0)
 5.000: 0.715, data does not look normal (reject H0)
 2.500: 0.834, data does not look normal (reject H0)
 1.000: 0.992, data does not look normal (reject H0)

Batch: 122

mean=0.0053696875, median=0.00329 , max=0.01729, min=0.00047, variance=2.31888e-05

Boxplots and Distribution plot for Reconstruction Error



**Anderson_Darling Test**

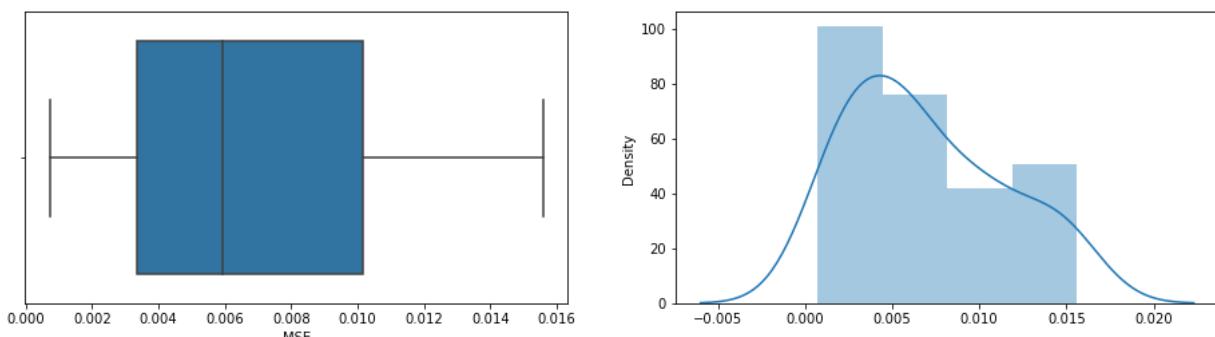
Statistic: 1.736

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)

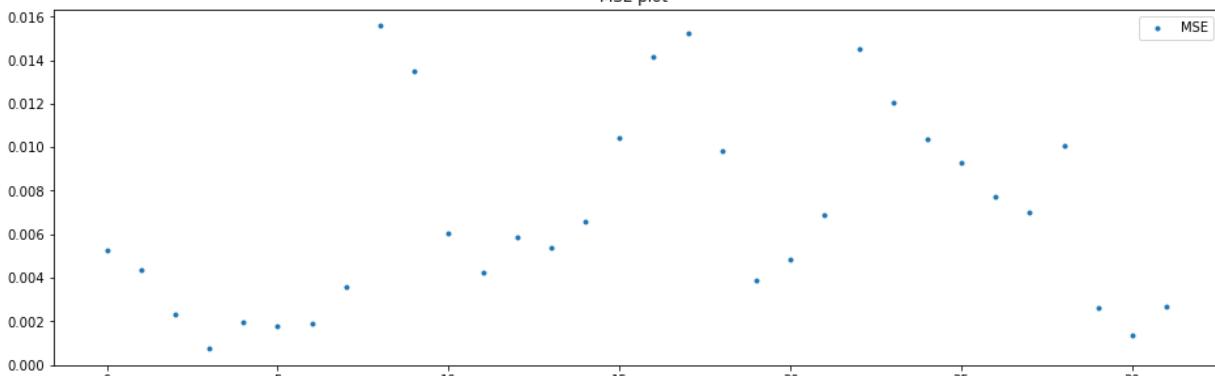
Batch: 123

mean=0.006940625, median=0.005945 , max=0.01558, min=0.00073, variance=1.94517e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson_Darling Test**

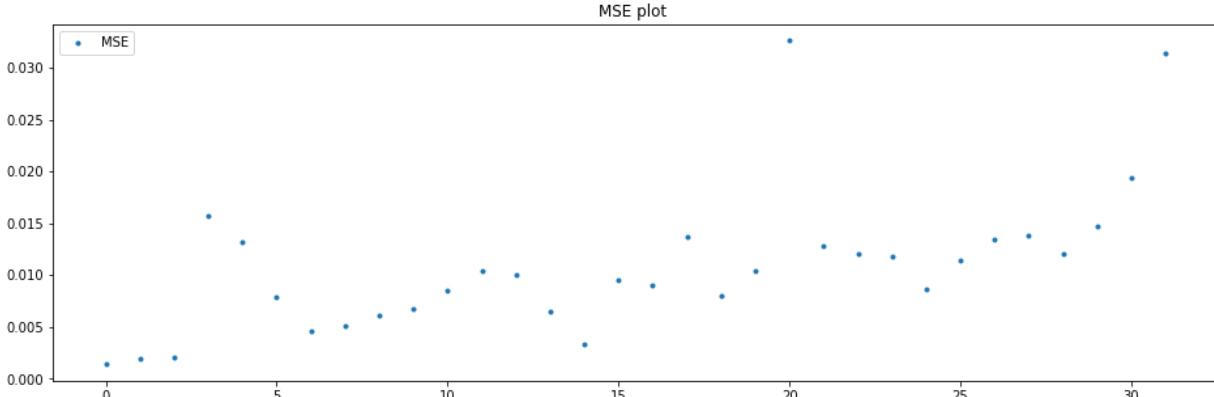
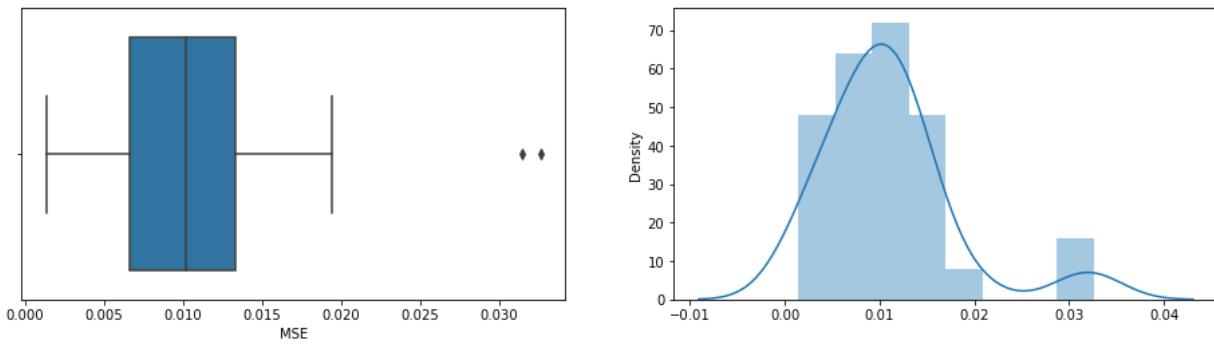
Statistic: 0.714

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: 124

mean=0.0108825, median=0.010185 , max=0.0326, min=0.00138, variance=4.71835e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

Statistic: 1.289

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)

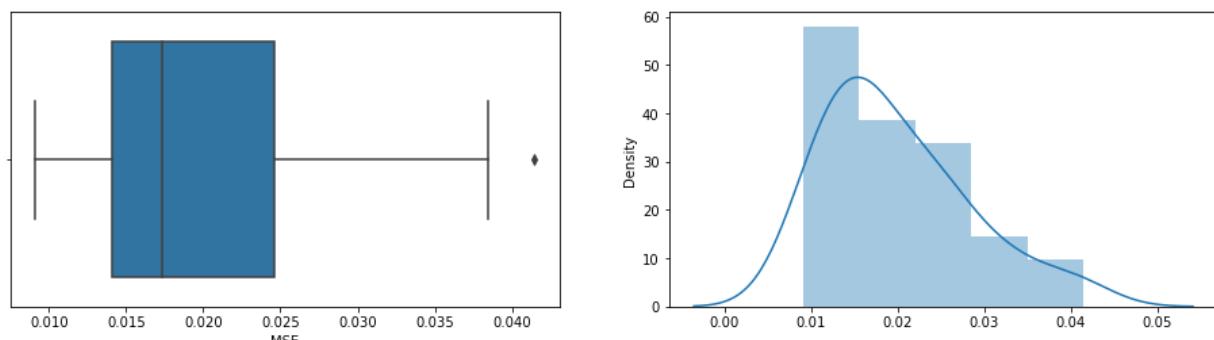
2.500: 0.834, data does not look normal (reject H0)

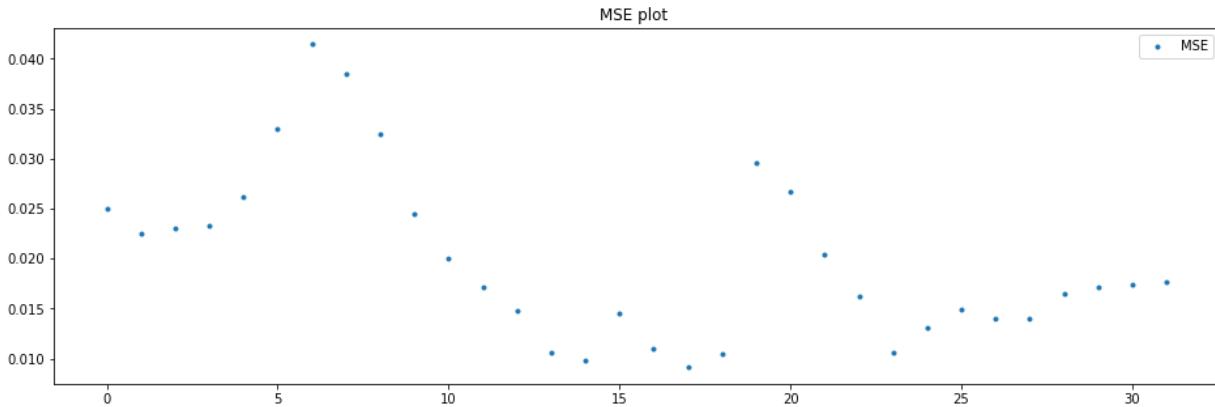
1.000: 0.992, data does not look normal (reject H0)

Batch: 125

mean=0.019869375, median=0.01732 , max=0.04144, min=0.00911, variance=6.86403e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.761

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)

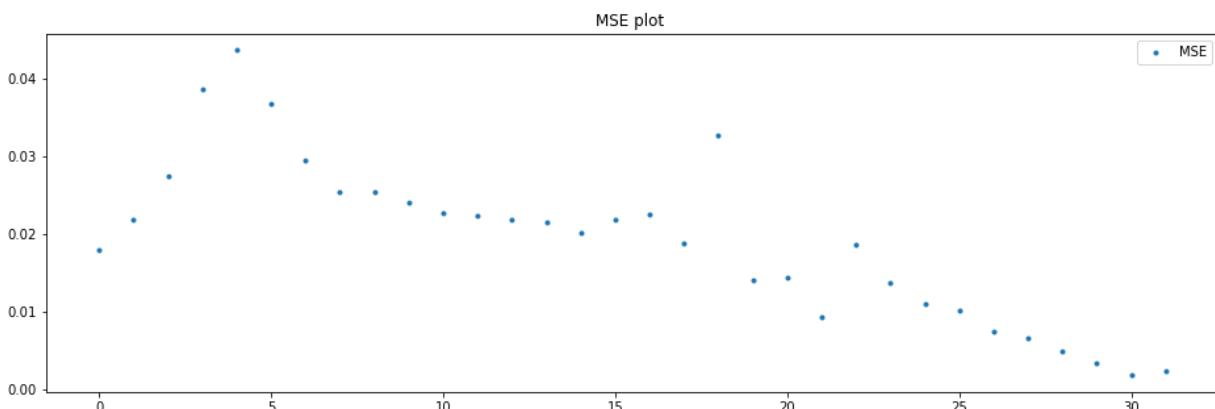
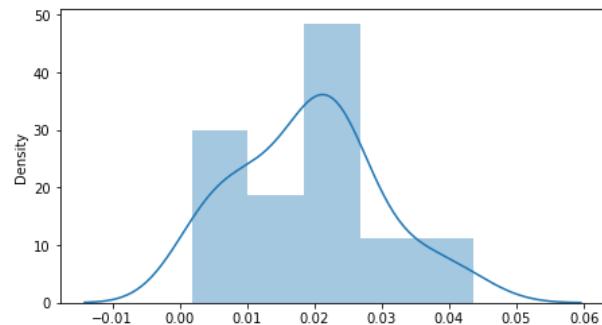
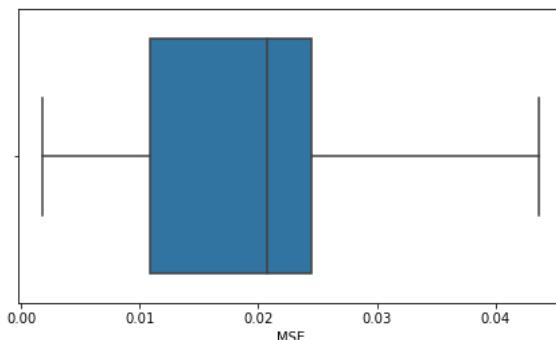
2.500: 0.834, data looks normal (fail to reject H0)

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

Batch: 126

mean=0.0191609375, median=0.020795 , max=0.04367, min=0.00177, variance=0.0001087342

Boxplots and Distribution plot for Reconstruction Error



Anderson_Darling Test

Statistic: 0.331

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)

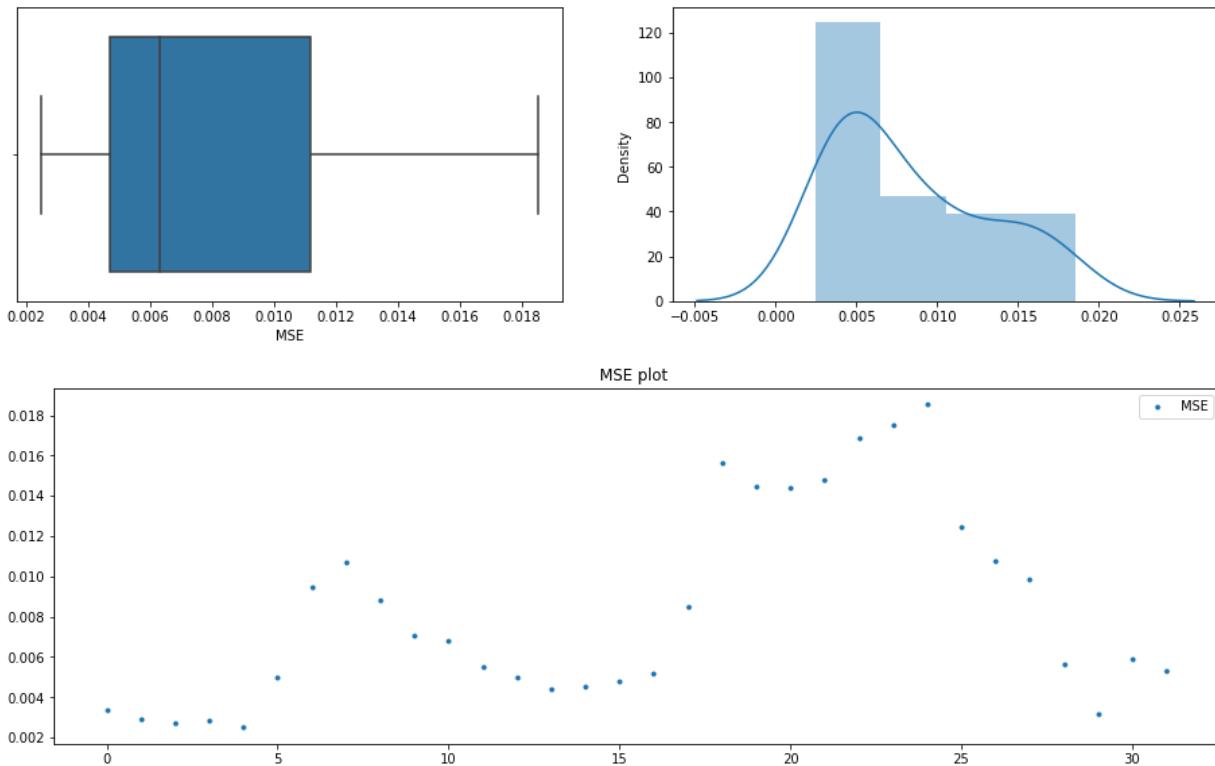
2.500: 0.834, data looks normal (fail to reject H0)

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

Batch: 127

mean=0.00829375, median=0.006335 , max=0.01853, min=0.0025, variance=2.33575e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

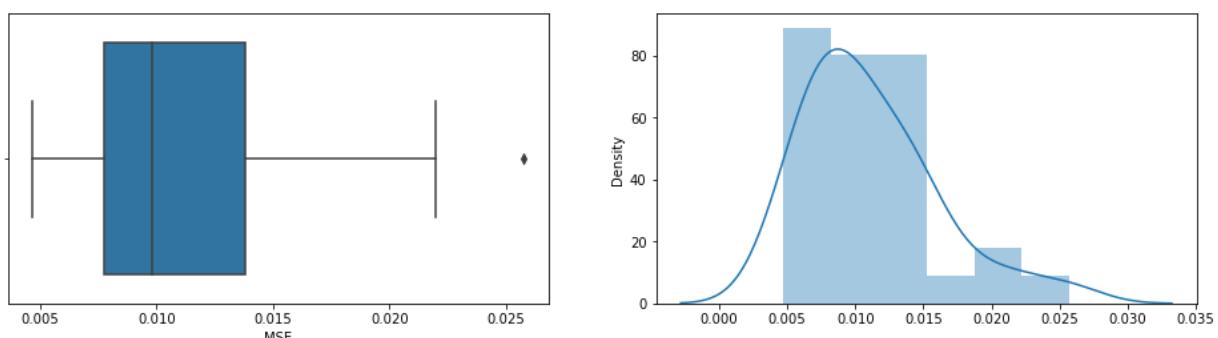
Statistic: 1.216

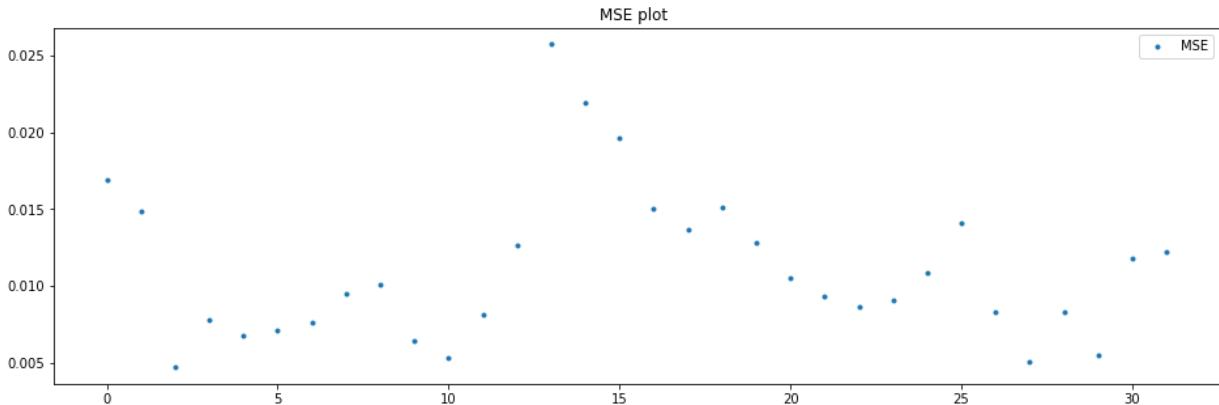
15.000: 0.523, data does not look normal (reject H0)
 10.000: 0.596, data does not look normal (reject H0)
 5.000: 0.715, data does not look normal (reject H0)
 2.500: 0.834, data does not look normal (reject H0)
 1.000: 0.992, data does not look normal (reject H0)

Batch: 128

mean=0.0111046875, median=0.009805 , max=0.02575, min=0.00467, variance=2.41449e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.759

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)

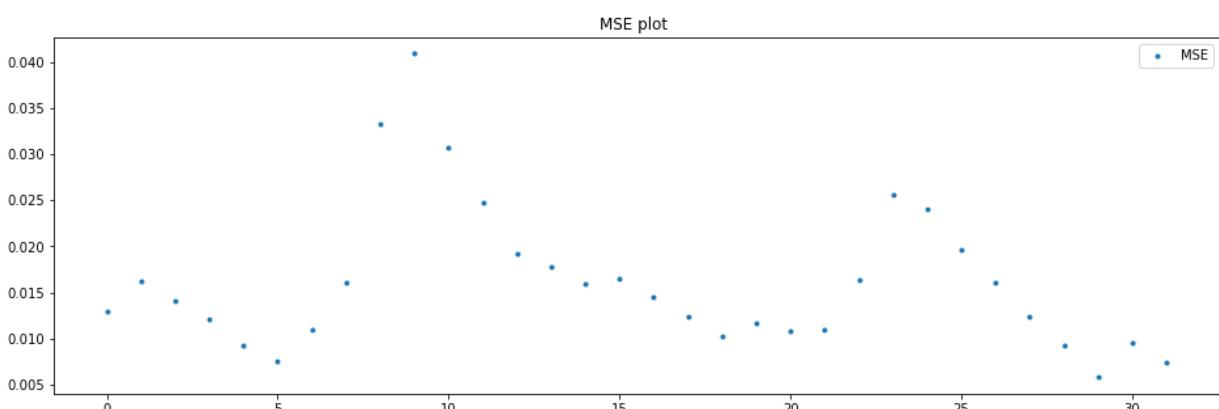
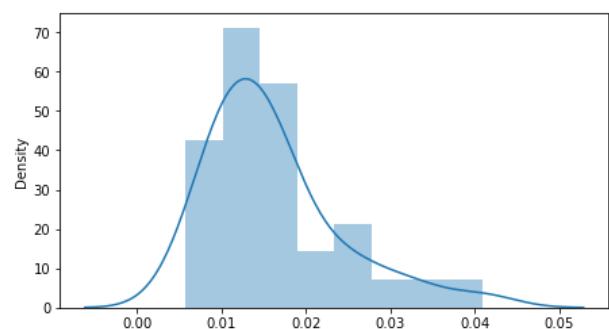
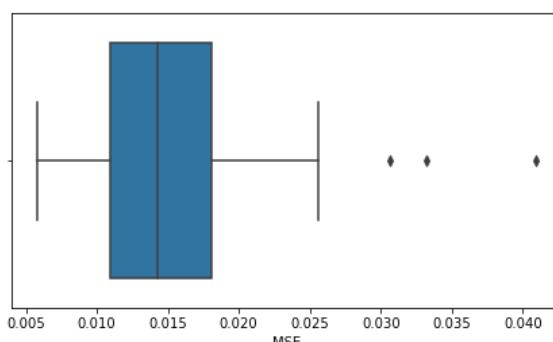
2.500: 0.834, data looks normal (fail to reject H0)

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

Batch: 129

mean=0.016089375, median=0.0143 , max=0.04089, min=0.00578, variance=6.1245e-05

Boxplots and Distribution plot for Reconstruction Error



Anderson_Darling Test

Statistic: 1.355

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

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

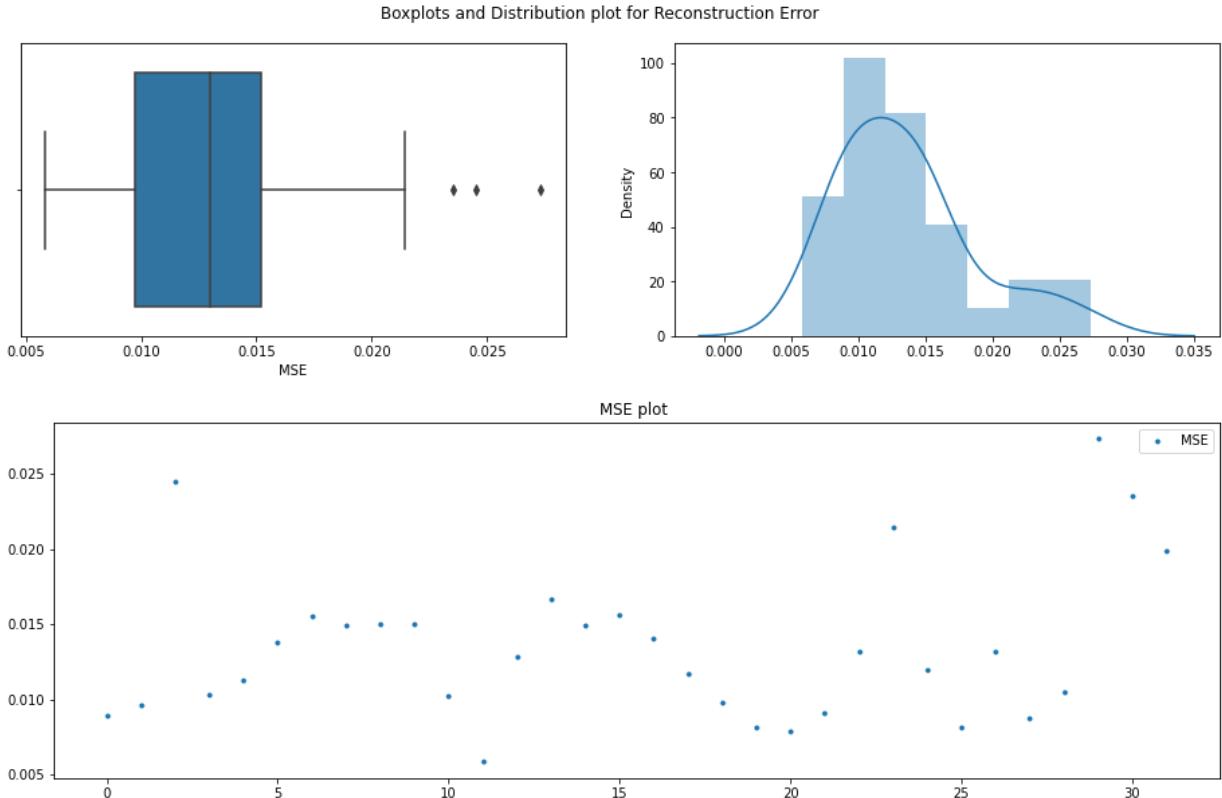
5.000: 0.715, data does not look normal (reject H0)

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=0.0135459375, median=0.01298 , max=0.02731, min=0.00585, variance=2.57338e-05



Anderson_Darling Test

Statistic: 0.947

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

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

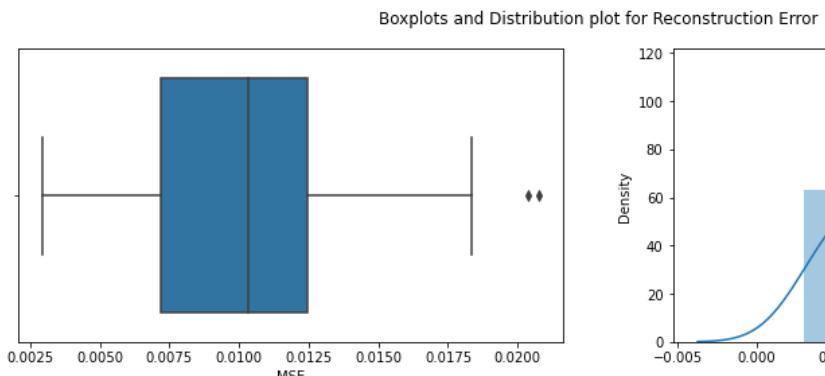
5.000: 0.715, data does not look normal (reject H0)

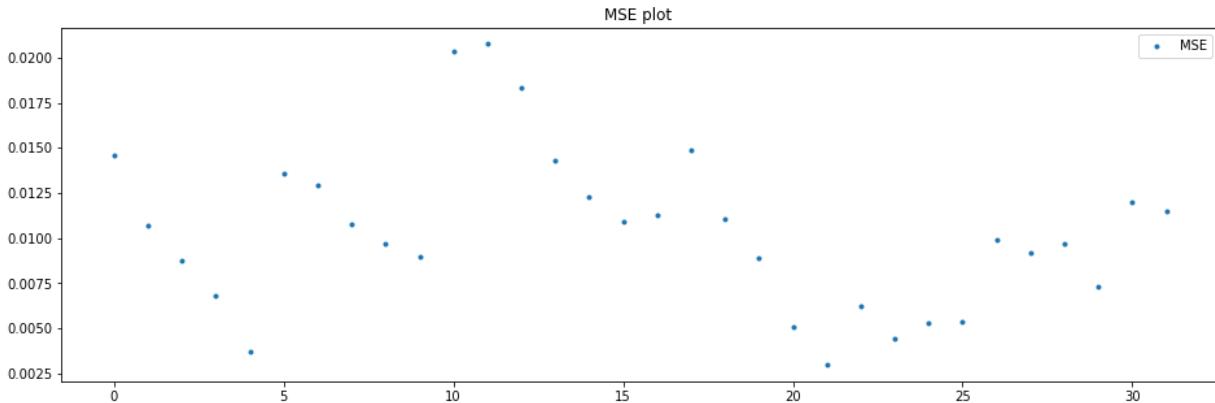
2.500: 0.834, data does not look normal (reject H0)

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

Batch: 131

mean=0.01038375, median=0.01032 , max=0.02076, min=0.00295, variance=1.92035e-05





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)

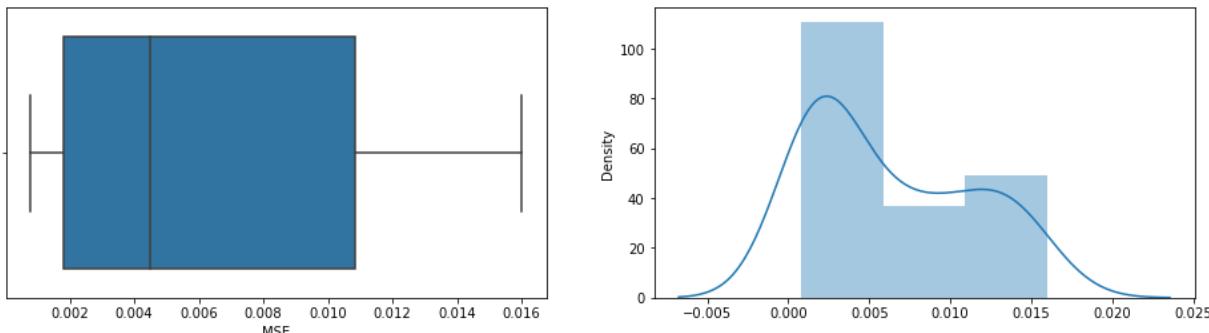
2.500: 0.834, data looks normal (fail to reject H0)

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

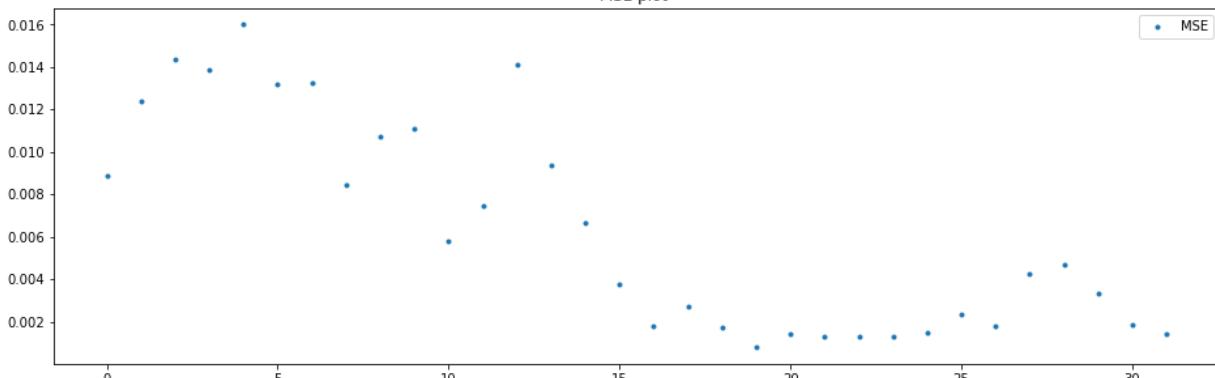
Batch: 132

mean=0.00634, median=0.004485 , max=0.016, min=0.00078, variance=2.44634e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 1.603

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 does not look normal (reject H0)

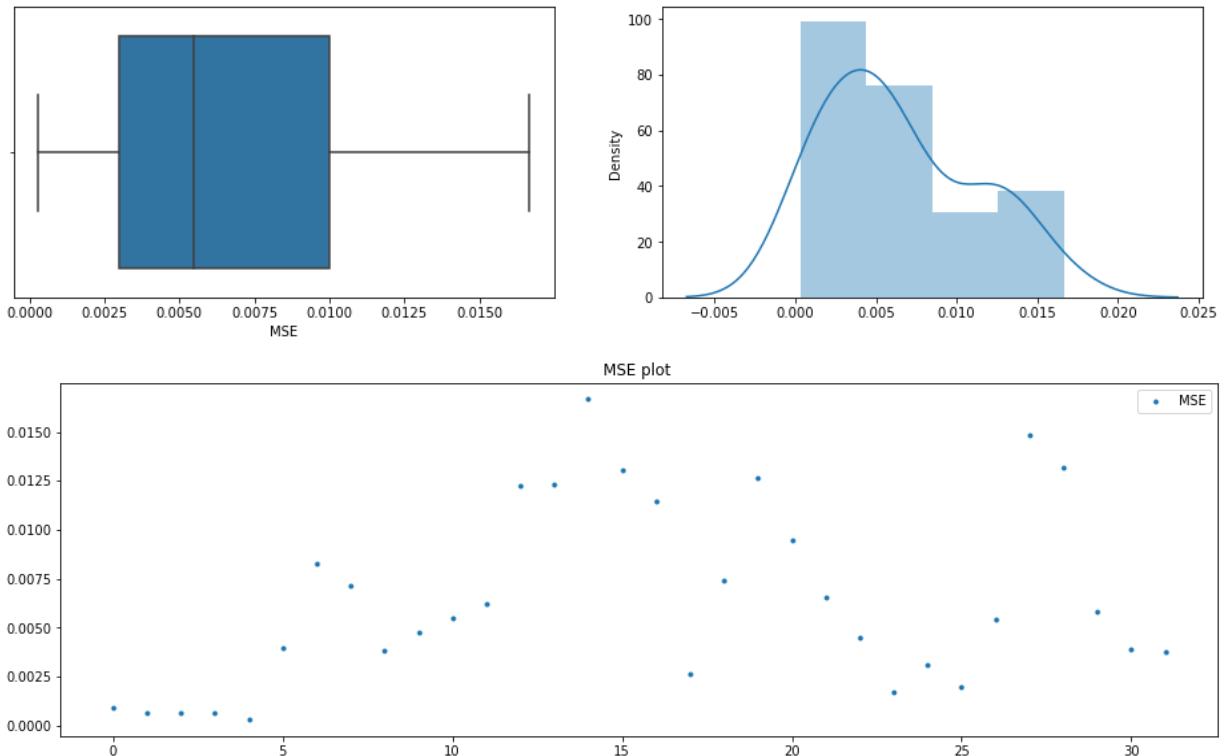
2.500: 0.834, data does not look normal (reject H0)

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

Batch: 133

mean=0.0064290625, median=0.00547 , max=0.01667, min=0.00029, variance=2.13078e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

Statistic: 0.800

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)

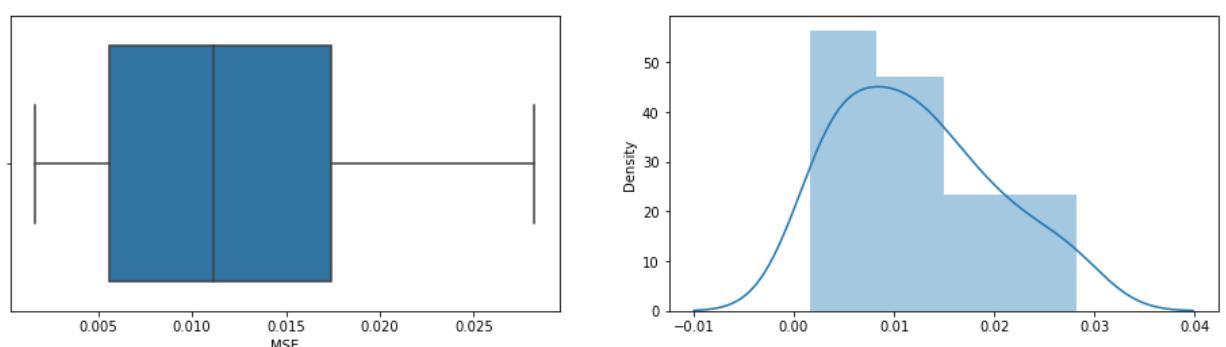
2.500: 0.834, data looks normal (fail to reject H0)

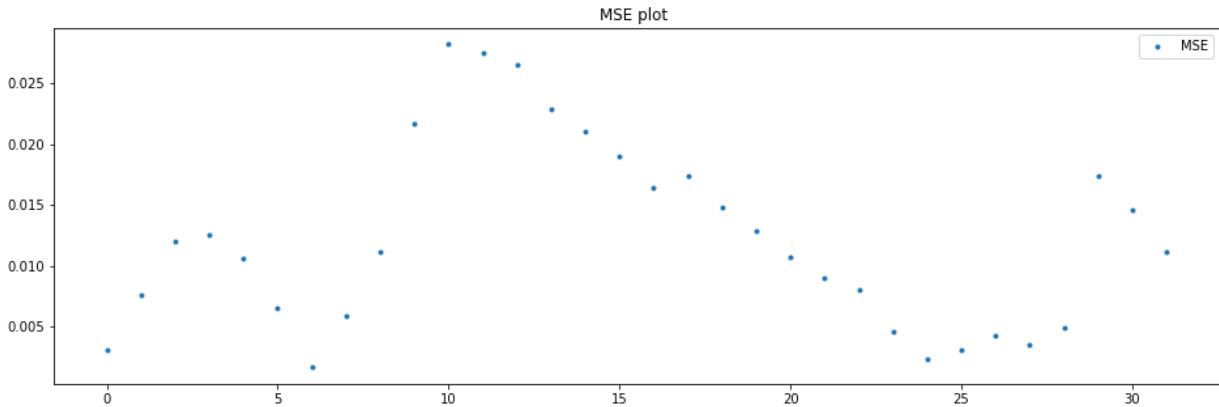
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 134

mean=0.012284375, median=0.01117 , max=0.02821, min=0.00165, variance=5.82385e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.512

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)

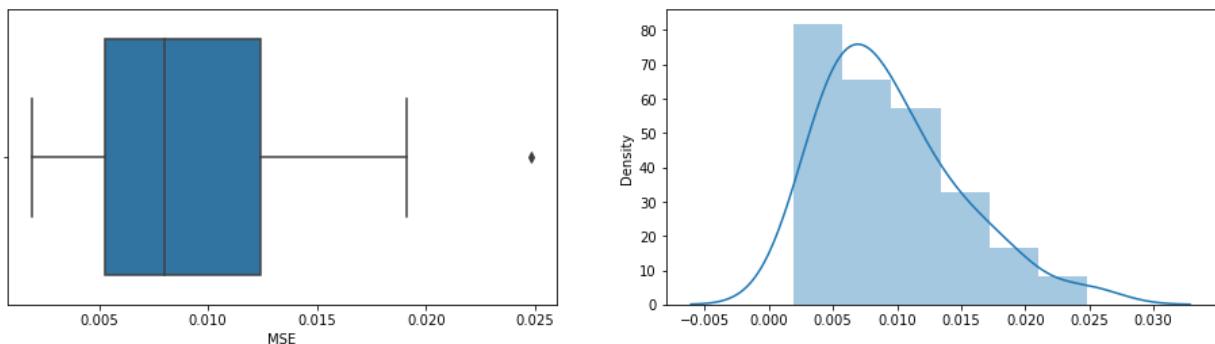
2.500: 0.834, data looks normal (fail to reject H0)

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

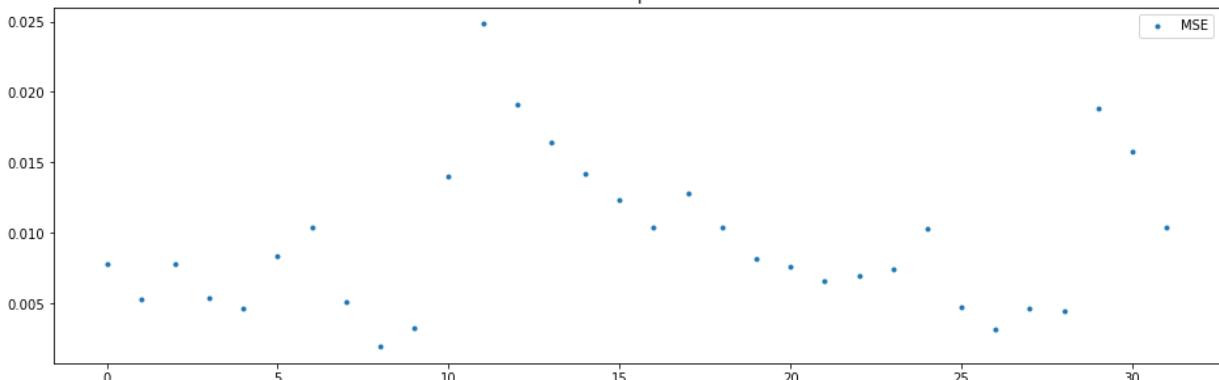
Batch: 135

mean=0.0094984375, median=0.007995 , max=0.02483, min=0.00193, variance=2.75797e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 0.761

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)

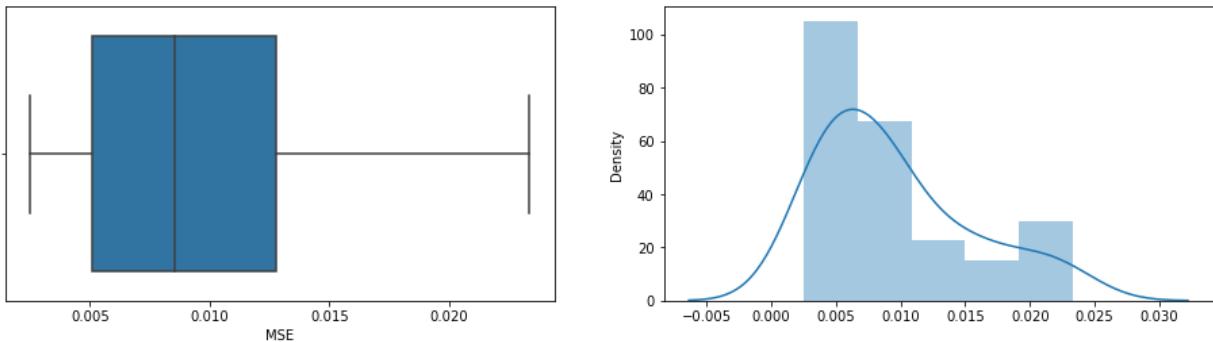
2.500: 0.834, data looks normal (fail to reject H0)

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

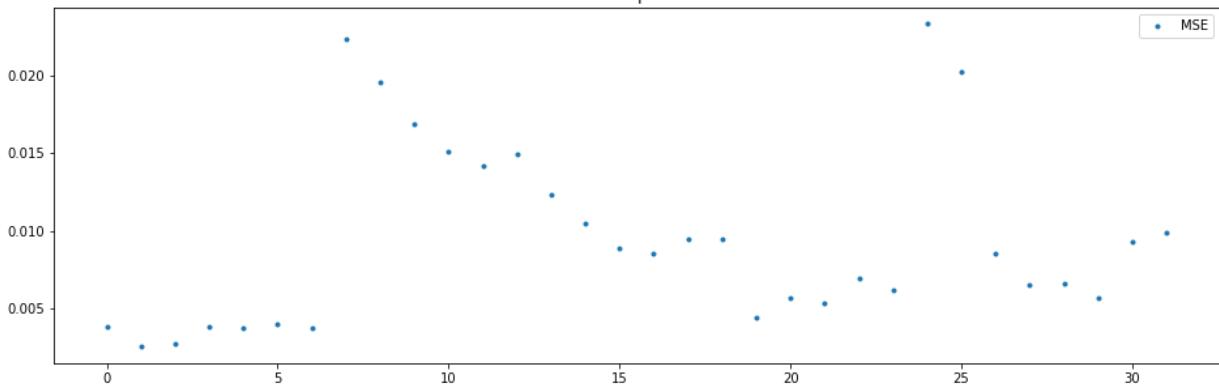
Batch: 136

mean=0.0095284375, median=0.00854 , max=0.02333, min=0.00251, variance=3.39935e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson_Darling Test**

Statistic: 1.182

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)

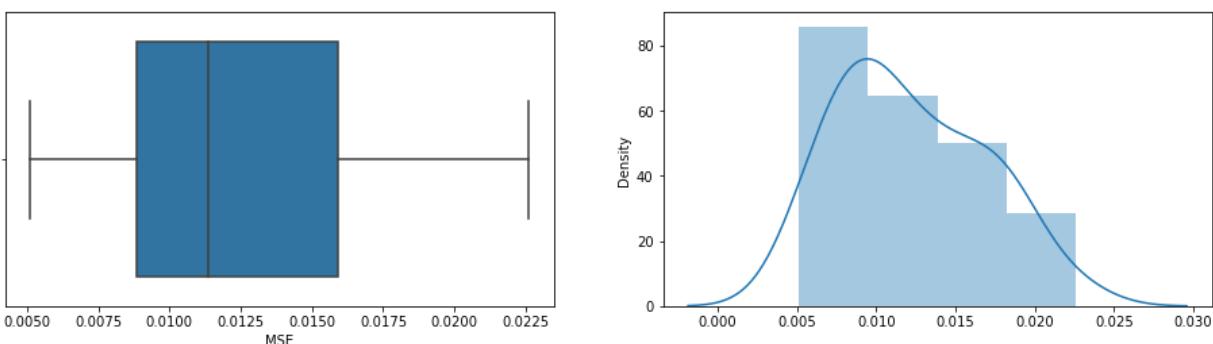
2.500: 0.834, data does not look normal (reject H0)

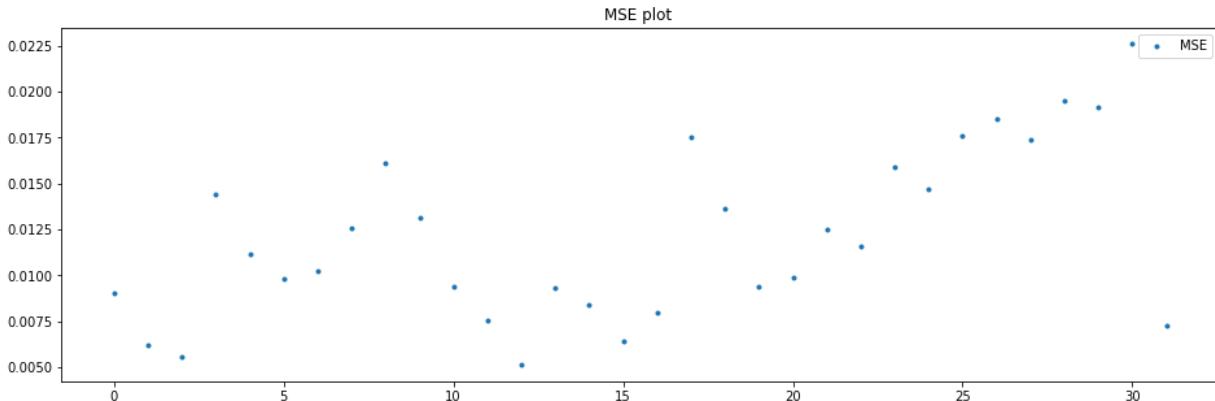
1.000: 0.992, data does not look normal (reject H0)

Batch: 137

mean=0.0121734375, median=0.011375 , max=0.0226, min=0.00511, variance=2.0937e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

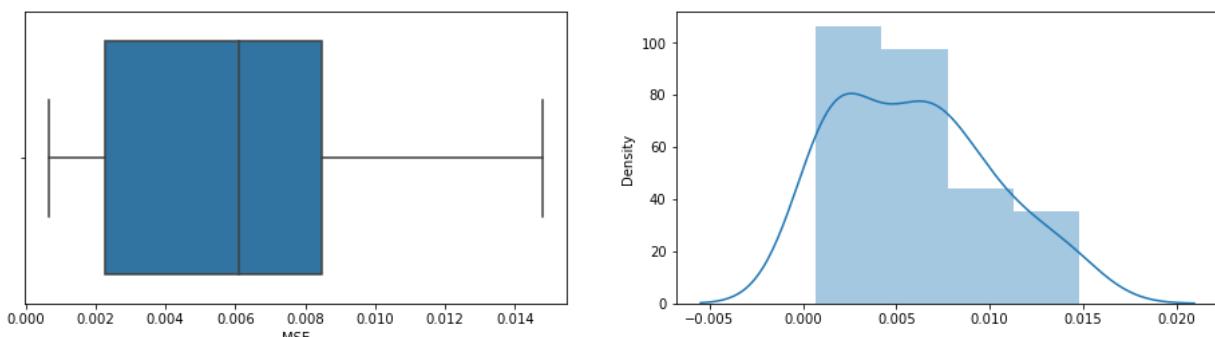
Statistic: 0.461

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)

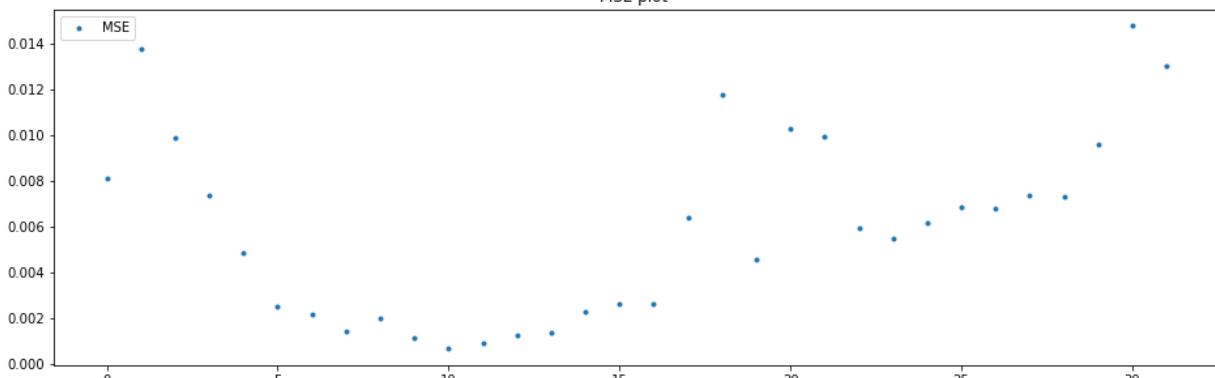
Batch: 138

mean=0.00598625, median=0.006085 , max=0.01479, min=0.00067, variance=1.62461e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



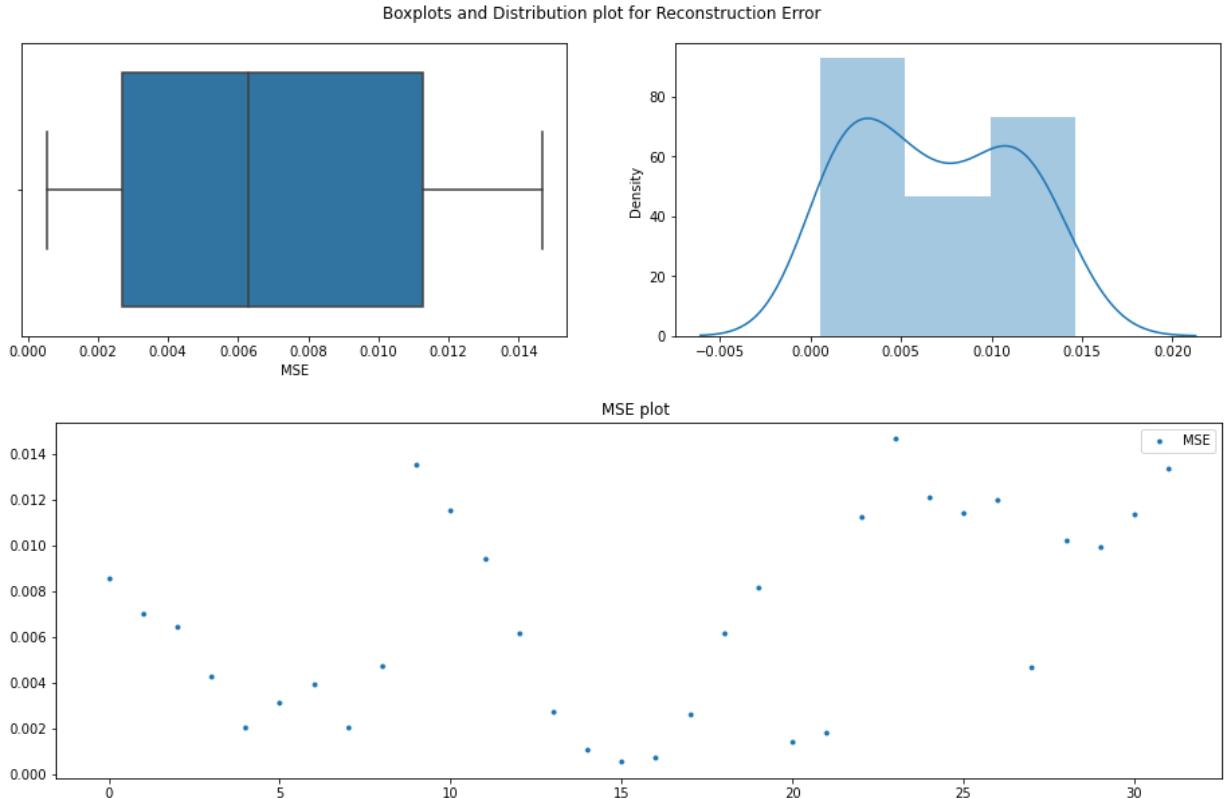
Anderson_Darling Test

Statistic: 0.672

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: 139

mean=0.00684875, median=0.00631 , max=0.01466, min=0.00054, variance=1.88319e-05



Anderson_Darling Test

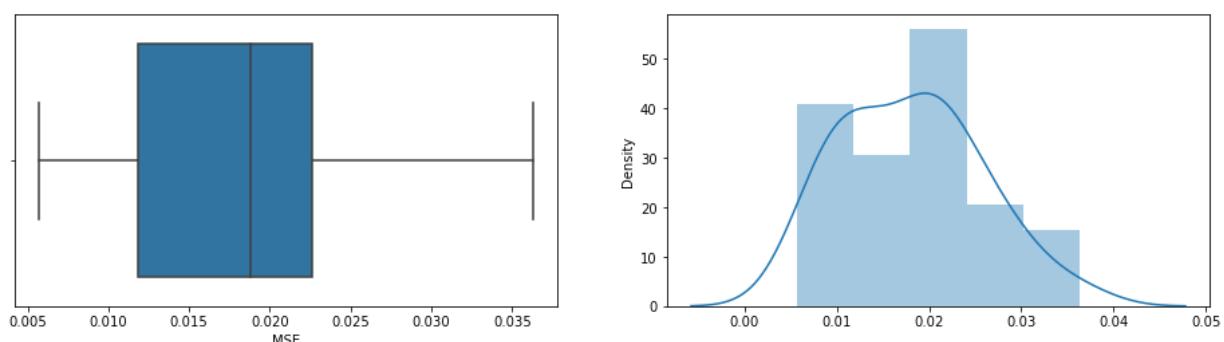
Statistic: 0.753

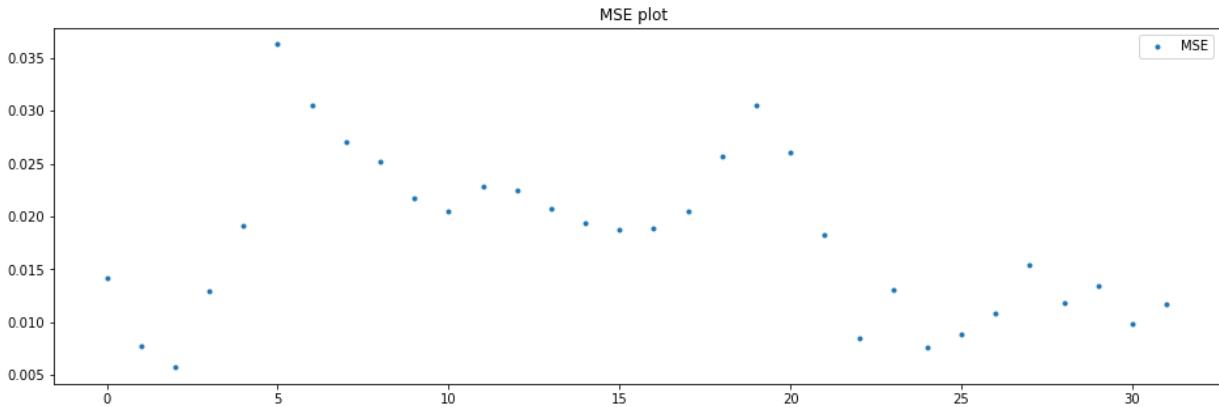
15.000: 0.523, data does not look normal (reject H0)
 10.000: 0.596, data does not look normal (reject H0)
 5.000: 0.715, data does not look normal (reject H0)
 2.500: 0.834, data looks normal (fail to reject H0)
 1.000: 0.992, data looks normal (fail to reject H0)

Batch: 140

mean=0.01801, median=0.018825 , max=0.0363, min=0.0057, variance=5.66965e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

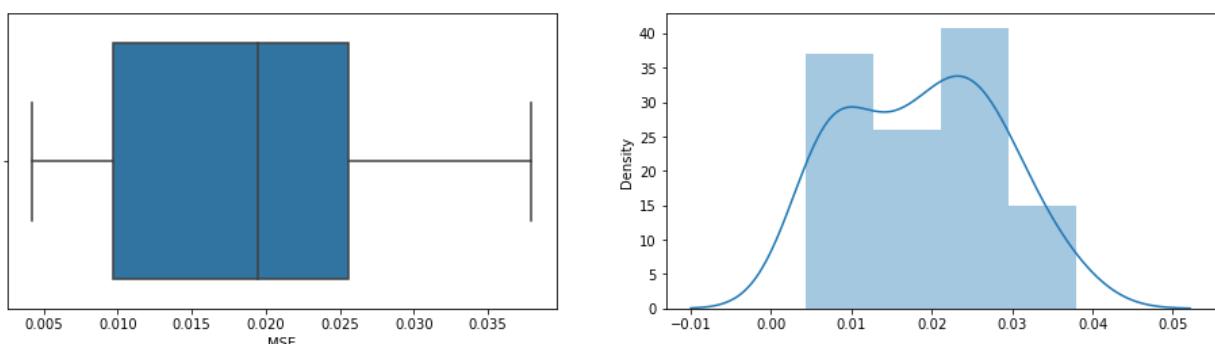
Statistic: 0.312

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)

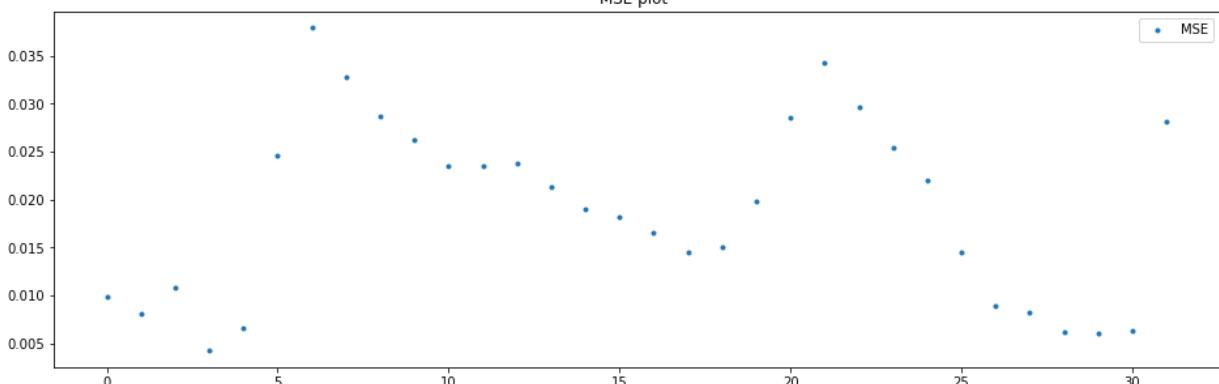
Batch: 141

mean=0.0188503125, median=0.01944 , max=0.03791, min=0.00422, variance=8.69108e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

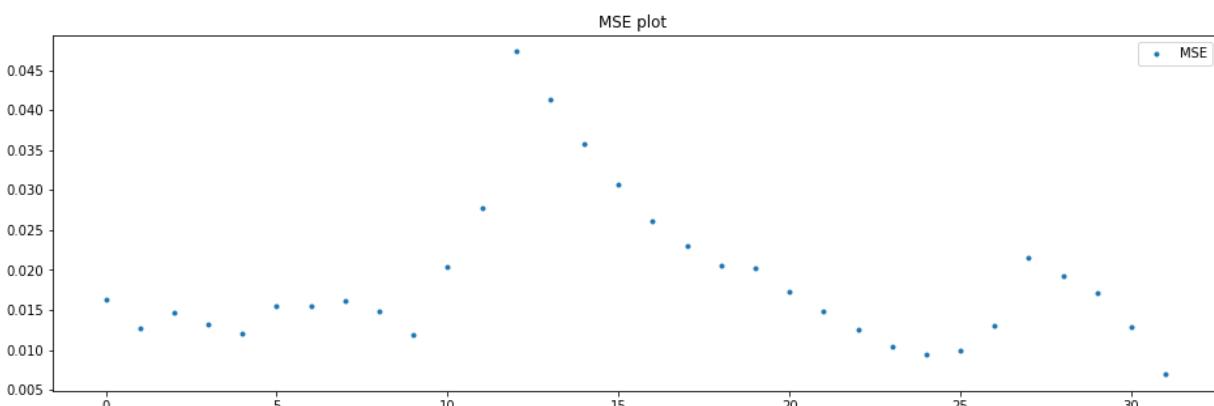
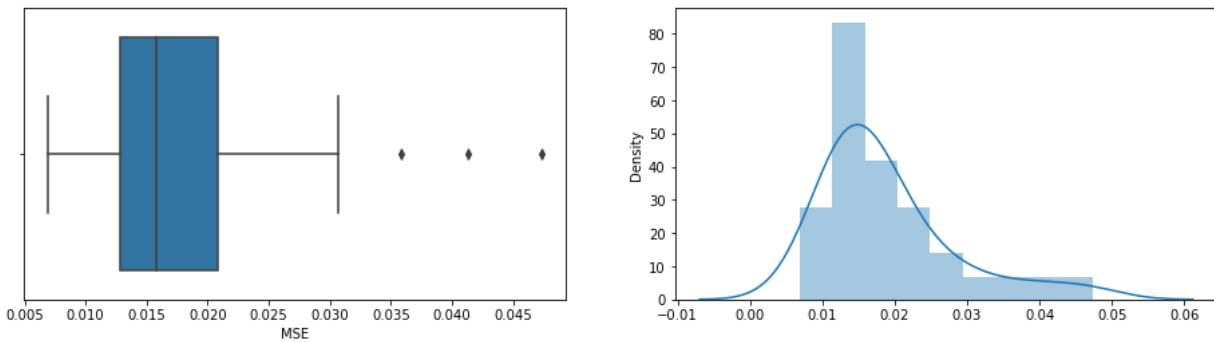
Statistic: 0.464

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=0.01879, median=0.015815 , max=0.04733, min=0.00691, variance=8.28456e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

Statistic: 1.694

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 does not look normal (reject H0)

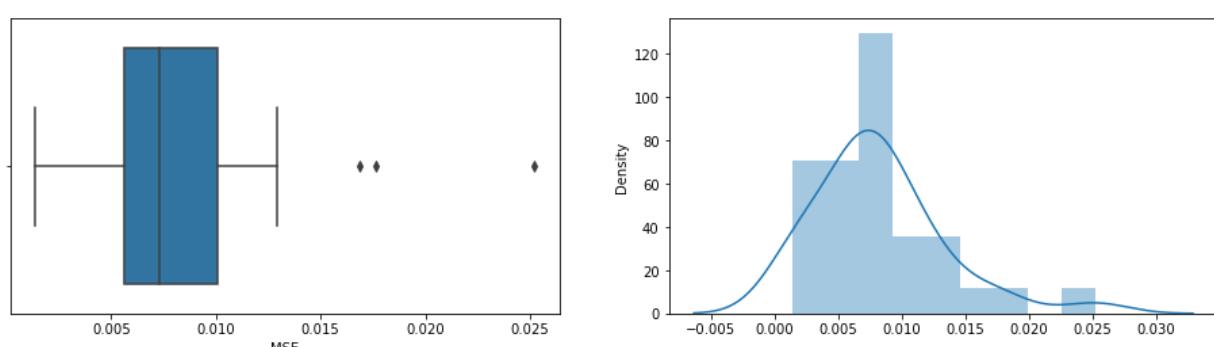
2.500: 0.834, data does not look normal (reject H0)

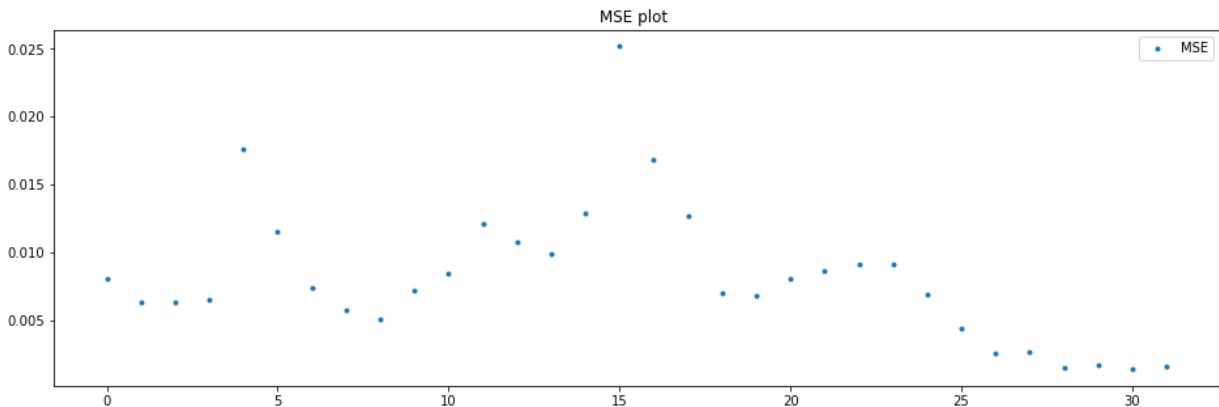
1.000: 0.992, data does not look normal (reject H0)

Batch: 143

mean=0.0081934375, median=0.007295 , max=0.0252, min=0.00137, variance=2.56139e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.791

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)

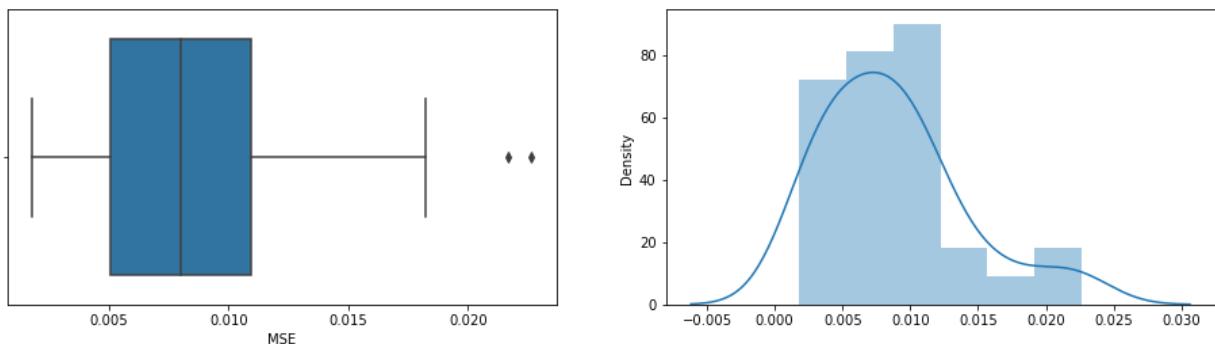
2.500: 0.834, data looks normal (fail to reject H0)

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

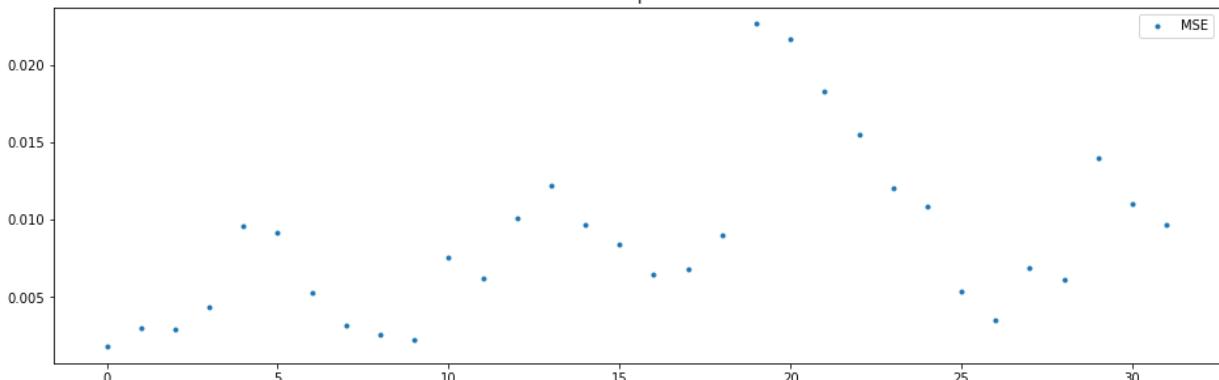
Batch: 144

mean=0.0086971875, median=0.008 , max=0.02263, min=0.0018, variance=2.75342e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 0.752

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)

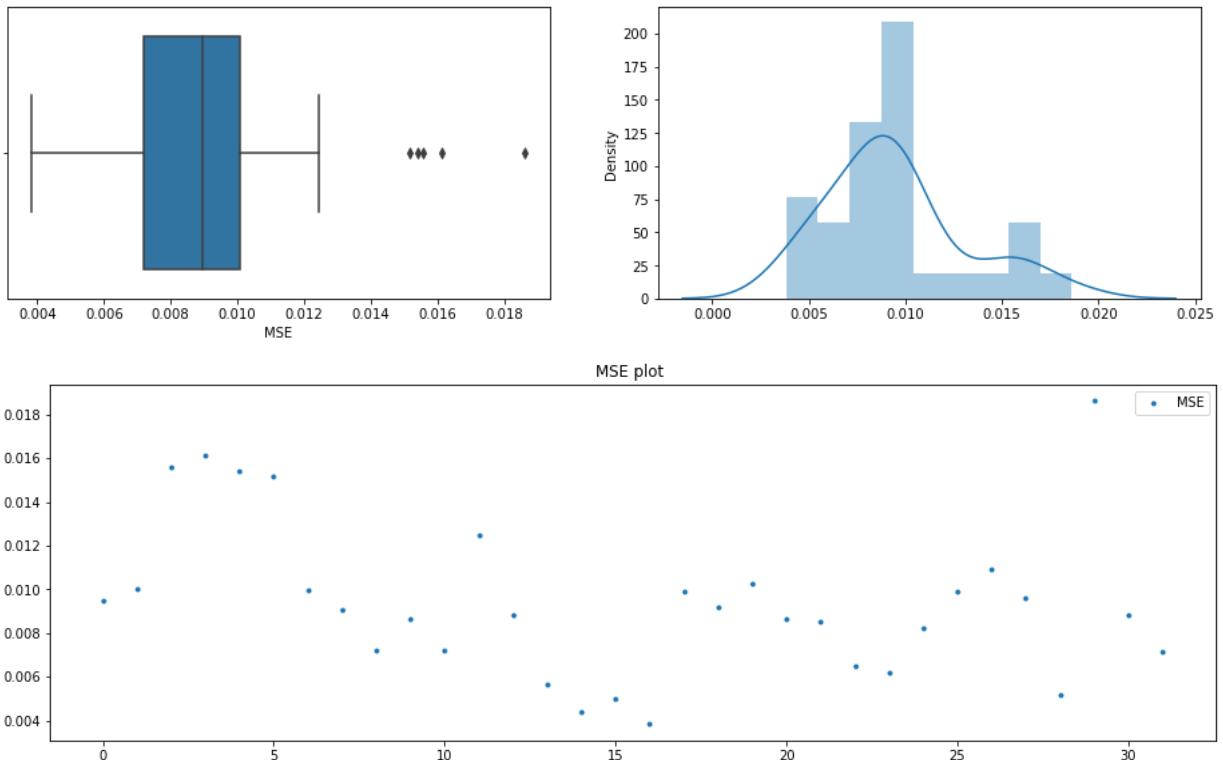
2.500: 0.834, data looks normal (fail to reject H0)

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

Batch: 145

mean=0.0094228125, median=0.00895 , max=0.01862, min=0.00383, variance=1.24112e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

Statistic: 0.975

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)

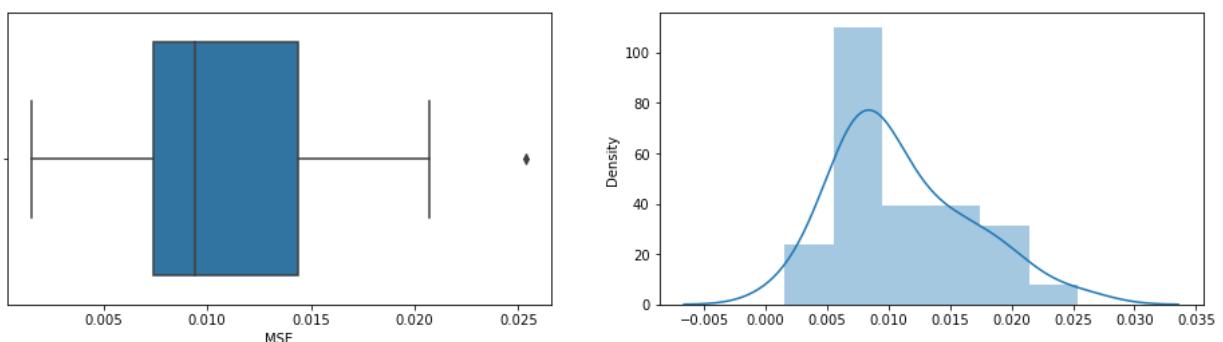
2.500: 0.834, data does not look normal (reject H0)

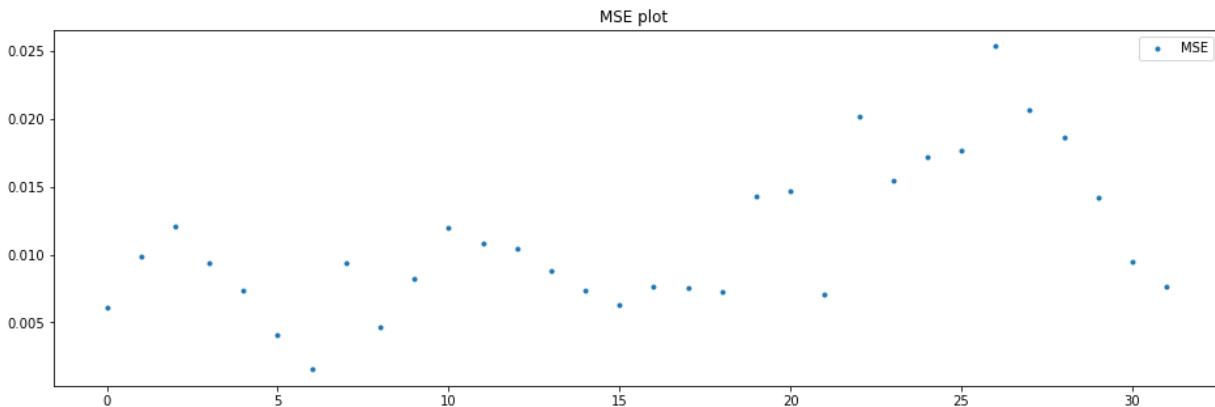
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 146

mean=0.0110459375, median=0.009435 , max=0.02537, min=0.00153, variance=2.88003e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.790

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)

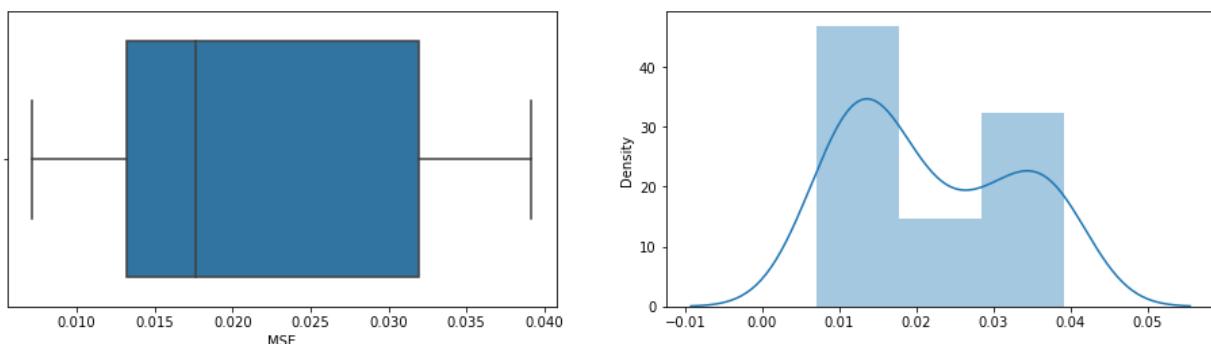
2.500: 0.834, data looks normal (fail to reject H0)

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

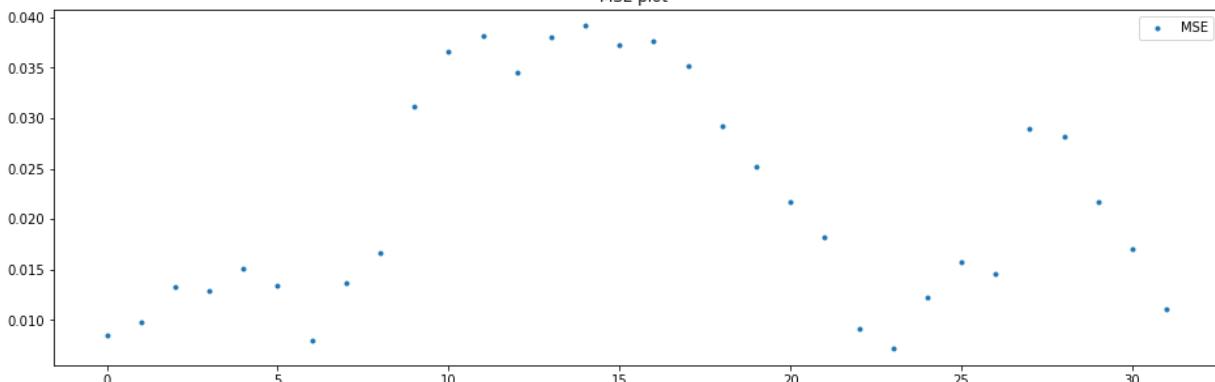
Batch: 147

mean=0.021839375, median=0.017645 , max=0.03915, min=0.00714, variance=0.0001156627

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 1.239

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)

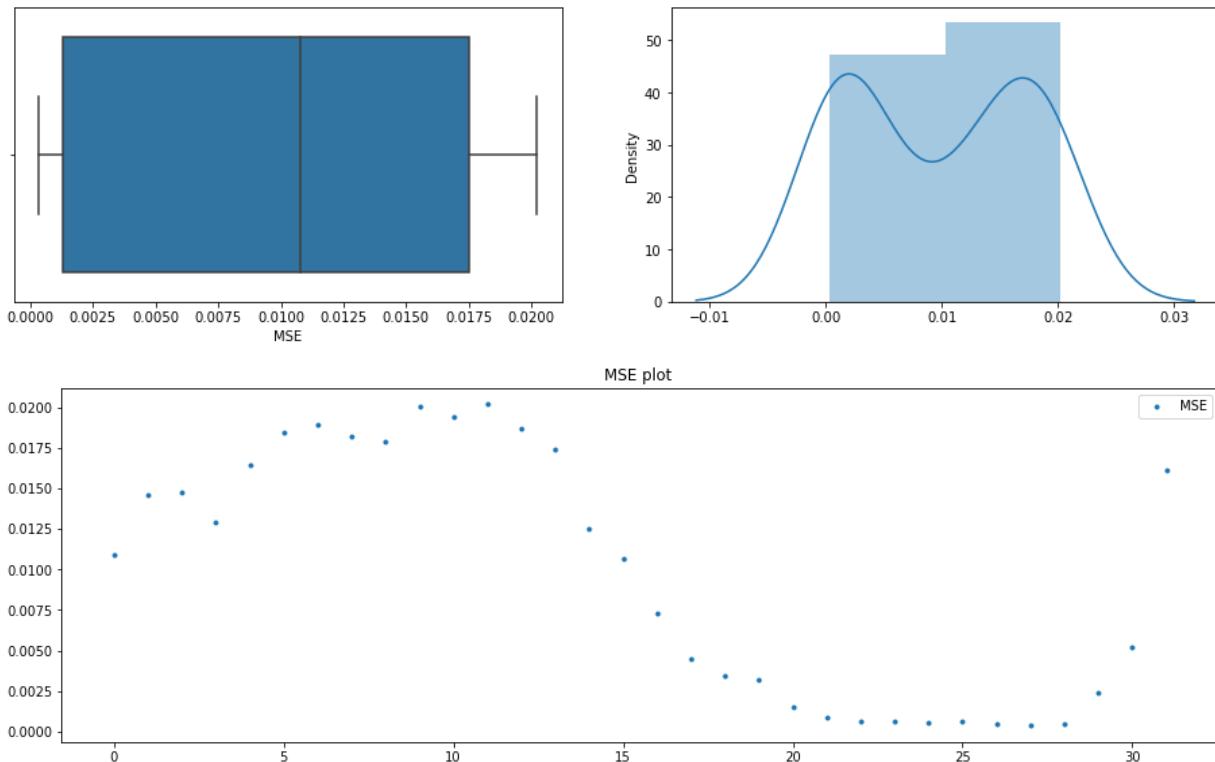
2.500: 0.834, data does not look normal (reject H0)

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

Batch: 148

mean=0.00969875, median=0.010775 , max=0.02021, min=0.00035, variance=5.7365e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

Statistic: 1.738

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)

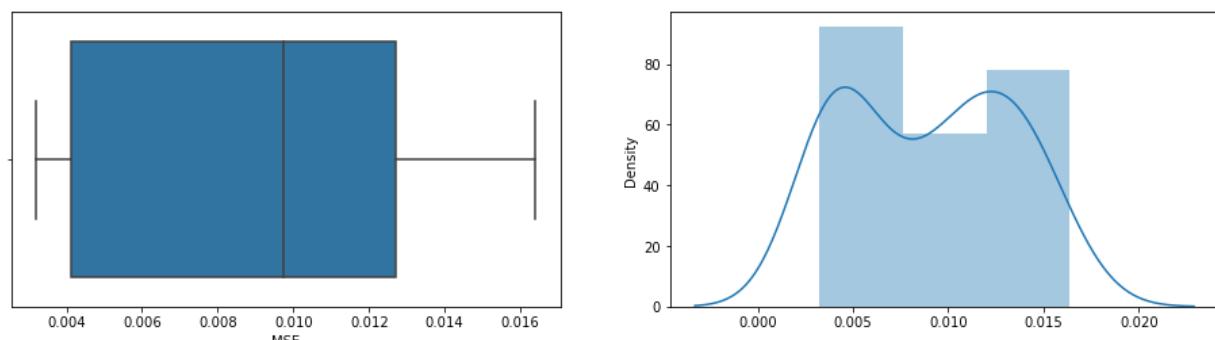
2.500: 0.834, data does not look normal (reject H0)

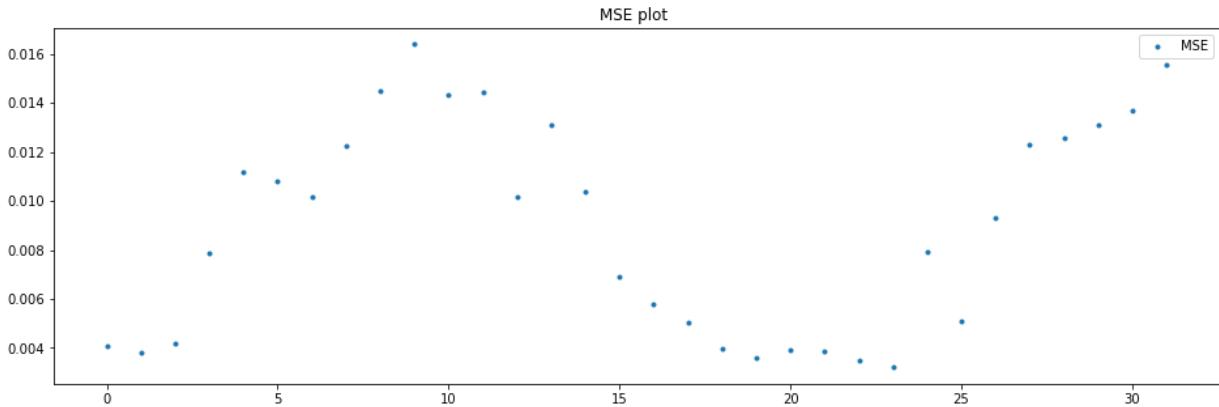
1.000: 0.992, data does not look normal (reject H0)

Batch: 149

mean=0.0089640625, median=0.009735 , max=0.01639, min=0.0032, variance=1.8186e-05

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)

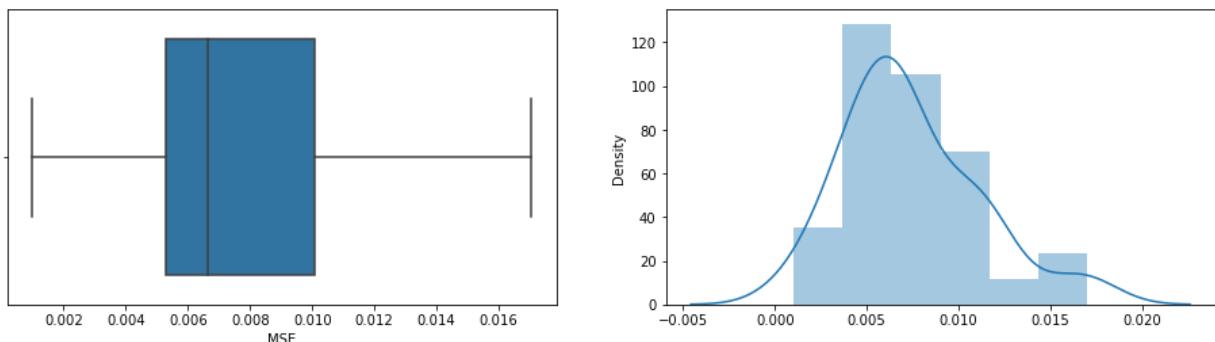
2.500: 0.834, data does not look normal (reject H0)

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

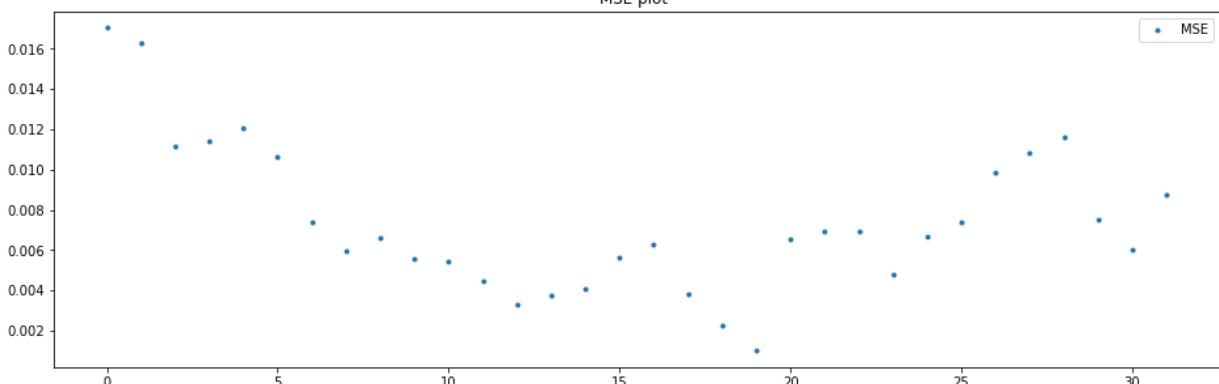
Batch: 150

mean=0.0074309375, median=0.00665 , max=0.01704, min=0.00099, variance=1.33597e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 0.728

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)

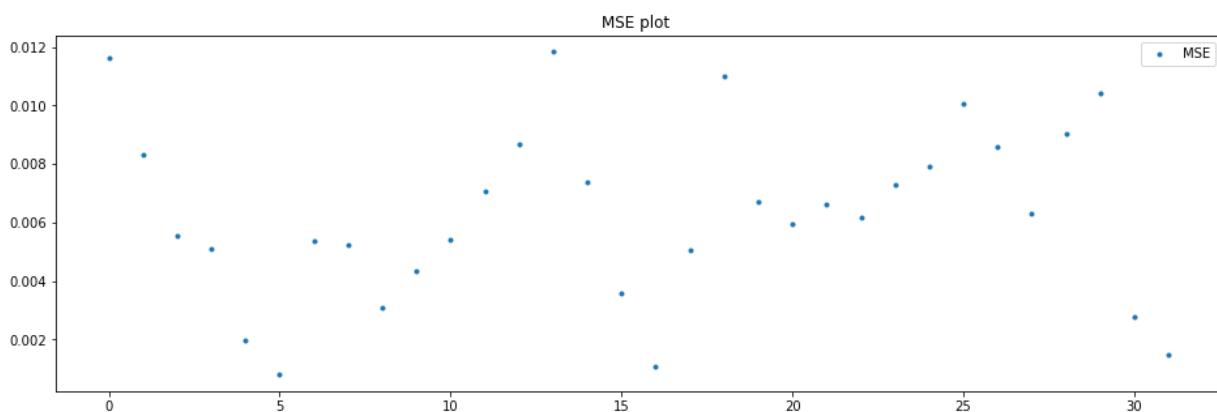
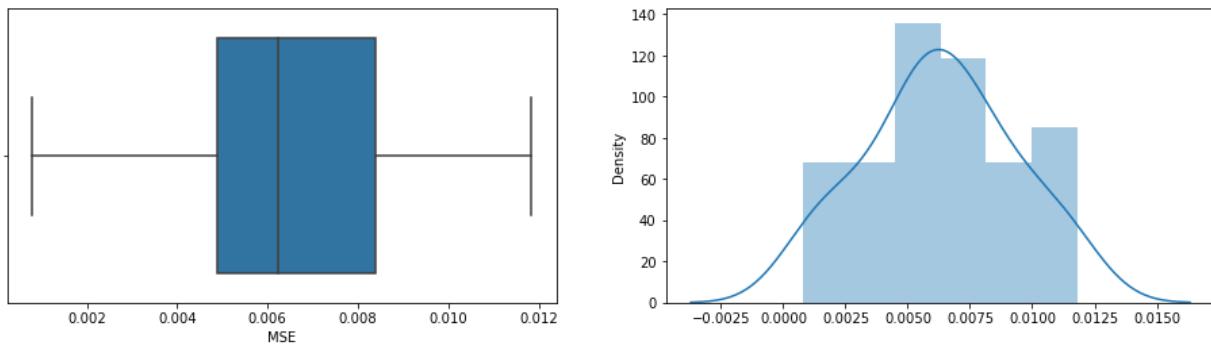
2.500: 0.834, data looks normal (fail to reject H0)

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

Batch: 151

mean=0.00630375, median=0.00624 , max=0.01183, min=0.00079, variance=8.7314e-06

Boxplots and Distribution plot for Reconstruction Error



Anderson_Darling Test

Statistic: 0.178

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)

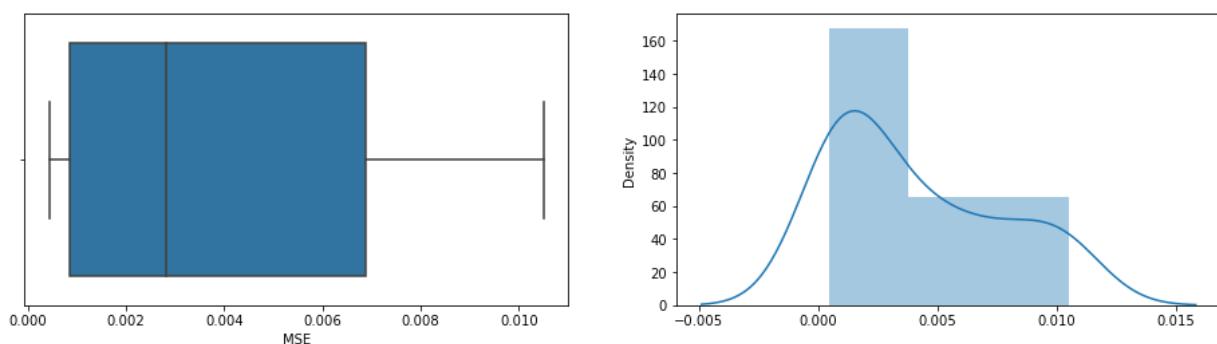
2.500: 0.834, data looks normal (fail to reject H0)

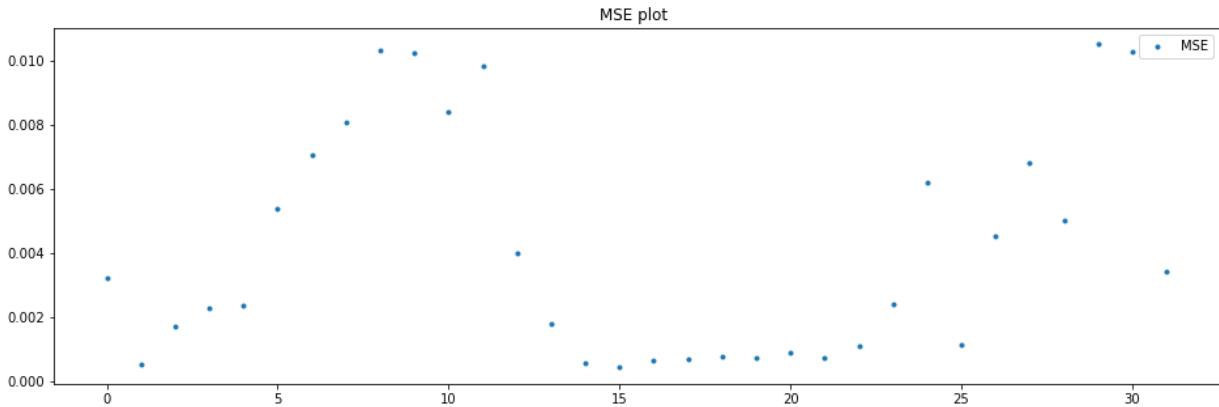
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 152

mean=0.0041321875, median=0.002825 , max=0.0105, min=0.00044, variance=1.21934e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

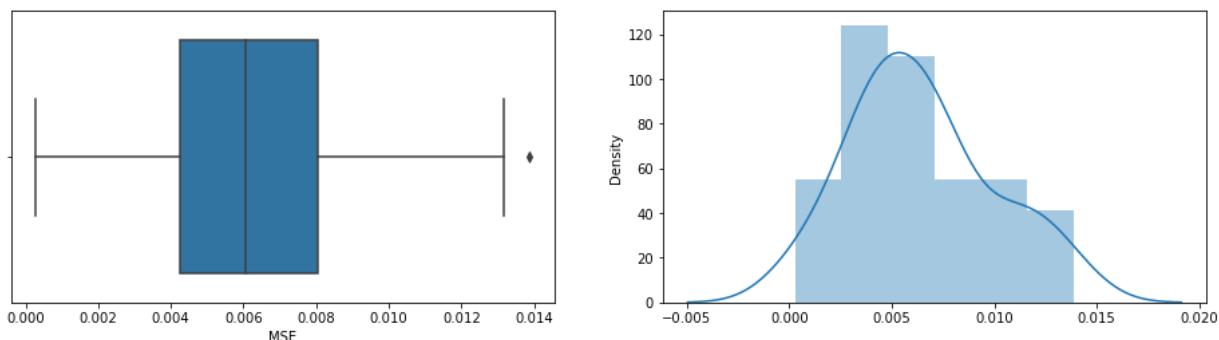
Statistic: 1.589

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)

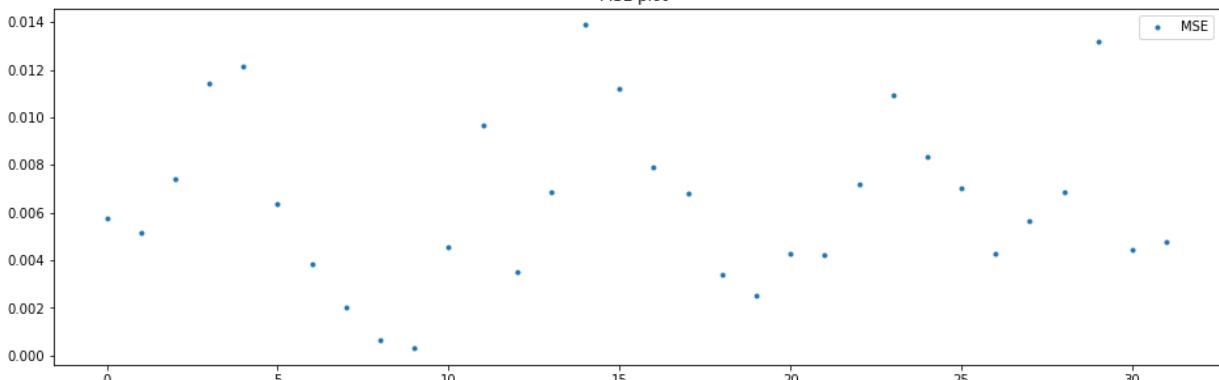
Batch: 153

mean=0.0064553125, median=0.006065 , max=0.01388, min=0.00029, variance=1.18192e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

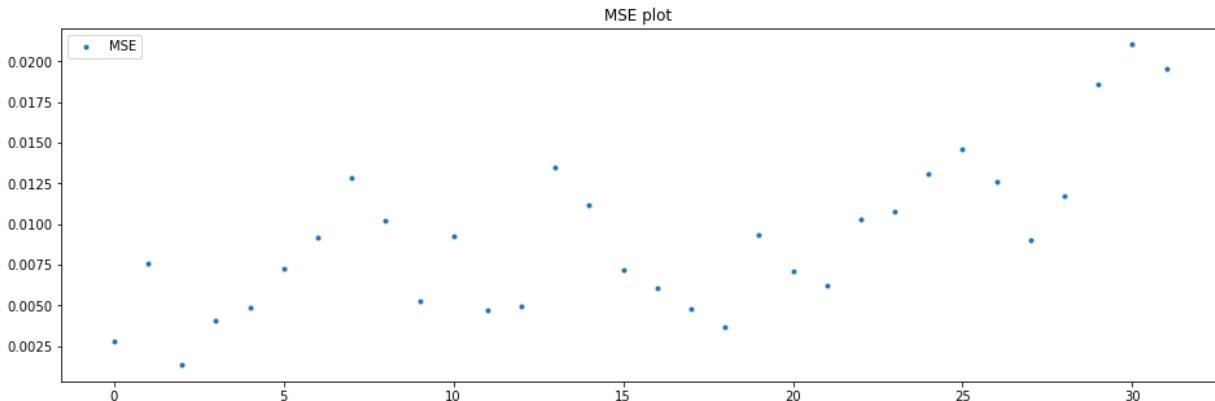
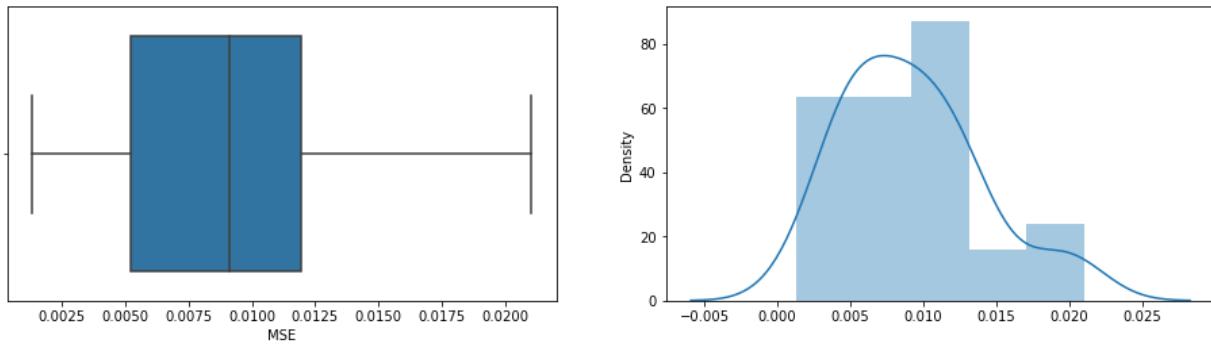
Statistic: 0.473

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: 154

mean=0.0092065625, median=0.0091 , max=0.02104, min=0.00132, variance=2.25994e-05

Boxplots and Distribution plot for Reconstruction Error



Anderson_Darling Test

Statistic: 0.487

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)

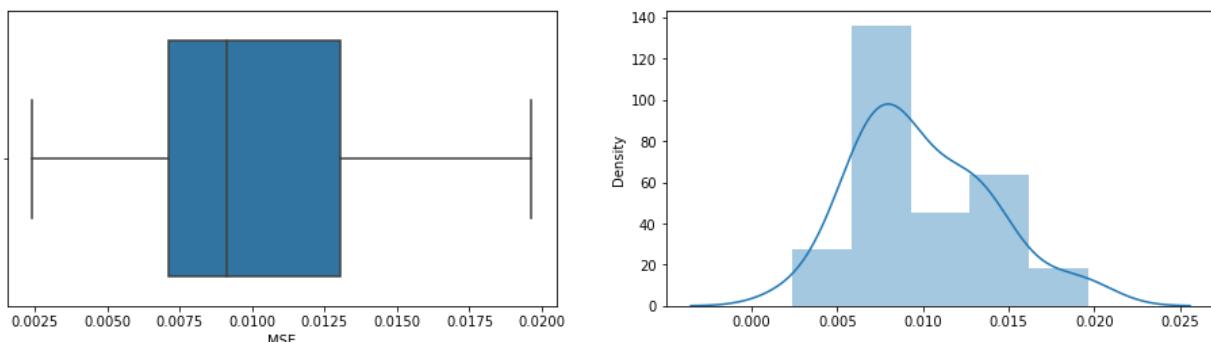
2.500: 0.834, data looks normal (fail to reject H0)

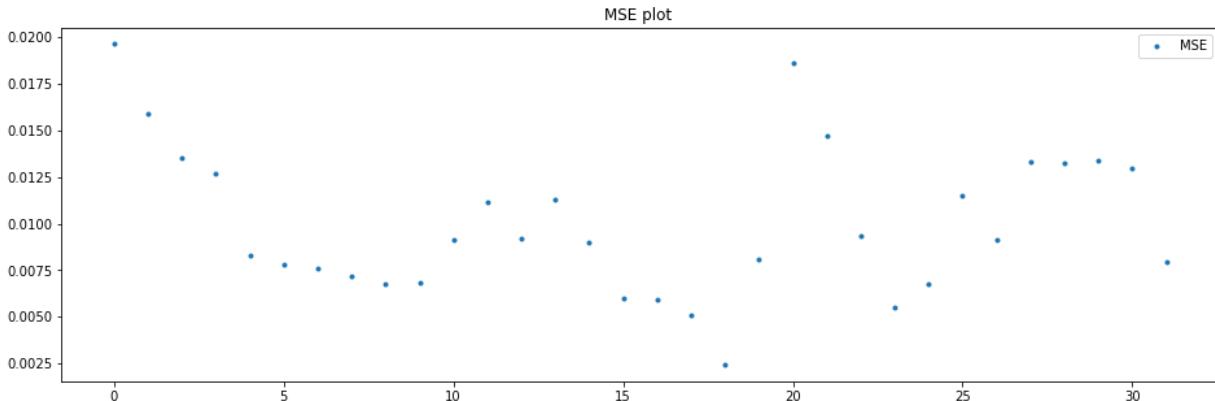
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 155

mean=0.0099953125, median=0.00912 , max=0.01963, min=0.00241, variance=1.52279e-05

Boxplots and Distribution plot for Reconstruction Error



**Anderson_Darling Test**

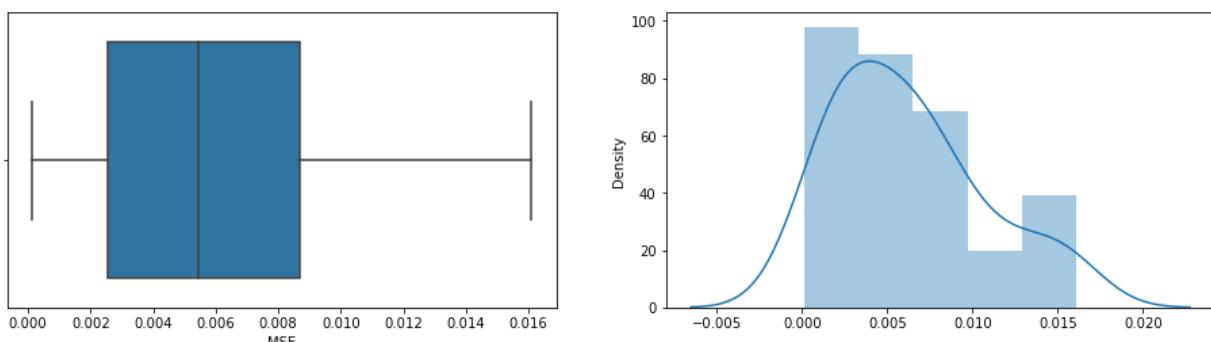
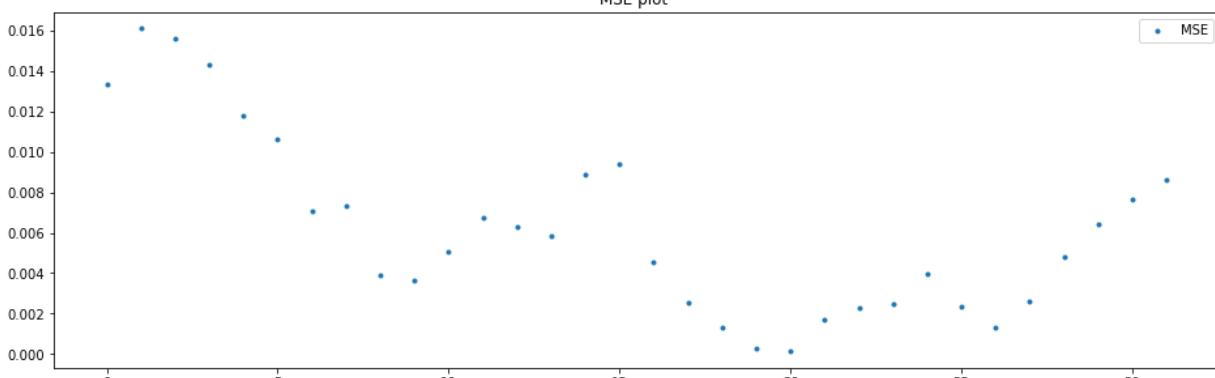
Statistic: 0.551

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: 156

mean=0.006215625, median=0.00546 , max=0.01608, min=0.00013, variance=1.91303e-05

Boxplots and Distribution plot for Reconstruction Error

**MSE plot****Anderson_Darling Test**

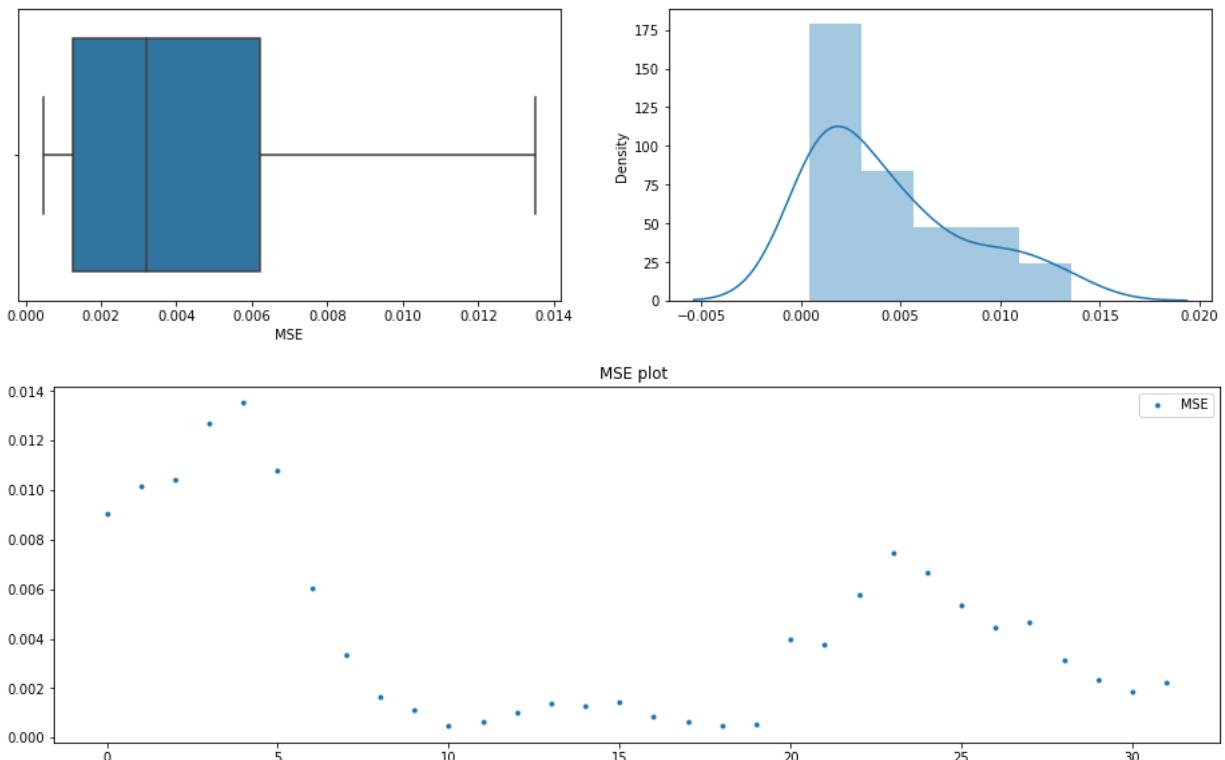
Statistic: 0.673

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: 157

mean=0.004349375, median=0.003215 , max=0.01353, min=0.00046, variance=1.45985e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

Statistic: 1.473

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)

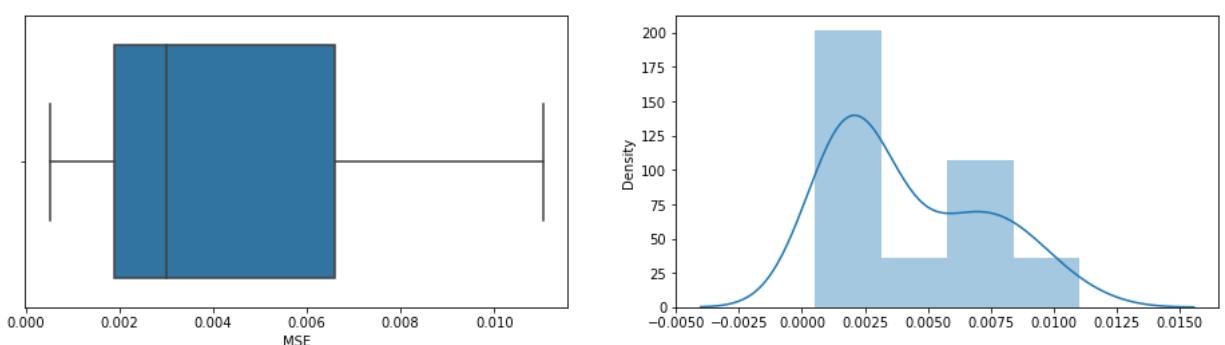
2.500: 0.834, data does not look normal (reject H0)

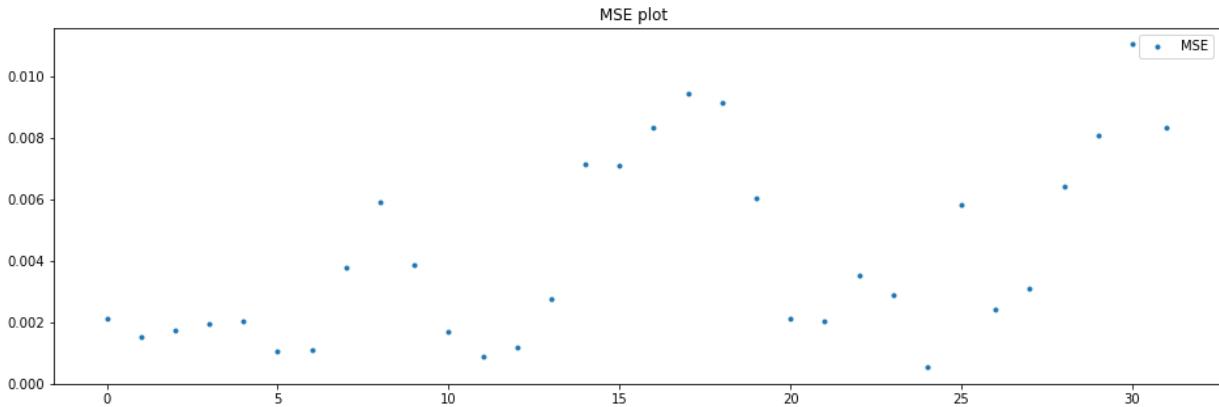
1.000: 0.992, data does not look normal (reject H0)

Batch: 158

mean=0.0042153125, median=0.002995 , max=0.01104, min=0.00052, variance=8.8802e-06

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 1.370

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)

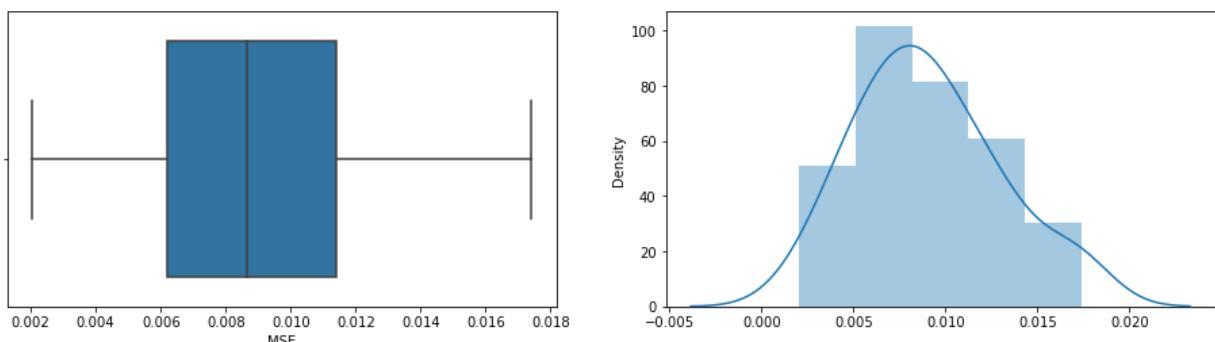
2.500: 0.834, data does not look normal (reject H0)

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

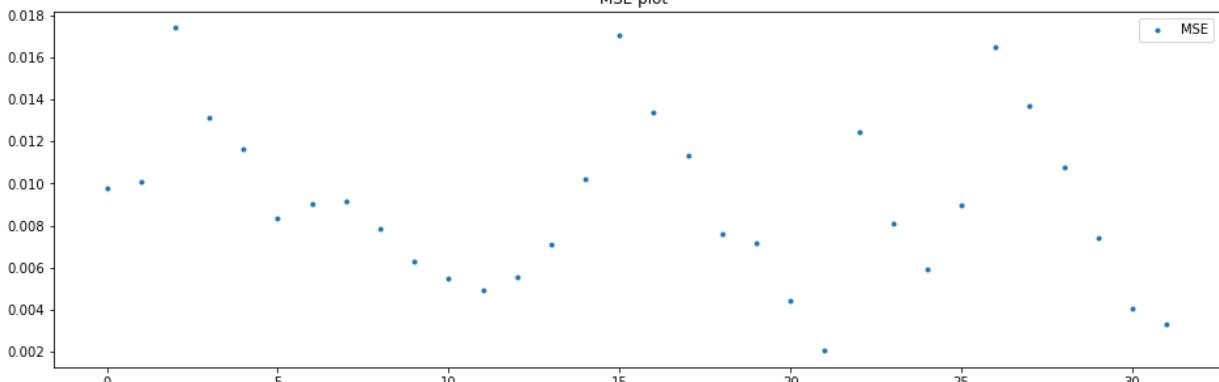
Batch: 159

mean=0.009066875, median=0.00865 , max=0.0174, min=0.00204, variance=1.49219e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 0.266

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)

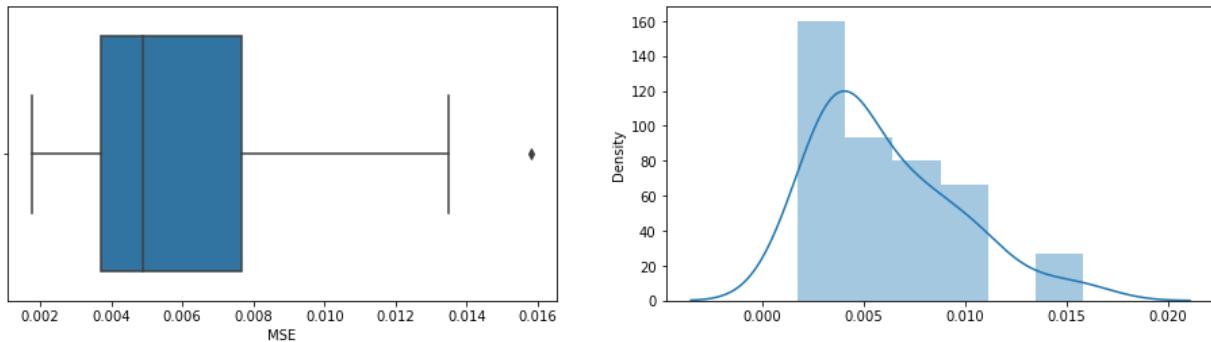
2.500: 0.834, data looks normal (fail to reject H0)

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

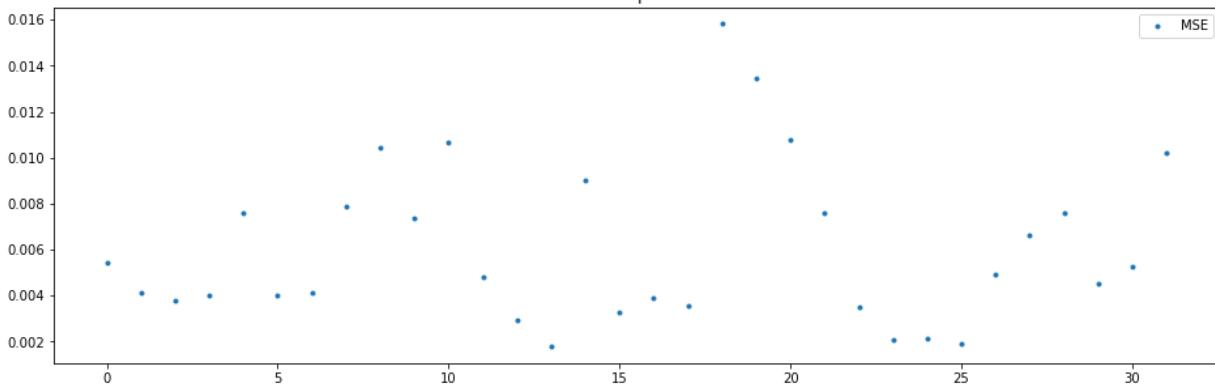
Batch: 160

mean=0.006101875, median=0.00489 , max=0.01582, min=0.00177, variance=1.1907e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson_Darling Test**

Statistic: 1.017

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)

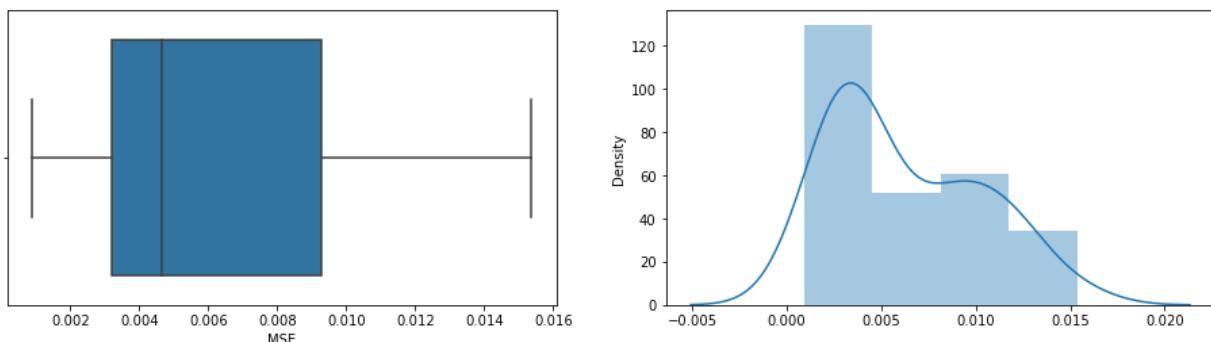
2.500: 0.834, data does not look normal (reject H0)

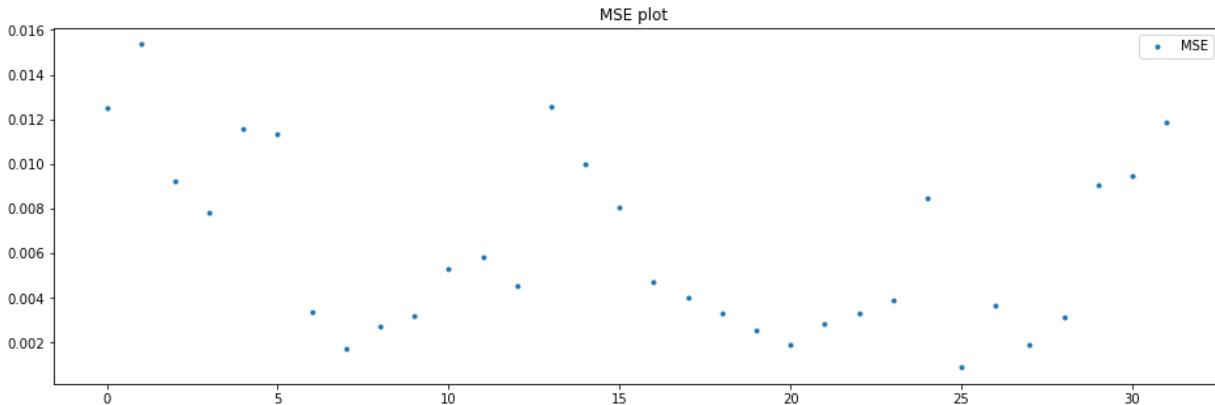
1.000: 0.992, data does not look normal (reject H0)

Batch: 161

mean=0.0062584375, median=0.00463 , max=0.01536, min=0.00089, variance=1.53576e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

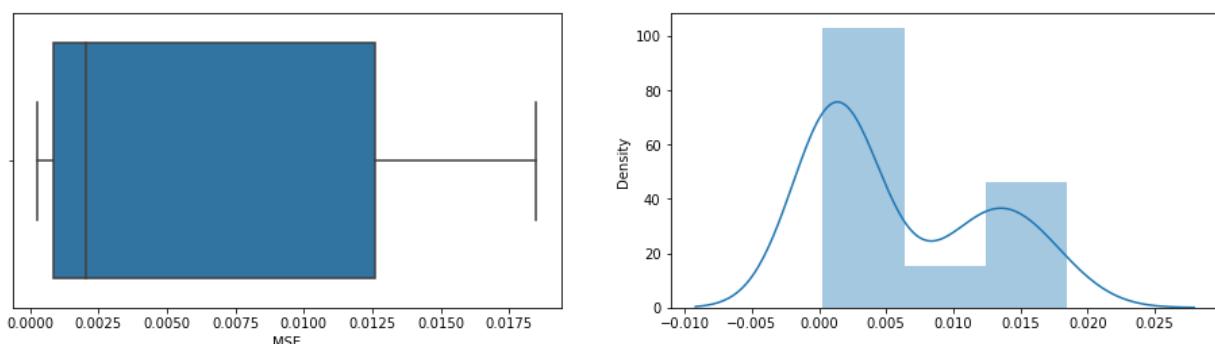
Statistic: 1.221

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)

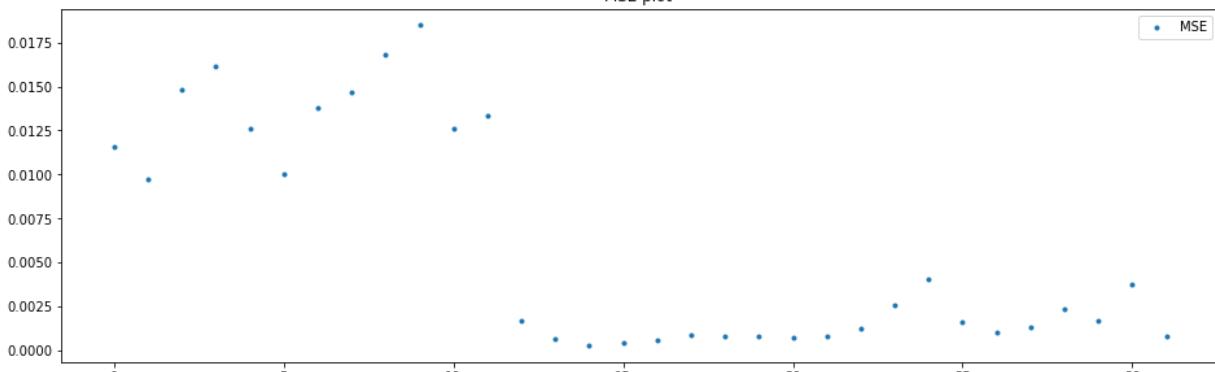
Batch: 162

mean=0.0060328125, median=0.00206 , max=0.01848, min=0.00027, variance=3.84937e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

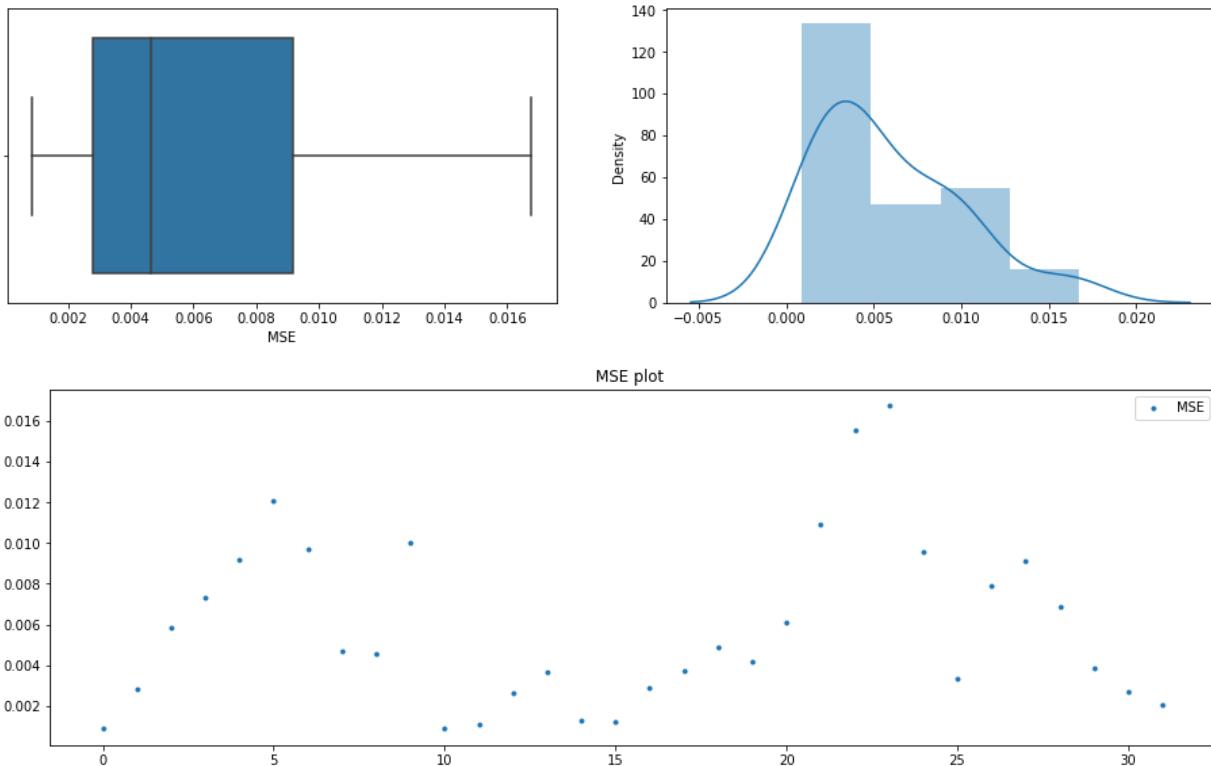
Statistic: 3.015

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: 163

mean=0.0058878125, median=0.004625 , max=0.01676, min=0.00086, variance=1.71394e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

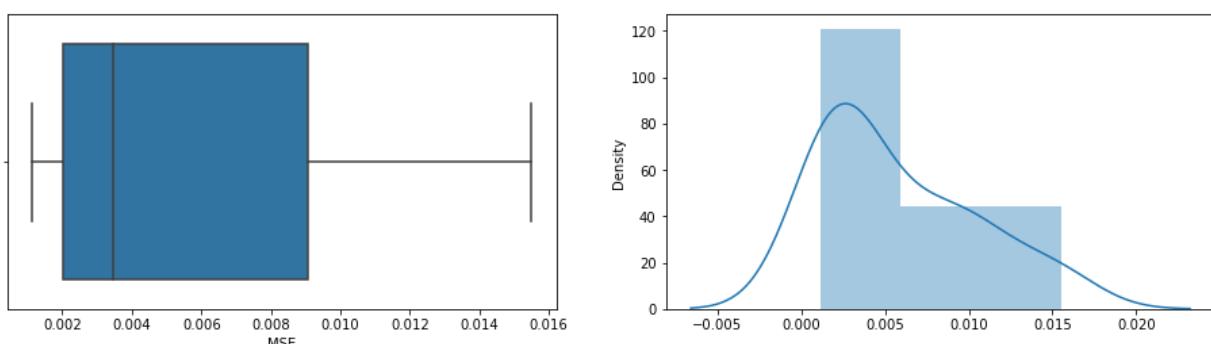
Statistic: 0.837

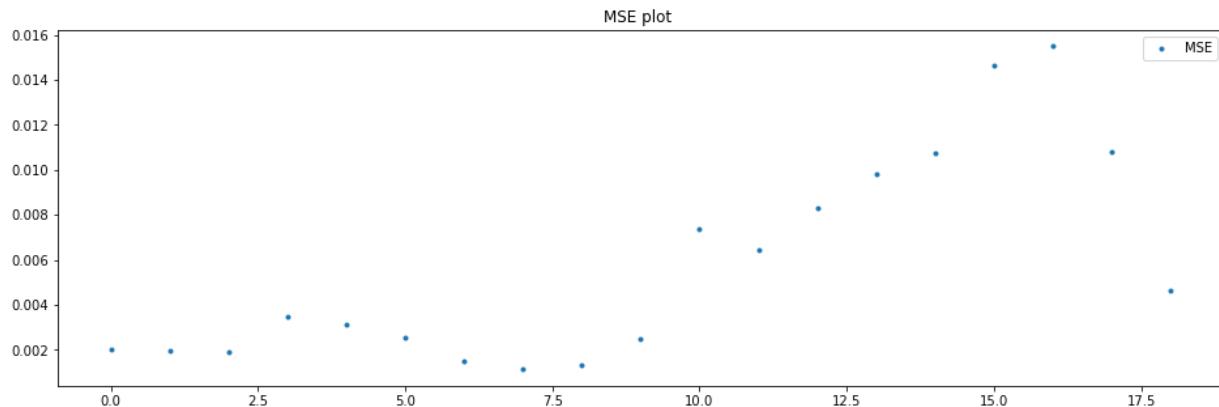
15.000: 0.523, data does not look normal (reject H₀)
 10.000: 0.596, data does not look normal (reject H₀)
 5.000: 0.715, data does not look normal (reject H₀)
 2.500: 0.834, data does not look normal (reject H₀)
 1.000: 0.992, data looks normal (fail to reject H₀)

Batch: 164

mean=0.0057789474, median=0.00346 , max=0.01549, min=0.00113, variance=2.03097e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 1.005

15.000: 0.505, data does not look normal (reject H₀)
10.000: 0.575, data does not look normal (reject H₀)
5.000: 0.690, data does not look normal (reject H₀)
2.500: 0.804, data does not look normal (reject H₀)
1.000: 0.957, data does not look normal (reject H₀)

Intance Threshold Computation

In [41]:

```
# 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 [42]:

```
instance_thresh_neg,zscore_list_neg=compute_instance_threshold_firstN_batches(batch_r
```

In [43]:

```
instance_thresh_neg
```

Out[43]: 0.0335

Batch Threshold Computation

```
In [44]: ## 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 [45]: thres_iqr_batch_neg, thres_zscore_batch_neg =compute_batch_threshold_testdata(batch_avg_mse)
```

```
In [46]: thres_zscore_batch_neg
```

```
Out[46]: 0.0284
```

Count Threshold Computation

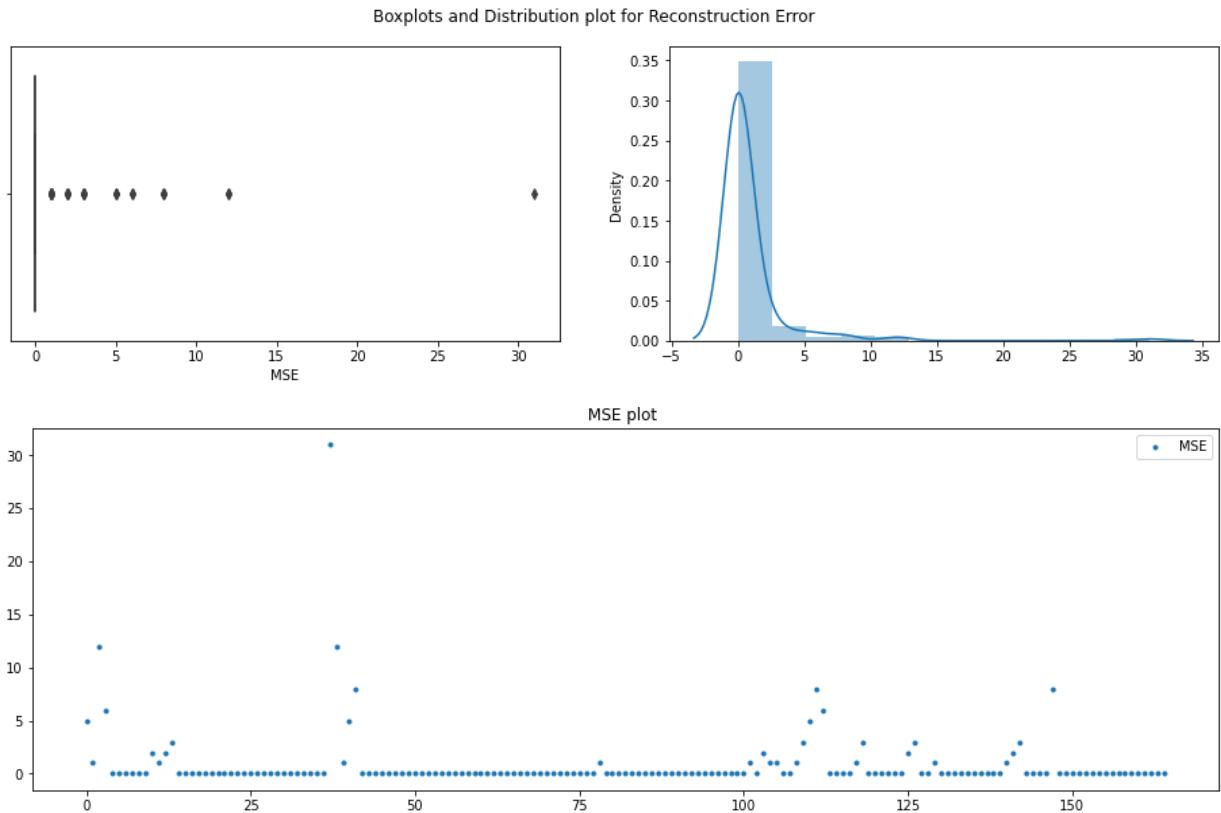
```
In [47]: # This function computes how many instances in a batch exceed instance threshold
def threshold_exceed_count(batch_mse_values, thr):
    exceed_count={}
    for key in batch_mse_values.keys():
        count=0
        list=batch_mse_values[key]
        for a in range(0,len(list)):
            if list[a]>thr:
                count+=1
        exceed_count[key]=count
    values = exceed_count.values()
    total = sum(values)
    return exceed_count, total
```

```
In [48]: # 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 [49]: # 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 [50]: plot_results(exceed_list_neg_en_neg)
```

mean=0.8606060606, median=0.0 , max=31, min=0, variance=9.3442056933



Count Threshold is ataken as median value

```
In [51]: count_thresh_neg=np.median(exceed_list_neg_en_neg)
```

```
In [52]: count_thresh_neg
```

Out[52]: 0.0

5. B) Positive Class Data

```
In [53]: predictions_pos=mse_predictions(test_pos_class,encoder_pos_class)
```

```
In [54]: test_pos_class
```

Out[54]:

	day	period	nswprice	nswdemand	vicprice	vicdemand	transfer
31738	0.667	0.213	0.059	0.328	0.004	0.388	0.727
31739	0.667	0.234	0.062	0.406	0.004	0.454	0.658
31752	0.667	0.511	0.110	0.784	0.007	0.883	0.257
31753	0.667	0.532	0.228	0.792	0.015	0.904	0.157
31754	0.667	0.553	0.468	0.803	0.030	0.934	0.130
...

	day	period	nswprice	nswdemand	vicprice	vicdemand	transfer
31738	0.667	0.213	0.059	0.328	0.004	0.388	0.727
31739	0.667	0.234	0.062	0.406	0.004	0.454	0.658
31752	0.667	0.511	0.110	0.784	0.007	0.883	0.257
31753	0.667	0.532	0.228	0.792	0.015	0.904	0.157
31754	0.667	0.553	0.468	0.803	0.030	0.934	0.130
...

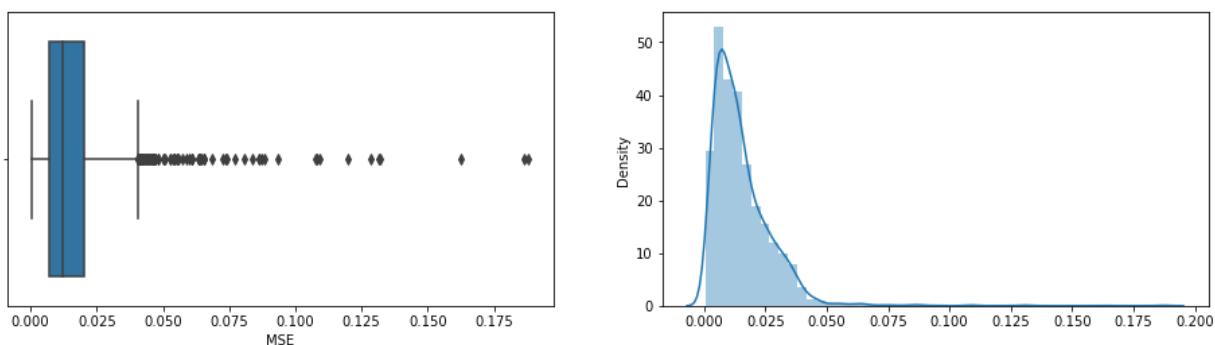
	day	period	nswprice	nswdemand	vicprice	vicdemand	transfer
40775	0.500	0.489	0.102	0.505	0.007	0.584	0.496
40776	0.500	0.511	0.093	0.497	0.006	0.558	0.525
40777	0.500	0.532	0.093	0.488	0.006	0.560	0.530
40778	0.500	0.553	0.098	0.484	0.007	0.577	0.511
40779	0.500	0.574	0.091	0.473	0.006	0.577	0.489

3795 rows × 7 columns

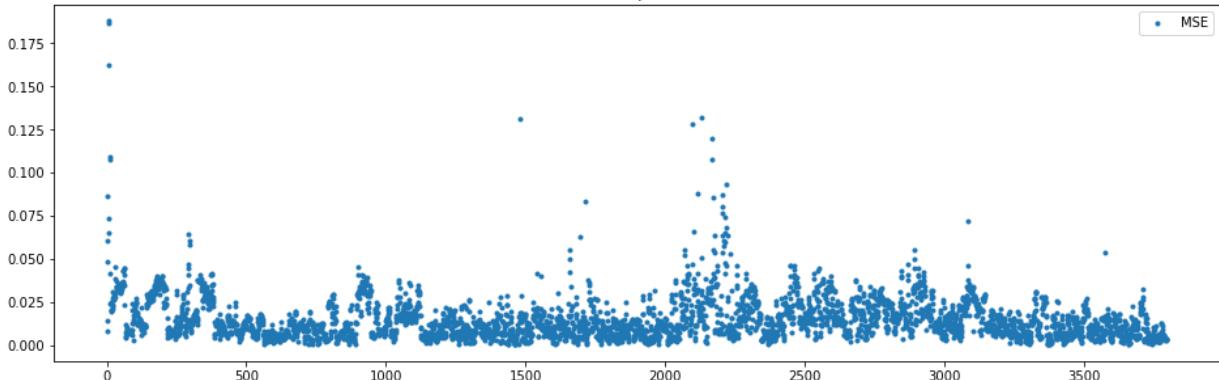
In [55]:

```
plot_results(predictions_pos)
```

mean=0.0153554775, median=0.012333 , max=0.187911, min=0.000502, variance=0.0001628292
Boxplots and Distribution plot for Reconstruction Error



MSE plot



In [56]:

```
batches_pos=make_batches(test_pos_class)
```

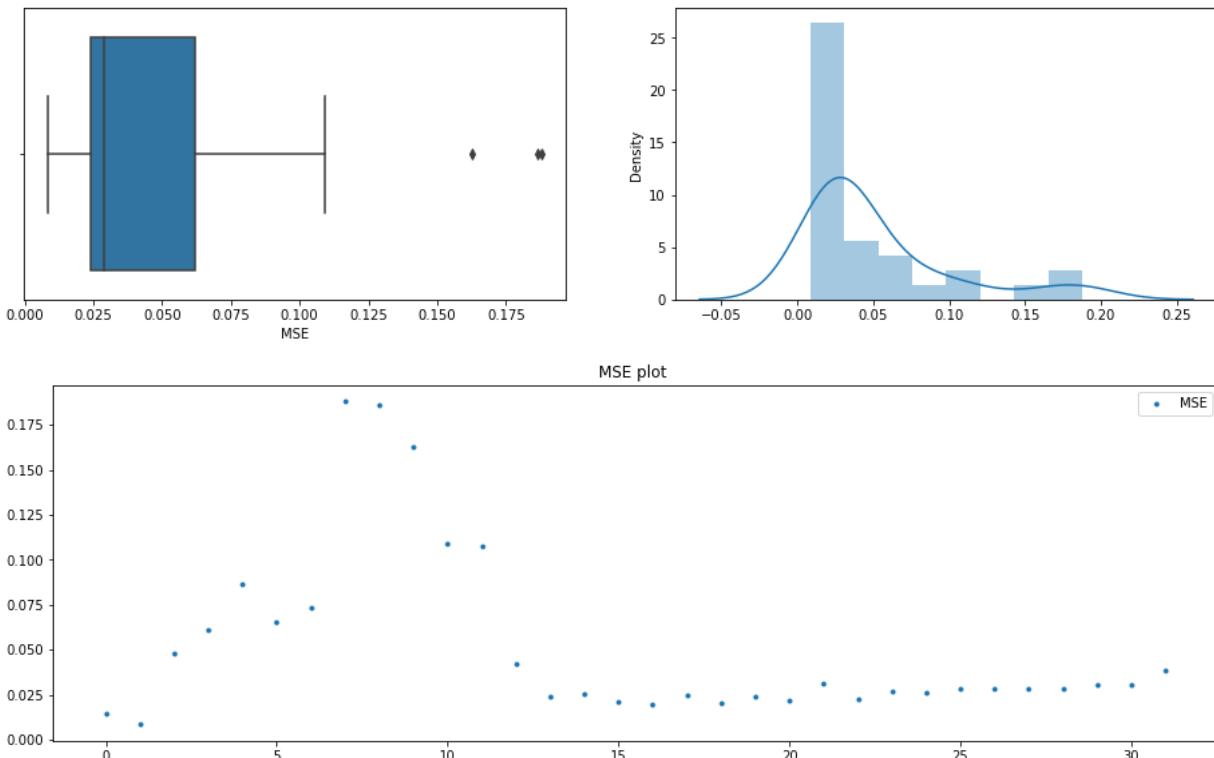
In [57]:

```
batch_avg_mse_pos,batch_mse_values_pos=check_all_batch_normality(batches_pos,encoder_
```

Batch: 0

mean=0.0517340625, median=0.028705 , max=0.18791, min=0.0085, variance=0.0022893521

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

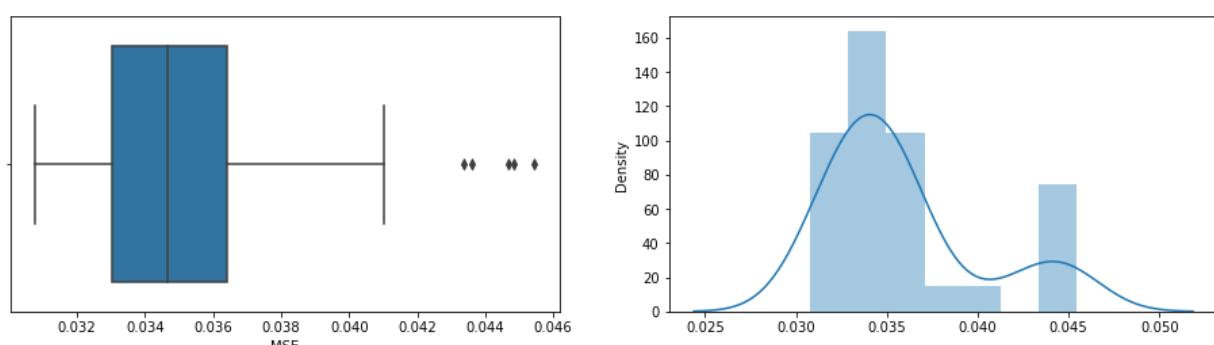
Statistic: 3.757

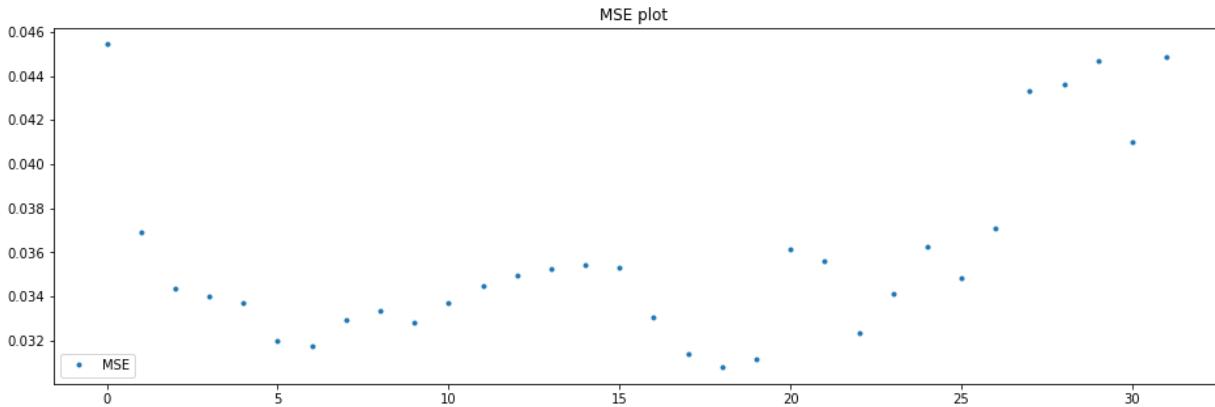
15.000: 0.523, data does not look normal (reject H0)
 10.000: 0.596, data does not look normal (reject H0)
 5.000: 0.715, data does not look normal (reject H0)
 2.500: 0.834, data does not look normal (reject H0)
 1.000: 0.992, data does not look normal (reject H0)

Batch: 1

mean=0.0358321875, median=0.03466 , max=0.04544, min=0.03077, variance=1.75956e-05

Boxplots and Distribution plot for Reconstruction Error



**Anderson_Darling Test**

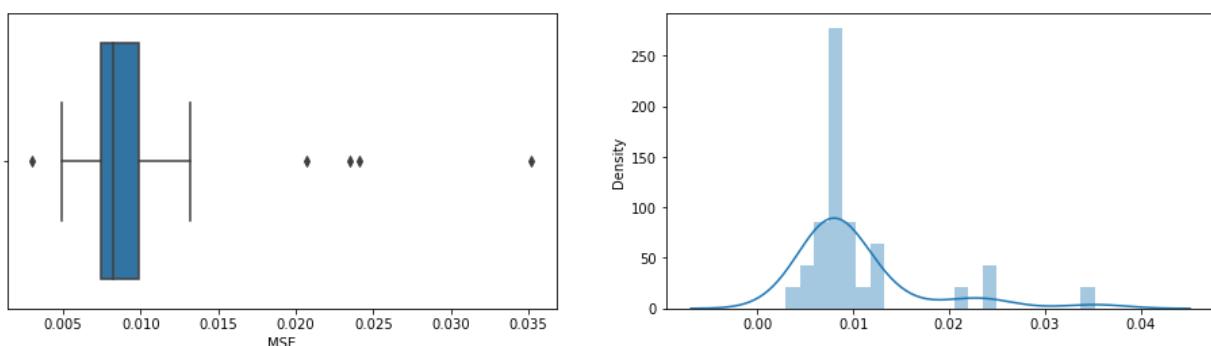
Statistic: 2.091

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)

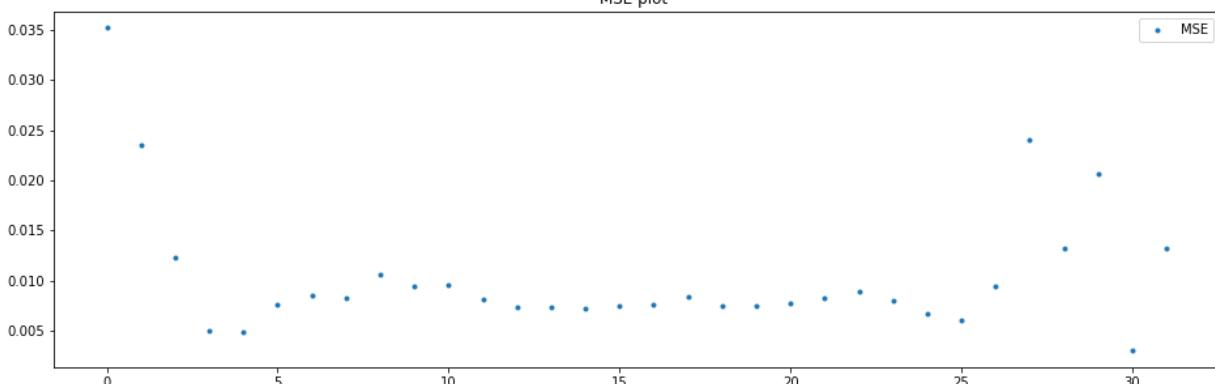
Batch: 2

mean=0.0103921875, median=0.008195 , max=0.03519, min=0.00299, variance=4.23096e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson_Darling Test**

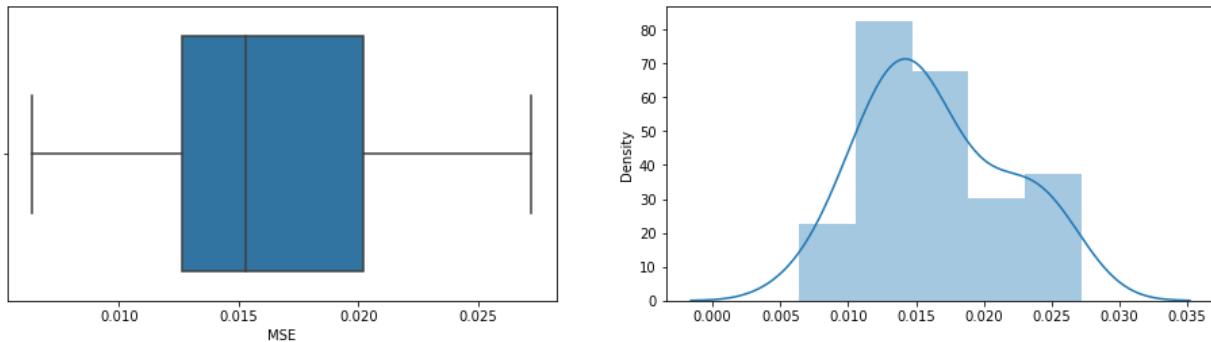
Statistic: 3.820

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)

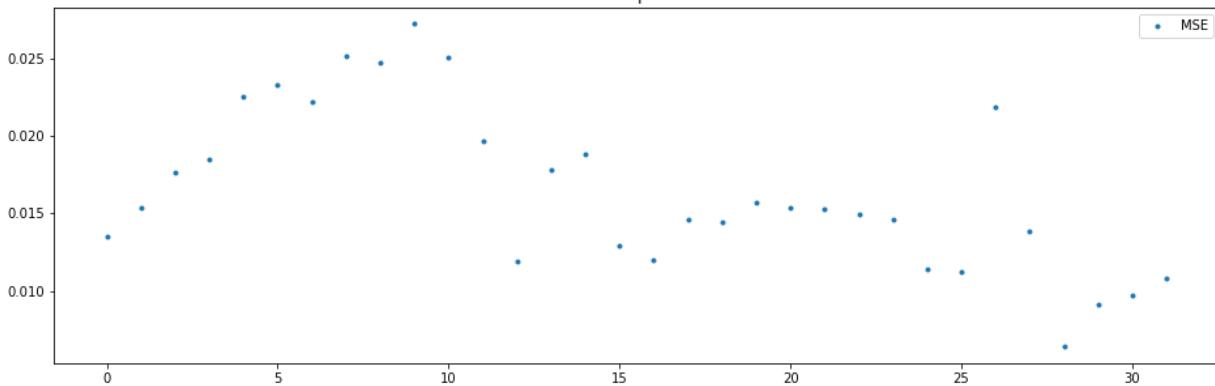
Batch: 3

mean=0.016471875, median=0.01529 , max=0.02721, min=0.00638, variance=2.74046e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**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)

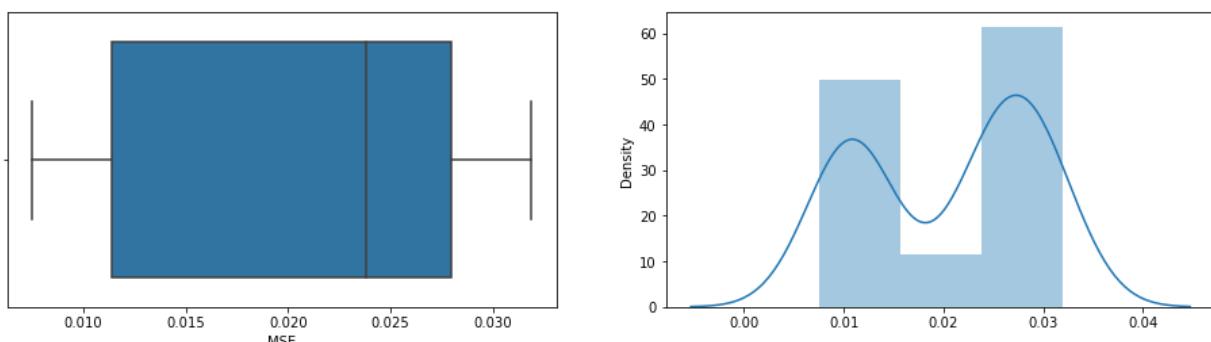
2.500: 0.834, data looks normal (fail to reject H0)

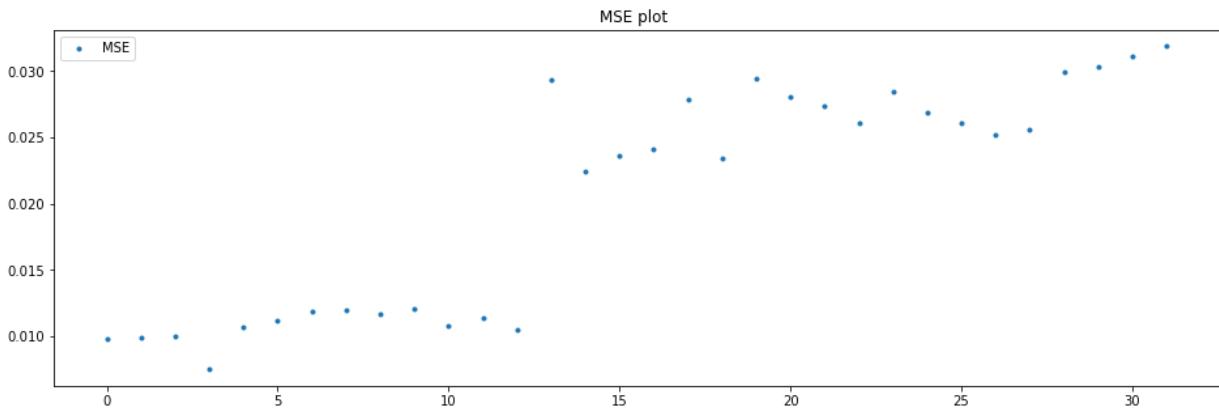
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 4

mean=0.0205325, median=0.02383 , max=0.03188, min=0.00749, variance=7.05902e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 2.351

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)

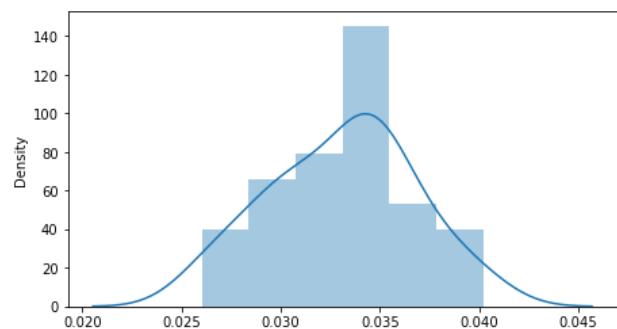
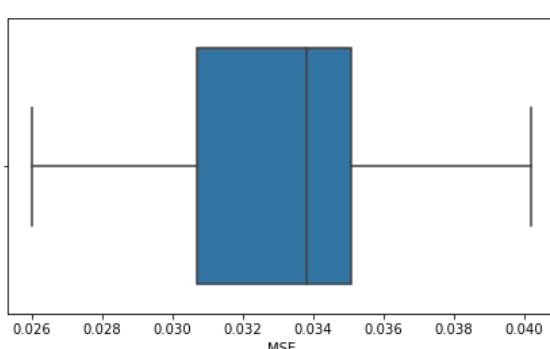
2.500: 0.834, data does not look normal (reject H0)

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

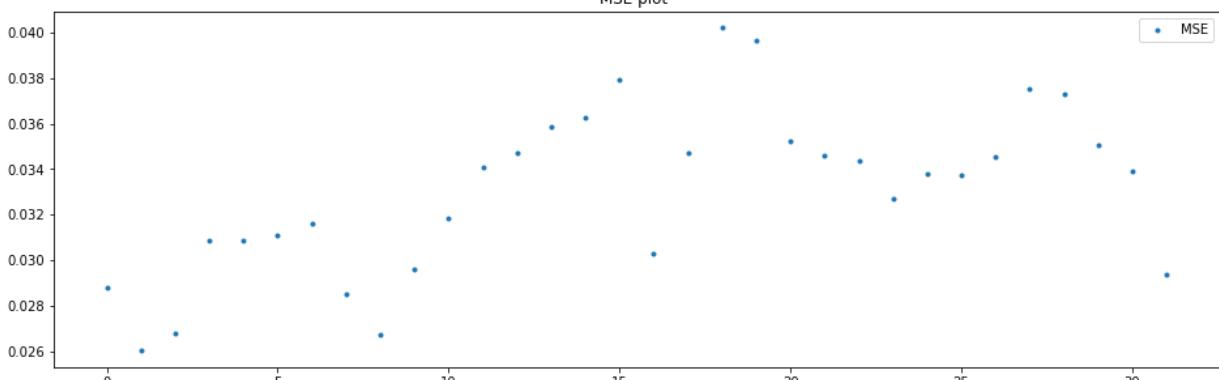
Batch: 5

mean=0.033074375, median=0.033825 , max=0.0402, min=0.02602, variance=1.29727e-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)

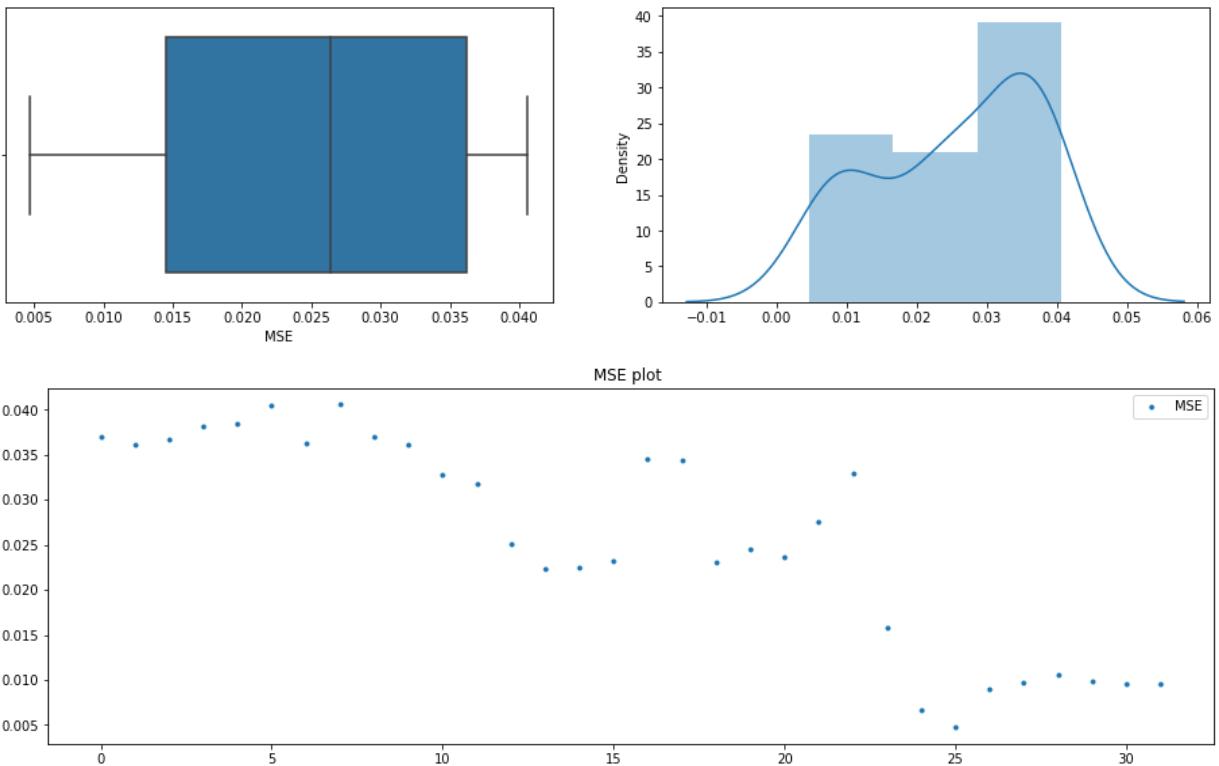
2.500: 0.834, data looks normal (fail to reject H0)

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

Batch: 6

mean=0.0256496875, median=0.026335 , max=0.04059, min=0.0047, variance=0.0001322456

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

Statistic: 1.319

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)

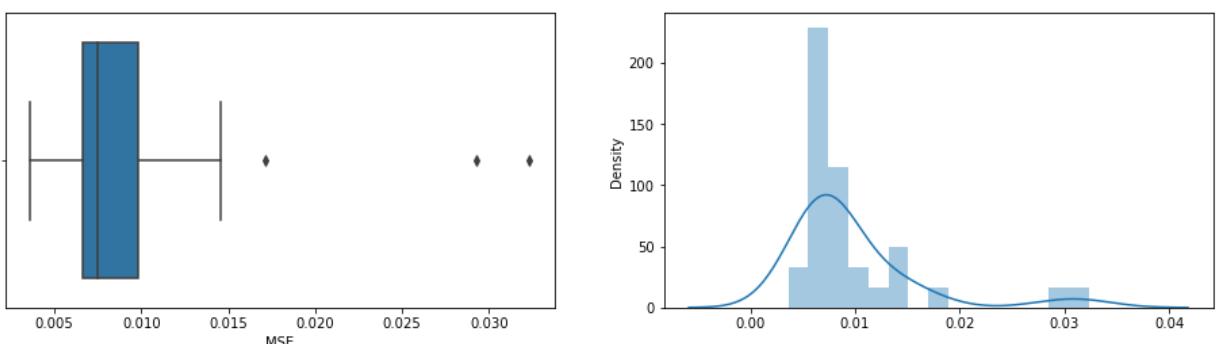
2.500: 0.834, data does not look normal (reject H0)

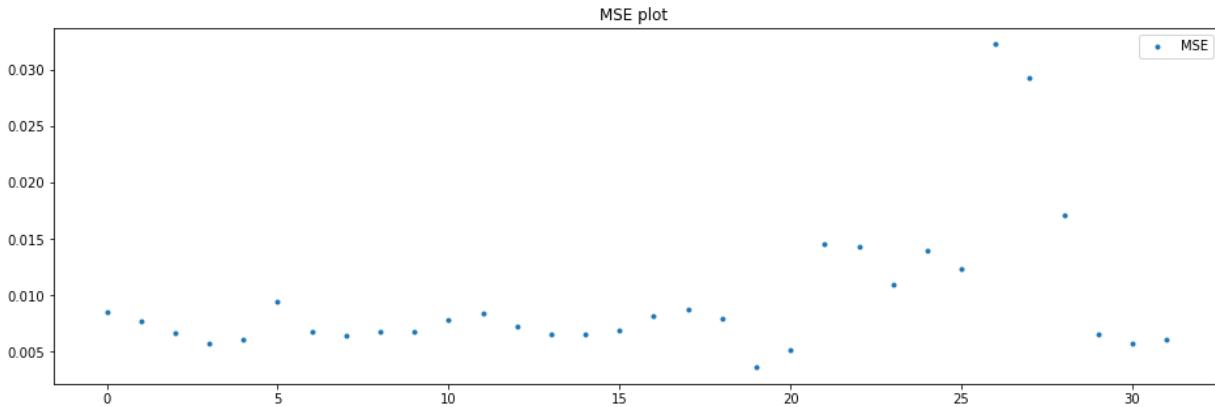
1.000: 0.992, data does not look normal (reject H0)

Batch: 7

mean=0.0097475, median=0.00747 , max=0.0323, min=0.00361, variance=3.87311e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 3.761

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)

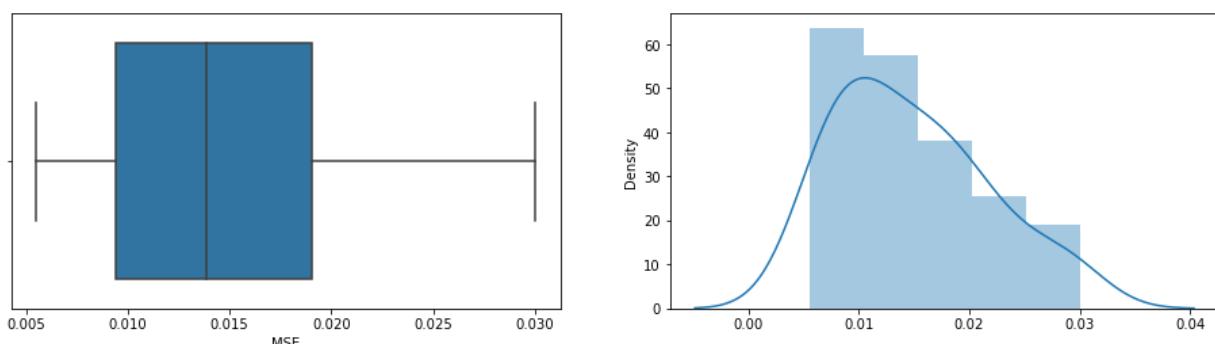
2.500: 0.834, data does not look normal (reject H0)

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

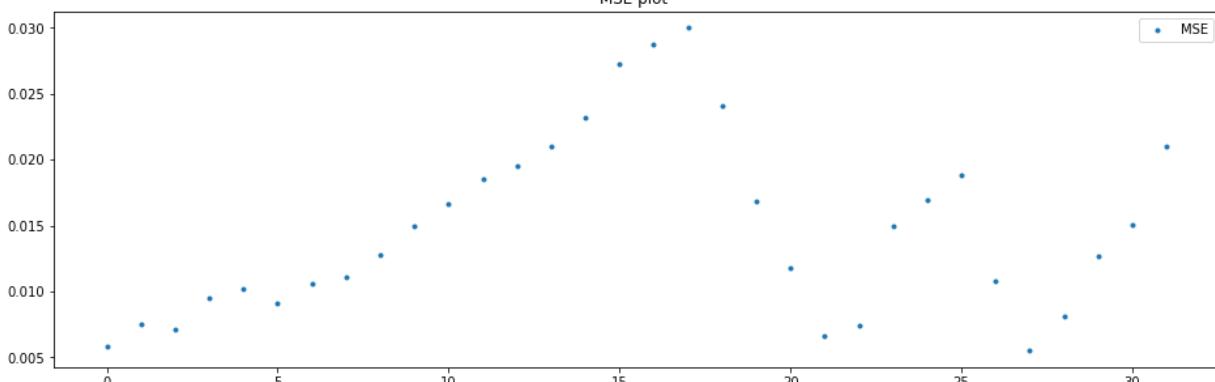
Batch: 8

mean=0.0148259375, median=0.013865 , max=0.03, min=0.0055, variance=4.60115e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 0.536

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)

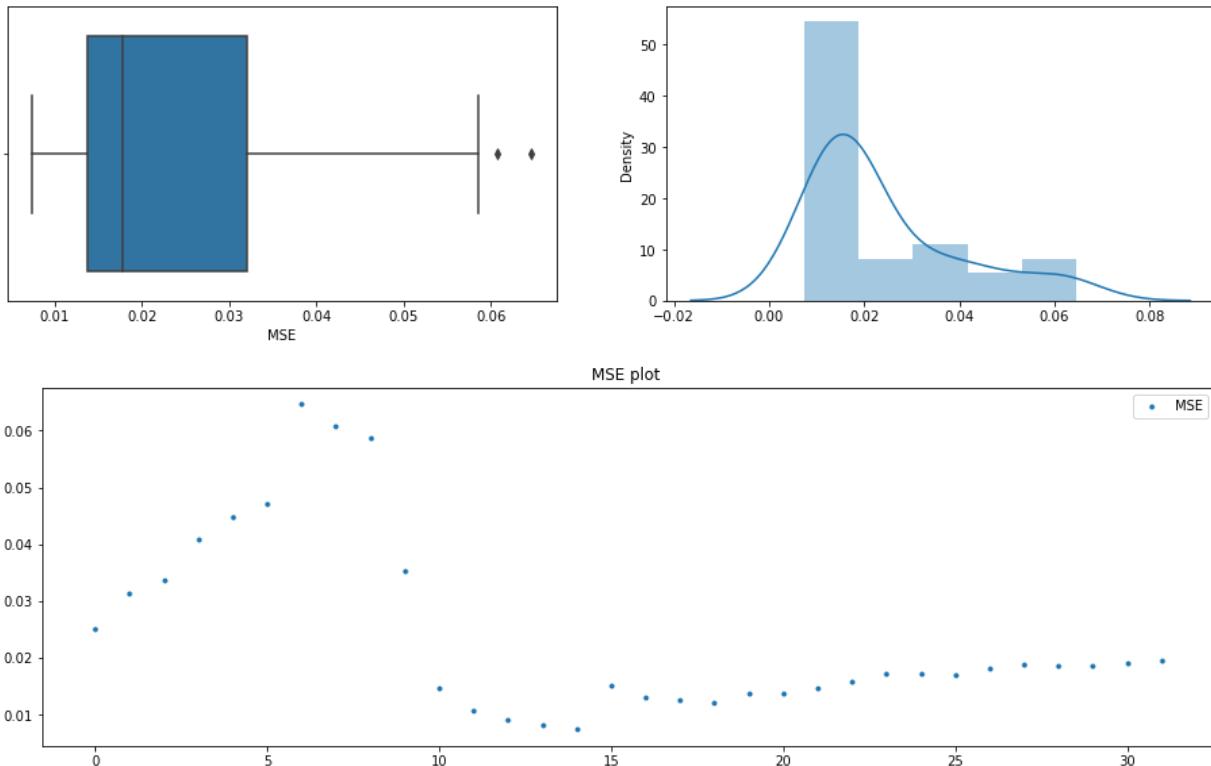
2.500: 0.834, data looks normal (fail to reject H0)

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

Batch: 9

mean=0.0240009375, median=0.017785 , max=0.06462, min=0.00744, variance=0.0002458343

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

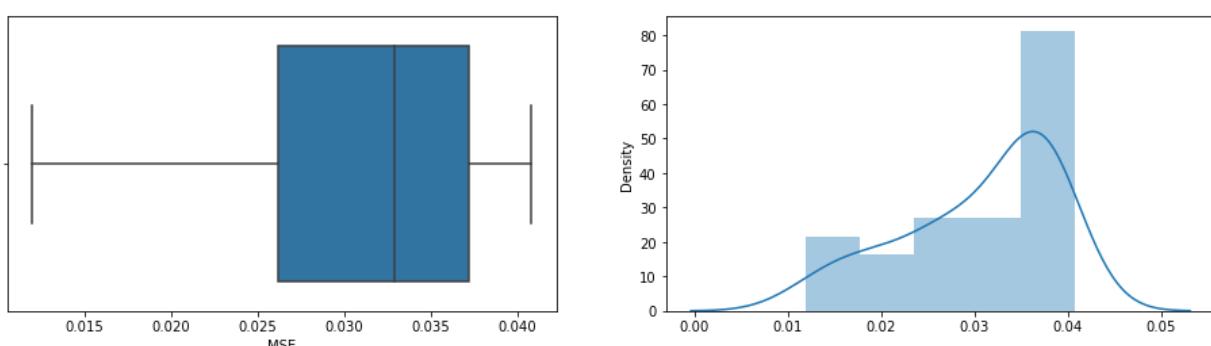
Statistic: 2.532

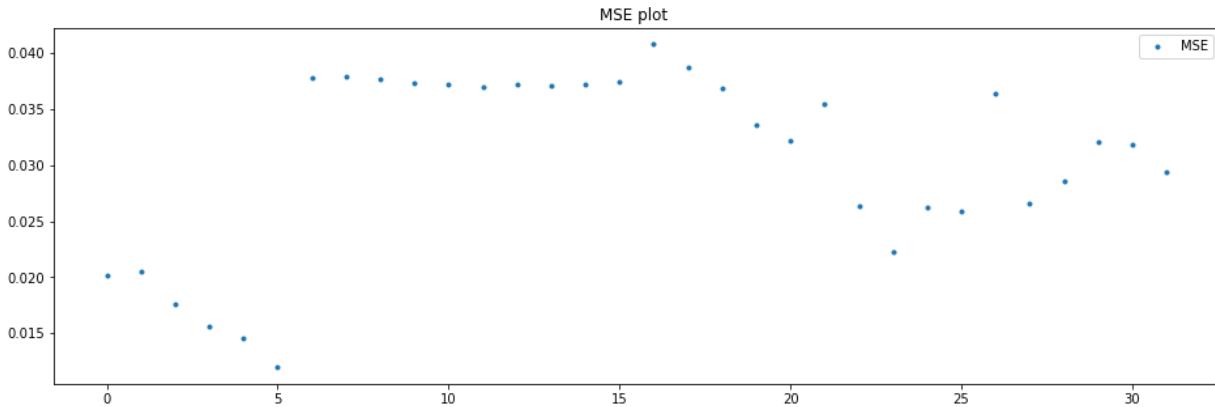
15.000: 0.523, data does not look normal (reject H₀)
 10.000: 0.596, data does not look normal (reject H₀)
 5.000: 0.715, data does not look normal (reject H₀)
 2.500: 0.834, data does not look normal (reject H₀)
 1.000: 0.992, data does not look normal (reject H₀)

Batch: 10

mean=0.030525625, median=0.03288 , max=0.04077, min=0.01195, variance=6.55315e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

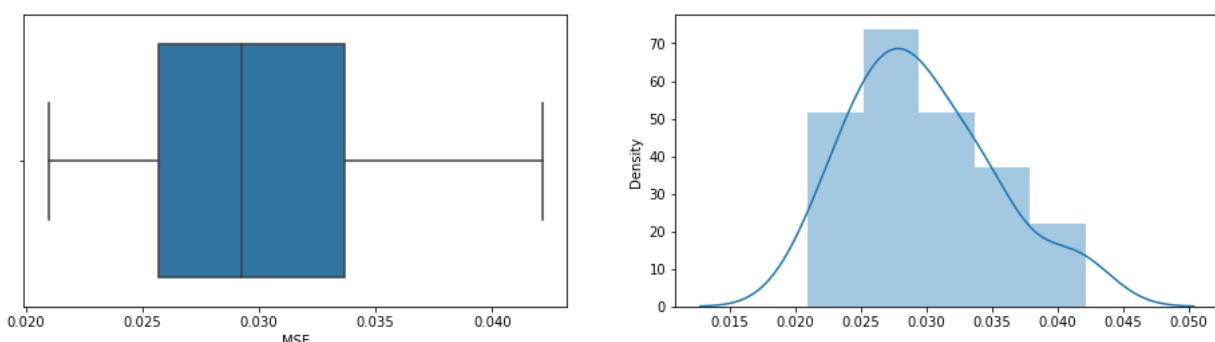
Statistic: 1.577

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)

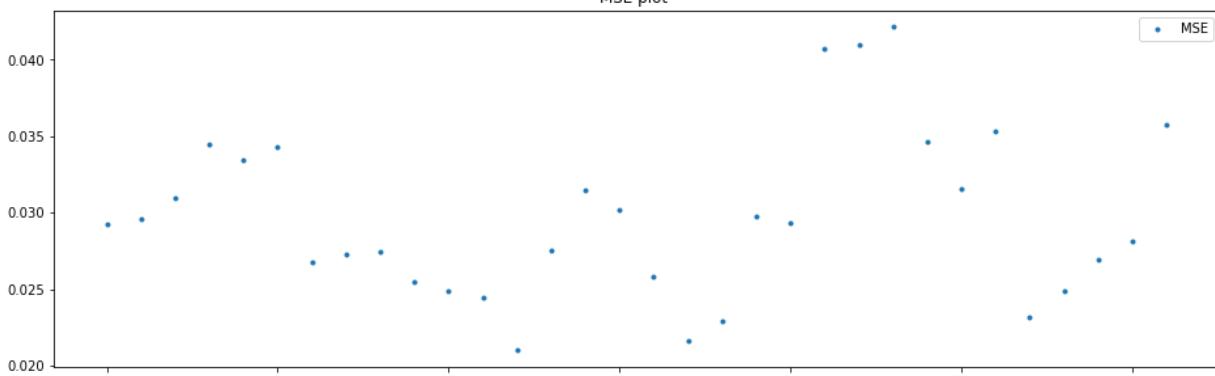
Batch: 11

mean=0.029751875, median=0.029275 , max=0.04214, min=0.02098, variance=2.92082e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

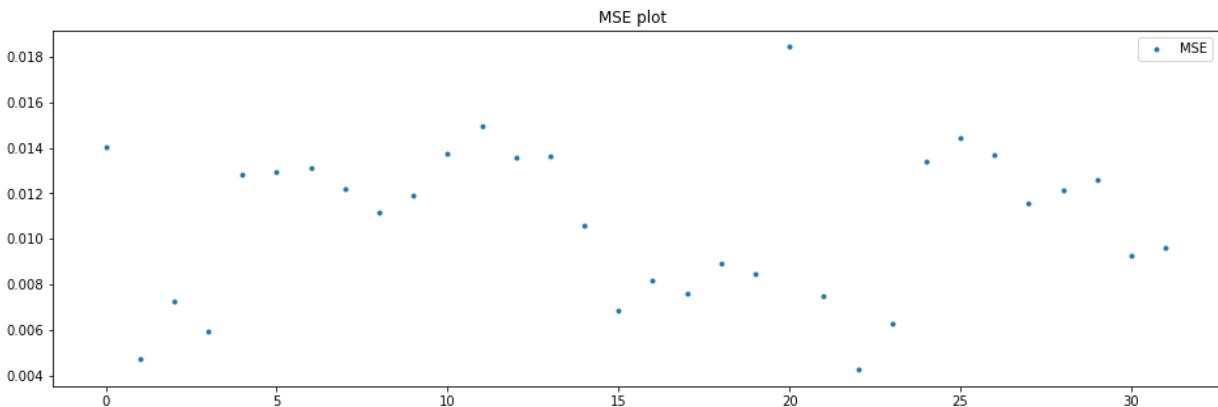
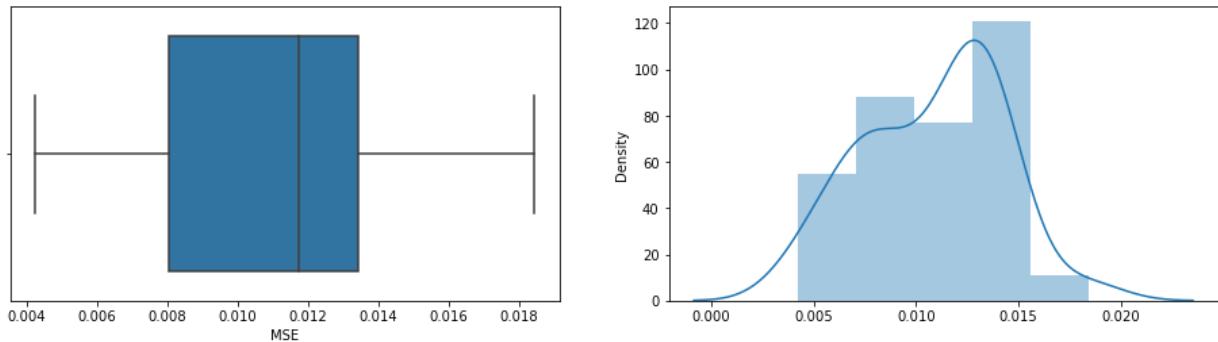
Statistic: 0.419

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: 12

mean=0.010808125, median=0.011755 , max=0.01844, min=0.00424, variance=1.10805e-05

Boxplots and Distribution plot for Reconstruction Error



Anderson_Darling Test

Statistic: 0.610

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)

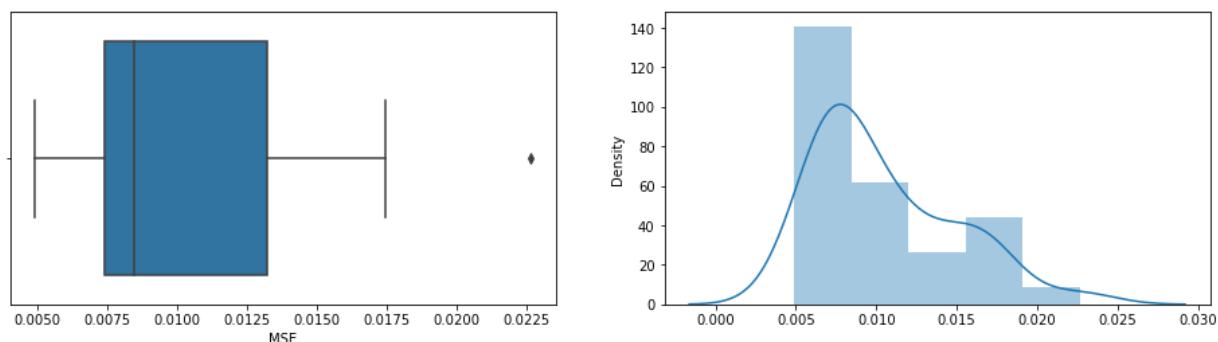
2.500: 0.834, data looks normal (fail to reject H0)

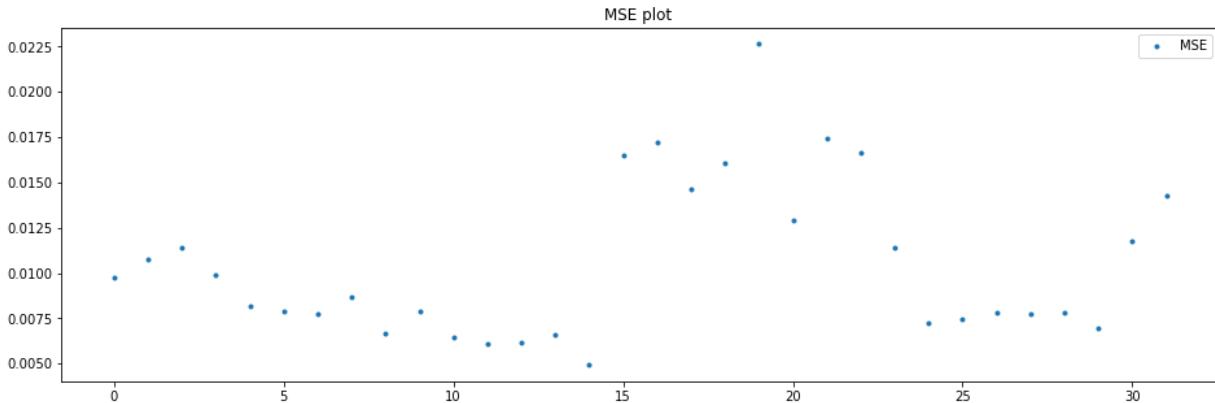
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 13

mean=0.0104890625, median=0.008445 , max=0.02265, min=0.00491, variance=1.84141e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

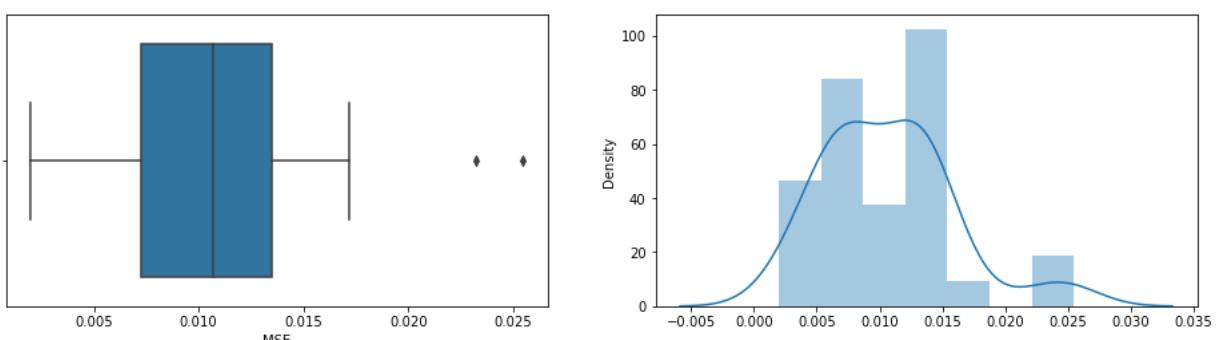
Statistic: 1.426

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)

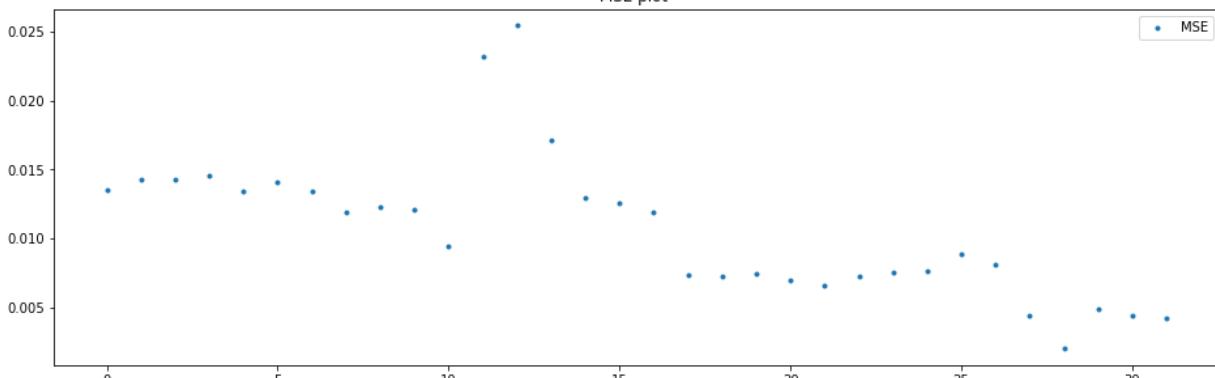
Batch: 14

mean=0.0106721875, median=0.010685 , max=0.02546, min=0.00198, variance=2.64395e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

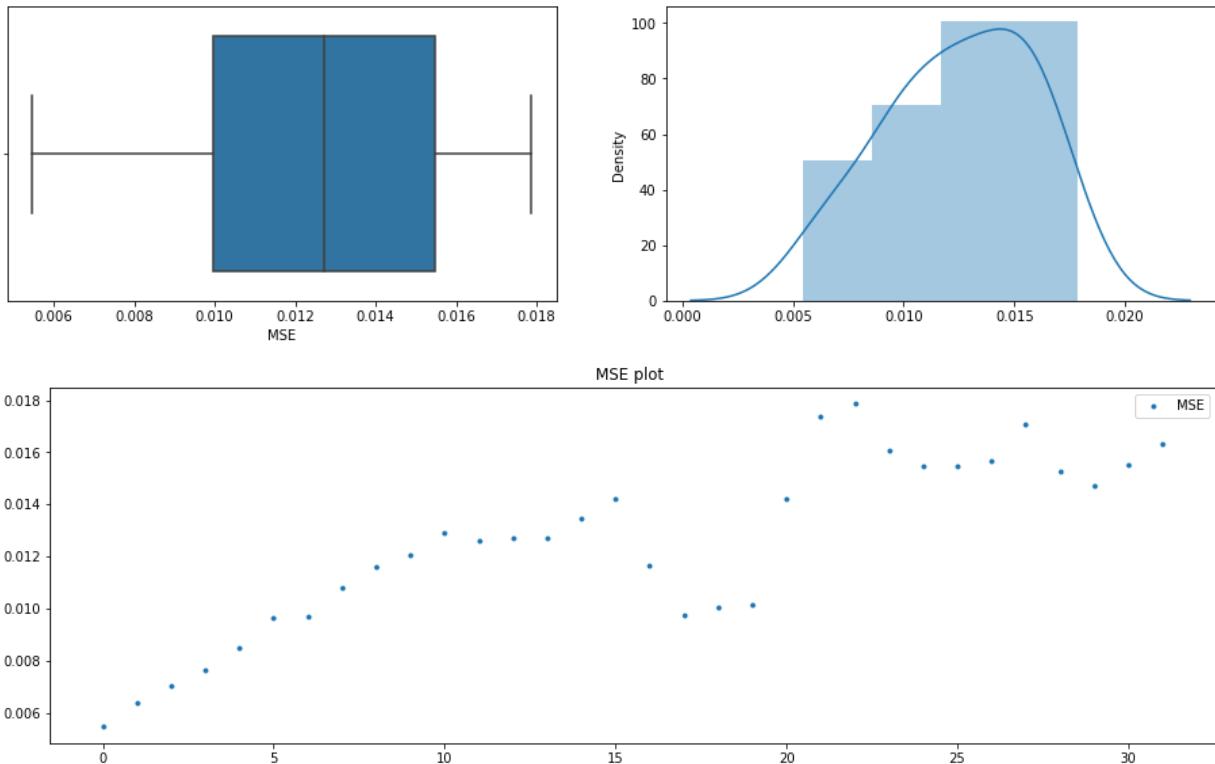
Statistic: 0.761

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: 15

mean=0.012500625, median=0.01271 , max=0.01786, min=0.00546, variance=1.10353e-05

Boxplots and Distribution plot for Reconstruction Error

**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)

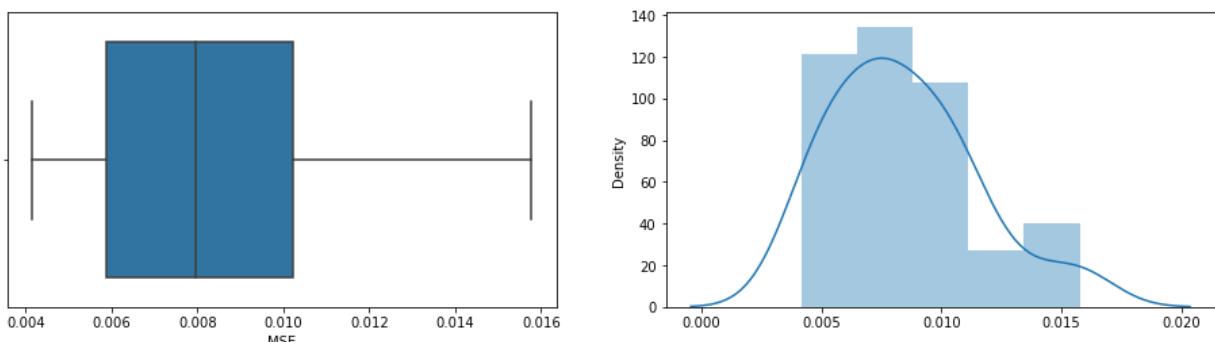
2.500: 0.834, data looks normal (fail to reject H0)

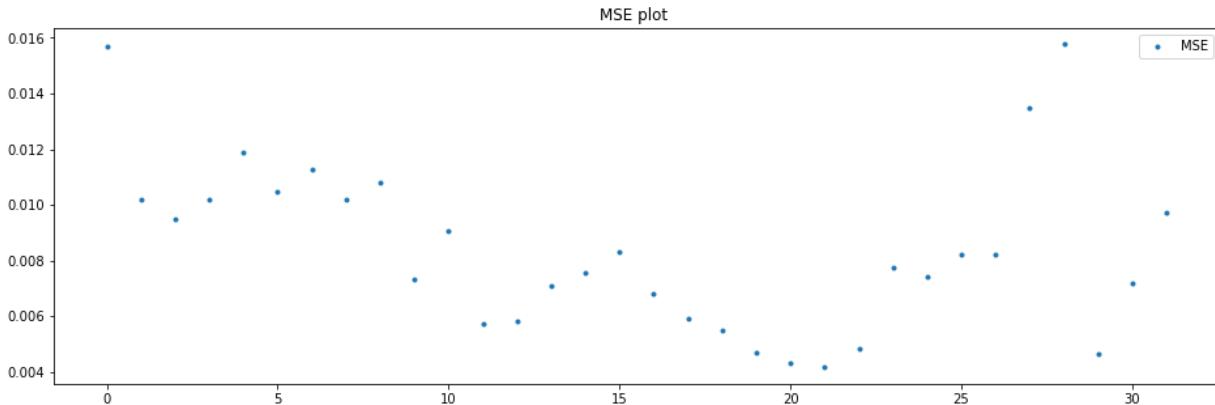
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 16

mean=0.0084240625, median=0.007965 , max=0.01577, min=0.00415, variance=9.0704e-06

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

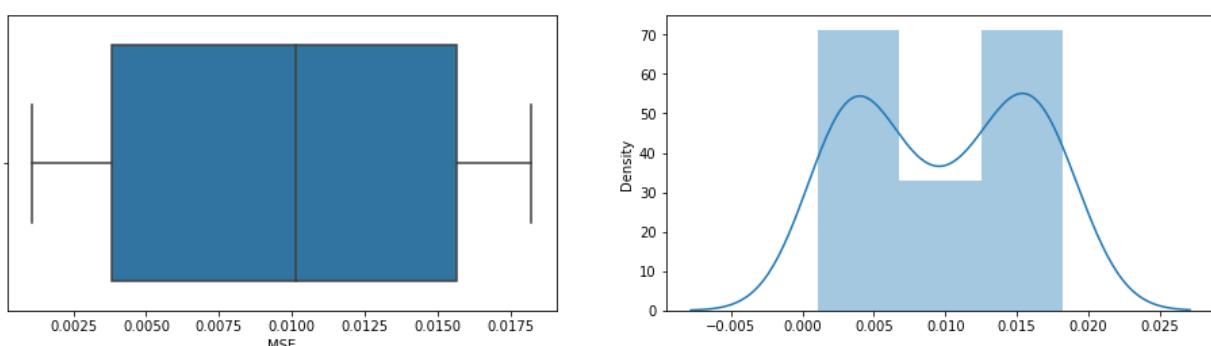
Statistic: 0.467

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)

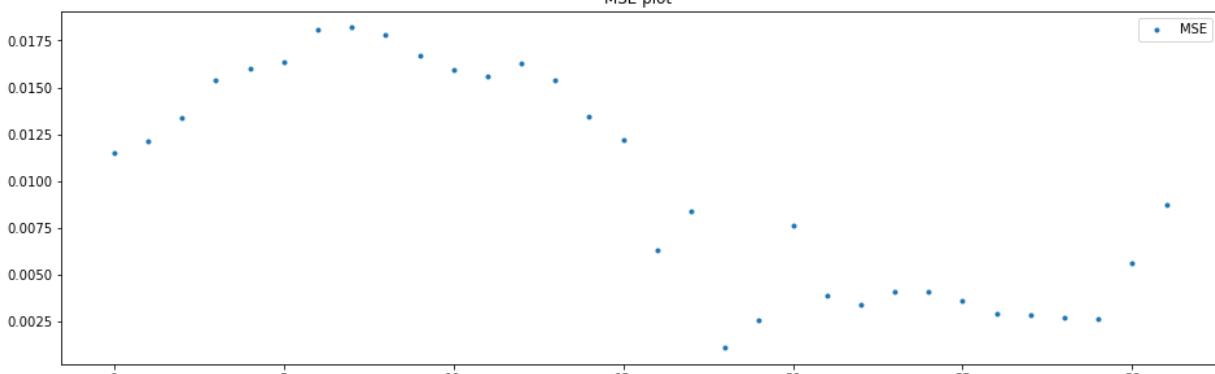
Batch: 17

mean=0.0098484375, median=0.01011 , max=0.0182, min=0.00109, variance=3.40827e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

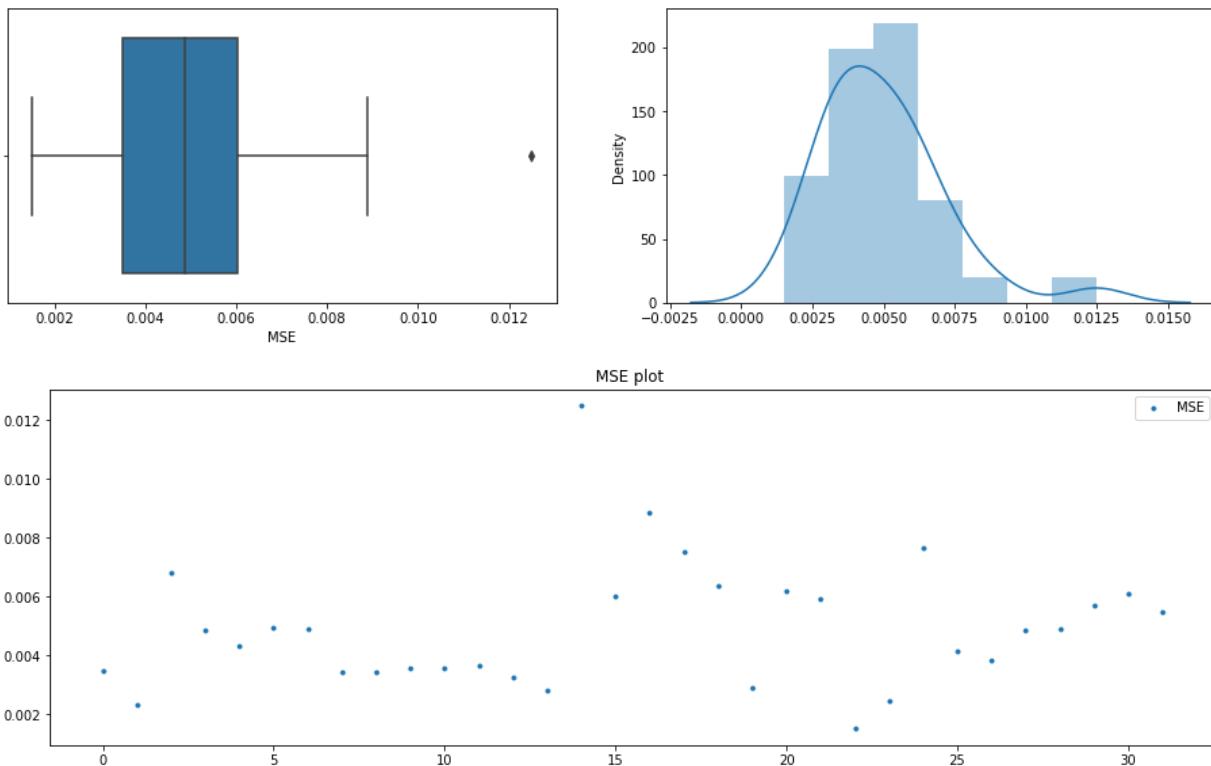
Statistic: 1.461

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: 18

mean=0.0049546875, median=0.00487 , max=0.01249, min=0.00151, variance=4.6347e-06

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

Statistic: 0.695

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)

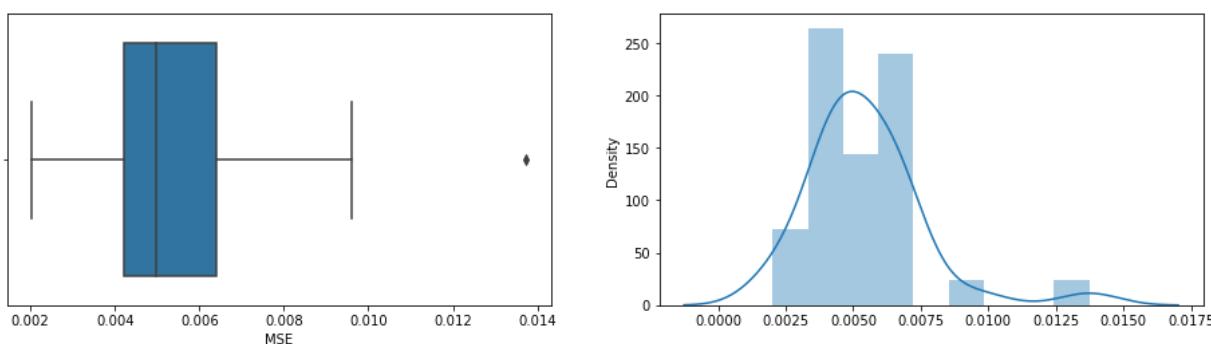
2.500: 0.834, data looks normal (fail to reject H0)

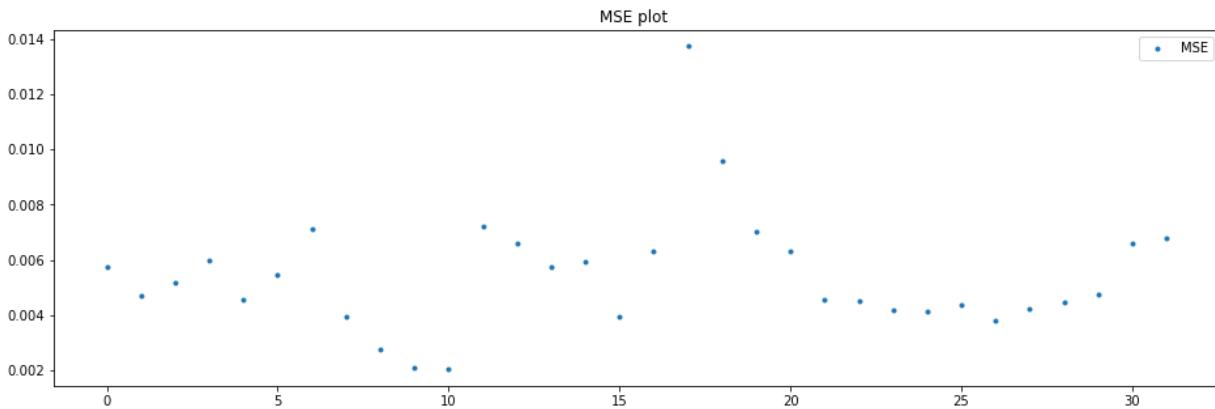
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 19

mean=0.00544625, median=0.00496 , max=0.01373, min=0.00203, variance=4.6519e-06

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 1.102

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)

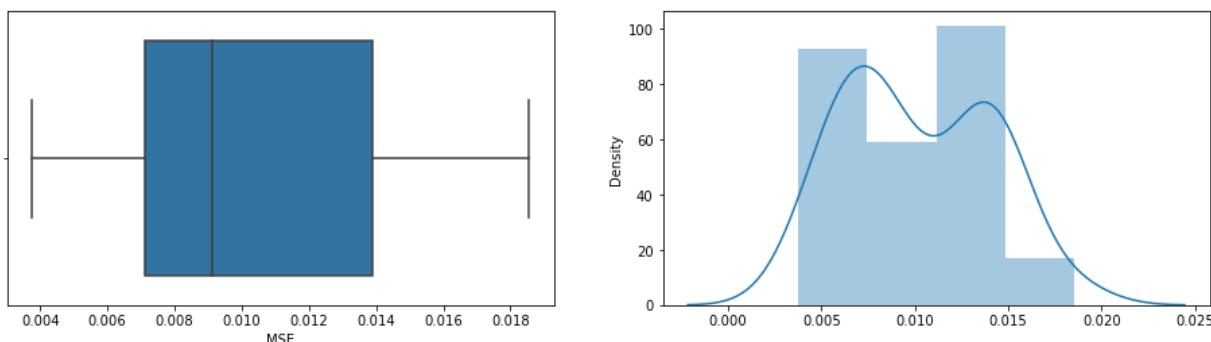
2.500: 0.834, data does not look normal (reject H0)

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

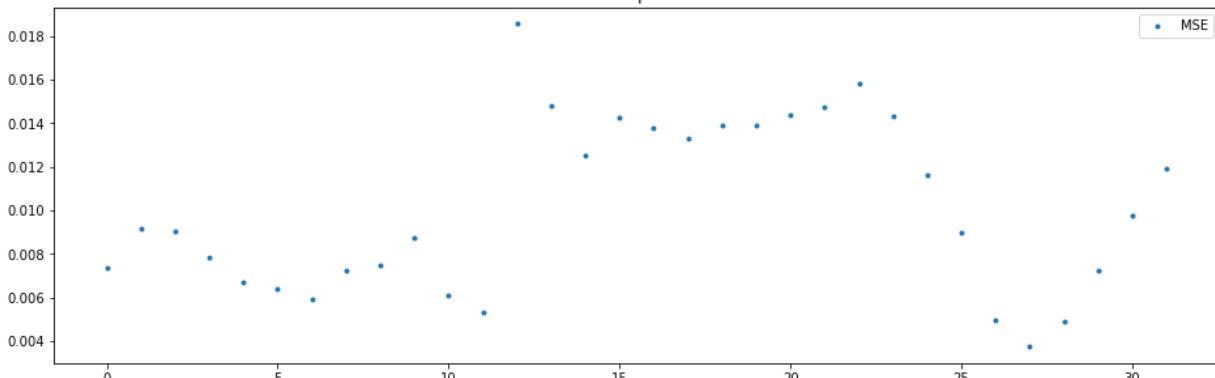
Batch: 20

mean=0.0101515625, median=0.00911 , max=0.01855, min=0.00375, variance=1.50136e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 0.834

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)

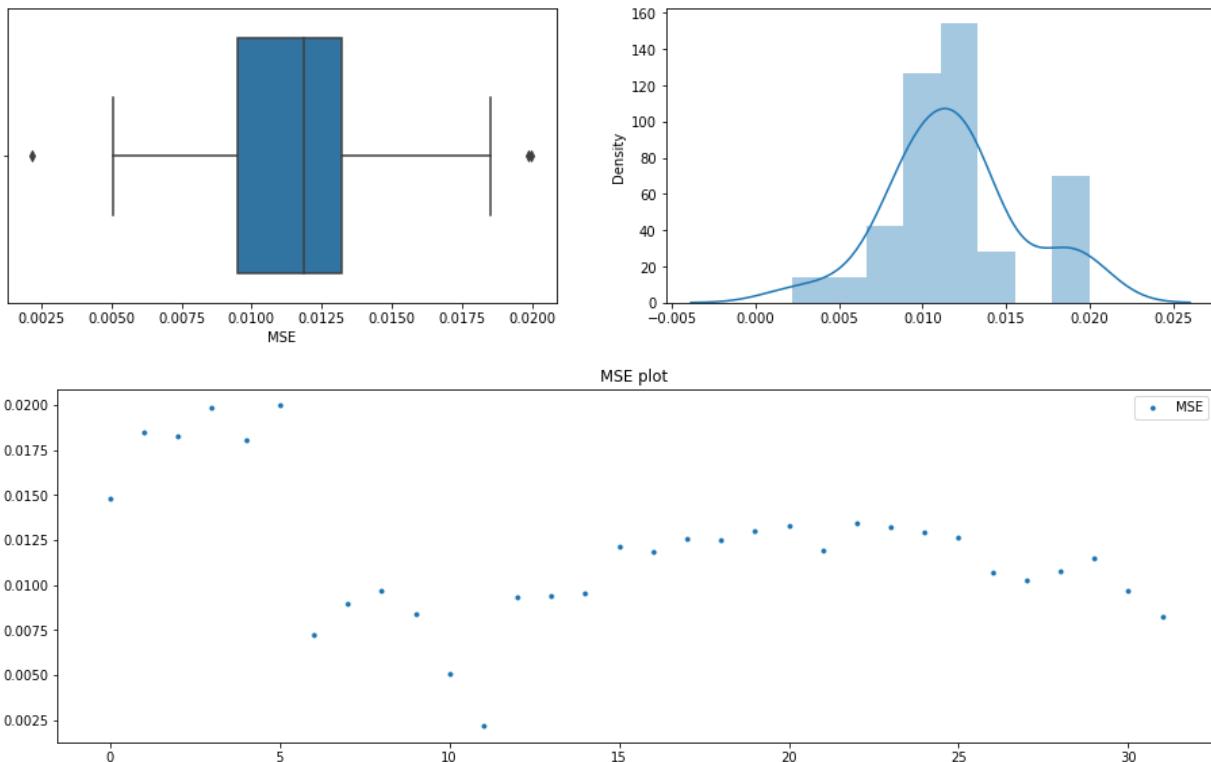
2.500: 0.834, data does not look normal (reject H0)

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

Batch: 21

mean=0.011874375, median=0.01187 , max=0.01997, min=0.00217, variance=1.56305e-05

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)

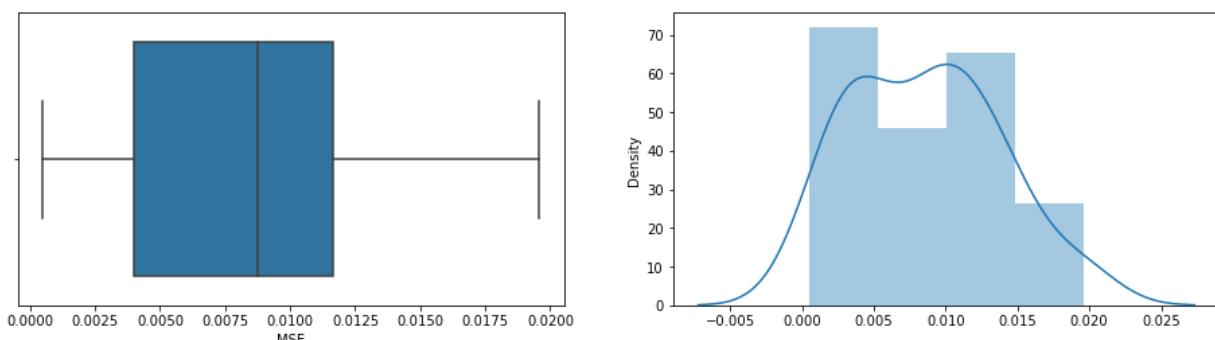
2.500: 0.834, data looks normal (fail to reject H0)

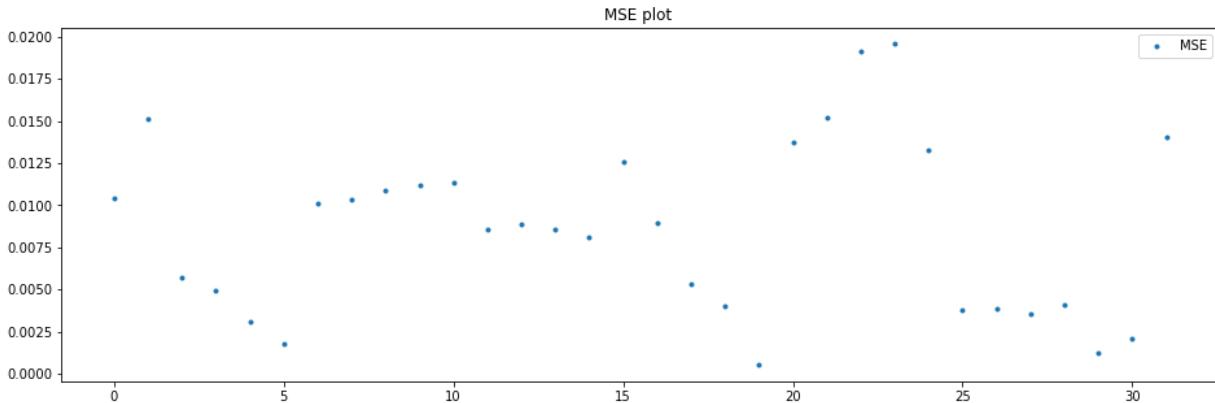
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 22

mean=0.00855875, median=0.00875 , max=0.01958, min=0.0005, variance=2.58101e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.419

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)

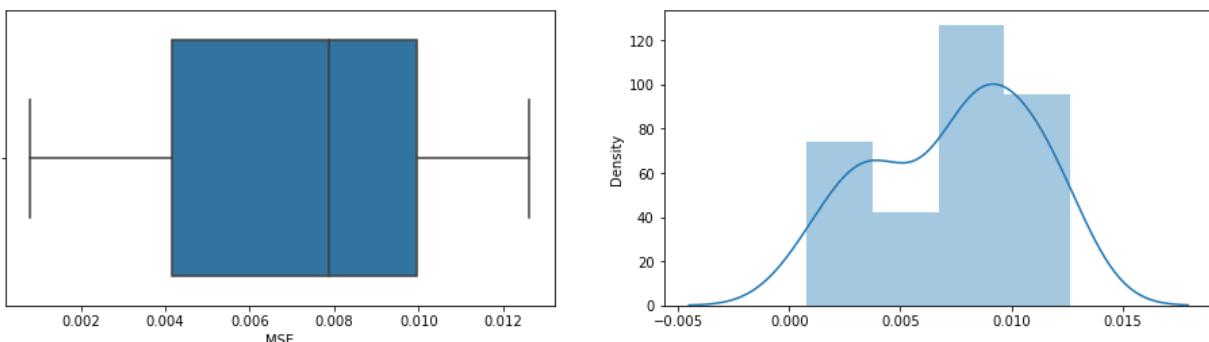
2.500: 0.834, data looks normal (fail to reject H0)

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

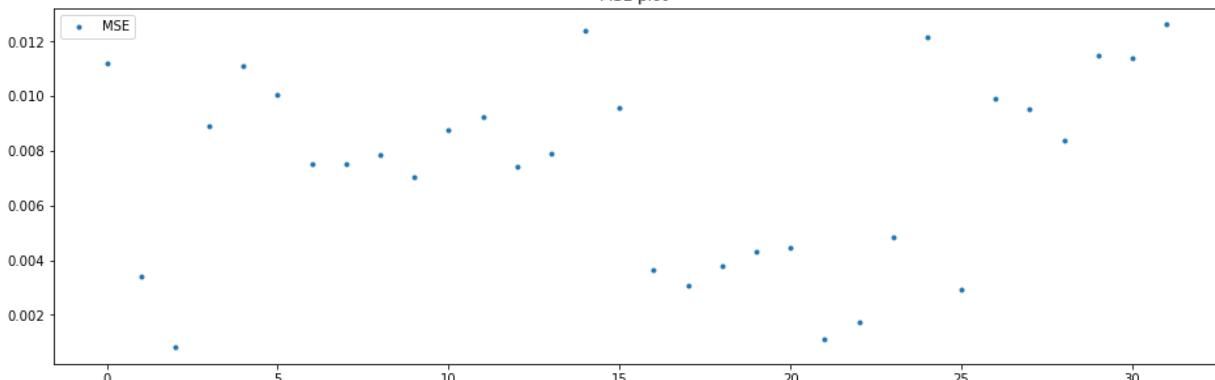
Batch: 23

mean=0.007379375, median=0.007875 , max=0.01262, min=0.0008, variance=1.21713e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 0.644

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)

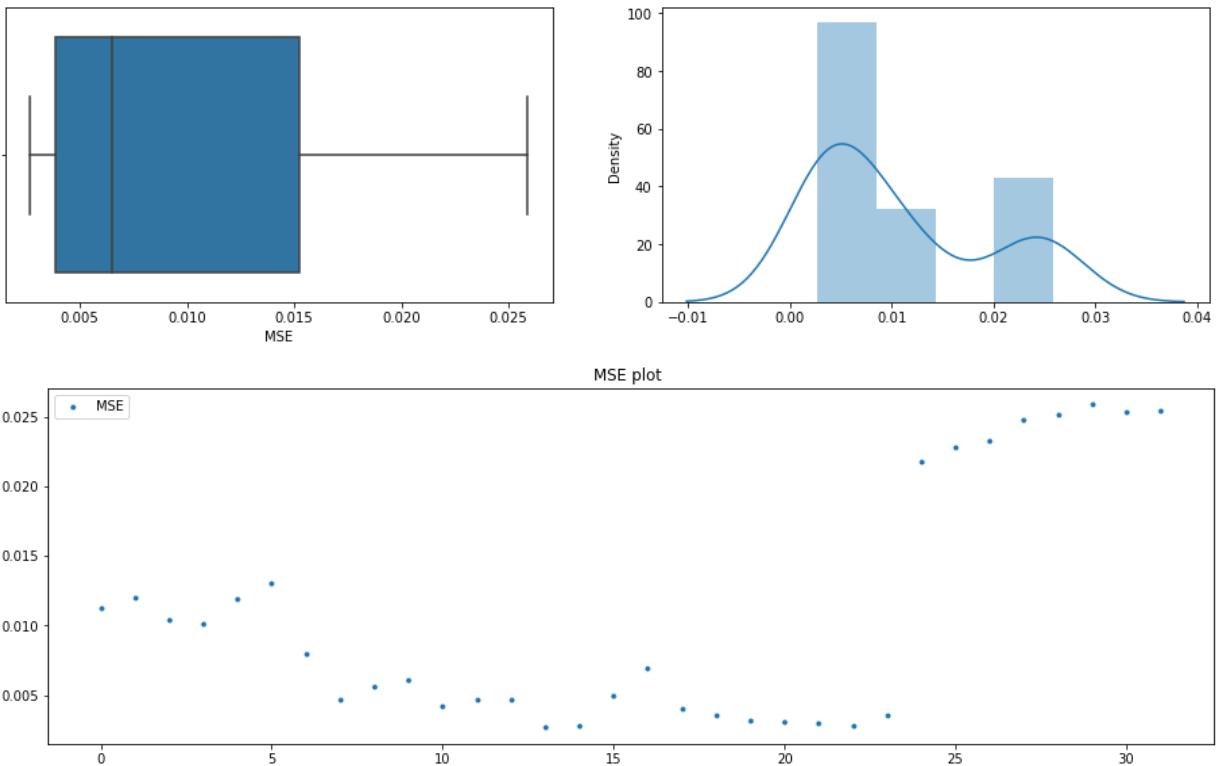
2.500: 0.834, data looks normal (fail to reject H0)

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

Batch: 24

mean=0.0106821875, median=0.00651 , max=0.02587, min=0.00267, variance=7.09001e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

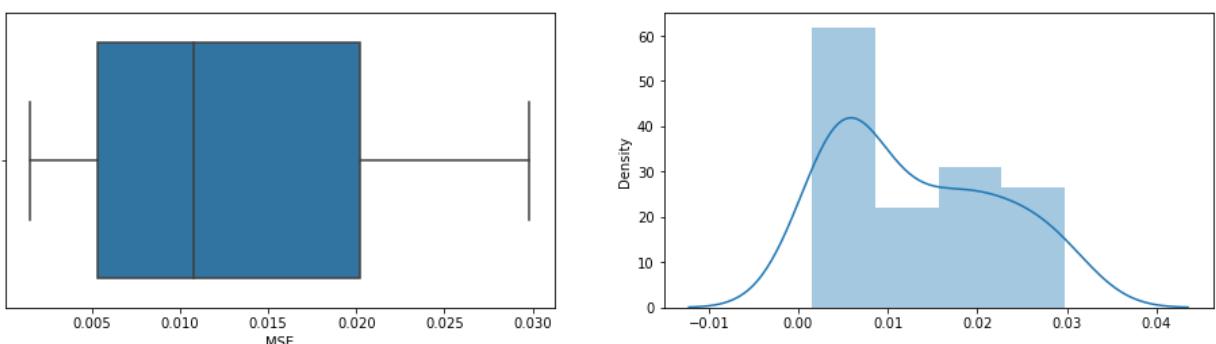
Statistic: 2.579

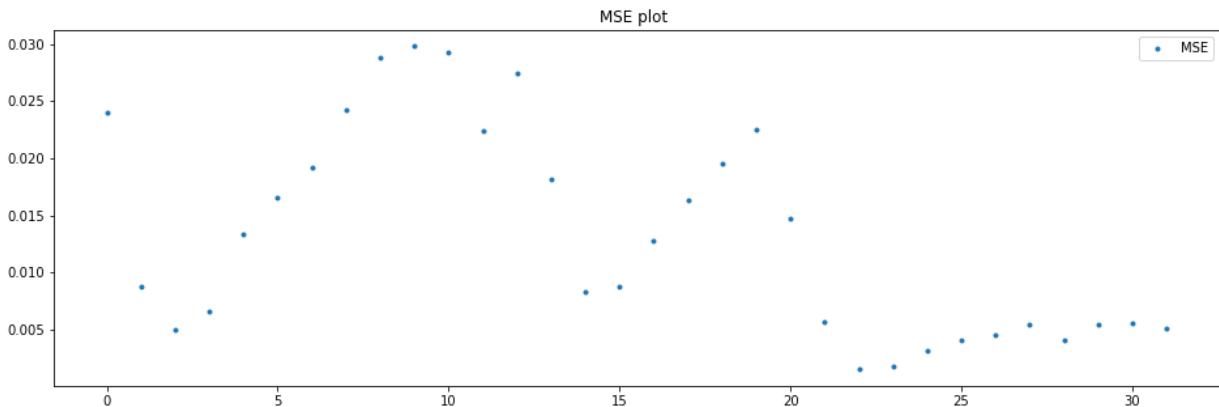
15.000: 0.523, data does not look normal (reject H₀)
 10.000: 0.596, data does not look normal (reject H₀)
 5.000: 0.715, data does not look normal (reject H₀)
 2.500: 0.834, data does not look normal (reject H₀)
 1.000: 0.992, data does not look normal (reject H₀)

Batch: 25

mean=0.013216875, median=0.010775 , max=0.0298, min=0.0015, variance=8.10957e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

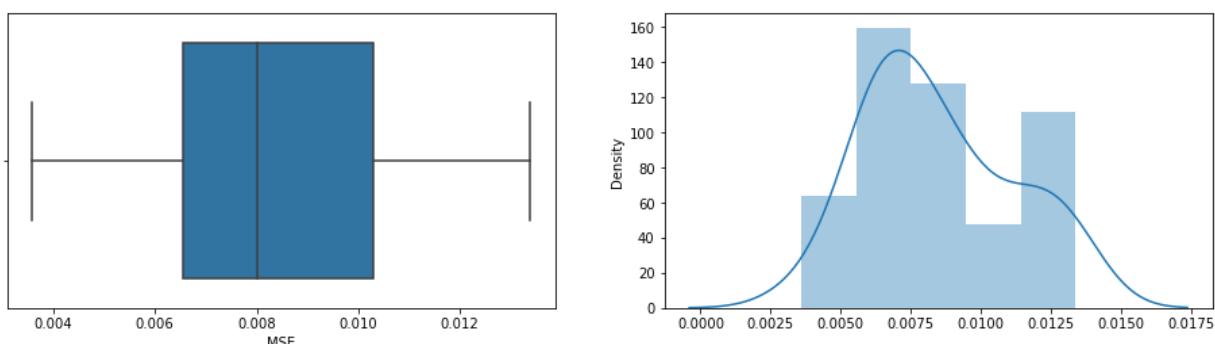
Statistic: 1.156

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)

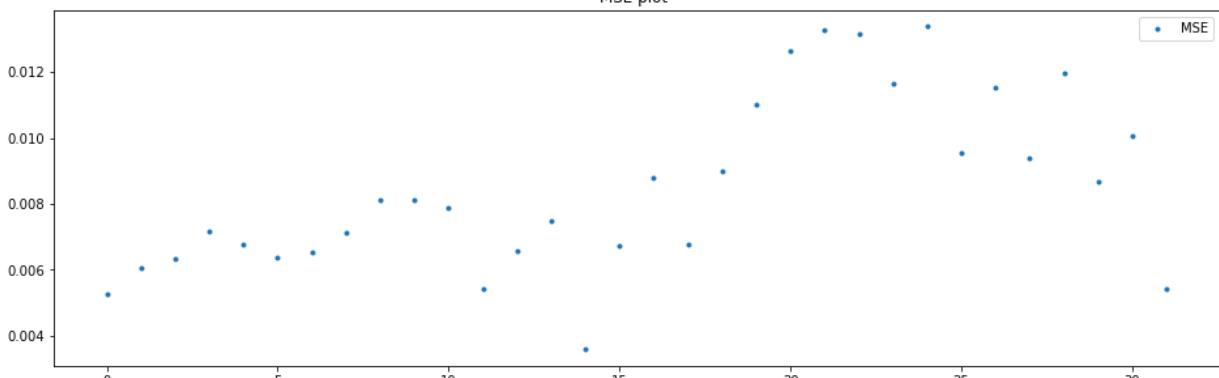
Batch: 26

mean=0.008495, median=0.008 , max=0.01338, min=0.00358, variance=6.8218e-06

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

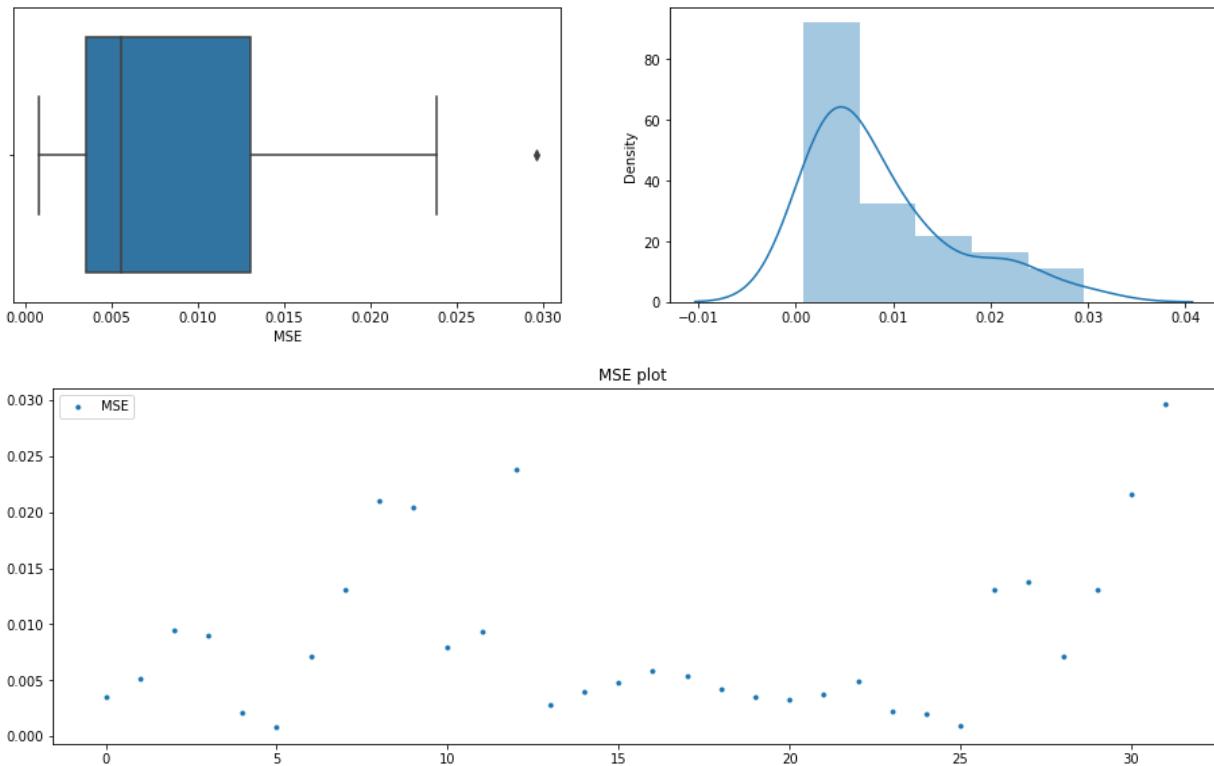
Statistic: 0.711

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: 27

mean=0.0087159375, median=0.005575 , max=0.02959, min=0.00079, variance=5.33205e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

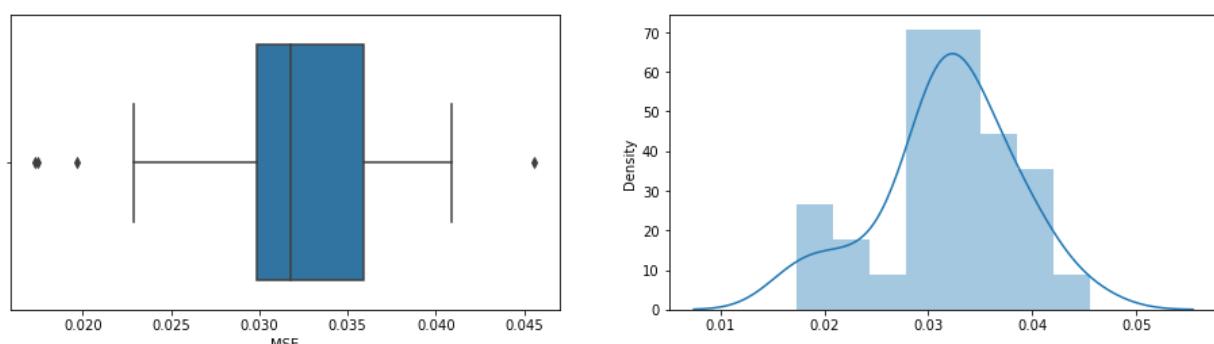
Statistic: 1.821

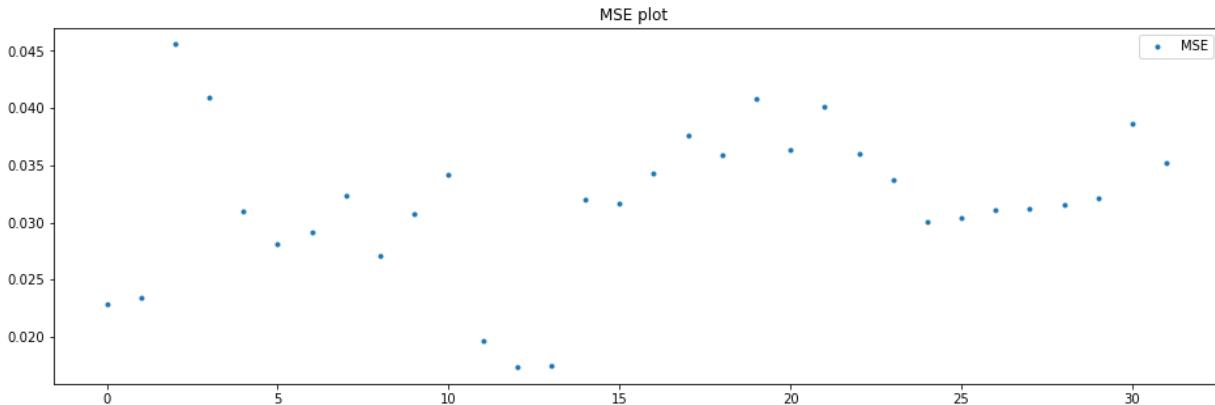
15.000: 0.523, data does not look normal (reject H₀)
 10.000: 0.596, data does not look normal (reject H₀)
 5.000: 0.715, data does not look normal (reject H₀)
 2.500: 0.834, data does not look normal (reject H₀)
 1.000: 0.992, data does not look normal (reject H₀)

Batch: 28

mean=0.0318346875, median=0.03181 , max=0.04558, min=0.01731, variance=4.21027e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.553

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)

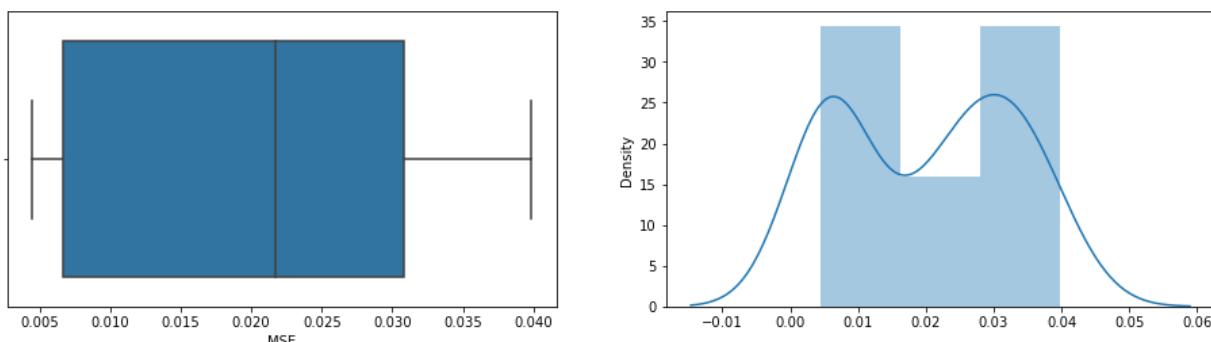
2.500: 0.834, data looks normal (fail to reject H0)

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

Batch: 29

mean=0.020013125, median=0.02171 , max=0.03984, min=0.00445, variance=0.0001570475

Boxplots and Distribution plot for Reconstruction Error



Anderson_Darling Test

Statistic: 1.767

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)

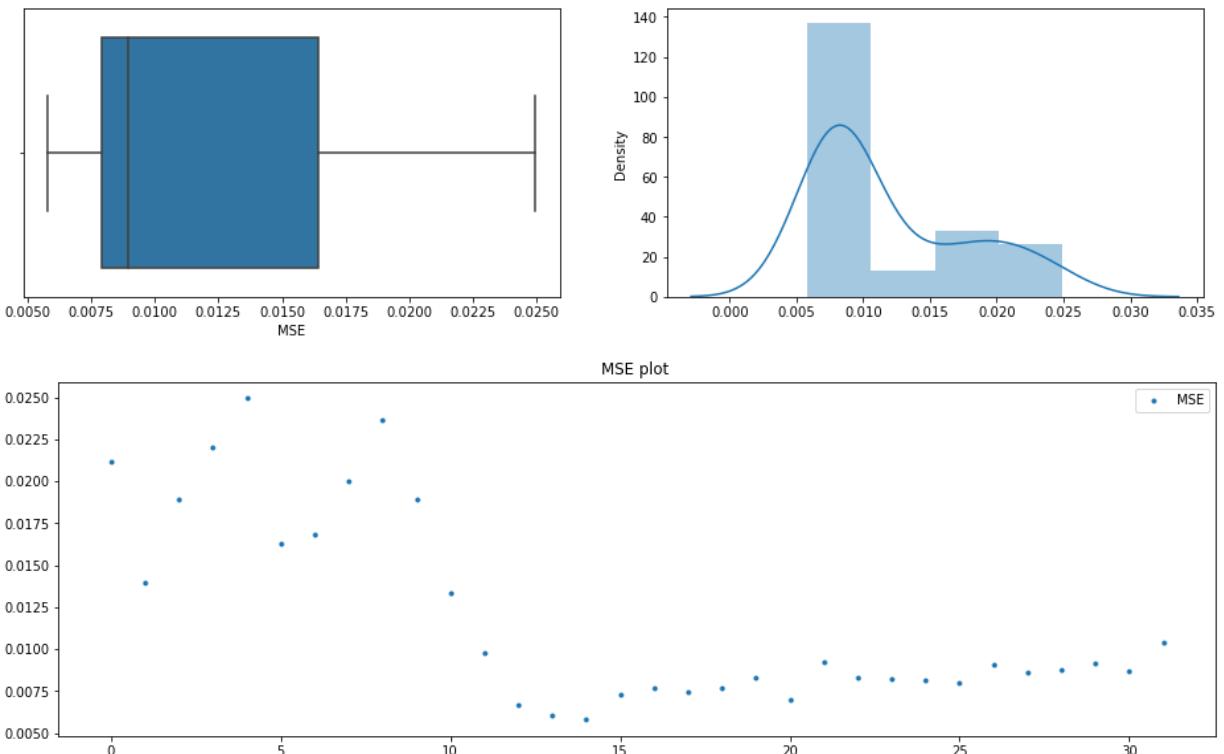
2.500: 0.834, data does not look normal (reject H0)

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

Batch: 30

mean=0.0118896875, median=0.00894 , max=0.02494, min=0.0058, variance=3.24181e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

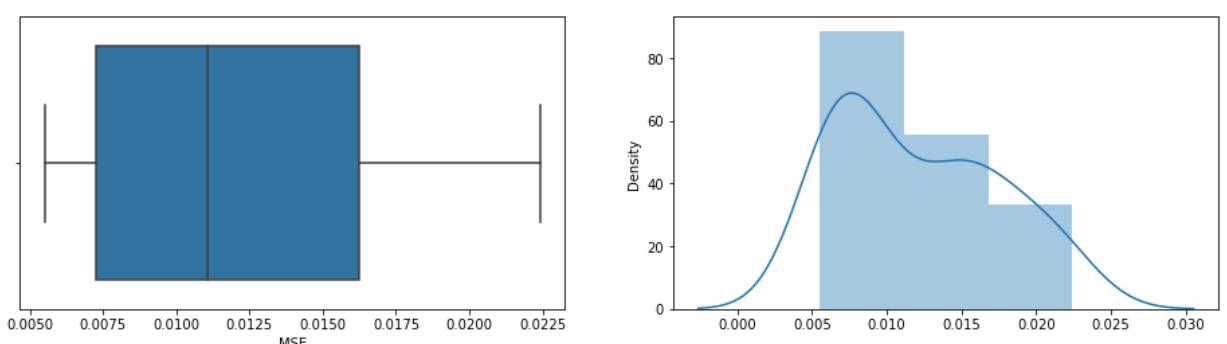
Statistic: 2.524

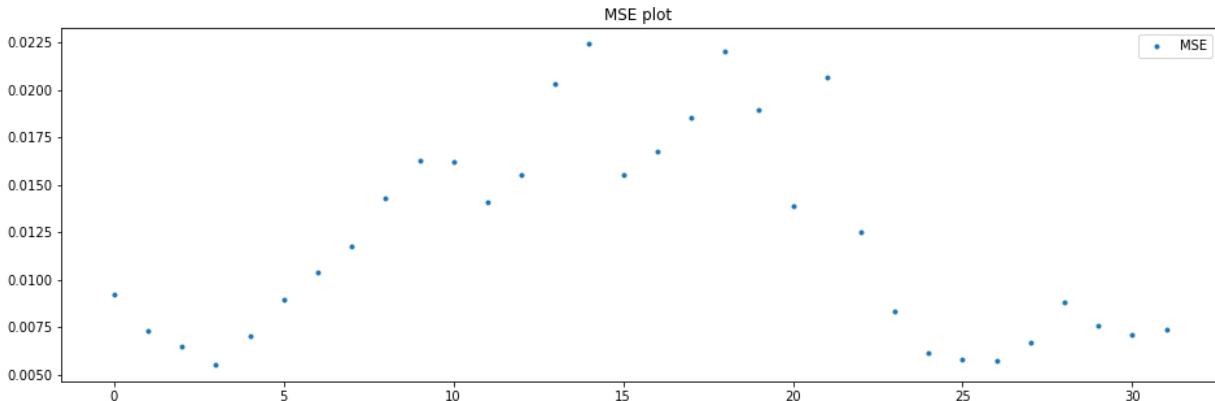
```
15.000: 0.523, data does not look normal (reject H0)
10.000: 0.596, data does not look normal (reject H0)
5.000: 0.715, data does not look normal (reject H0)
2.500: 0.834, data does not look normal (reject H0)
1.000: 0.992, data does not look normal (reject H0)
```

Batch: 31

mean=0.012129375, median=0.01106 , max=0.02241, min=0.0055, variance=2.82588e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

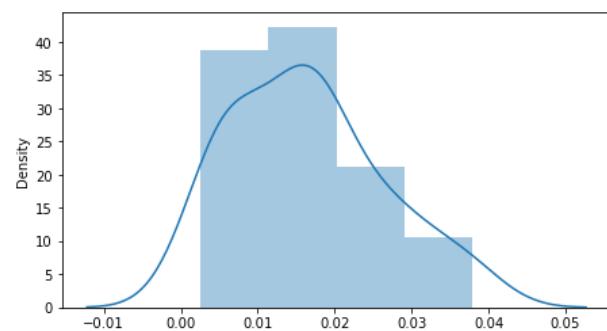
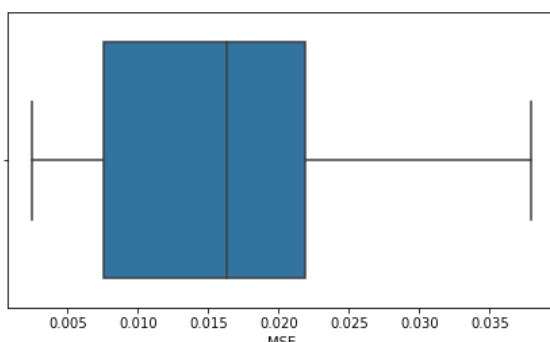
Statistic: 1.018

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)

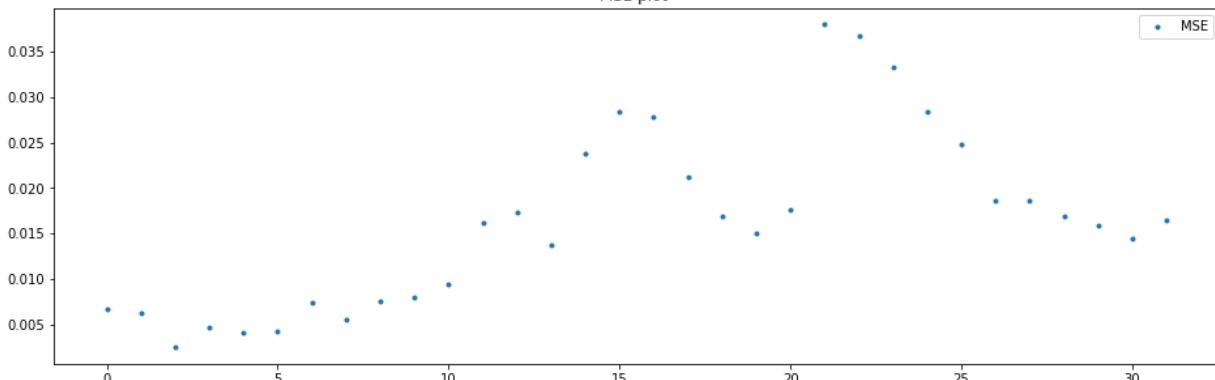
Batch: 32

mean=0.0164571875, median=0.01633 , max=0.03795, min=0.00248, variance=9.29723e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

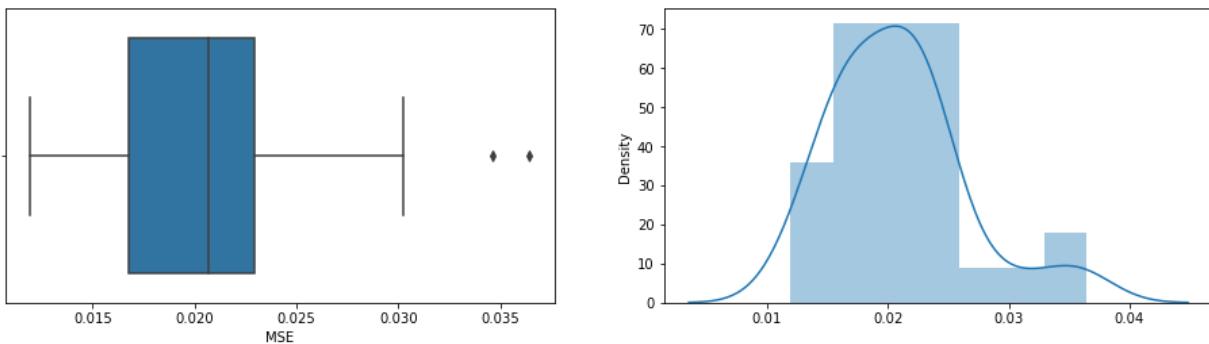
Statistic: 0.610

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)

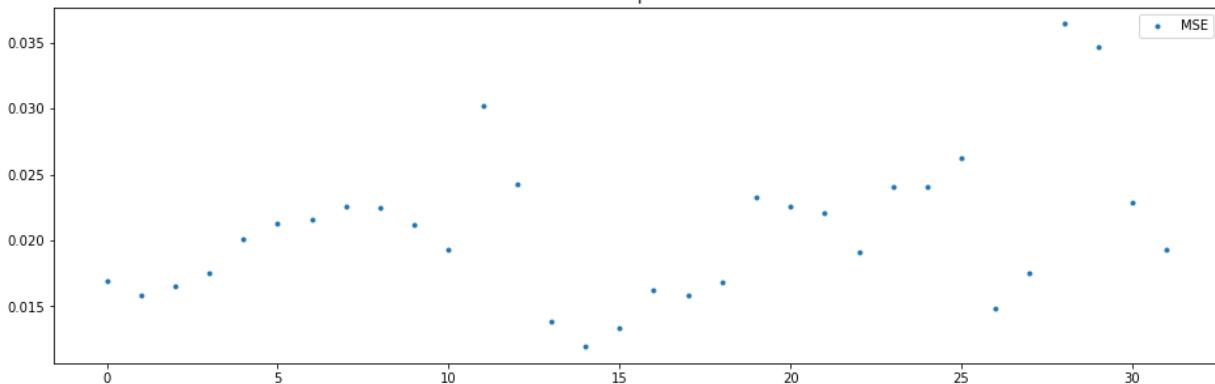
Batch: 33

mean=0.0207840625, median=0.020665 , max=0.03642, min=0.01193, variance=3.0496e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**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)

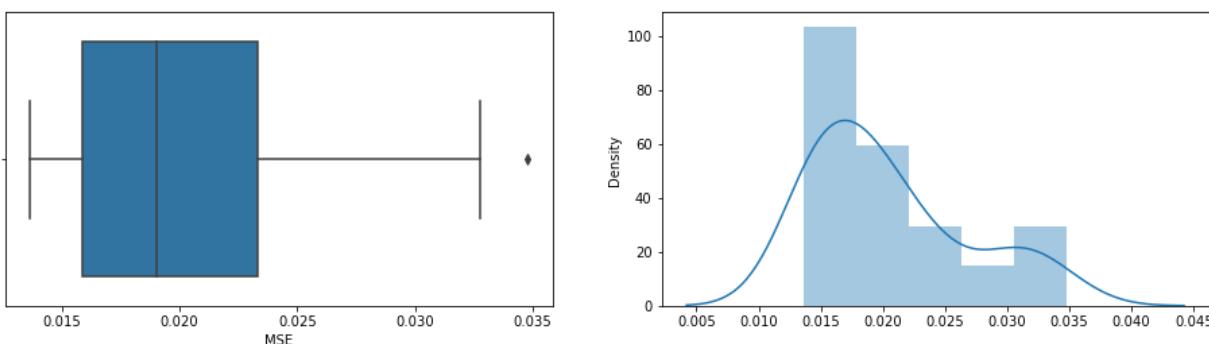
2.500: 0.834, data looks normal (fail to reject H0)

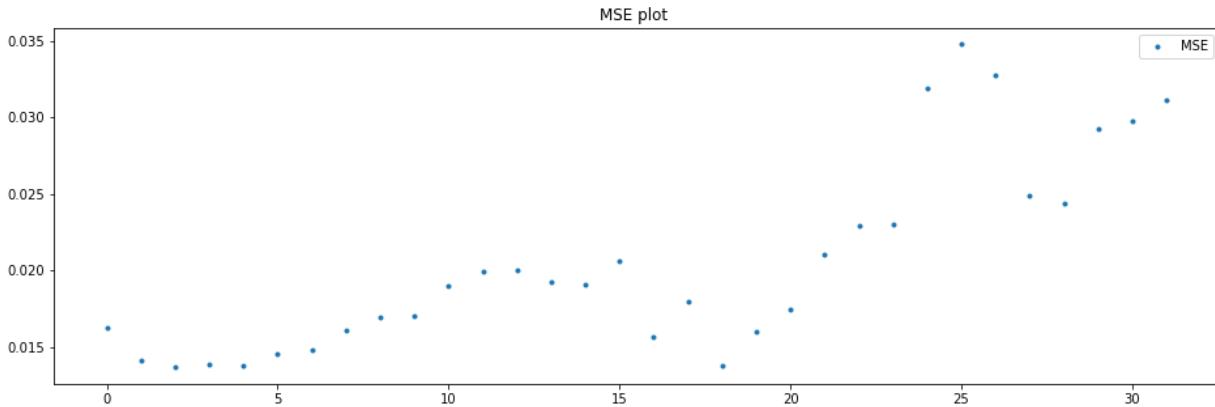
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 34

mean=0.020471875, median=0.019 , max=0.03478, min=0.01364, variance=3.83279e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 1.336

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)

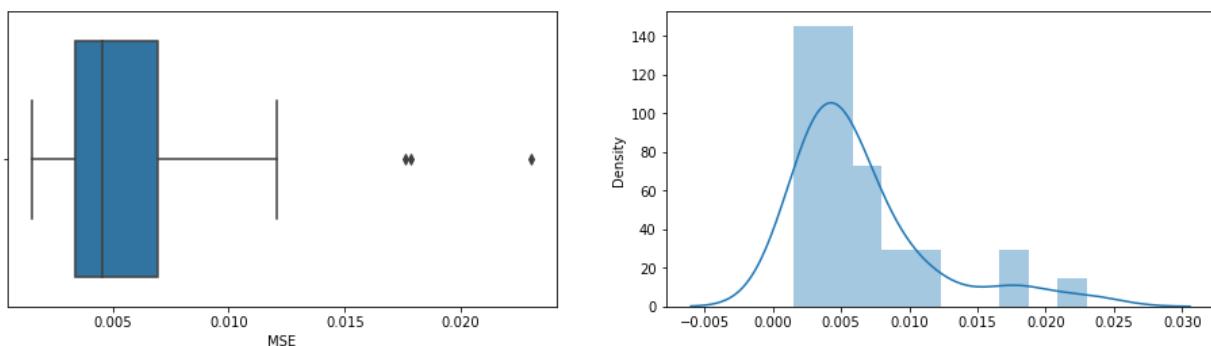
2.500: 0.834, data does not look normal (reject H0)

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

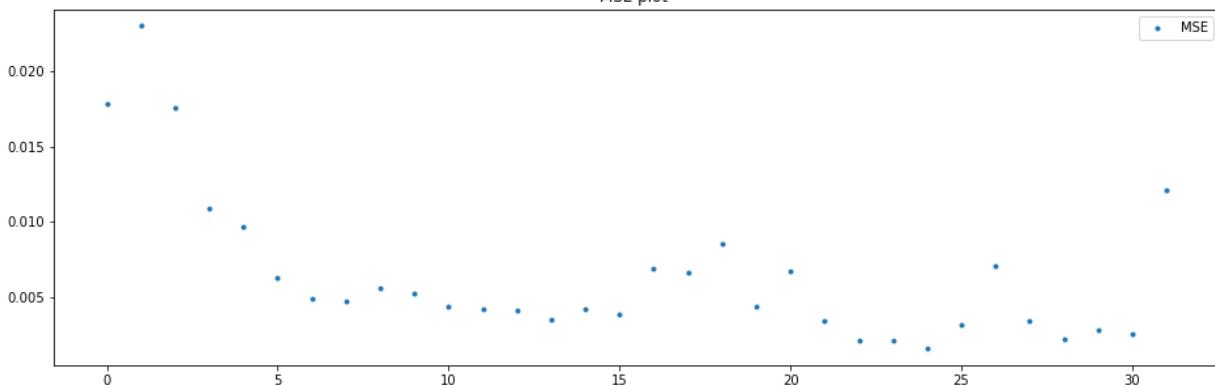
Batch: 35

mean=0.0064146875, median=0.004555 , max=0.02303, min=0.00153, variance=2.44324e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 2.511

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)

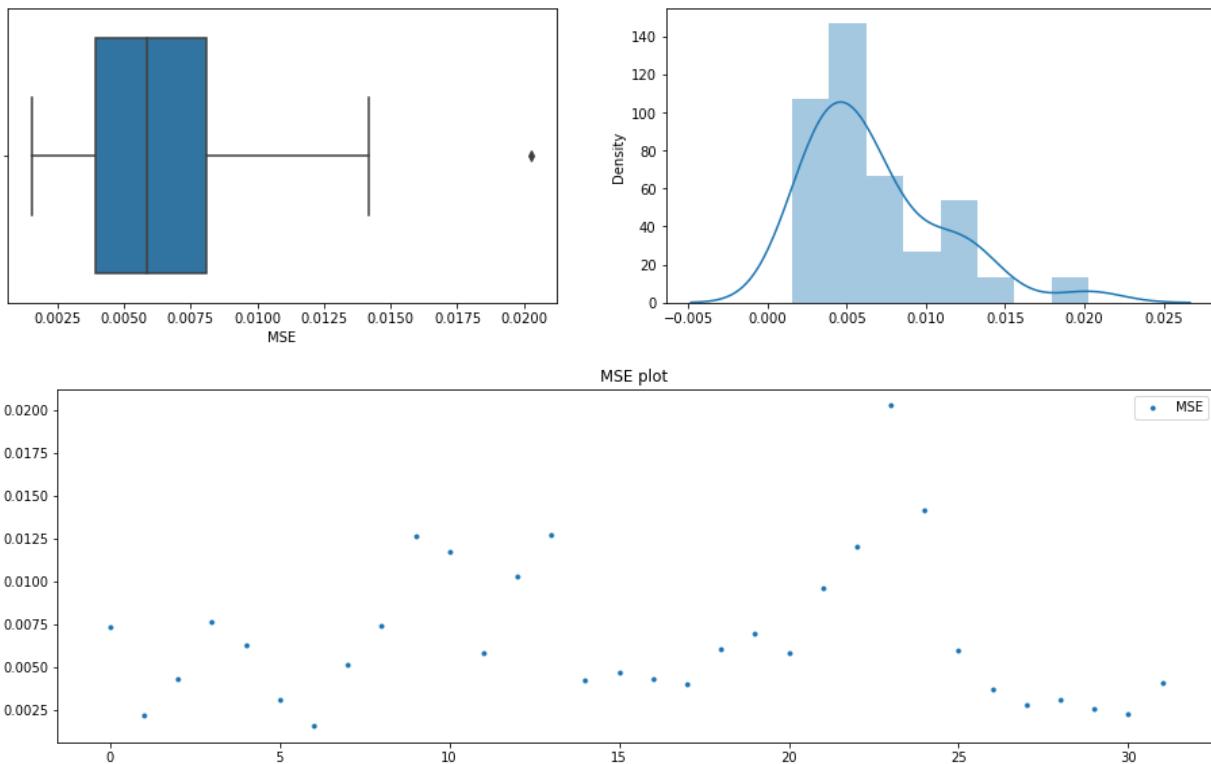
2.500: 0.834, data does not look normal (reject H0)

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

Batch: 36

mean=0.0067171875, median=0.00584 , max=0.02027, min=0.00156, variance=1.75458e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

Statistic: 1.210

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)

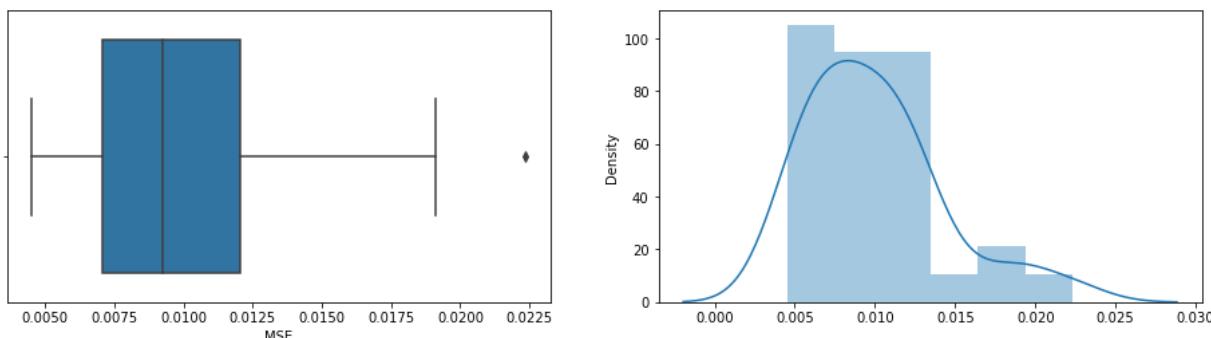
2.500: 0.834, data does not look normal (reject H0)

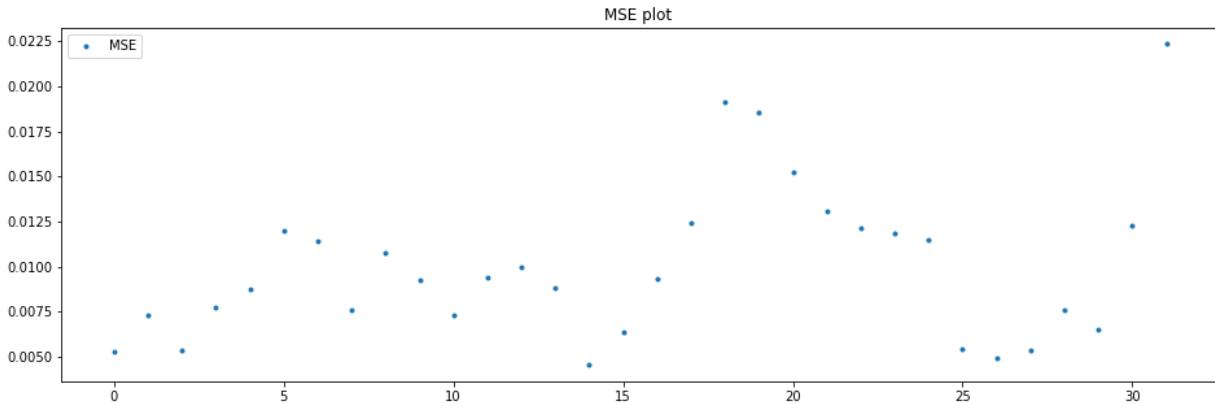
1.000: 0.992, data does not look normal (reject H0)

Batch: 37

mean=0.009973125, median=0.00926 , max=0.02235, min=0.00452, variance=1.805e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.852

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)

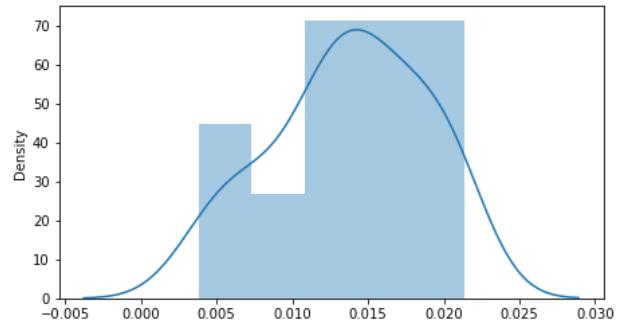
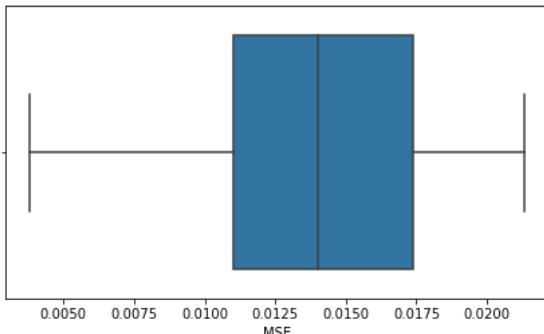
2.500: 0.834, data does not look normal (reject H0)

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

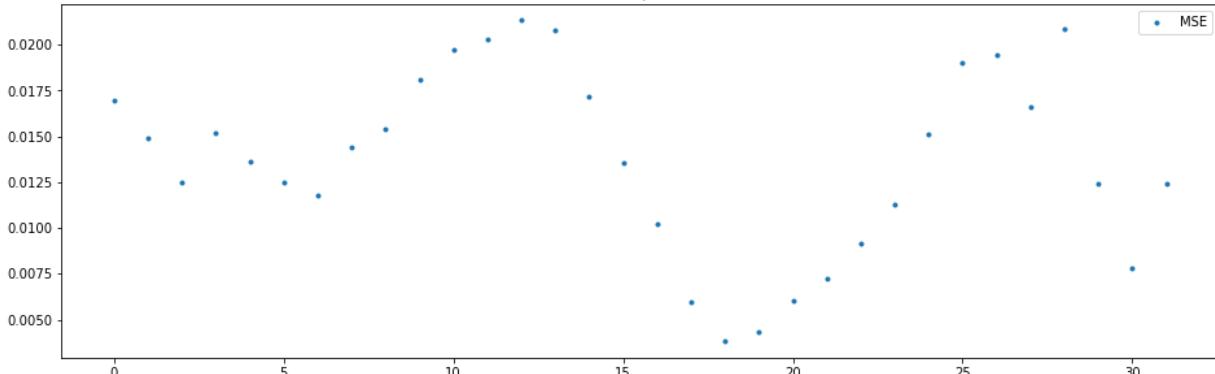
Batch: 38

mean=0.0137428125, median=0.01402 , max=0.02133, min=0.0038, variance=2.47156e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 0.338

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)

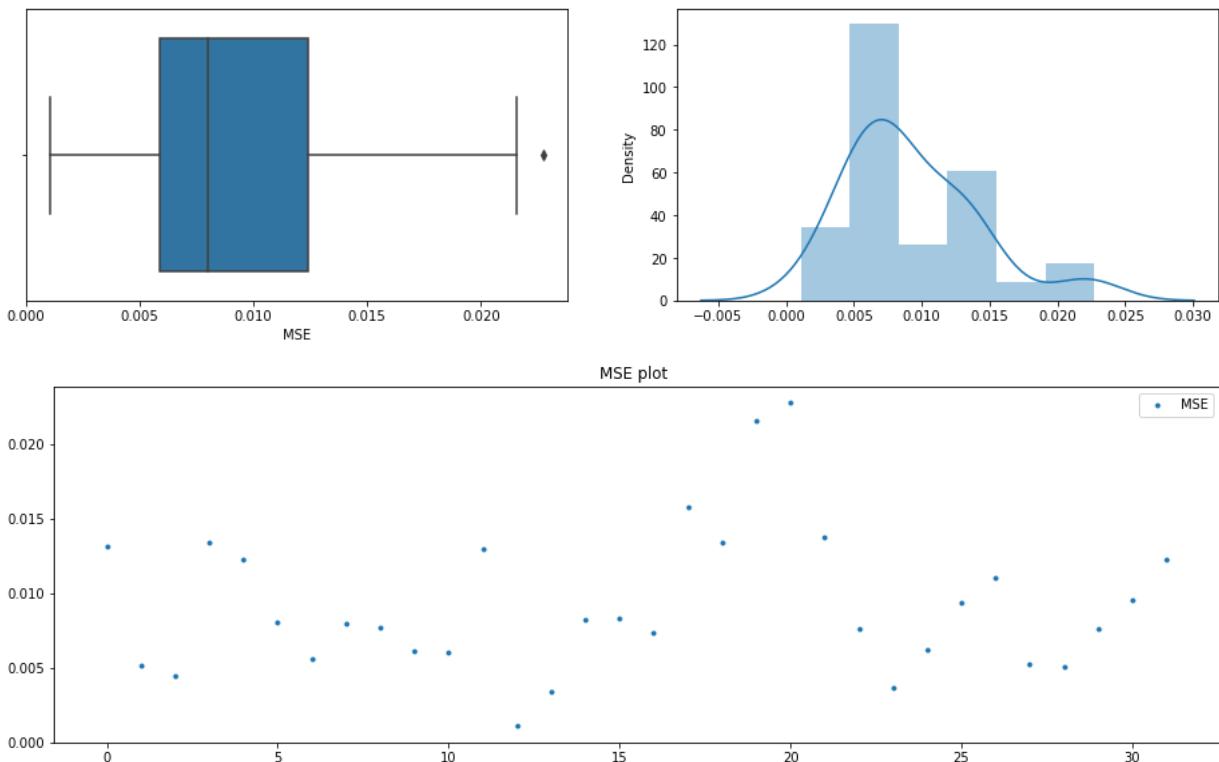
2.500: 0.834, data looks normal (fail to reject H0)

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

Batch: 39

mean=0.0092409375, median=0.008025 , max=0.02273, min=0.00108, variance=2.32526e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

Statistic: 0.824

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)

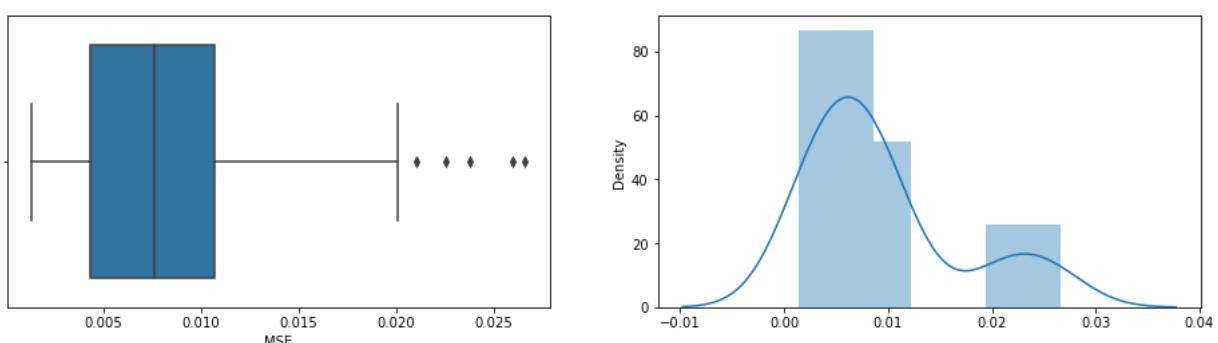
2.500: 0.834, data looks normal (fail to reject H0)

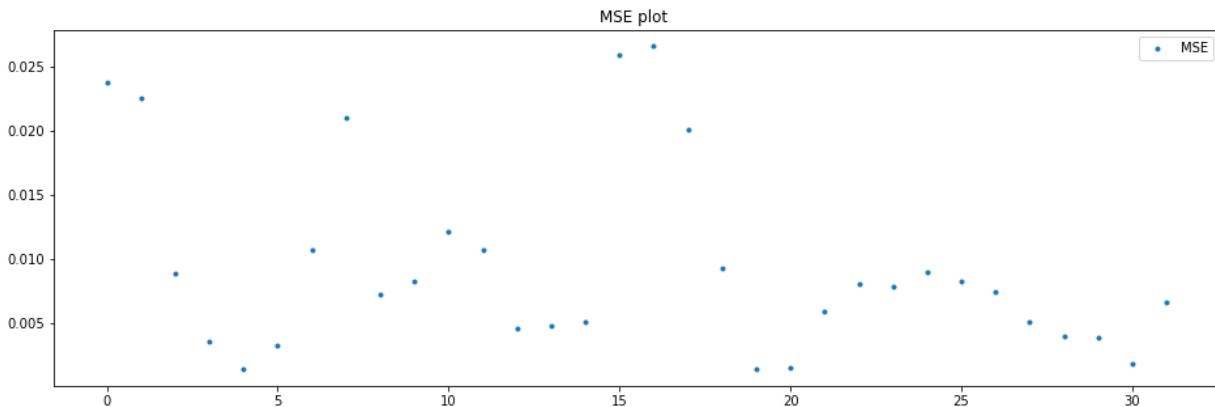
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 40

mean=0.0093678125, median=0.00765 , max=0.02657, min=0.00135, variance=5.34233e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

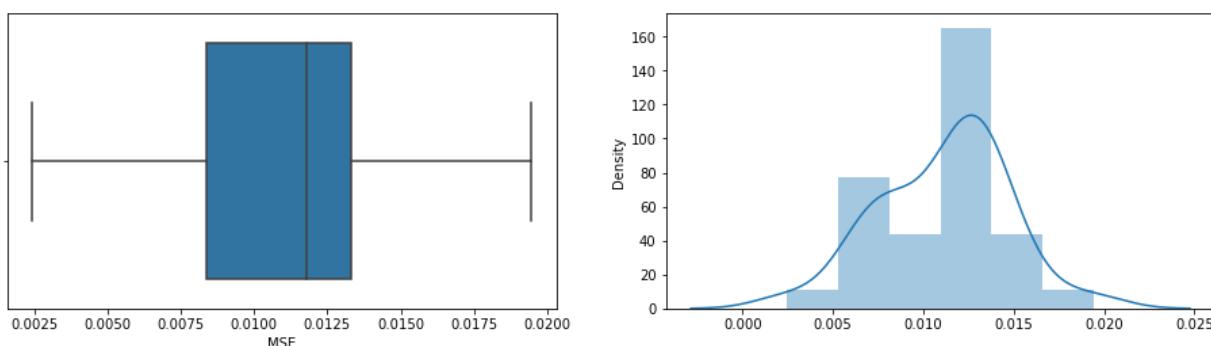
Statistic: 2.097

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)

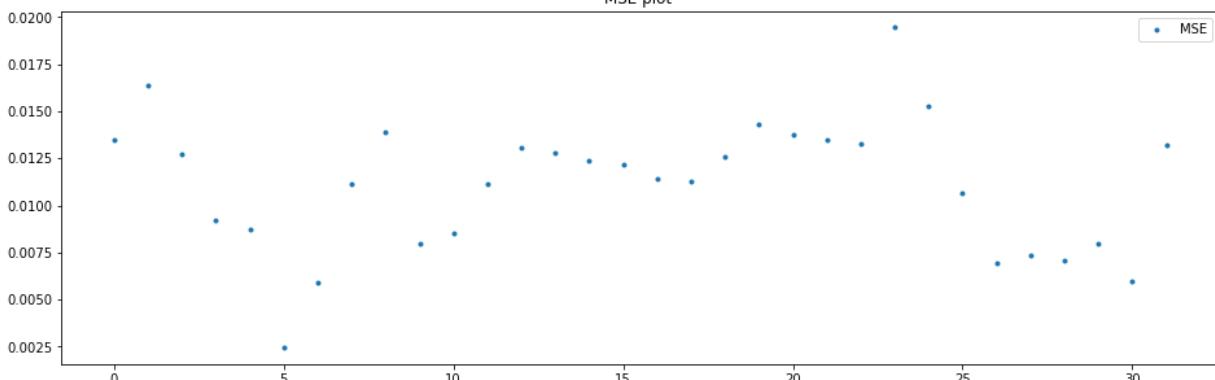
Batch: 41

mean=0.0111221875, median=0.011775 , max=0.01945, min=0.00243, variance=1.20811e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

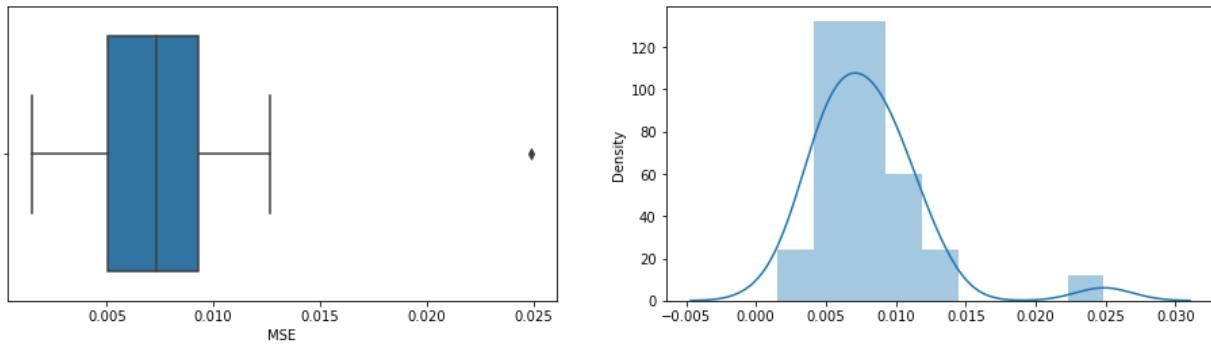
Statistic: 0.513

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)

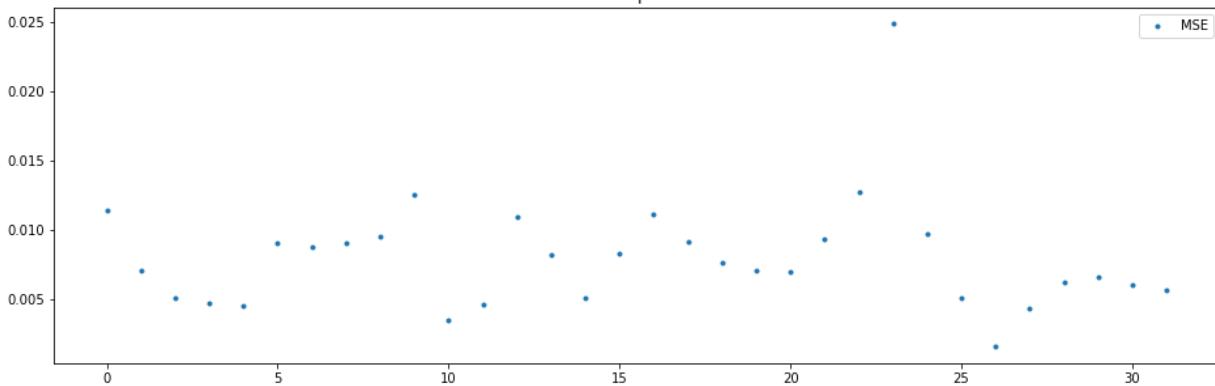
Batch: 42

mean=0.00797375, median=0.007335 , max=0.02487, min=0.00151, variance=1.63381e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson_Darling Test**

Statistic: 1.130

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)

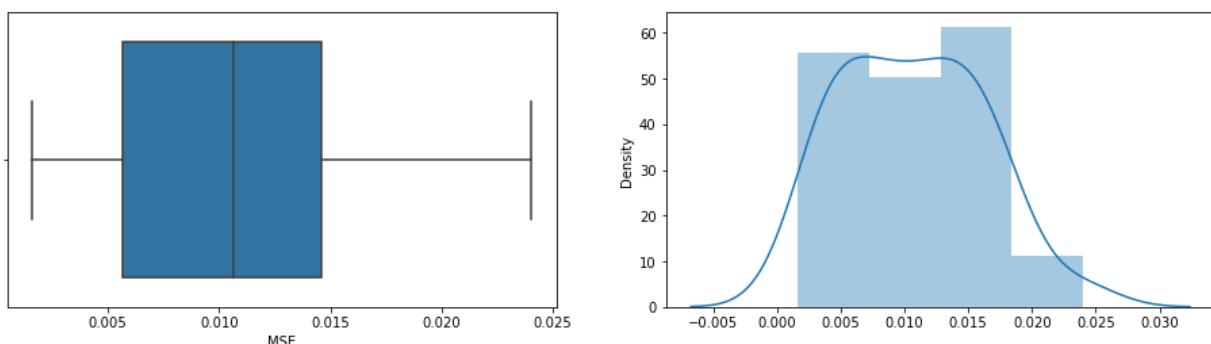
2.500: 0.834, data does not look normal (reject H0)

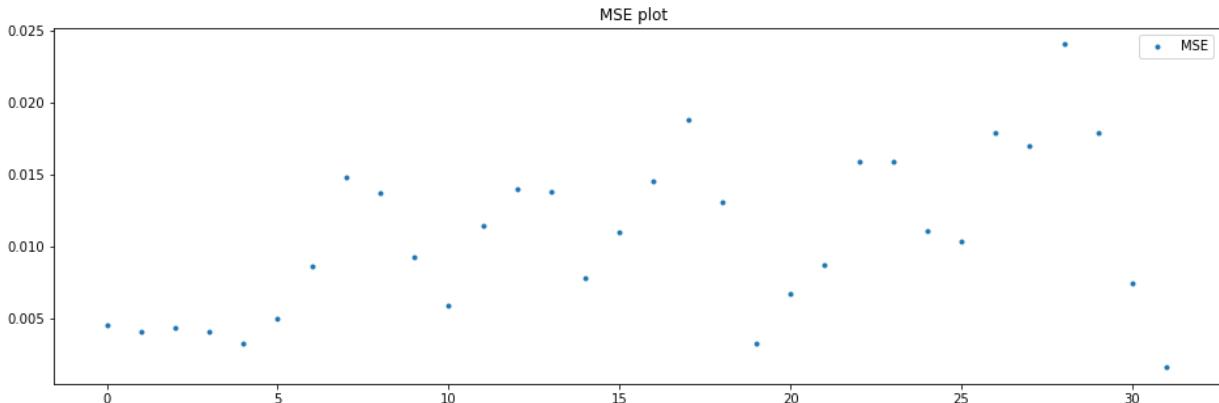
1.000: 0.992, data does not look normal (reject H0)

Batch: 43

mean=0.0106209375, median=0.010675 , max=0.02402, min=0.00161, variance=3.01445e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.371

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)

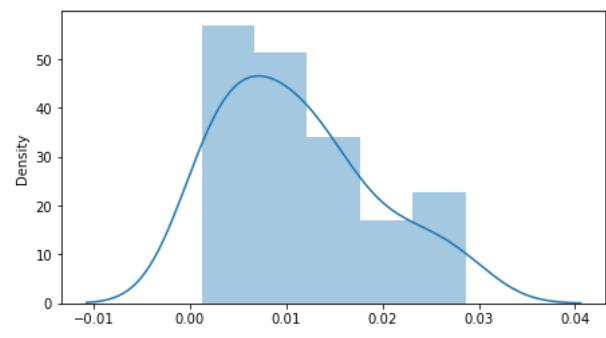
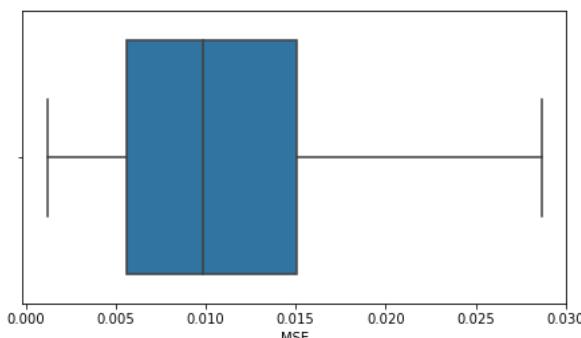
2.500: 0.834, data looks normal (fail to reject H0)

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

Batch: 44

mean=0.0111303125, median=0.00982 , max=0.02864, min=0.0012, variance=6.13339e-05

Boxplots and Distribution plot for Reconstruction Error



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)

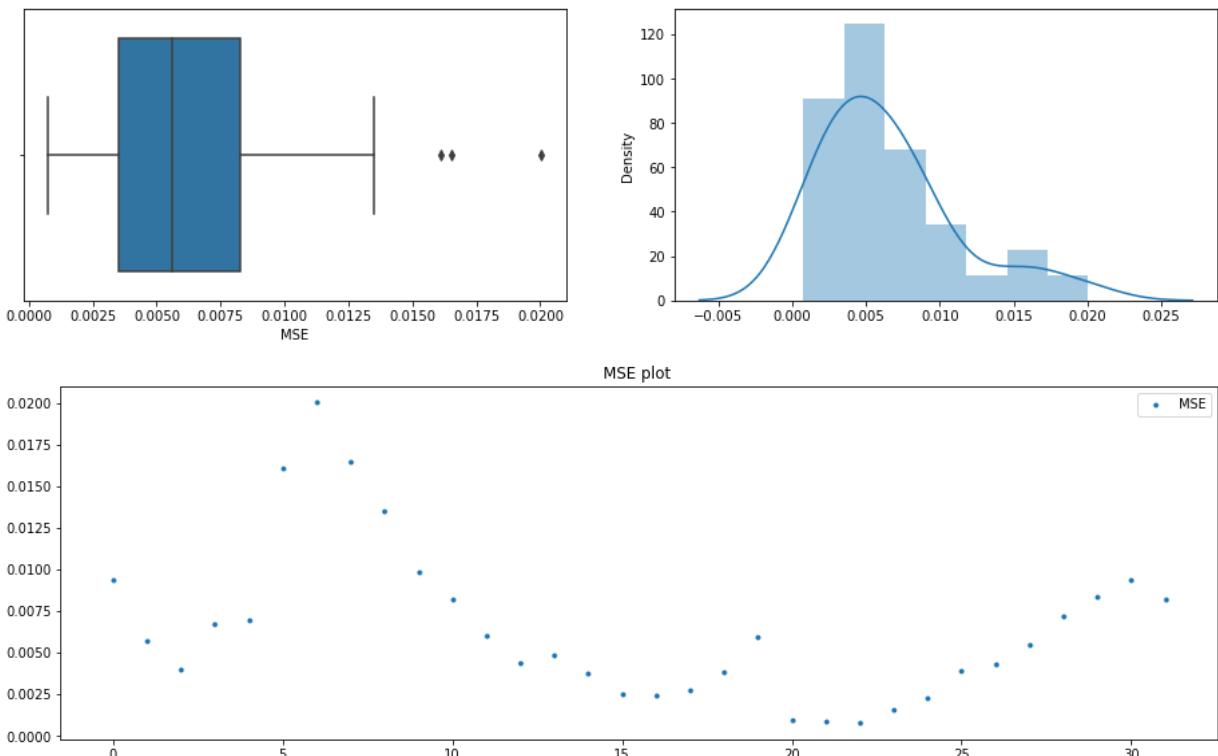
2.500: 0.834, data looks normal (fail to reject H0)

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

Batch: 45

mean=0.0064696875, median=0.0056 , max=0.02005, min=0.00077, variance=2.14853e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

Statistic: 1.088

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)

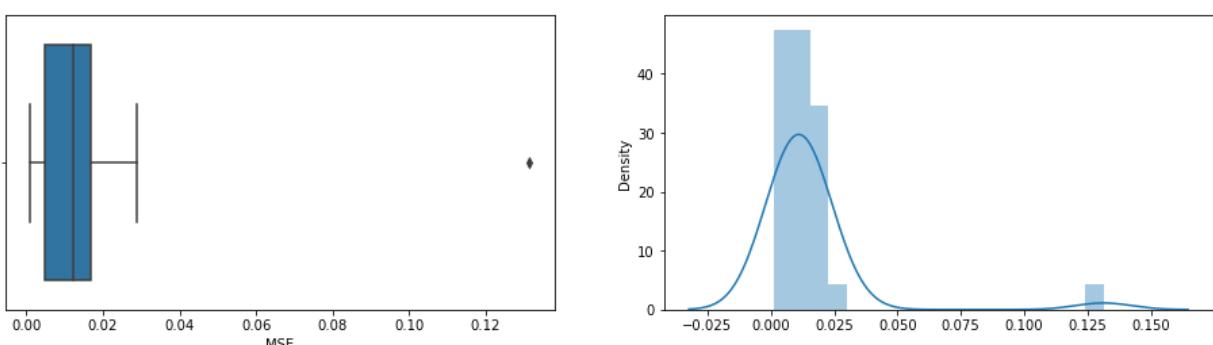
2.500: 0.834, data does not look normal (reject H0)

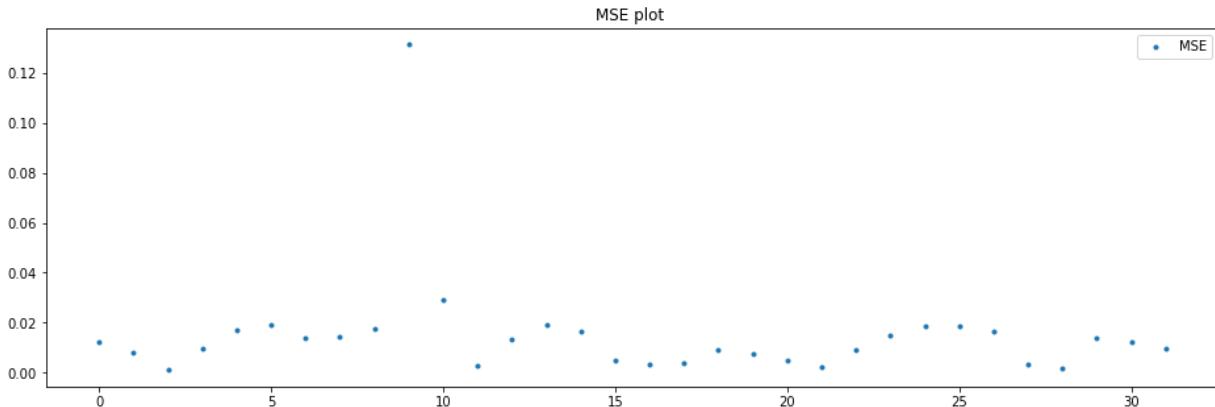
1.000: 0.992, data does not look normal (reject H0)

Batch: 46

mean=0.0149825,median=0.012365 ,max=0.13132,min=0.00099,variance=0.0004793913

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 5.389

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)

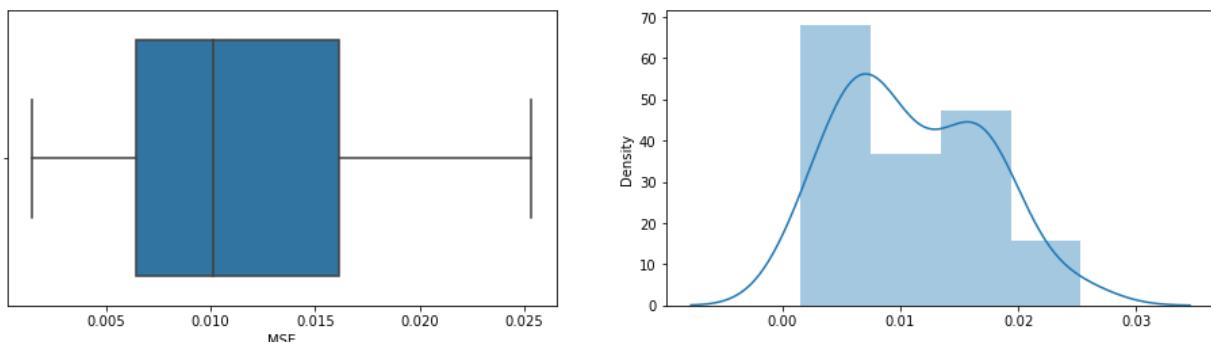
2.500: 0.834, data does not look normal (reject H0)

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

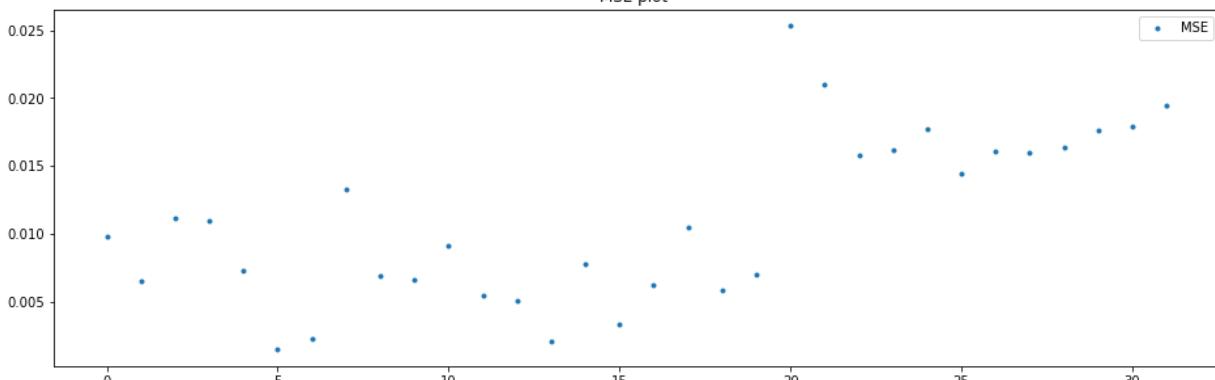
Batch: 47

mean=0.011029375, median=0.010155 , max=0.02532, min=0.00147, variance=3.69242e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 0.592

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)

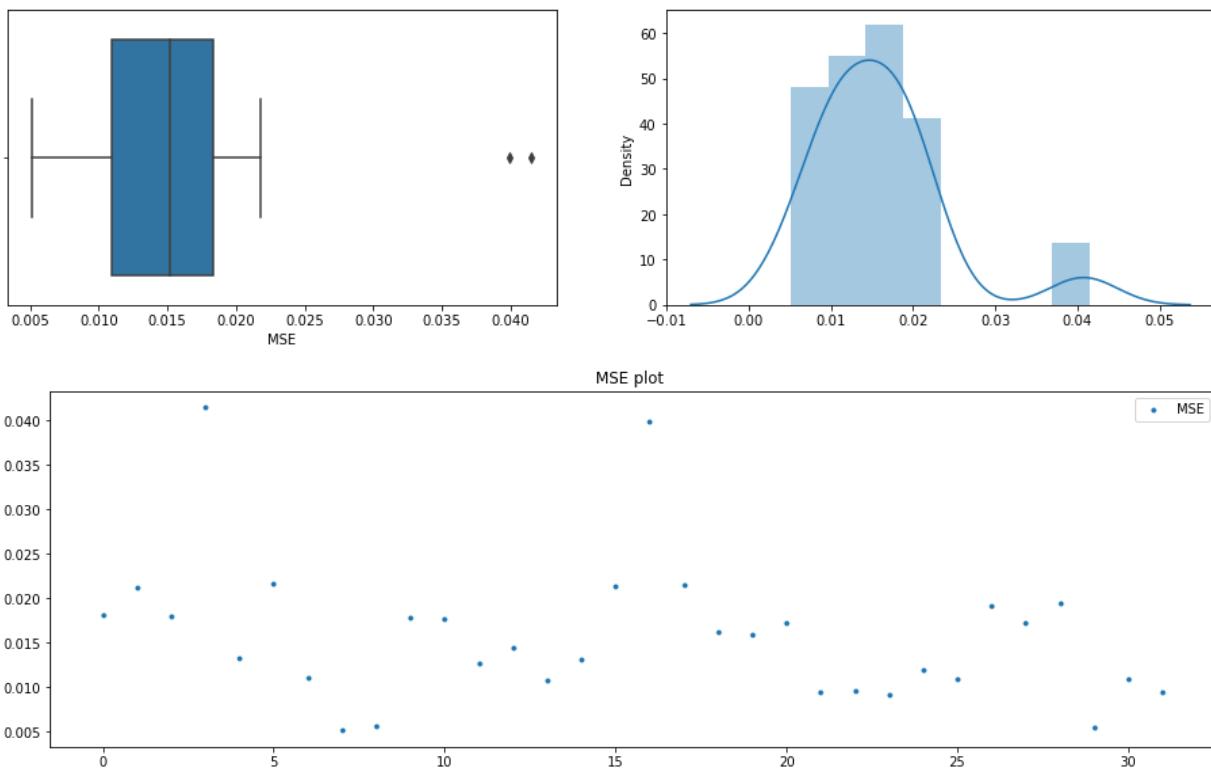
2.500: 0.834, data looks normal (fail to reject H0)

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

Batch: 48

mean=0.0158753125, median=0.0152 , max=0.04149, min=0.00515, variance=6.37255e-05

Boxplots and Distribution plot for Reconstruction Error



Anderson_Darling Test

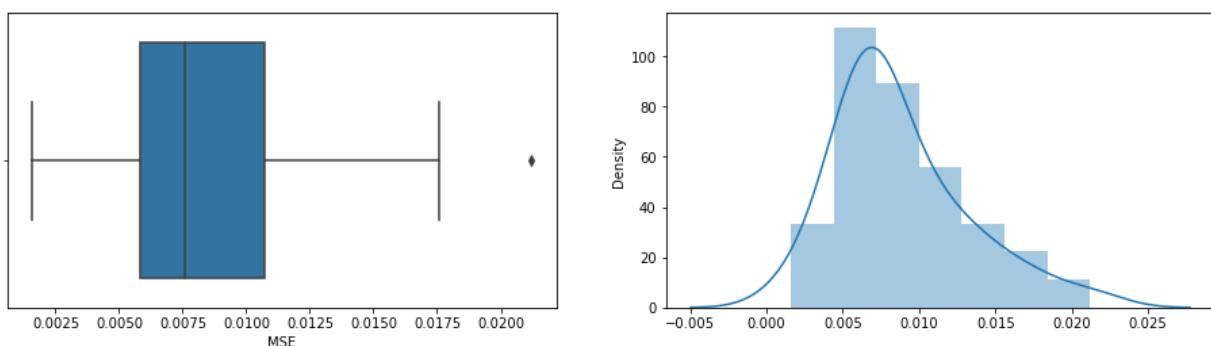
Statistic: 1.360

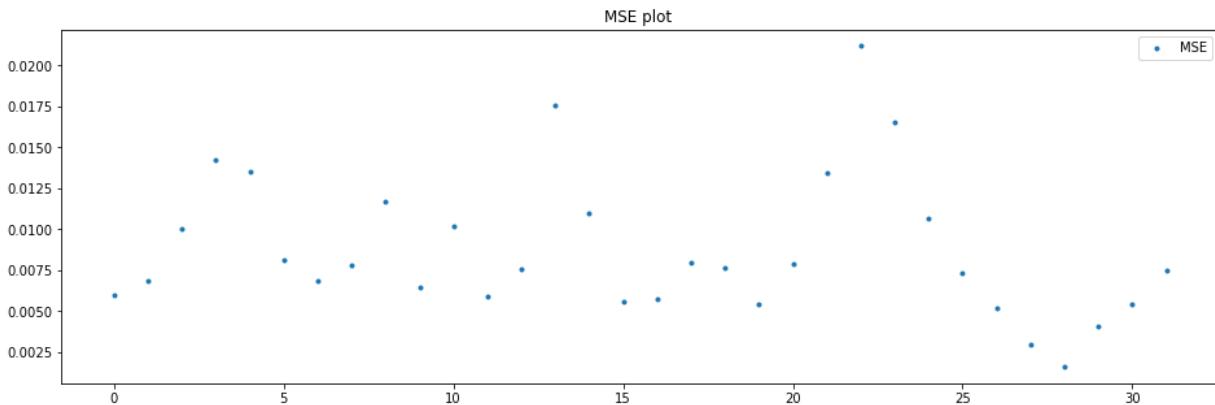
15.000: 0.523, data does not look normal (reject H0)
 10.000: 0.596, data does not look normal (reject H0)
 5.000: 0.715, data does not look normal (reject H0)
 2.500: 0.834, data does not look normal (reject H0)
 1.000: 0.992, data does not look normal (reject H0)

Batch: 49

mean=0.0087475, median=0.007585 , max=0.0212, min=0.00158, variance=1.83847e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

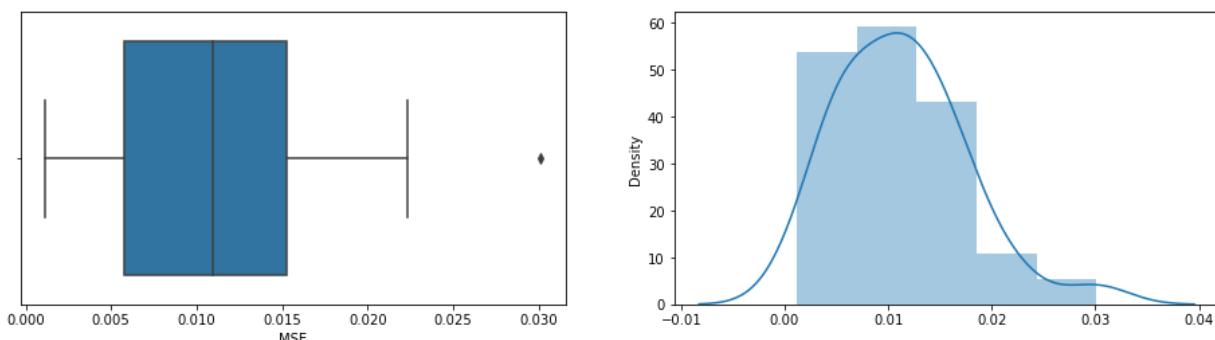
Statistic: 1.073

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)

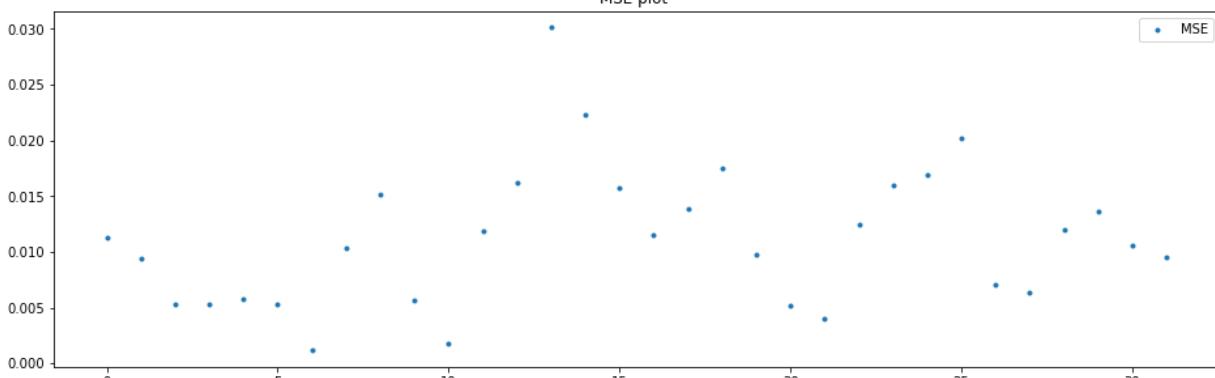
Batch: 50

mean=0.0112253125, median=0.01095 , max=0.03012, min=0.00115, variance=3.82538e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

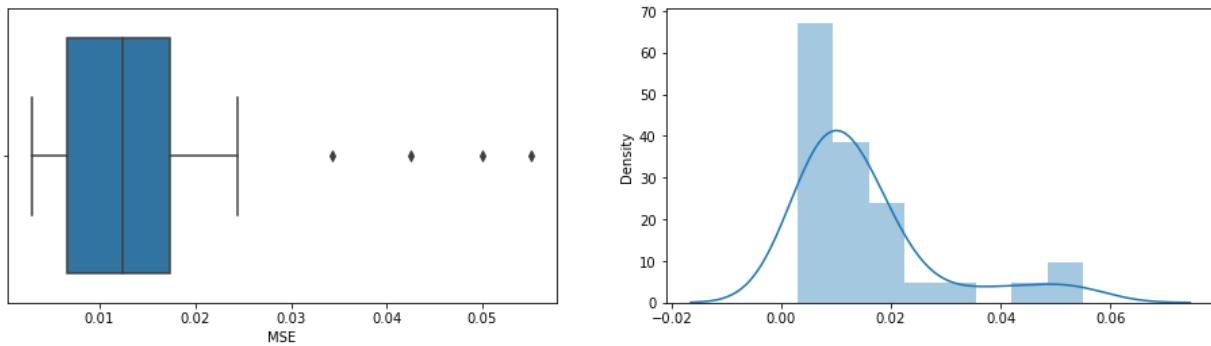
Statistic: 0.405

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)

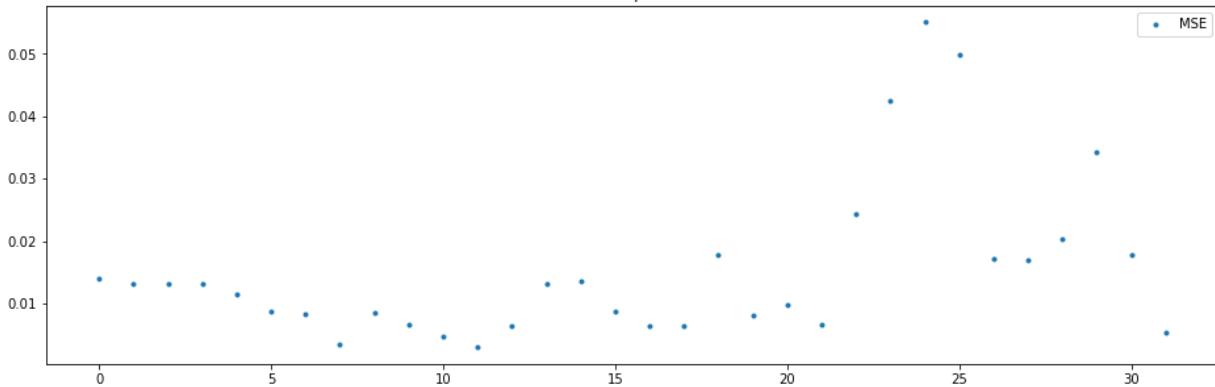
Batch: 51

mean=0.0153003125, median=0.01235 , max=0.05509, min=0.00296, variance=0.000162449

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson_Darling Test**

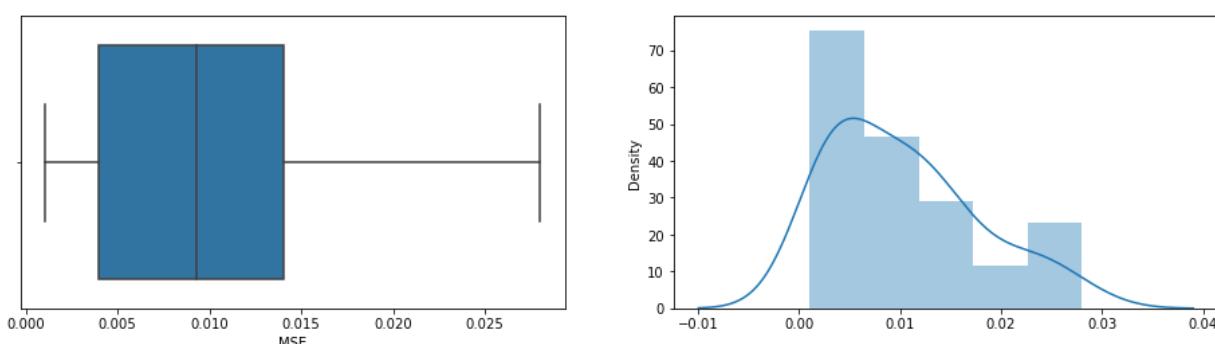
Statistic: 2.749

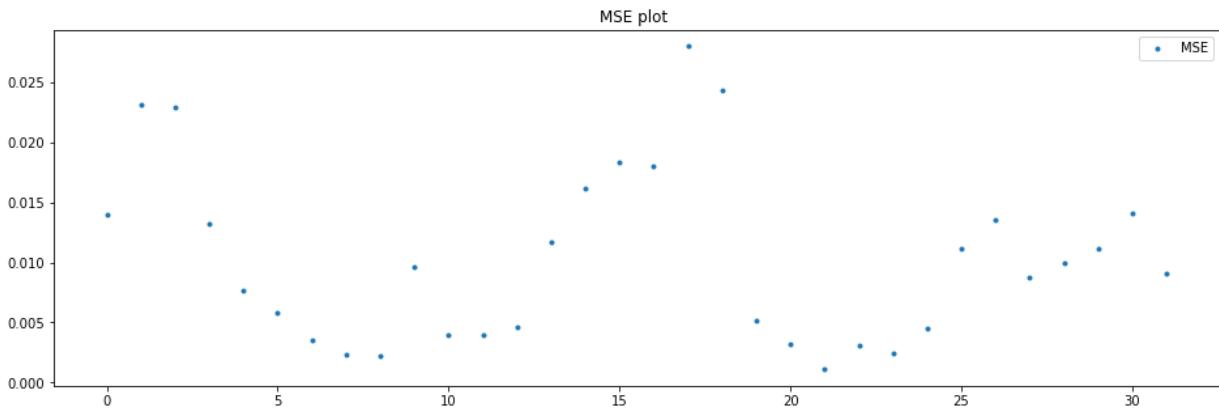
15.000: 0.523, data does not look normal (reject H₀)
 10.000: 0.596, data does not look normal (reject H₀)
 5.000: 0.715, data does not look normal (reject H₀)
 2.500: 0.834, data does not look normal (reject H₀)
 1.000: 0.992, data does not look normal (reject H₀)

Batch: 52

mean=0.010328125, median=0.00931 , max=0.028, min=0.00108, variance=5.22239e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.848

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)

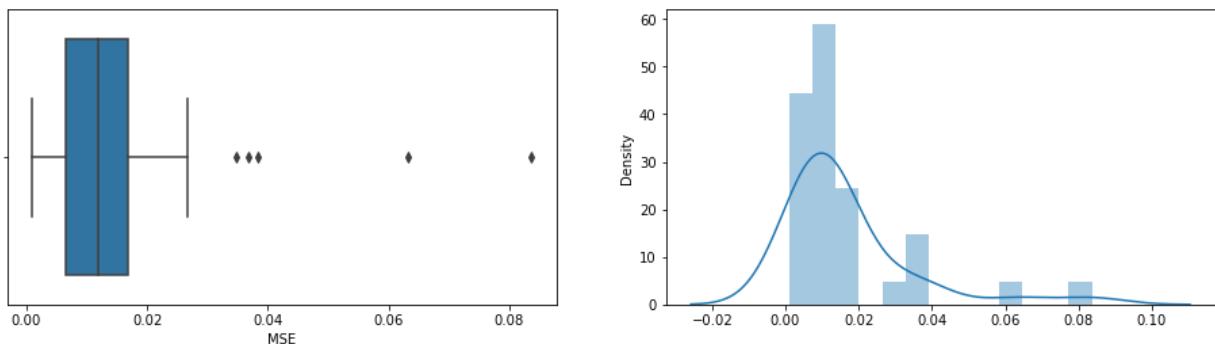
2.500: 0.834, data does not look normal (reject H0)

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

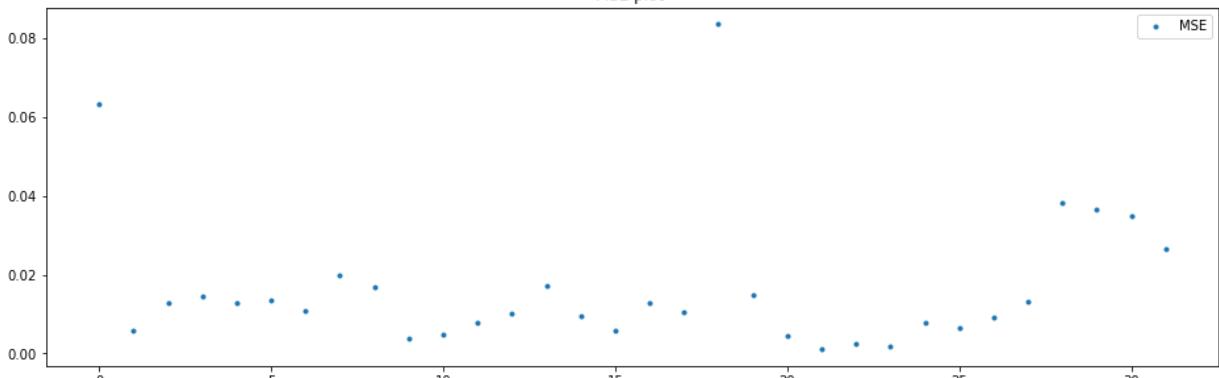
Batch: 53

mean=0.0166725, median=0.011835 , max=0.0836, min=0.00098, variance=0.0003085648

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 3.112

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)

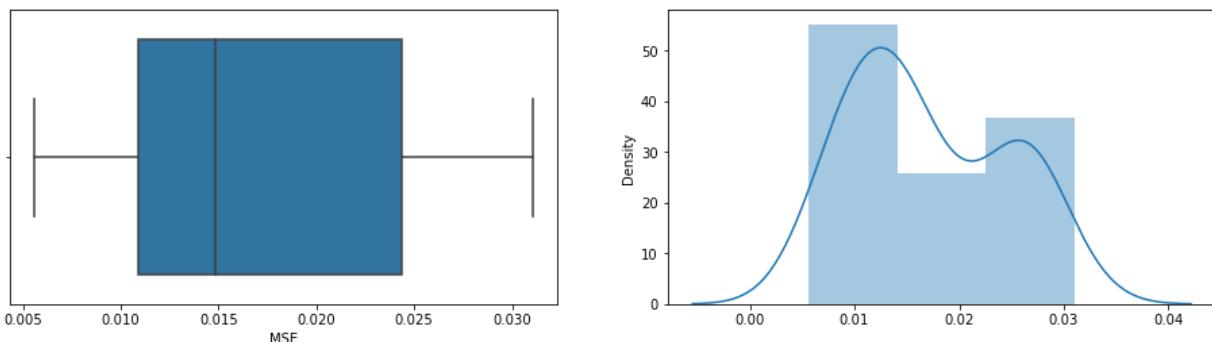
2.500: 0.834, data does not look normal (reject H0)

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

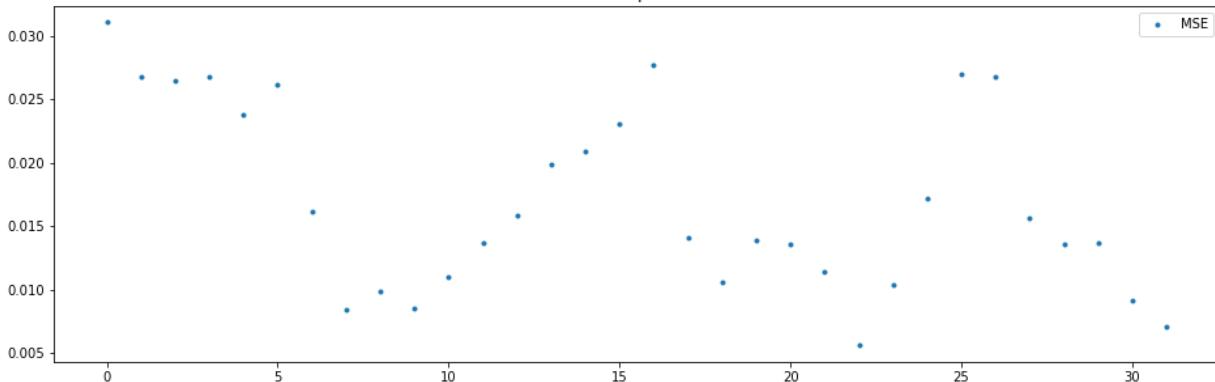
Batch: 54

mean=0.0170415625, median=0.014865 , max=0.03107, min=0.00559, variance=5.27024e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

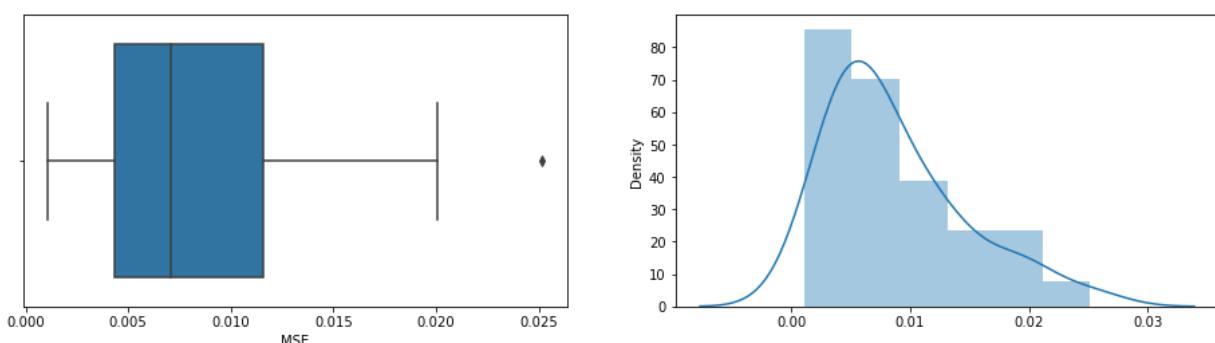
Statistic: 1.013

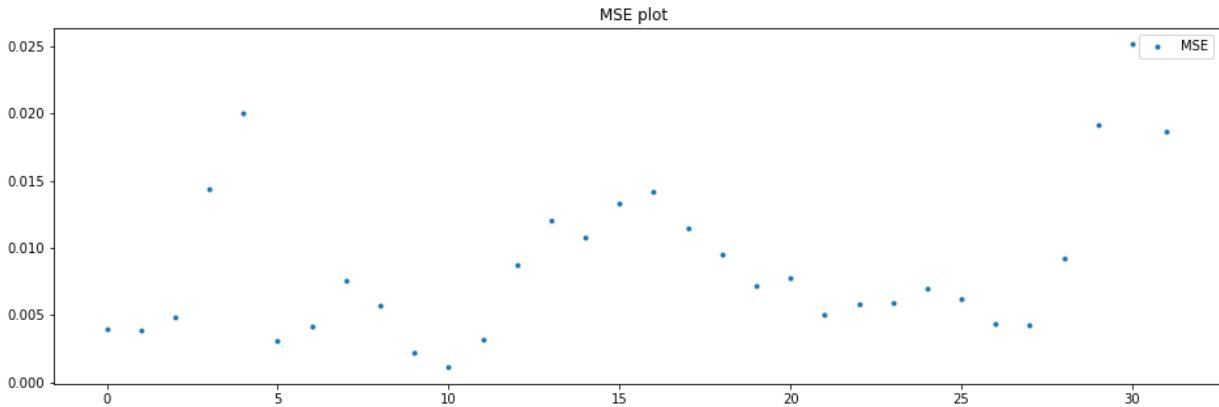
15.000: 0.523, data does not look normal (reject H0)
 10.000: 0.596, data does not look normal (reject H0)
 5.000: 0.715, data does not look normal (reject H0)
 2.500: 0.834, data does not look normal (reject H0)
 1.000: 0.992, data does not look normal (reject H0)

Batch: 55

mean=0.008738125, median=0.00708 , max=0.02515, min=0.00108, variance=3.29195e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

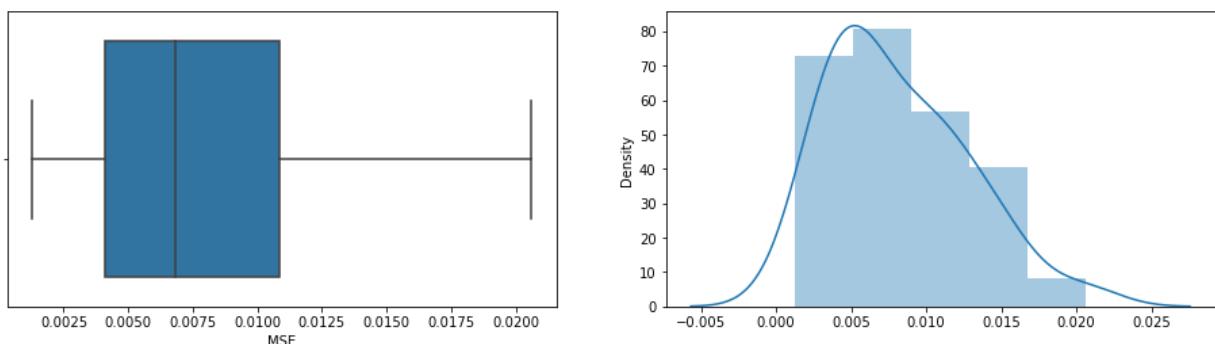
Statistic: 1.162

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)

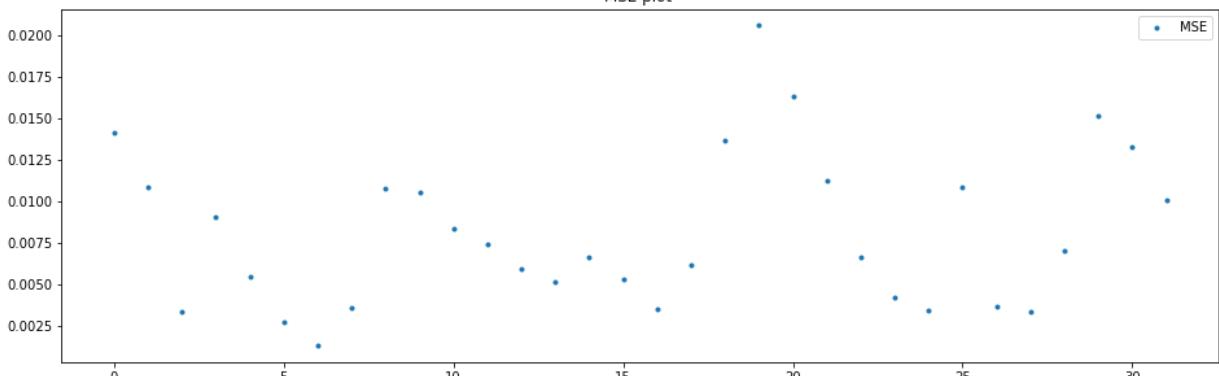
Batch: 56

mean=0.00811125, median=0.00682 , max=0.0206, min=0.00128, variance=2.08805e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

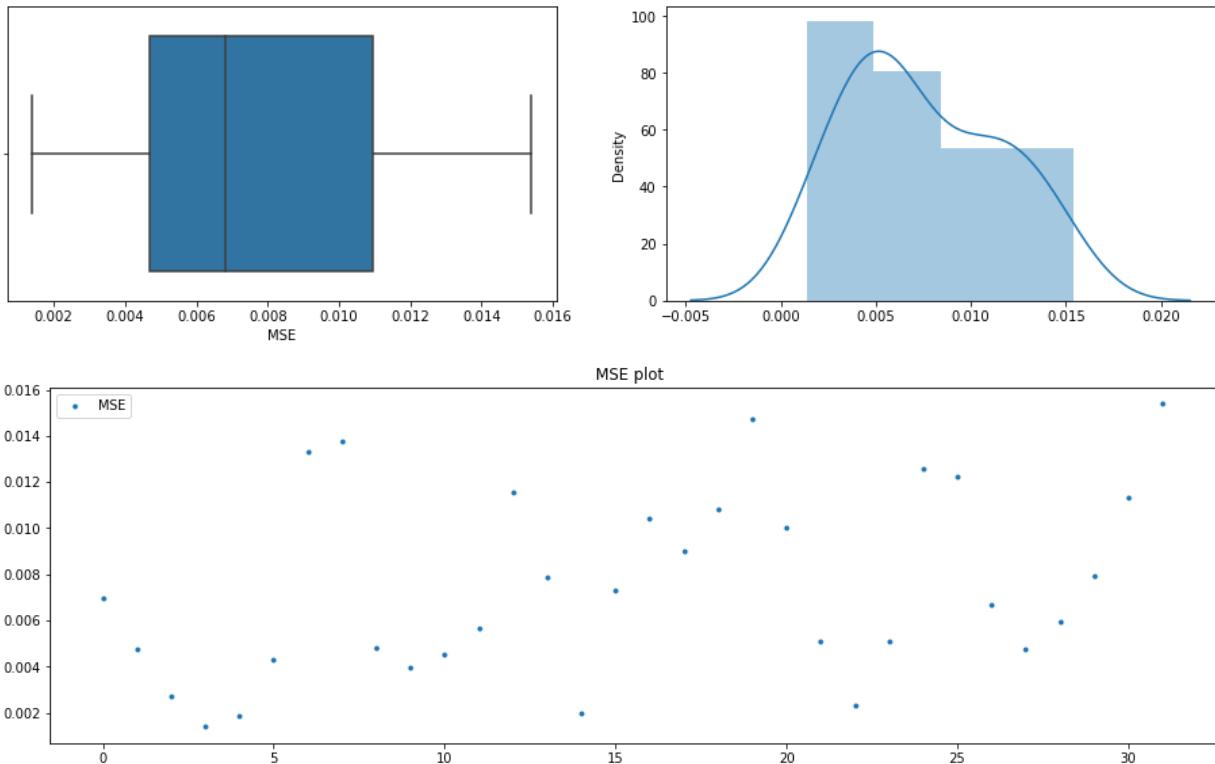
Statistic: 0.662

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: 57

mean=0.0075384375, median=0.00682 , max=0.01539, min=0.00139, variance=1.61457e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

Statistic: 0.572

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)

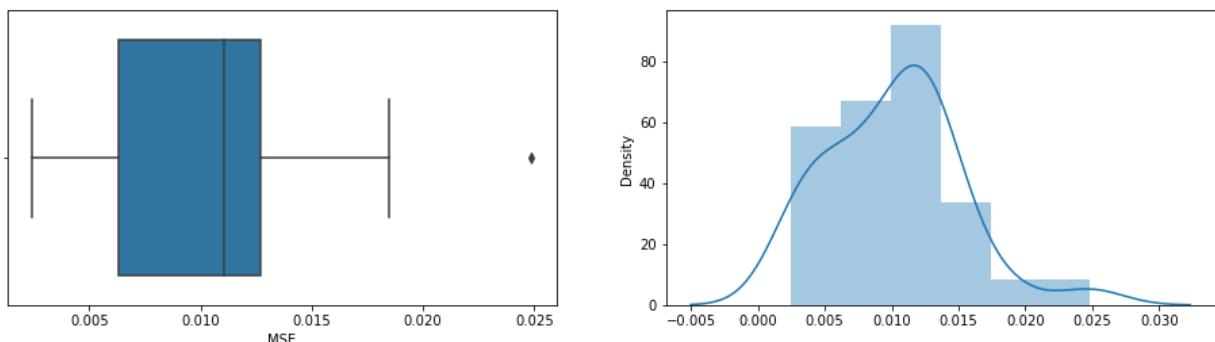
2.500: 0.834, data looks normal (fail to reject H0)

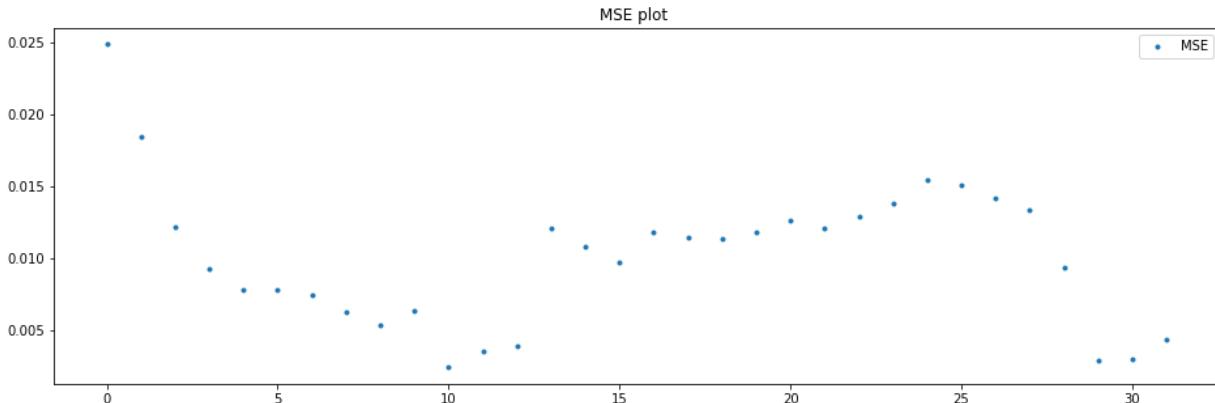
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 58

mean=0.0101246875, median=0.01107 , max=0.02486, min=0.00243, variance=2.38268e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

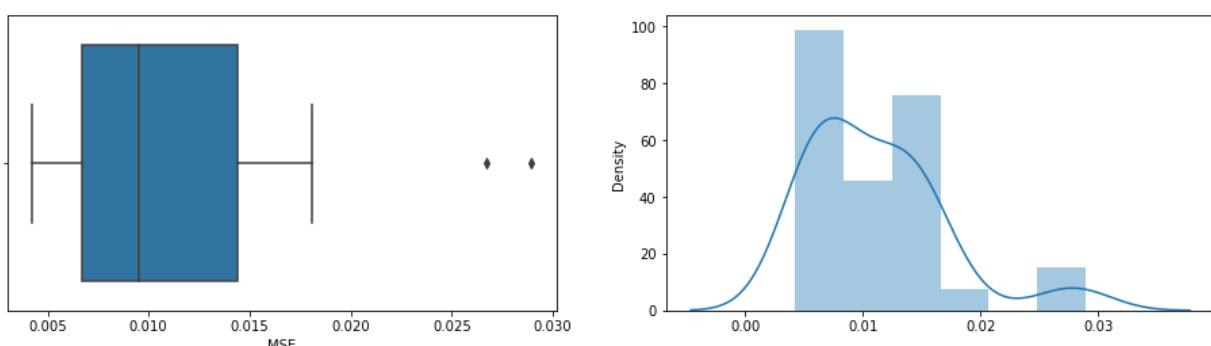
Statistic: 0.447

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)

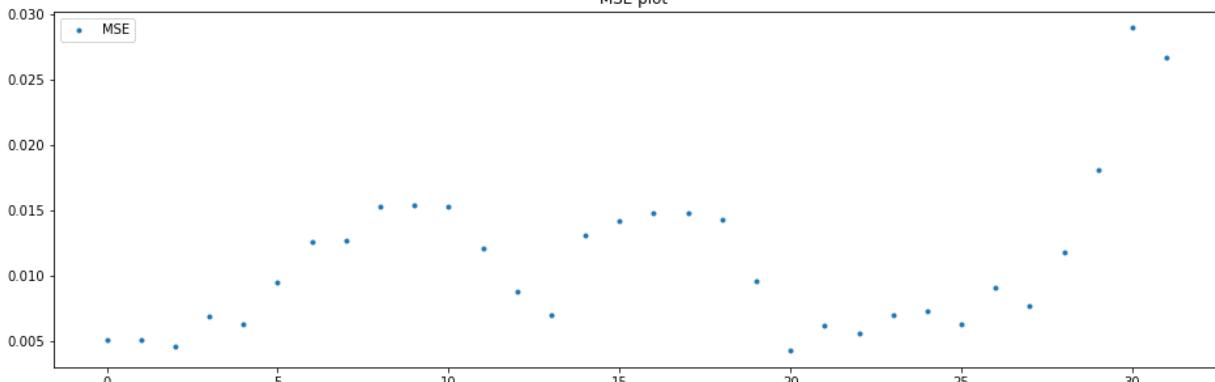
Batch: 59

mean=0.0111190625, median=0.009515 , max=0.02893, min=0.00424, variance=3.36981e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



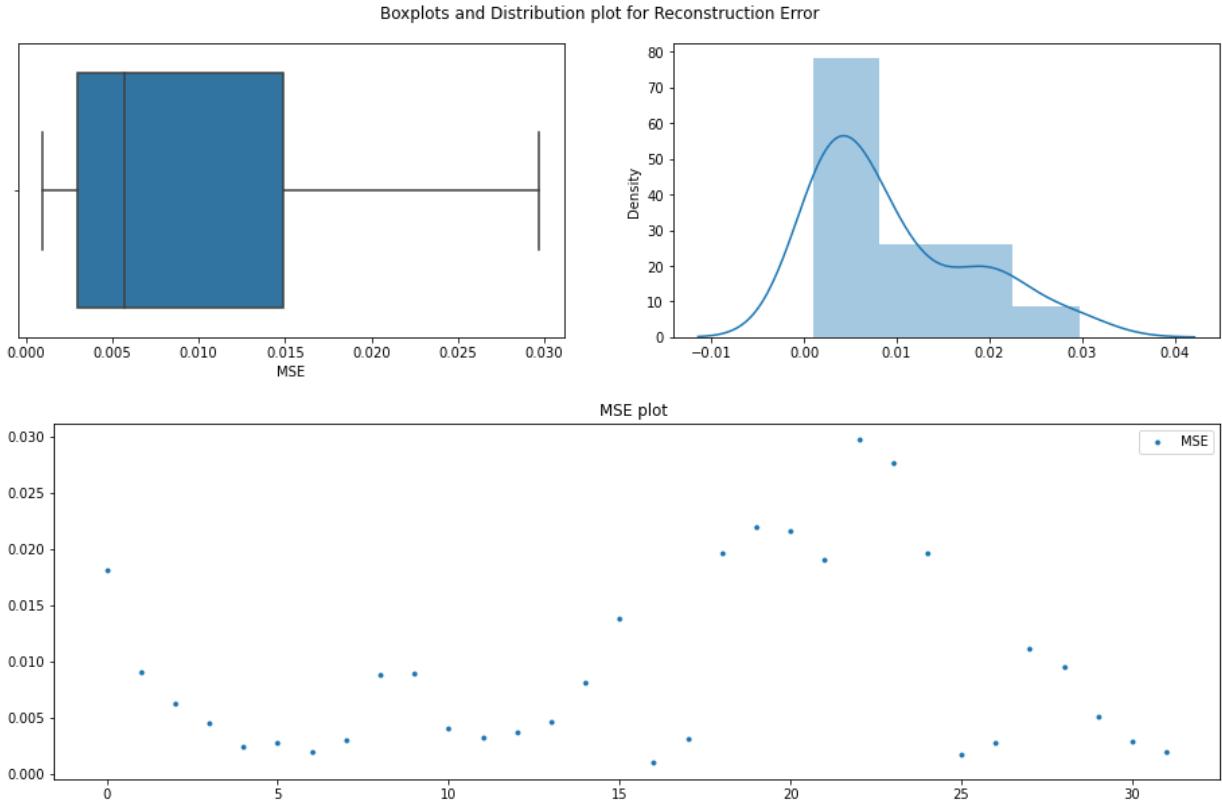
Anderson_Darling Test

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: 60

mean=0.009458125, median=0.00568 , max=0.02971, min=0.001, variance=6.64434e-05



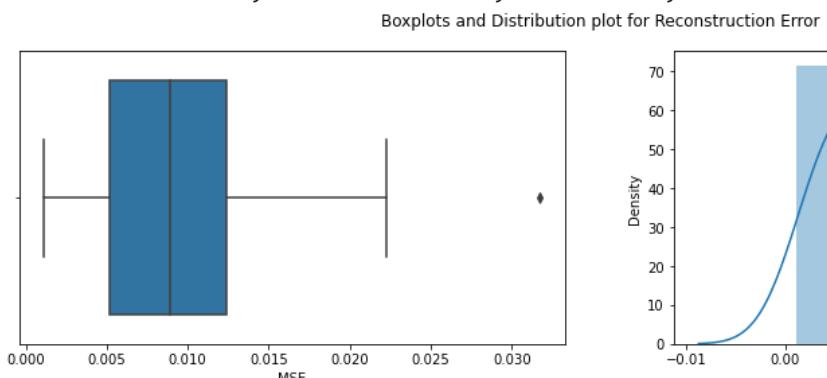
Anderson_Darling Test

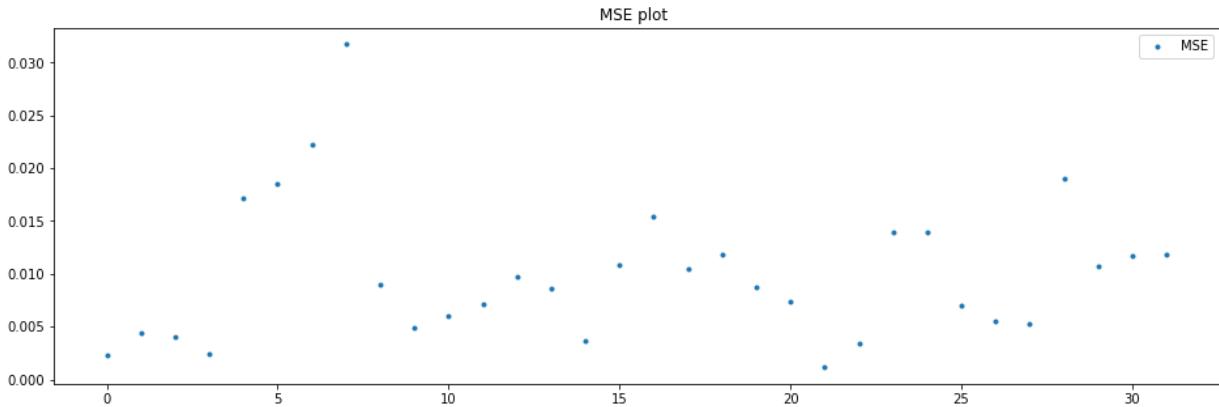
Statistic: 1.993

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: 61

mean=0.0100015625, median=0.008895 , max=0.03173, min=0.00114, variance=4.24898e-05





Anderson_Darling Test

Statistic: 0.700

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)

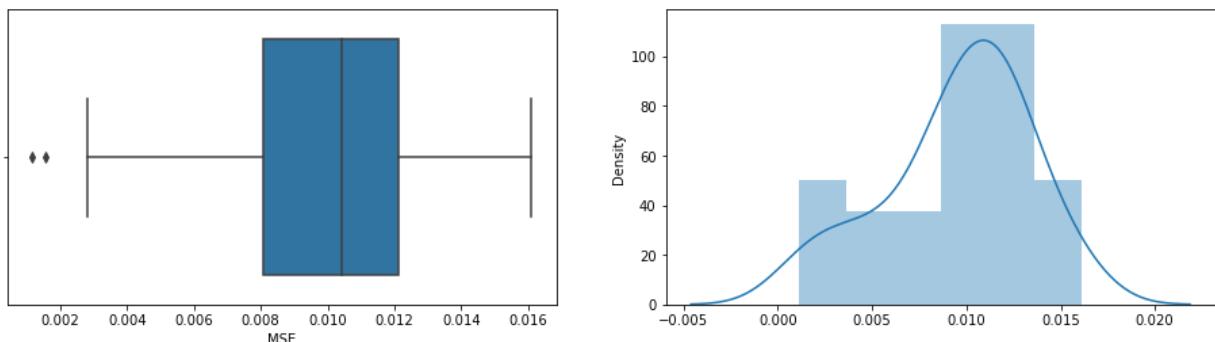
2.500: 0.834, data looks normal (fail to reject H0)

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

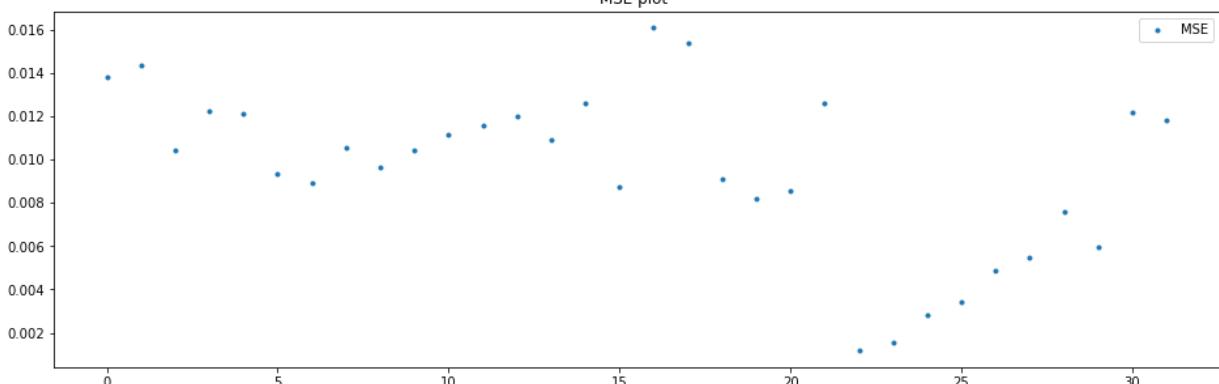
Batch: 62

mean=0.009551875, median=0.01044 , max=0.01609, min=0.00116, variance=1.42869e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 0.615

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)

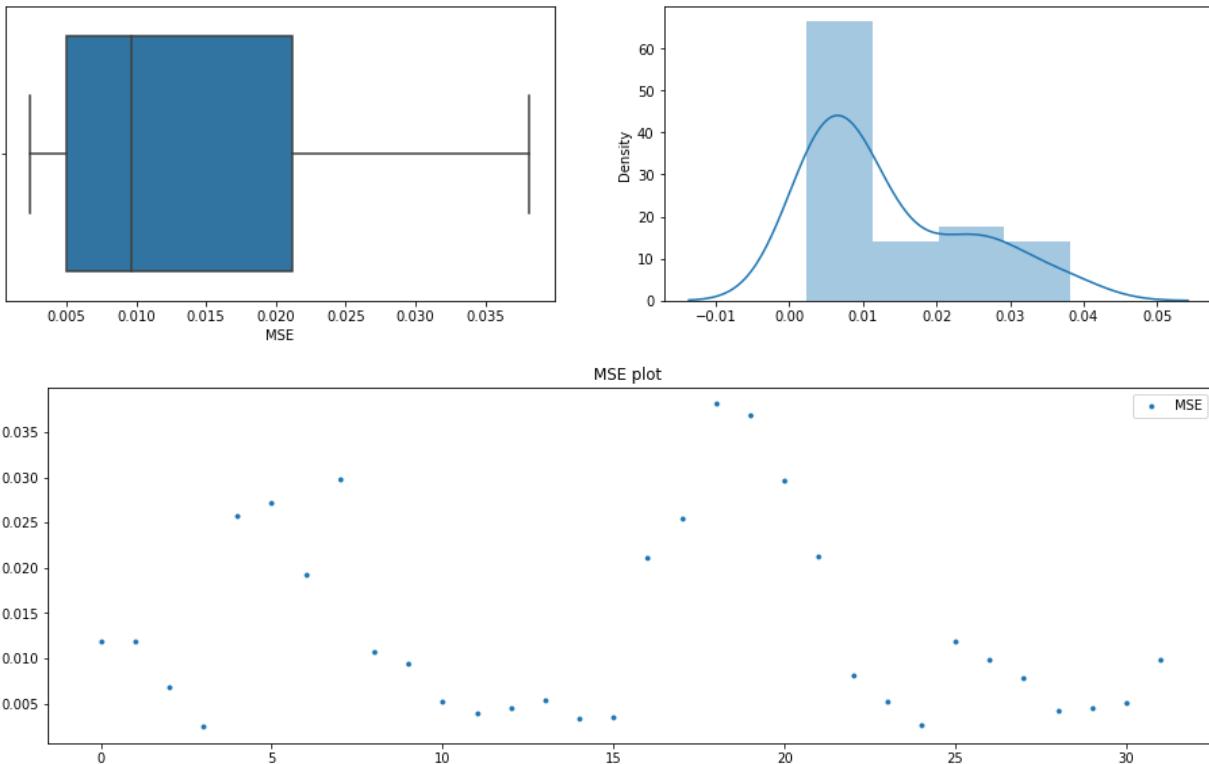
2.500: 0.834, data looks normal (fail to reject H0)

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

Batch: 63

mean=0.013205, median=0.00961 , max=0.03813, min=0.00241, variance=0.0001104682

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

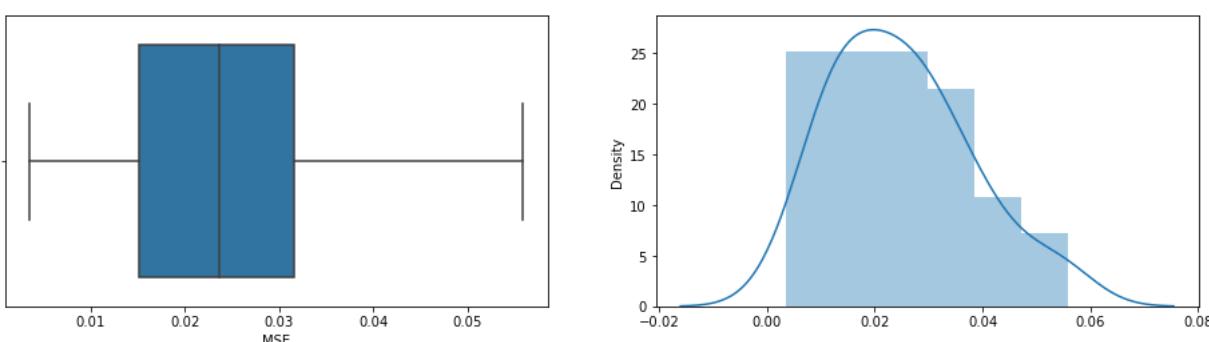
Statistic: 1.936

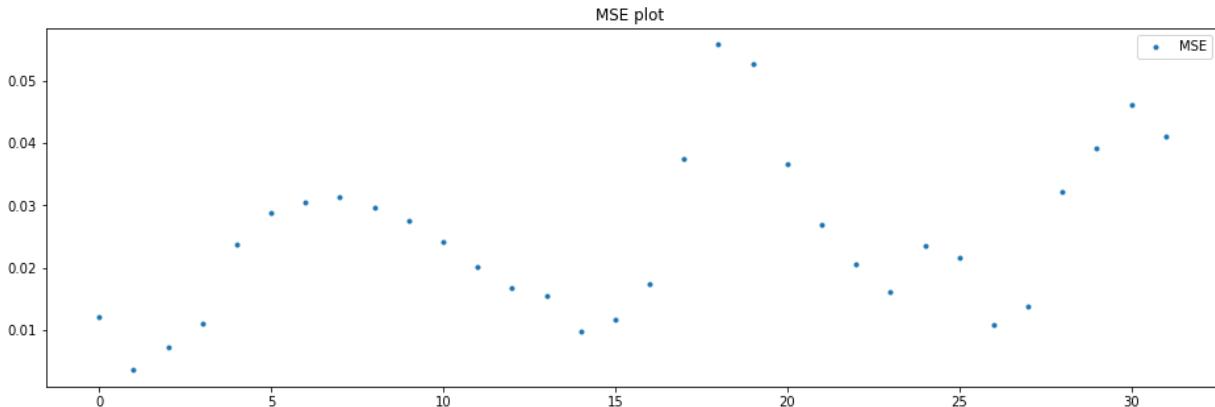
15.000: 0.523, data does not look normal (reject H₀)
 10.000: 0.596, data does not look normal (reject H₀)
 5.000: 0.715, data does not look normal (reject H₀)
 2.500: 0.834, data does not look normal (reject H₀)
 1.000: 0.992, data does not look normal (reject H₀)

Batch: 64

mean=0.024891875, median=0.023655 , max=0.05582, min=0.00357, variance=0.0001657822

Boxplots and Distribution plot for Reconstruction Error





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)

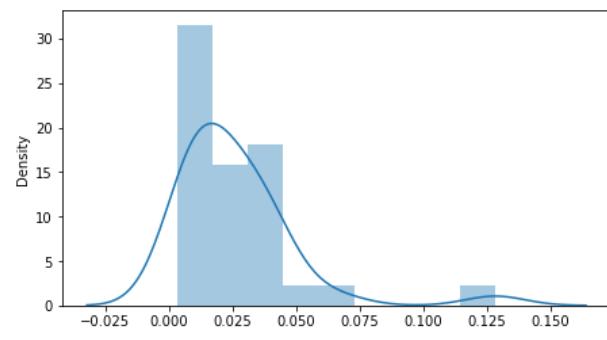
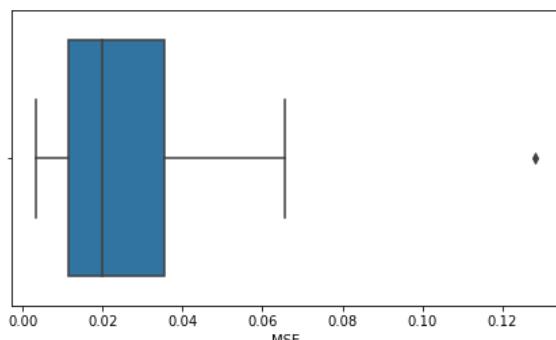
2.500: 0.834, data looks normal (fail to reject H0)

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

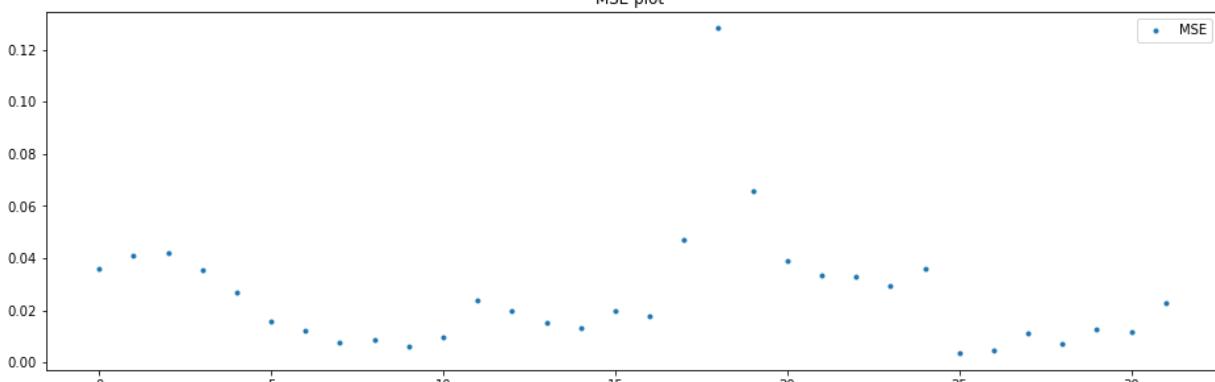
Batch: 65

mean=0.026093125, median=0.019845 , max=0.1282, min=0.00338, variance=0.0005461408

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 1.921

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)

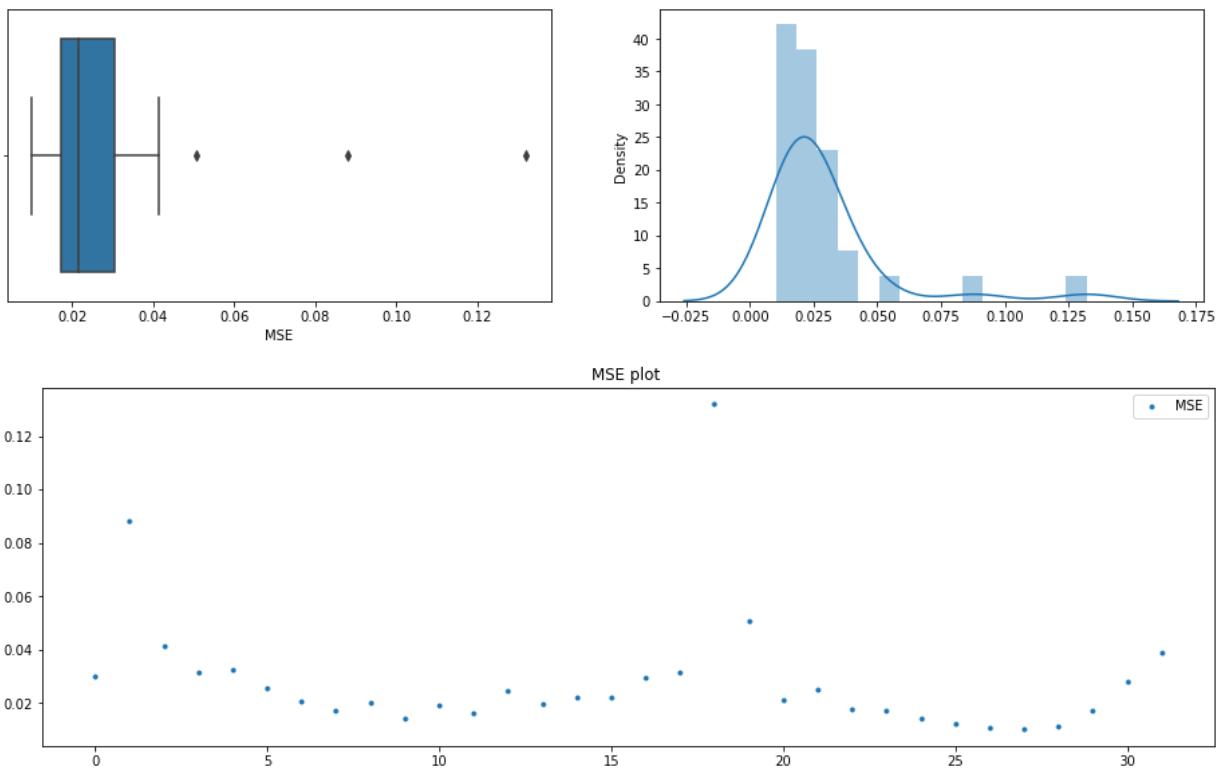
2.500: 0.834, data does not look normal (reject H0)

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

Batch: 66

mean=0.02857125, median=0.021585 , max=0.13204, min=0.0101, variance=0.0005566354

Boxplots and Distribution plot for Reconstruction Error



Anderson_Darling Test

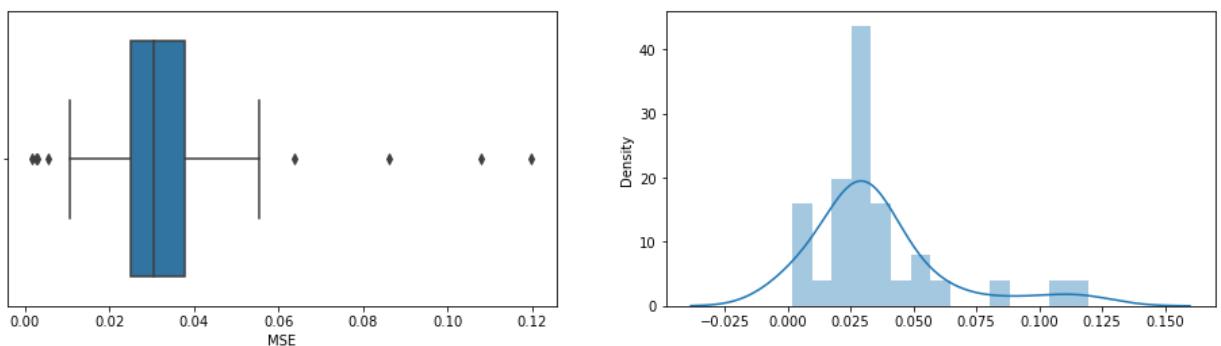
Statistic: 3.848

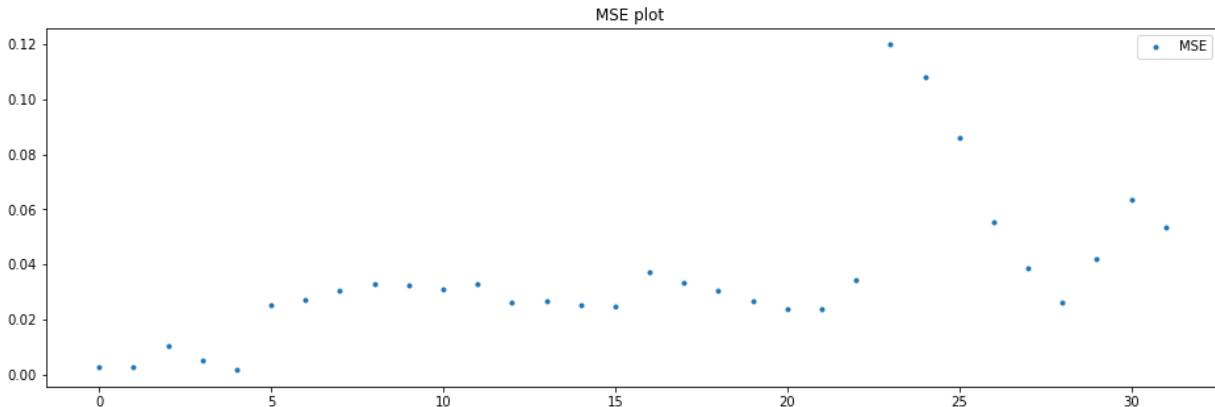
15.000: 0.523, data does not look normal (reject H0)
 10.000: 0.596, data does not look normal (reject H0)
 5.000: 0.715, data does not look normal (reject H0)
 2.500: 0.834, data does not look normal (reject H0)
 1.000: 0.992, data does not look normal (reject H0)

Batch: 67

mean=0.0357228125, median=0.030575 , max=0.1197, min=0.00173, variance=0.0006982066

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

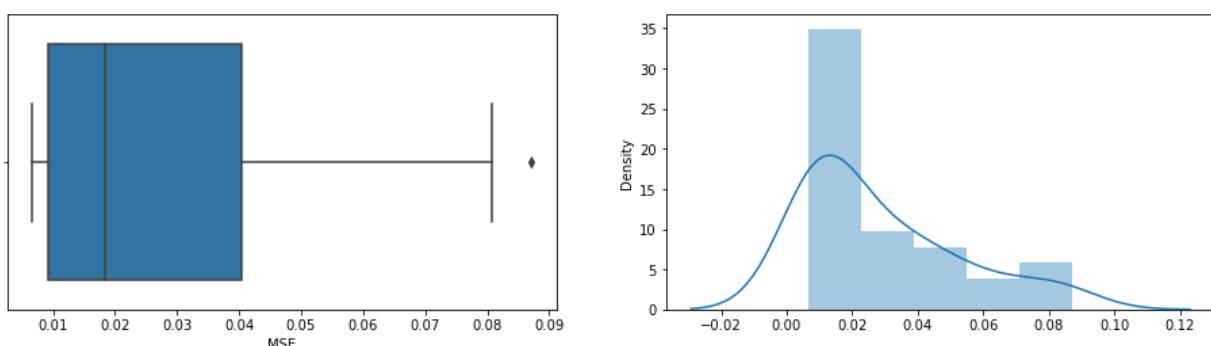
Statistic: 2.282

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)

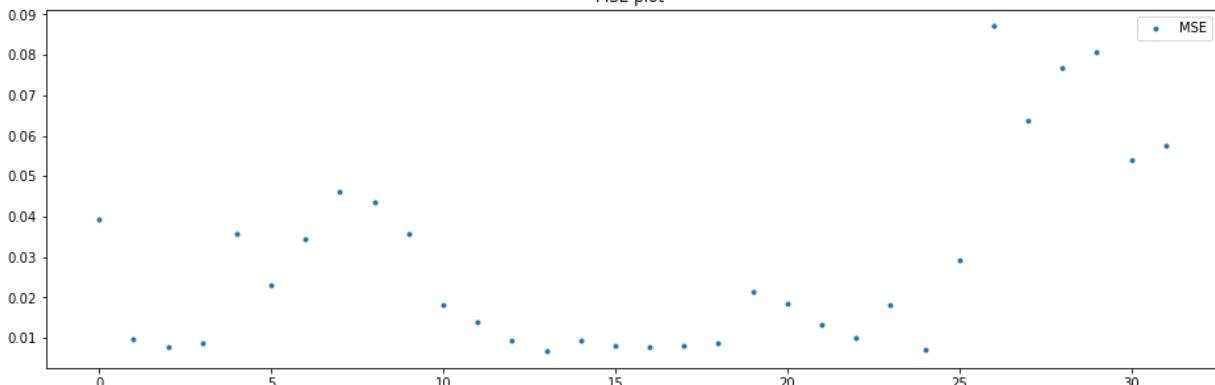
Batch: 68

mean=0.0284871875, median=0.01834 , max=0.08709, min=0.00662, variance=0.0005535899

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

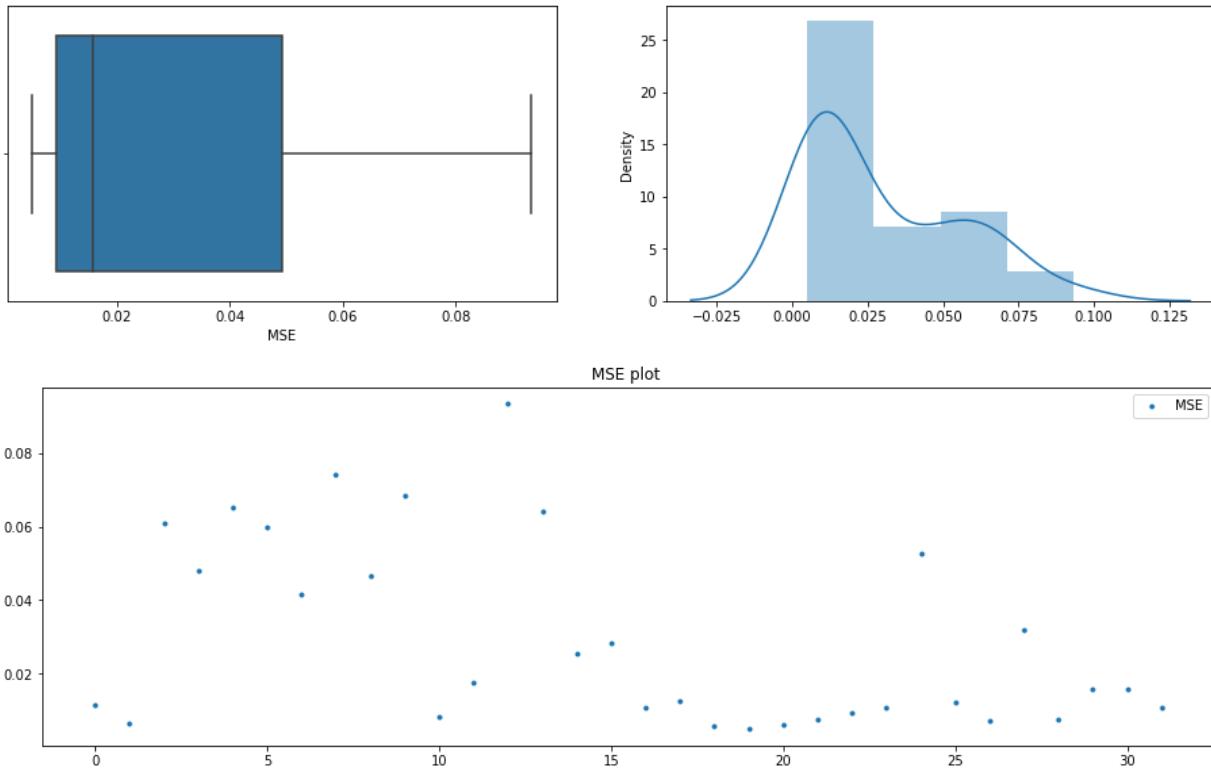
Statistic: 1.887

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=0.029465, median=0.015735 , max=0.09335, min=0.00492, variance=0.0006353808

Boxplots and Distribution plot for Reconstruction Error



Anderson_Darling Test

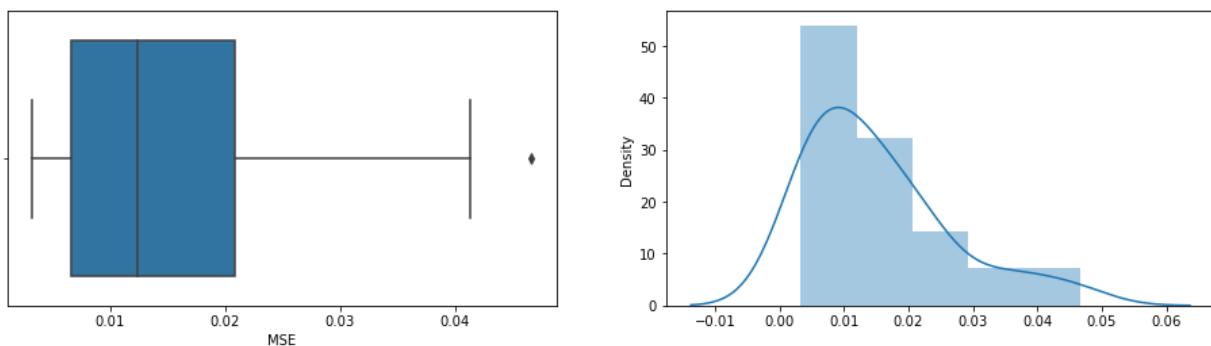
Statistic: 2.151

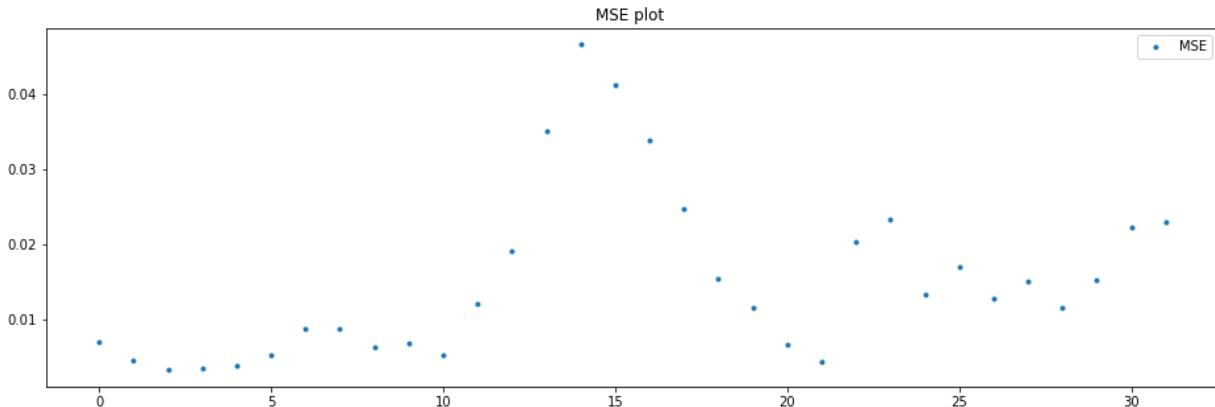
15.000: 0.523, data does not look normal (reject H0)
 10.000: 0.596, data does not look normal (reject H0)
 5.000: 0.715, data does not look normal (reject H0)
 2.500: 0.834, data does not look normal (reject H0)
 1.000: 0.992, data does not look normal (reject H0)

Batch: 70

mean=0.0152603125, median=0.01241 , max=0.04665, min=0.00324, variance=0.0001244193

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 1.256

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)

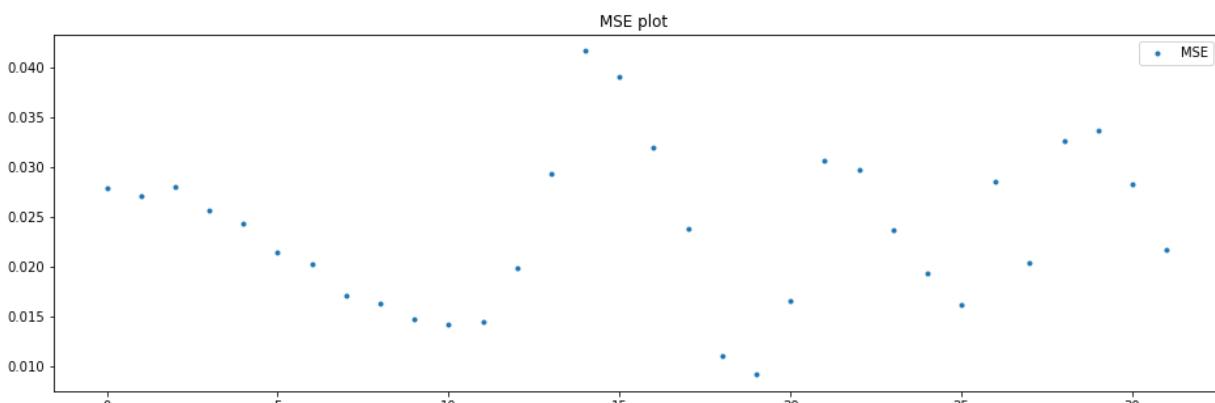
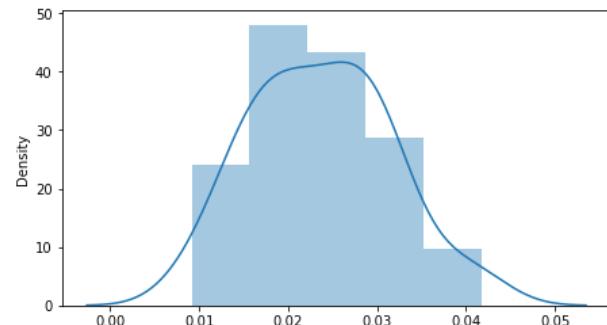
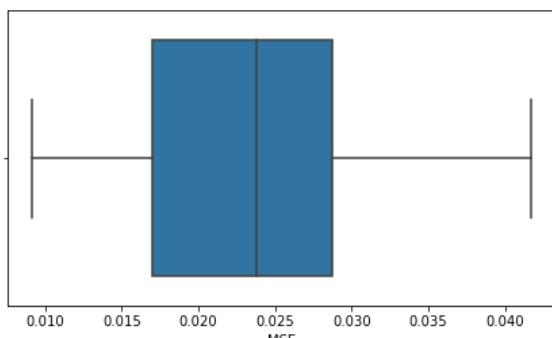
2.500: 0.834, data does not look normal (reject H0)

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

Batch: 71

mean=0.02374, median=0.023825 , max=0.04169, min=0.00917, variance=5.98231e-05

Boxplots and Distribution plot for Reconstruction Error



Anderson_Darling Test

Statistic: 0.215

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)

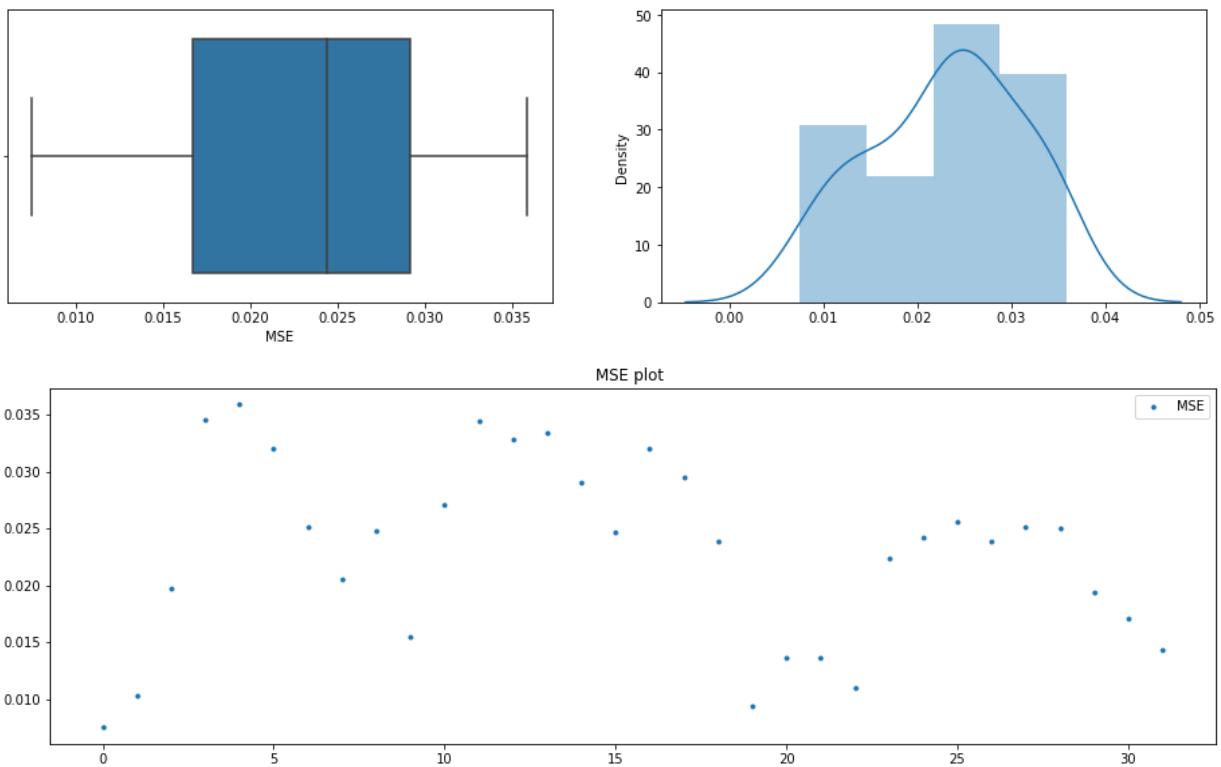
2.500: 0.834, data looks normal (fail to reject H0)

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

Batch: 72

mean=0.023026875, median=0.024415 , max=0.03588, min=0.00748, variance=6.31984e-05

Boxplots and Distribution plot for Reconstruction Error



Anderson_Darling Test

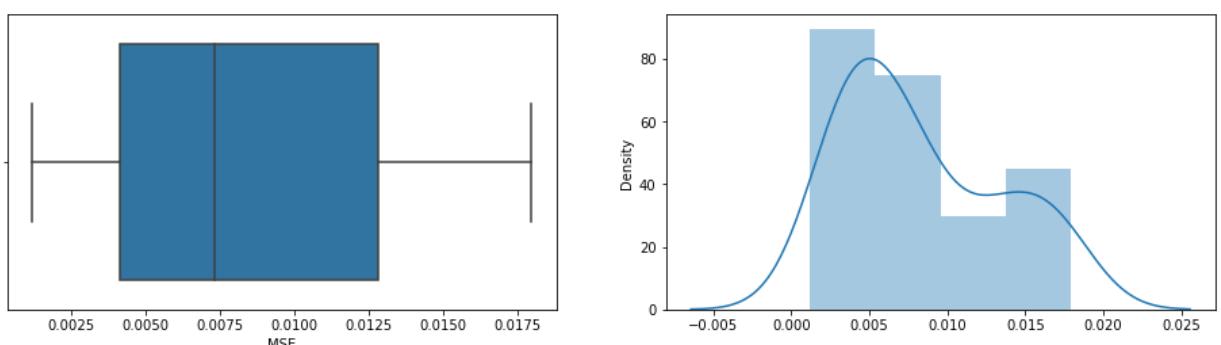
Statistic: 0.451

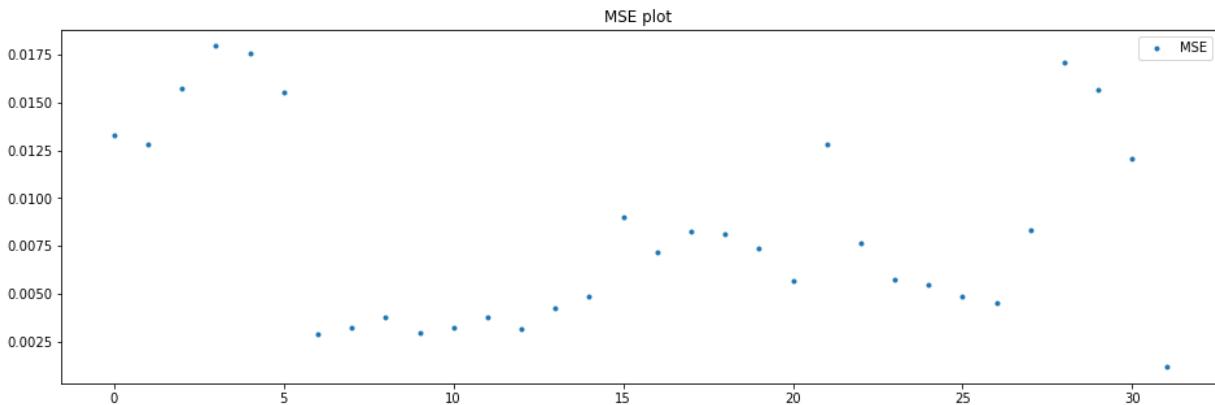
15.000: 0.523, data looks normal (fail to reject H0)
 10.000: 0.596, data looks normal (fail to reject H0)
 5.000: 0.715, data looks normal (fail to reject H0)
 2.500: 0.834, data looks normal (fail to reject H0)
 1.000: 0.992, data looks normal (fail to reject H0)

Batch: 73

mean=0.0083171875, median=0.007295 , max=0.01794, min=0.00118, variance=2.50409e-05

Boxplots and Distribution plot for Reconstruction Error





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)

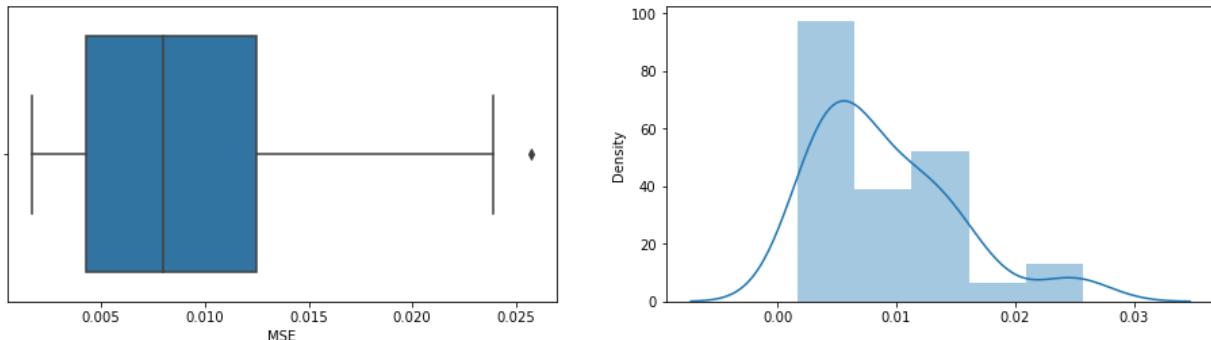
2.500: 0.834, data does not look normal (reject H0)

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

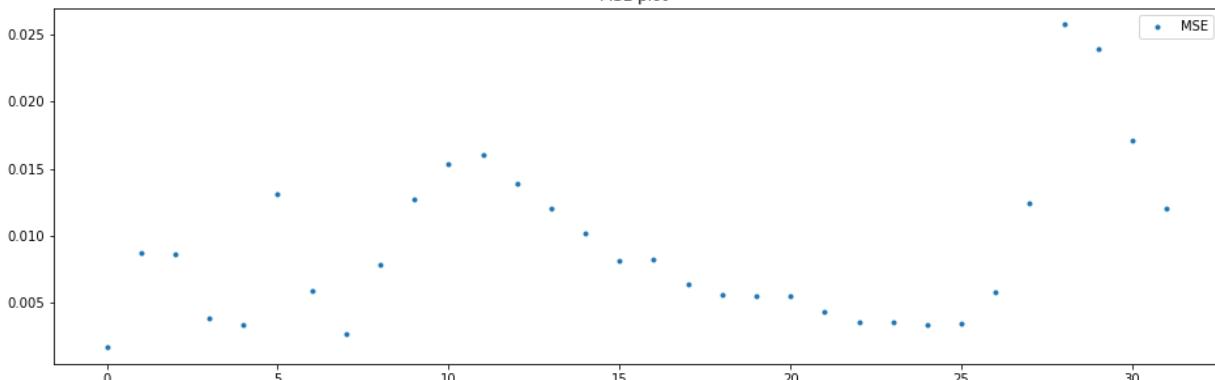
Batch: 74

mean=0.009085, median=0.007995 , max=0.02573, min=0.00167, variance=3.44466e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 1.019

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)

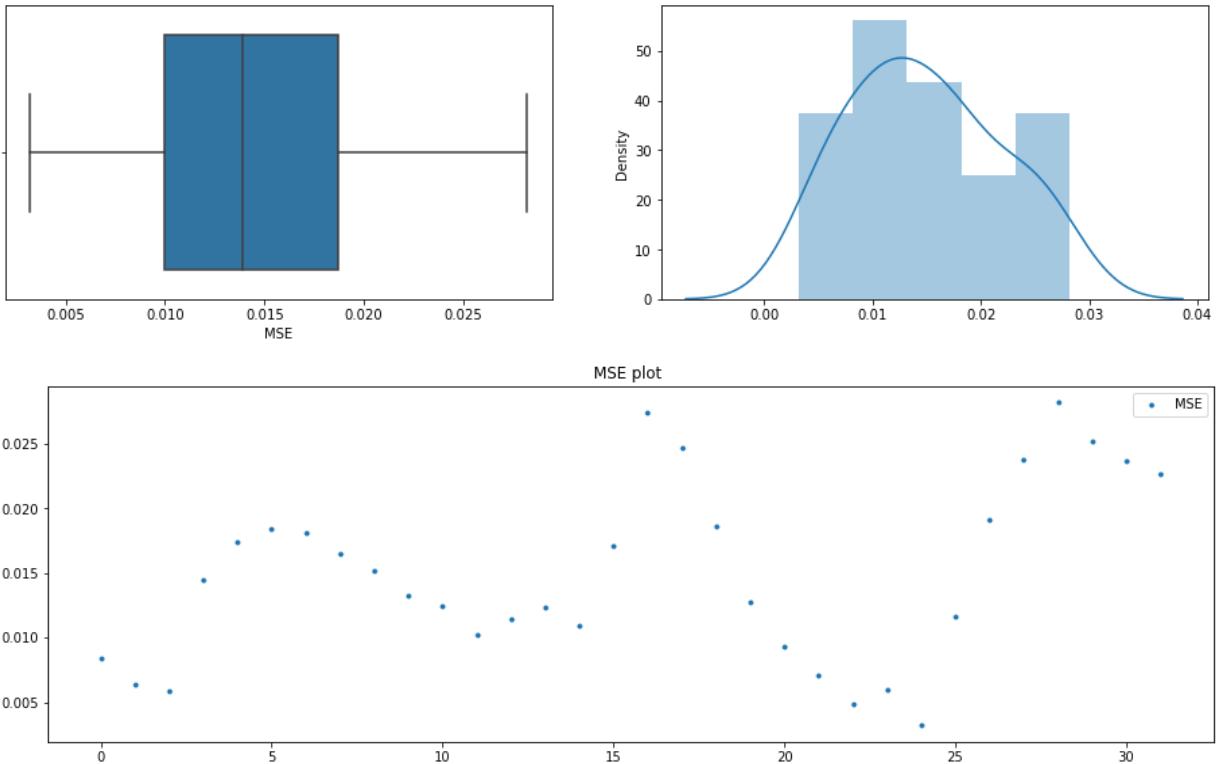
2.500: 0.834, data does not look normal (reject H0)

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

Batch: 75

mean=0.0148915625, median=0.013865 , max=0.0282, min=0.0032, variance=4.69447e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

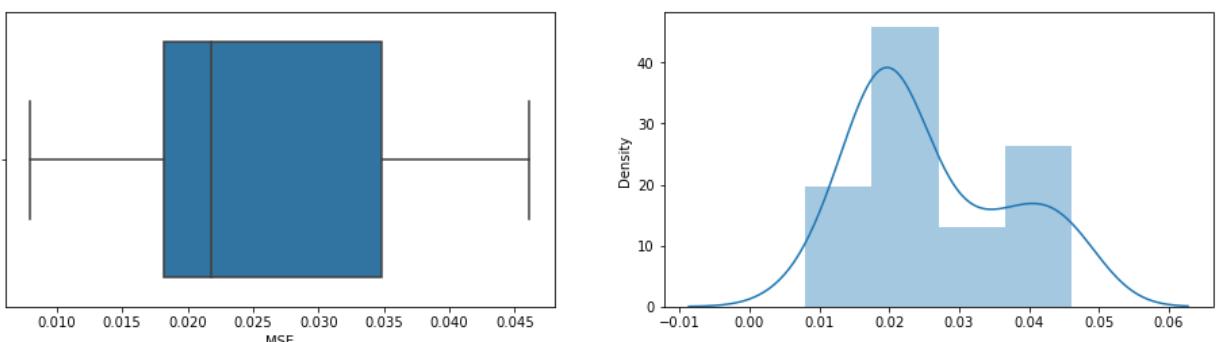
Statistic: 0.327

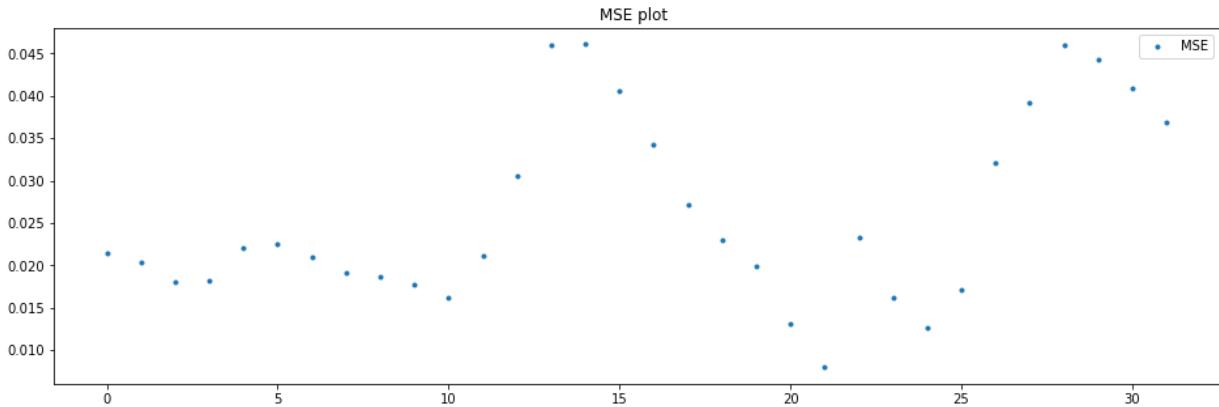
```
15.000: 0.523, data looks normal (fail to reject H0)
10.000: 0.596, data looks normal (fail to reject H0)
5.000: 0.715, data looks normal (fail to reject H0)
2.500: 0.834, data looks normal (fail to reject H0)
1.000: 0.992, data looks normal (fail to reject H0)
```

Batch: 76

mean=0.0260590625, median=0.021755 , max=0.0461, min=0.00796, variance=0.0001190393

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 1.374

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)

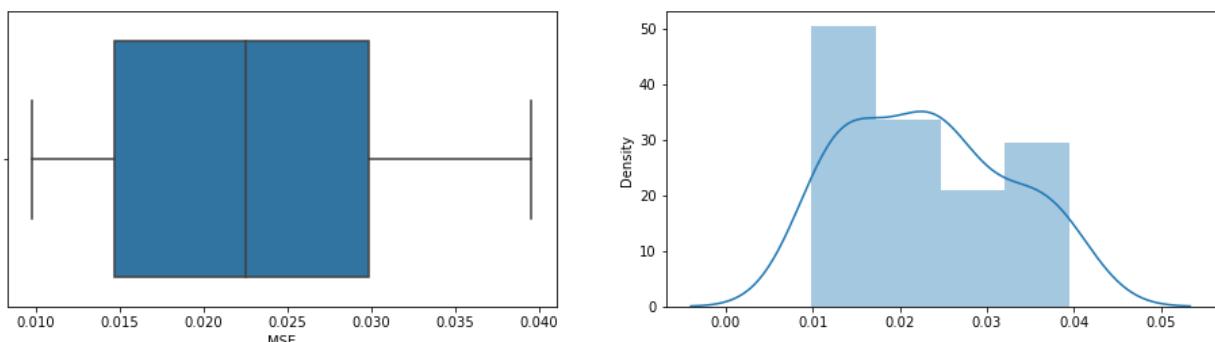
2.500: 0.834, data does not look normal (reject H0)

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

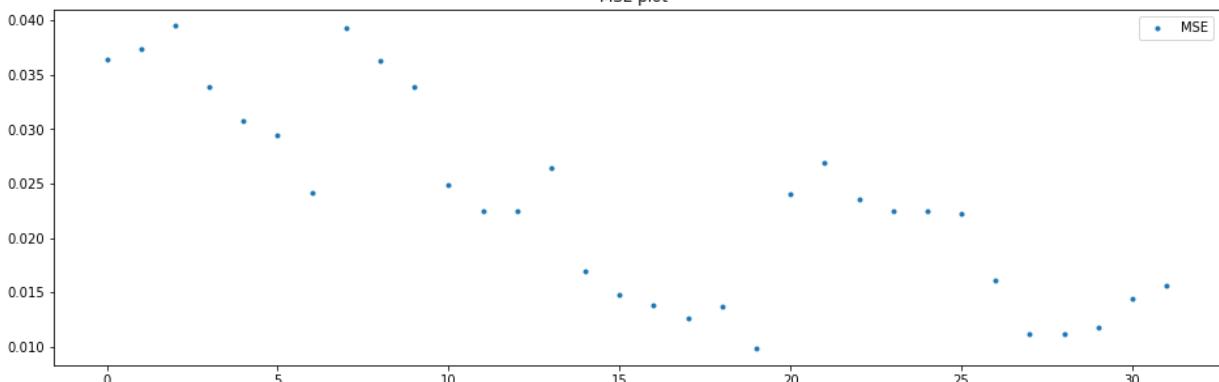
Batch: 77

mean=0.023169375, median=0.022515 , max=0.03951, min=0.00981, variance=8.18285e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



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)

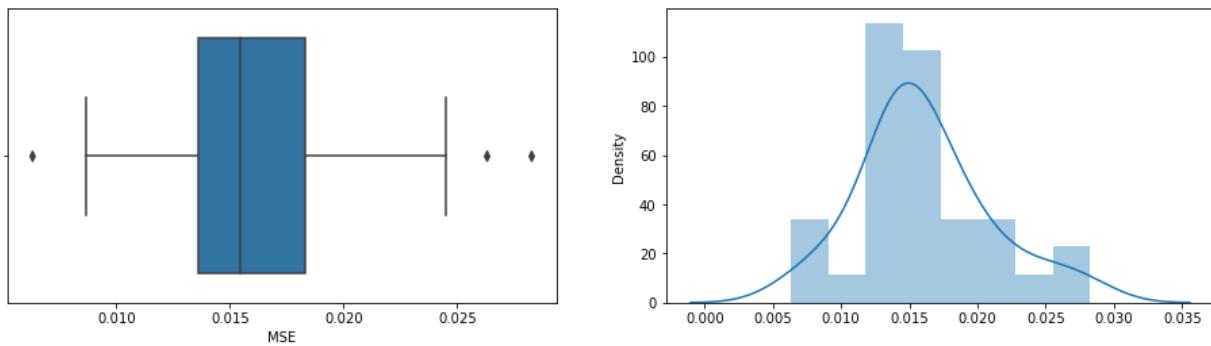
2.500: 0.834, data looks normal (fail to reject H0)

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

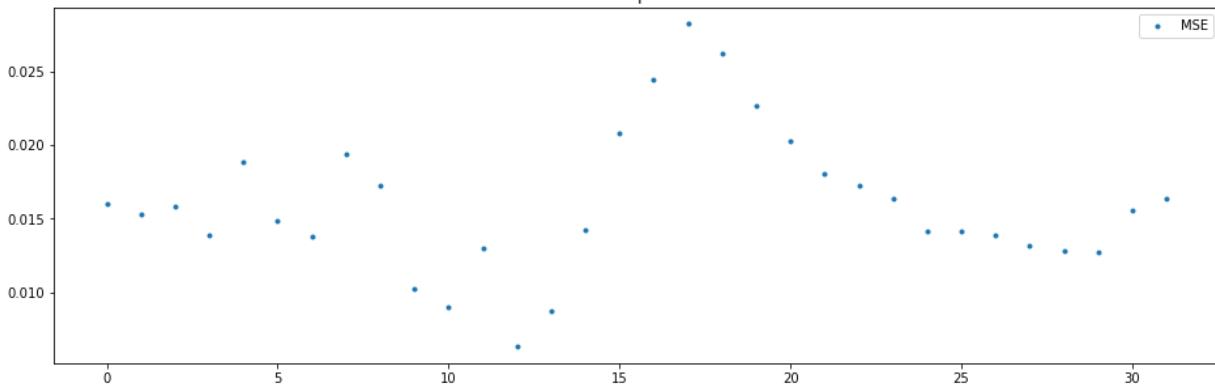
Batch: 78

mean=0.0160603125, median=0.015445 , max=0.02826, min=0.00629, variance=2.30113e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson_Darling Test**

Statistic: 0.588

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)

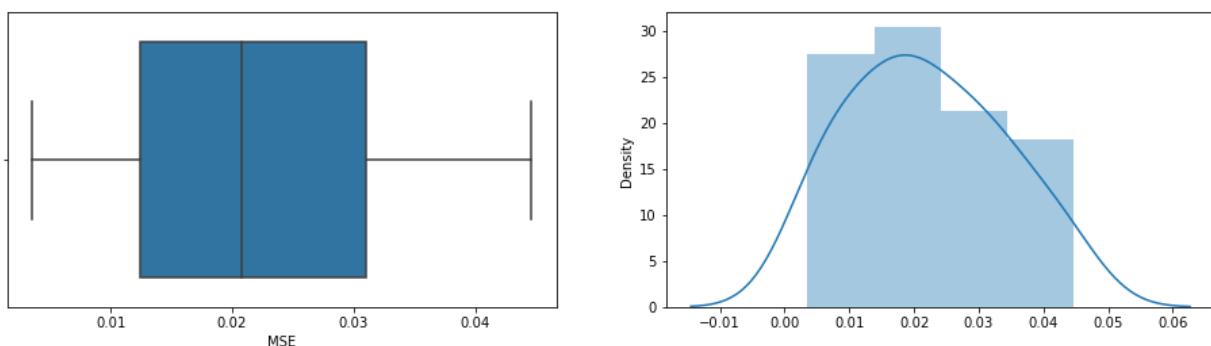
2.500: 0.834, data looks normal (fail to reject H0)

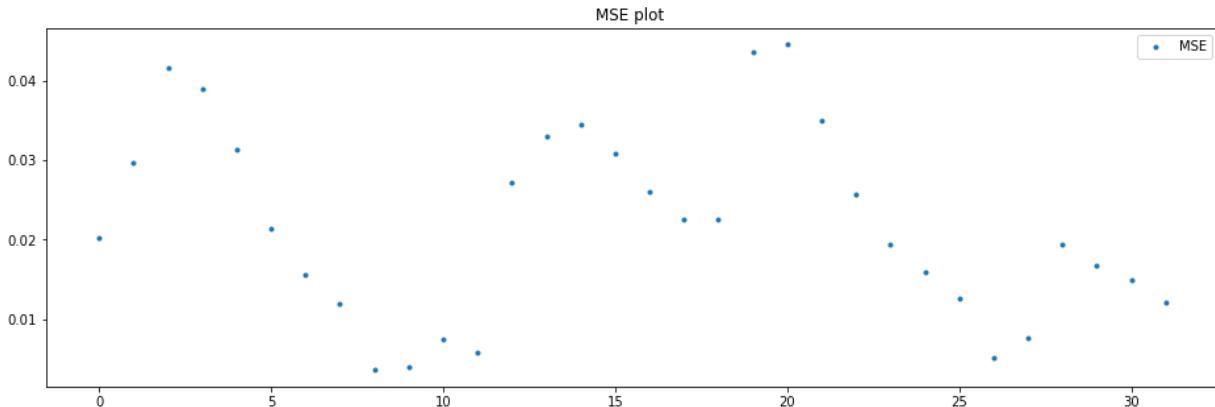
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 79

mean=0.0218878125, median=0.02077 , max=0.0446, min=0.00355, variance=0.0001401383

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.275

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)

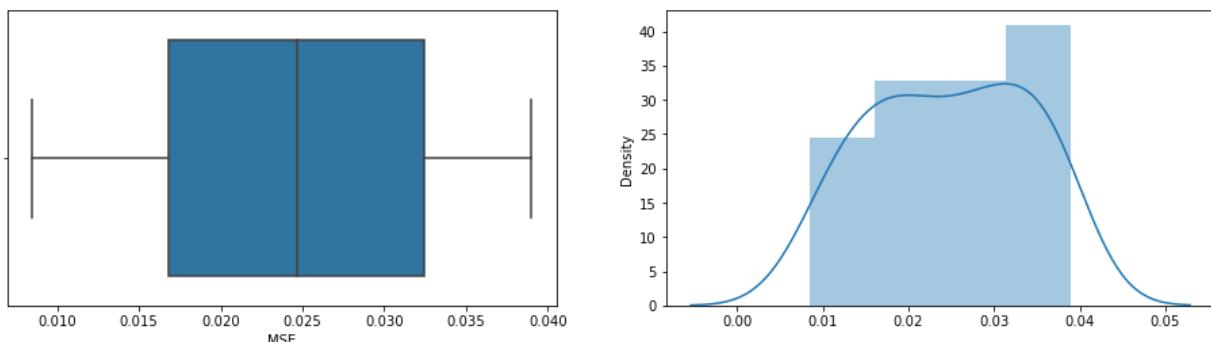
2.500: 0.834, data looks normal (fail to reject H0)

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

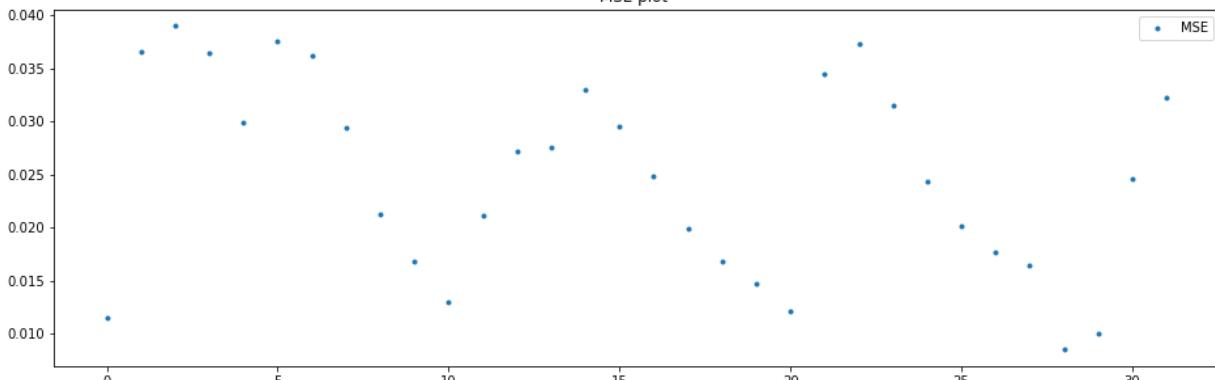
Batch: 80

mean=0.0247325, median=0.024695 , max=0.03899, min=0.00847, variance=8.2917e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



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)

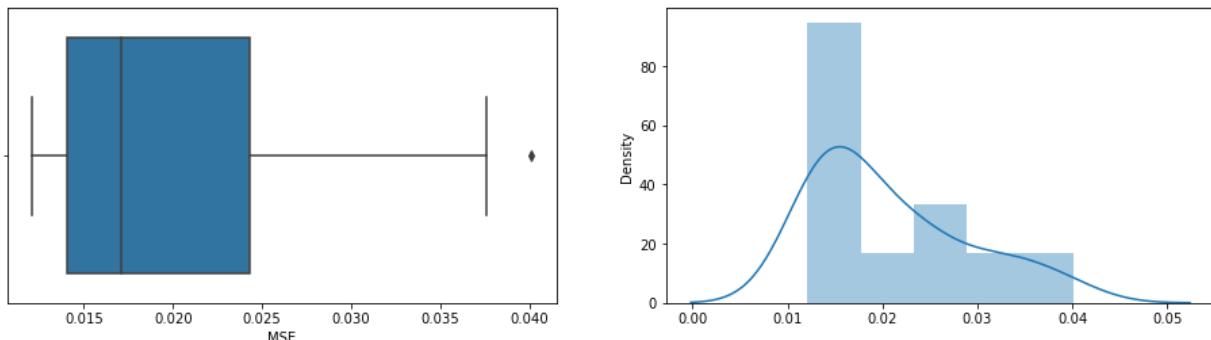
2.500: 0.834, data looks normal (fail to reject H0)

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

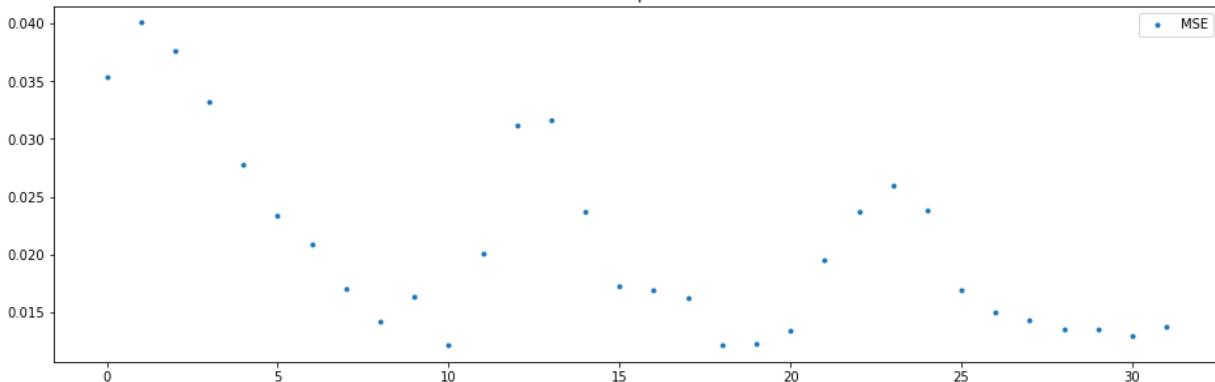
Batch: 81

mean=0.020779375, median=0.01711 , max=0.0401, min=0.01209, variance=6.478e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson_Darling Test**

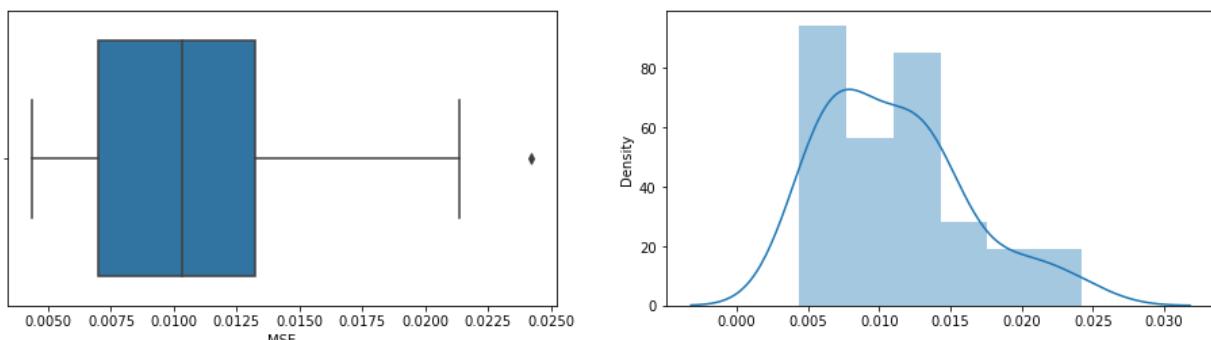
Statistic: 1.363

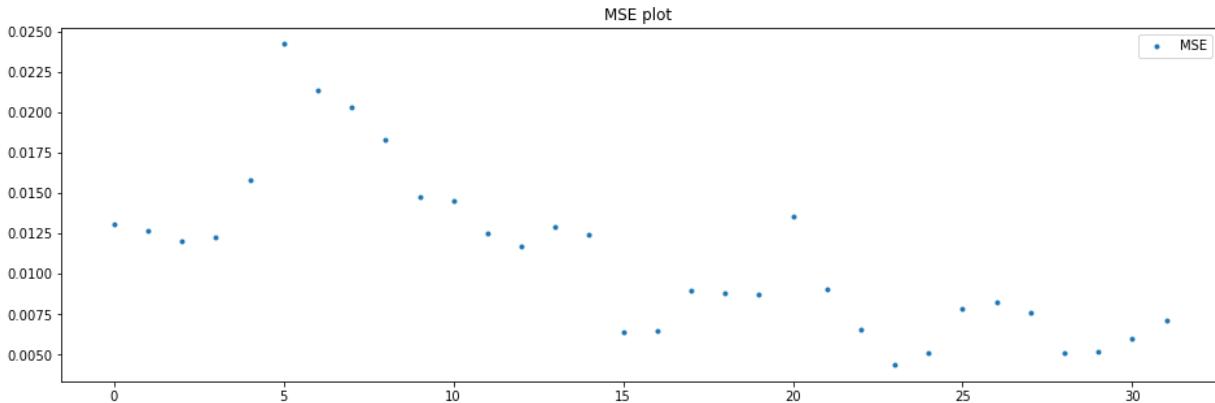
15.000: 0.523, data does not look normal (reject H0)
 10.000: 0.596, data does not look normal (reject H0)
 5.000: 0.715, data does not look normal (reject H0)
 2.500: 0.834, data does not look normal (reject H0)
 1.000: 0.992, data does not look normal (reject H0)

Batch: 82

mean=0.0110696875, median=0.01035 , max=0.02422, min=0.00436, variance=2.47413e-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)

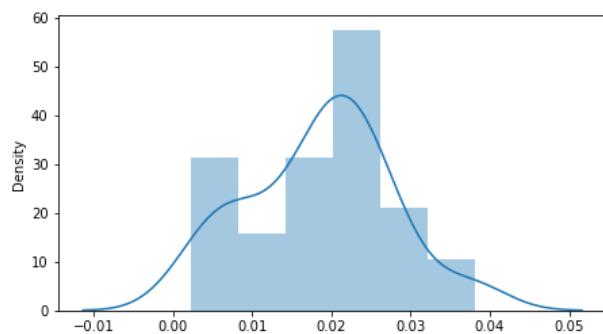
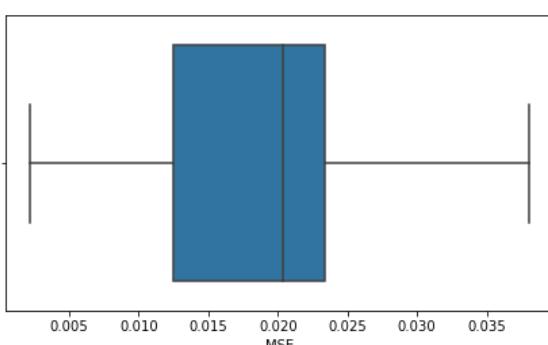
2.500: 0.834, data looks normal (fail to reject H0)

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

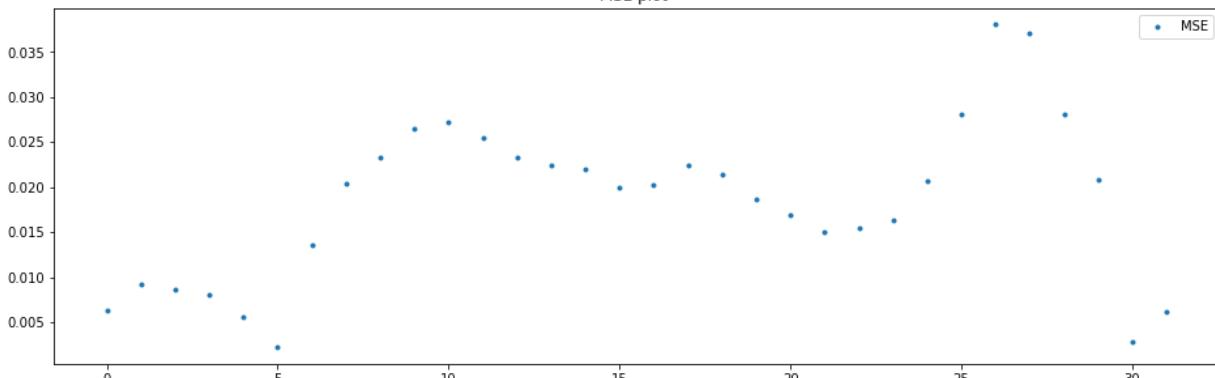
Batch: 83

mean=0.0185259375, median=0.02035 , max=0.03805, min=0.0022, variance=7.9421e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 0.477

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)

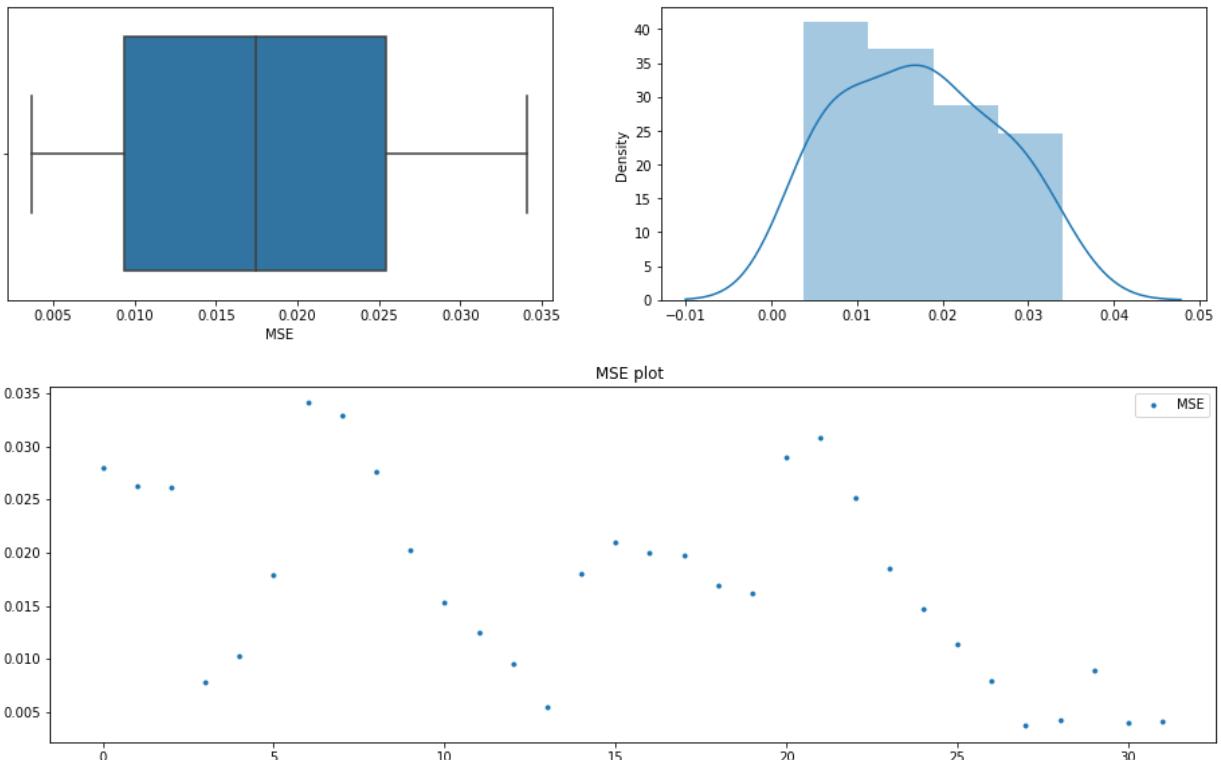
2.500: 0.834, data looks normal (fail to reject H0)

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

Batch: 84

mean=0.0171334375, median=0.01744 , max=0.03409, min=0.0037, variance=8.11941e-05

Boxplots and Distribution plot for Reconstruction Error



Anderson_Darling Test

Statistic: 0.390

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)

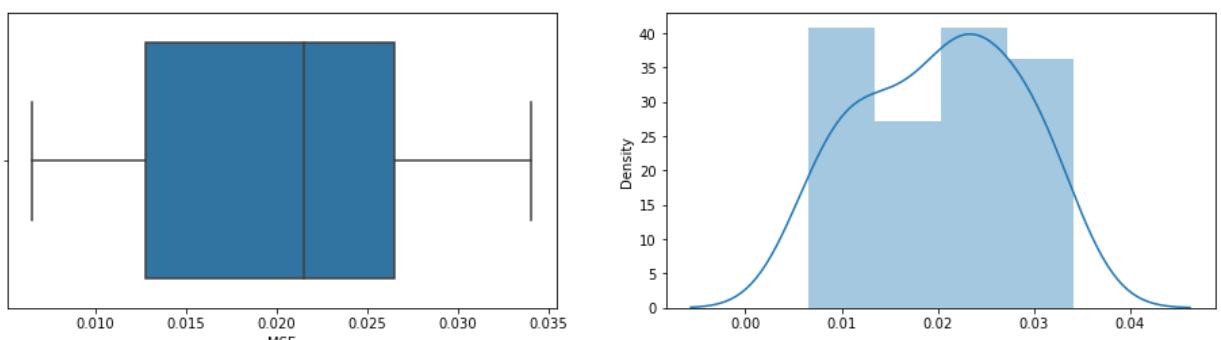
2.500: 0.834, data looks normal (fail to reject H0)

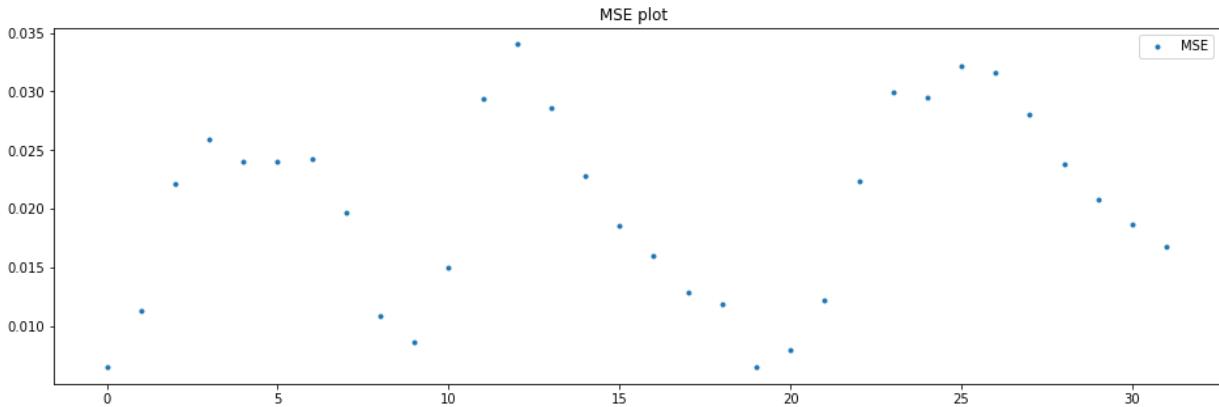
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 85

mean=0.0202128125, median=0.021475 , max=0.03402, min=0.0065, variance=6.36948e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.383

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)

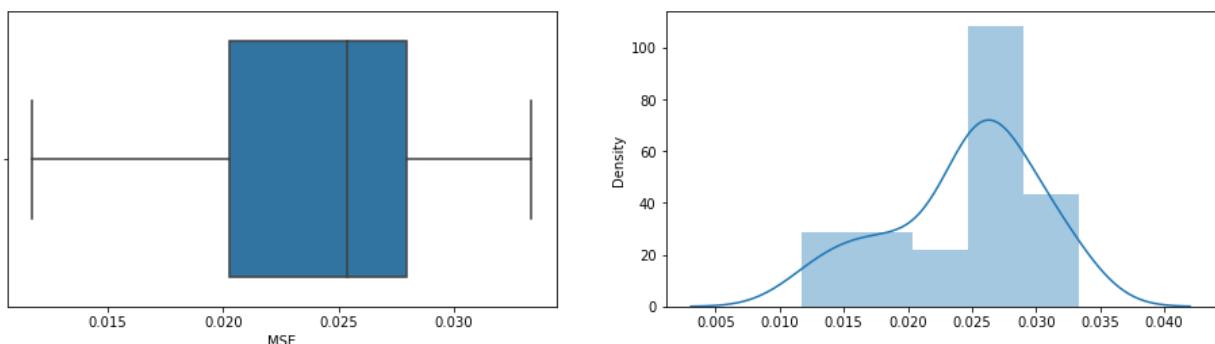
2.500: 0.834, data looks normal (fail to reject H0)

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

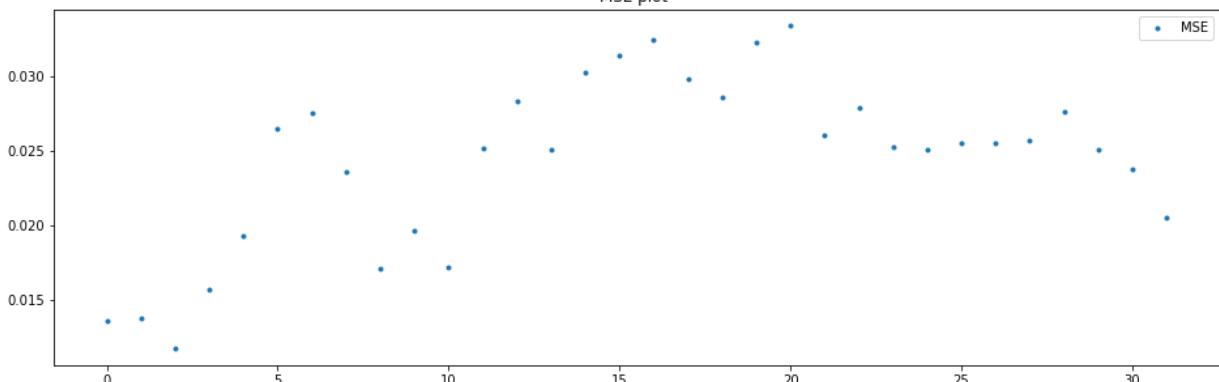
Batch: 86

mean=0.02436875, median=0.025345 , max=0.03334, min=0.01172, variance=3.21814e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 0.802

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)

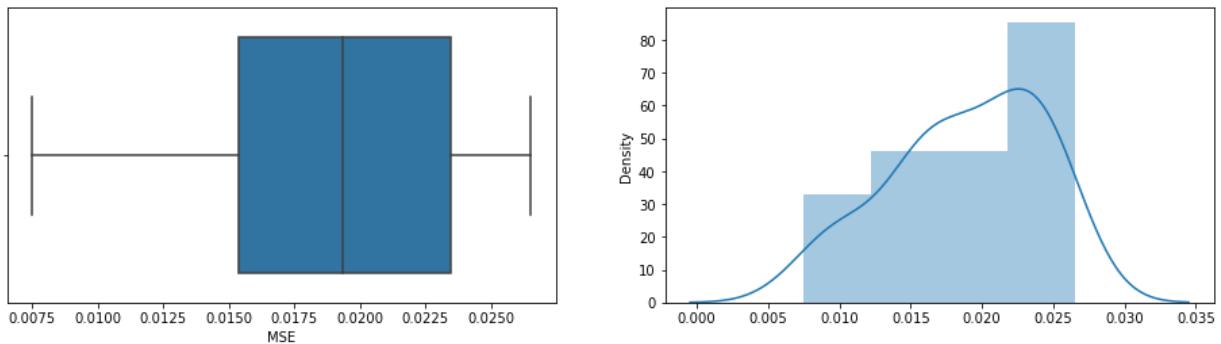
2.500: 0.834, data looks normal (fail to reject H0)

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

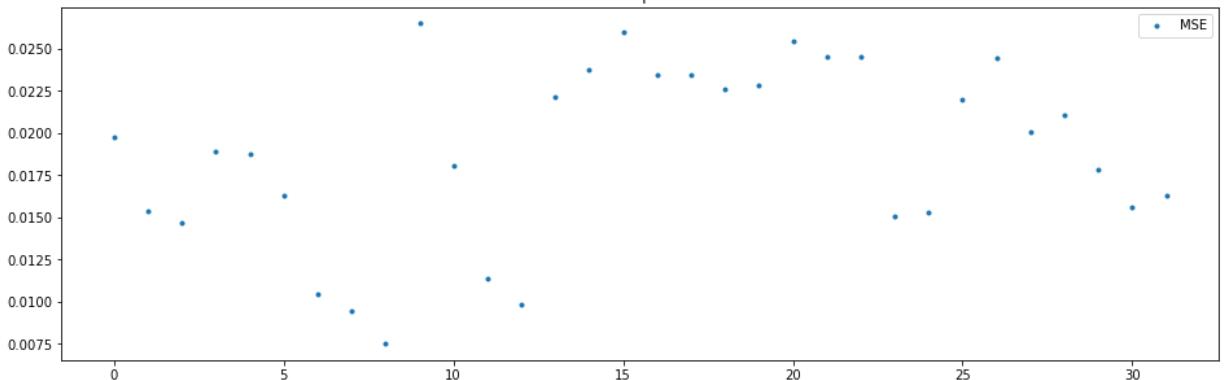
Batch: 87

mean=0.0188621875, median=0.019365 , max=0.02651, min=0.0075, variance=2.74348e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson_Darling Test**

Statistic: 0.561

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)

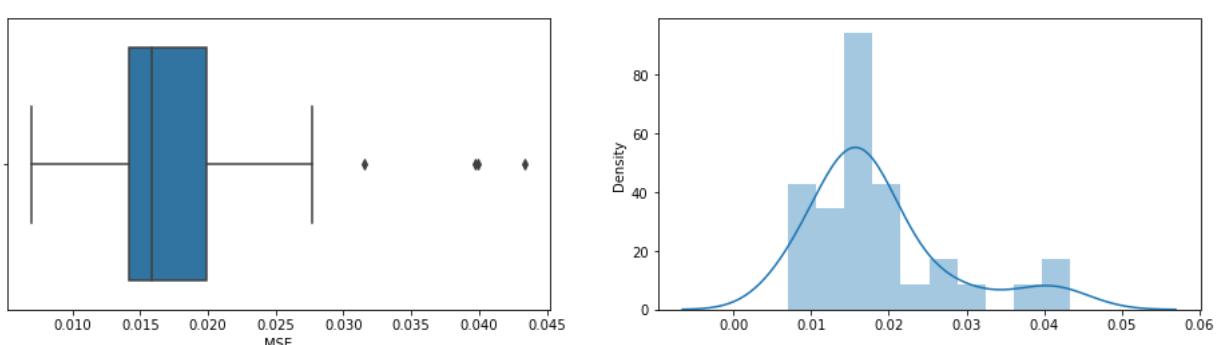
2.500: 0.834, data looks normal (fail to reject H0)

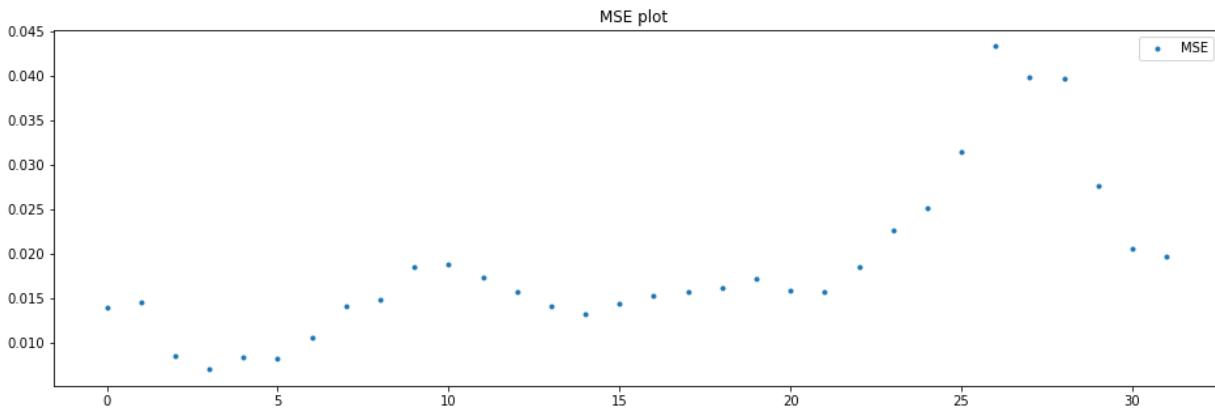
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 88

mean=0.018683125, median=0.01586 , max=0.04337, min=0.00699, variance=7.90518e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 1.940

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)

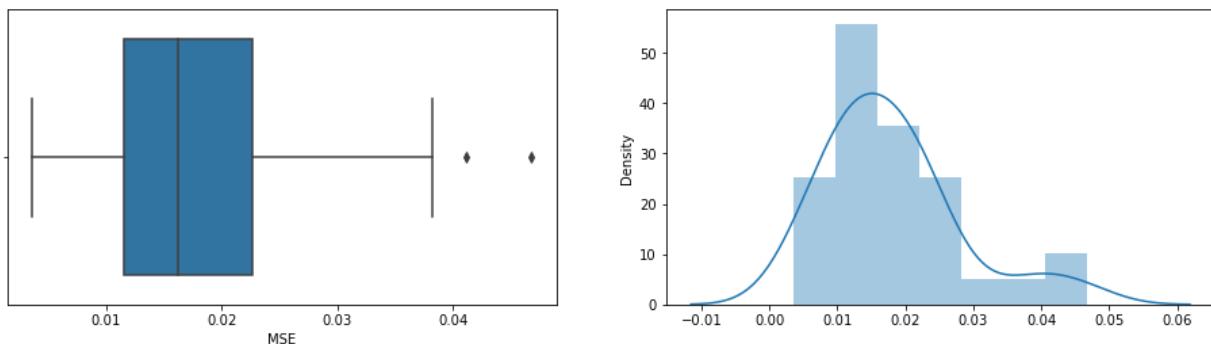
2.500: 0.834, data does not look normal (reject H0)

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

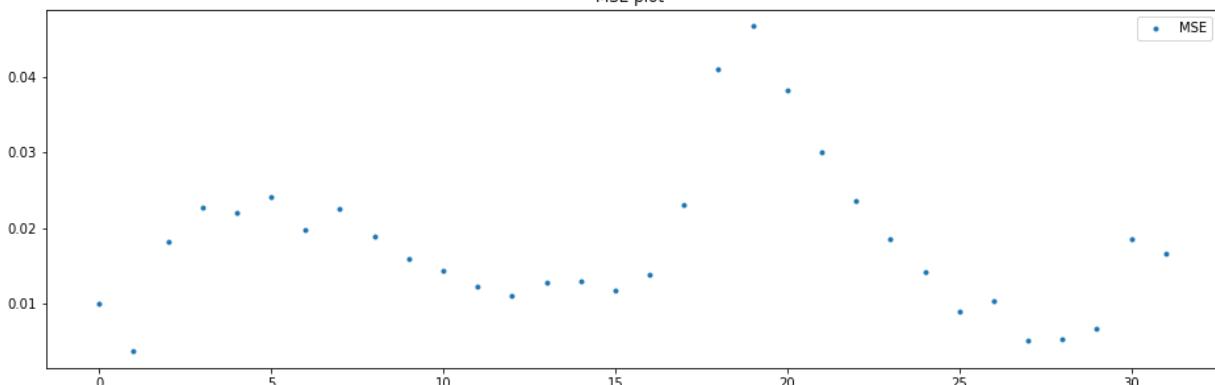
Batch: 89

mean=0.0179275, median=0.01626 , max=0.04674, min=0.0036, variance=9.88597e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 0.900

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)

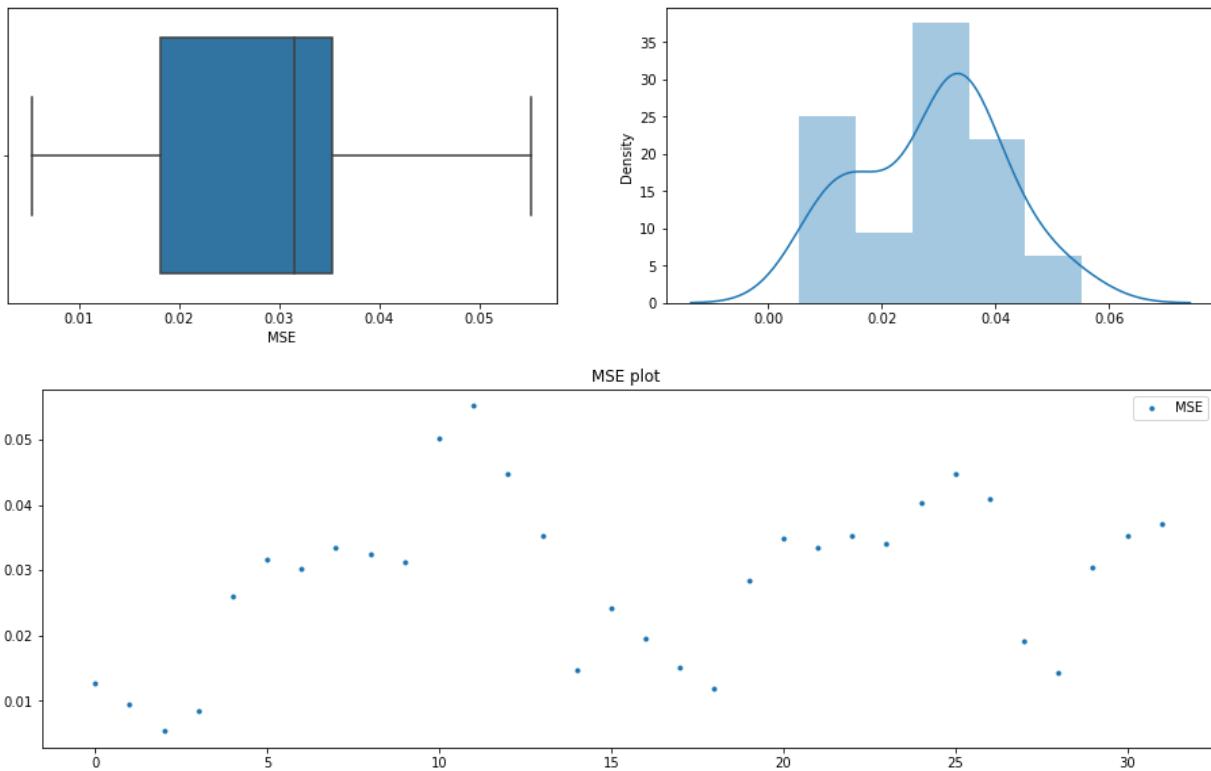
2.500: 0.834, data does not look normal (reject H0)

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

Batch: 90

mean=0.028753125, median=0.031495 , max=0.0552, min=0.00534, variance=0.000155474

Boxplots and Distribution plot for Reconstruction Error



Anderson_Darling Test

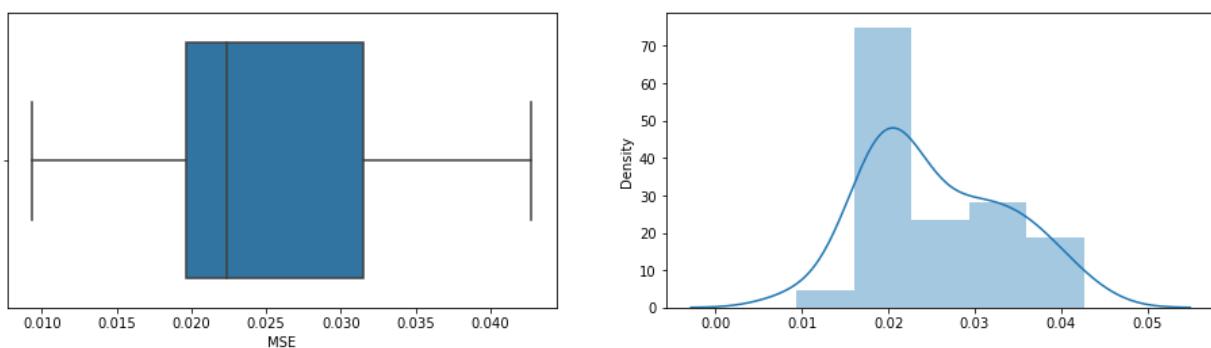
Statistic: 0.531

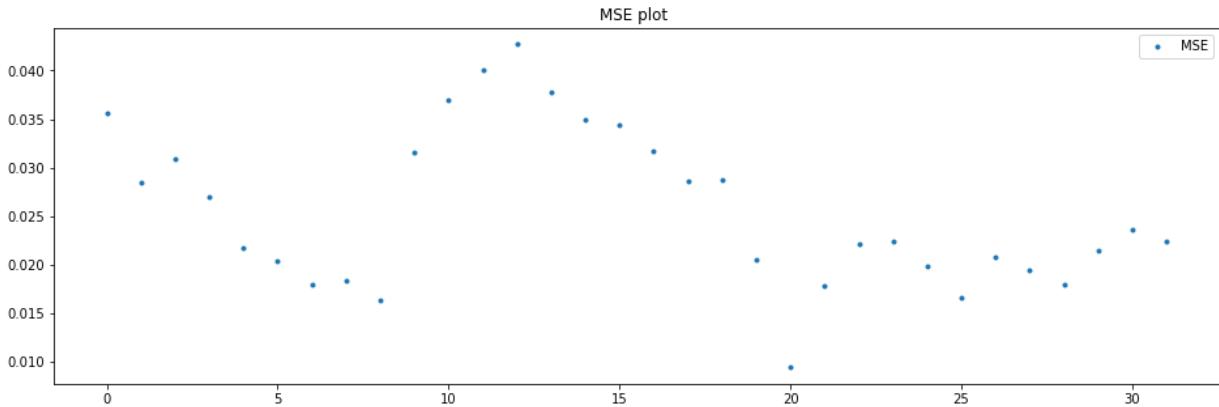
15.000: 0.523, data does not look normal (reject H0)
 10.000: 0.596, data looks normal (fail to reject H0)
 5.000: 0.715, data looks normal (fail to reject H0)
 2.500: 0.834, data looks normal (fail to reject H0)
 1.000: 0.992, data looks normal (fail to reject H0)

Batch: 91

mean=0.0255628125, median=0.022335 , max=0.04272, min=0.00935, variance=6.42413e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.753

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)

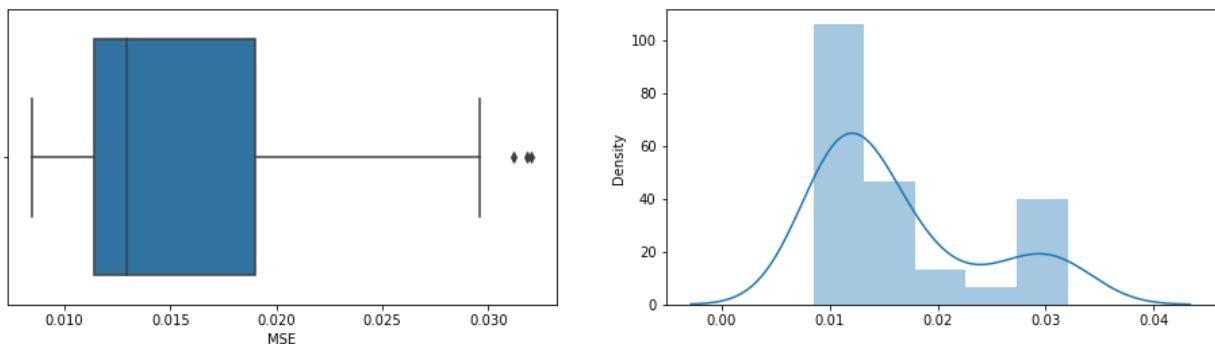
2.500: 0.834, data looks normal (fail to reject H0)

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

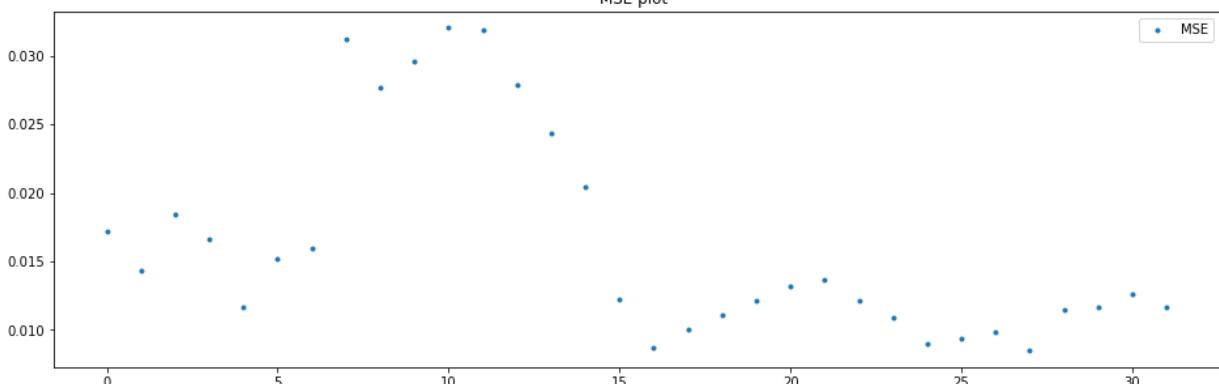
Batch: 92

mean=0.016339375, median=0.012925 , max=0.03203, min=0.00848, variance=5.52427e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 2.276

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)

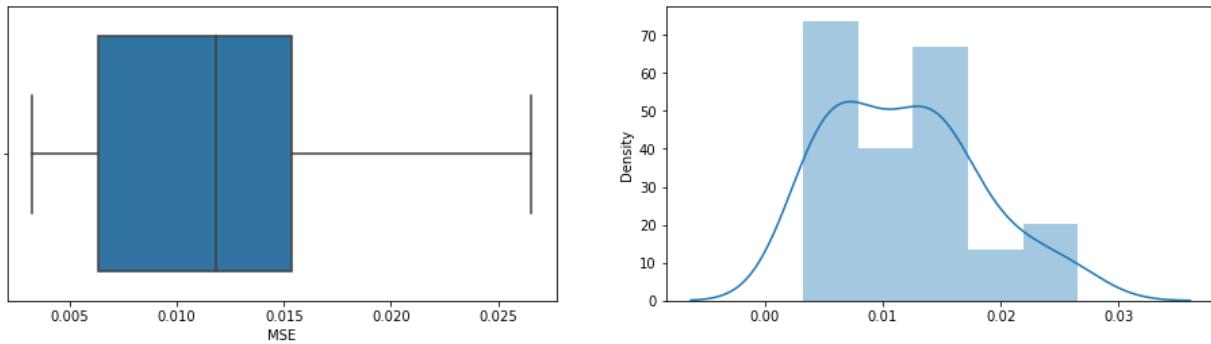
2.500: 0.834, data does not look normal (reject H0)

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

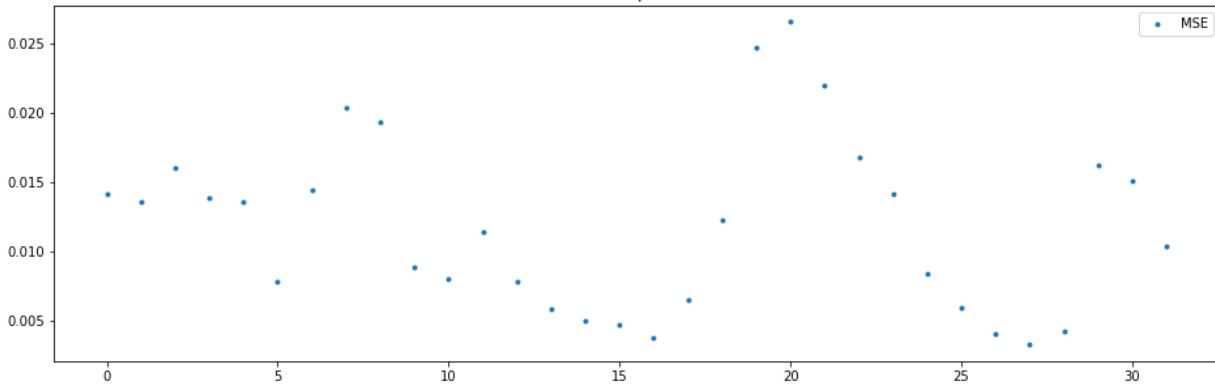
Batch: 93

mean=0.011836875, median=0.01184 , max=0.02655, min=0.00324, variance=3.88071e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson_Darling Test**

Statistic: 0.515

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)

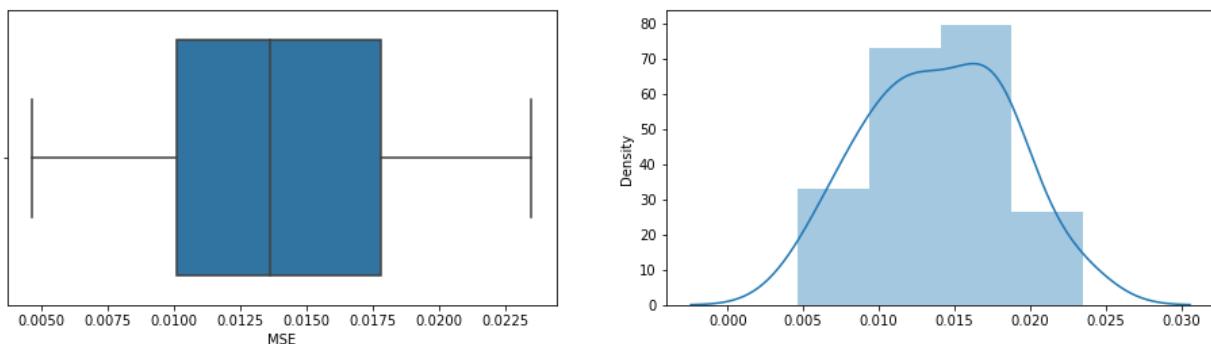
2.500: 0.834, data looks normal (fail to reject H0)

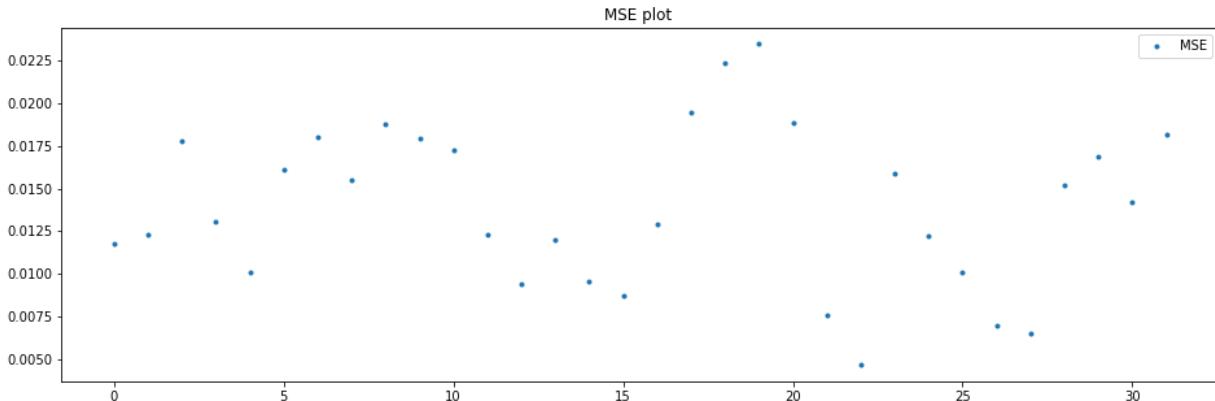
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 94

mean=0.01393, median=0.013615 , max=0.02348, min=0.00463, variance=2.14375e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

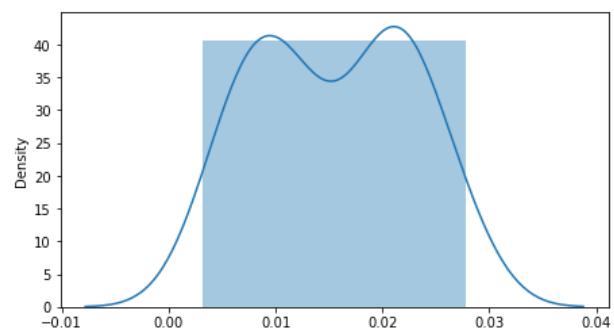
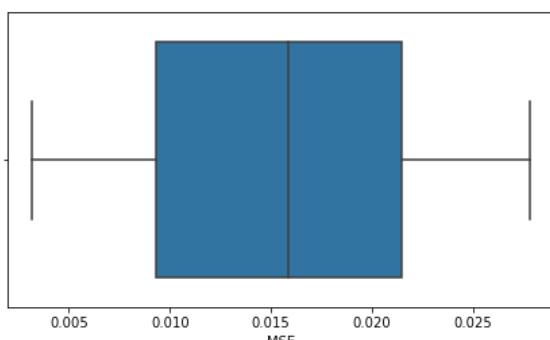
Statistic: 0.256

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)

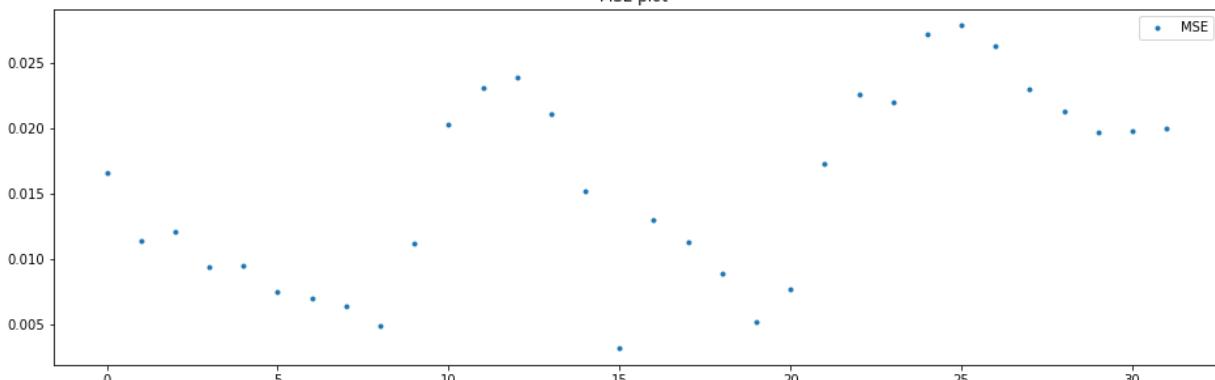
Batch: 95

mean=0.015476875, median=0.01587 , max=0.02781, min=0.00318, variance=5.19615e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

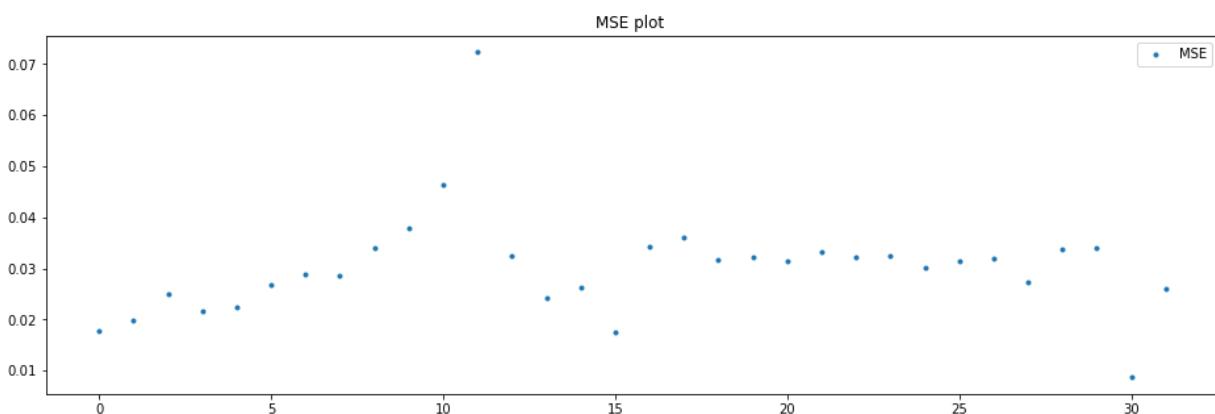
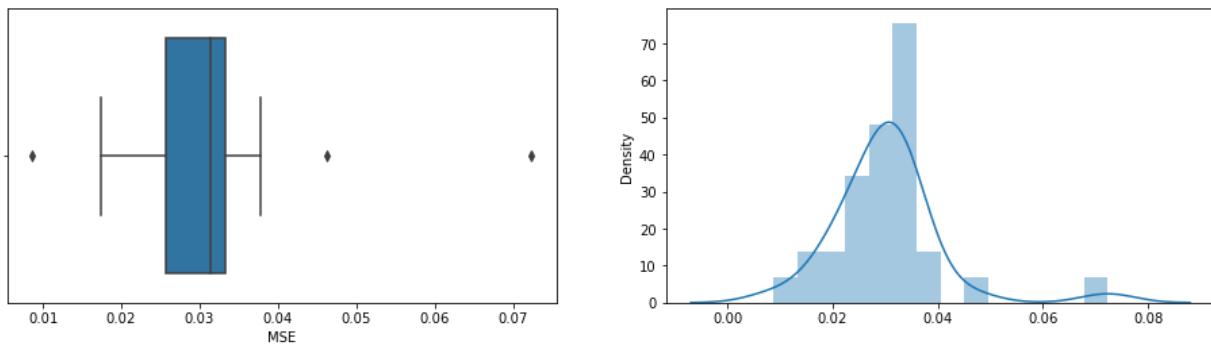
Statistic: 0.684

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: 96

mean=0.0302509375, median=0.03134 , max=0.07231, min=0.00863, variance=0.0001051791

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

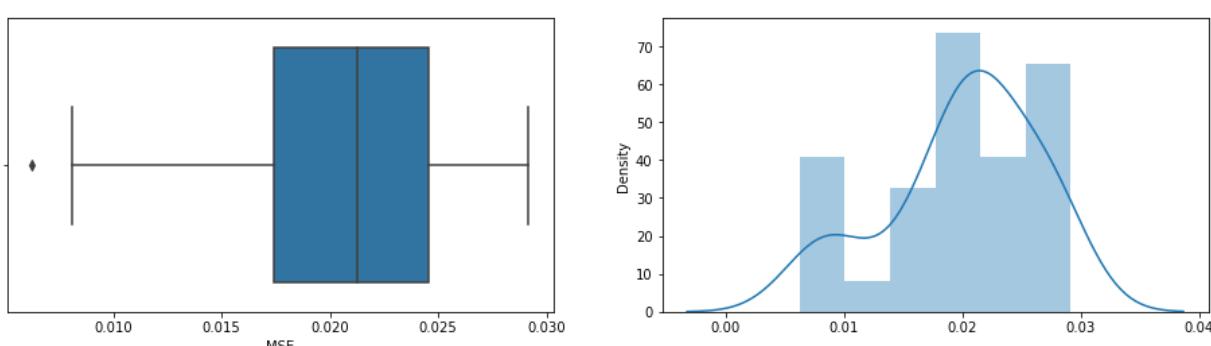
Statistic: 1.604

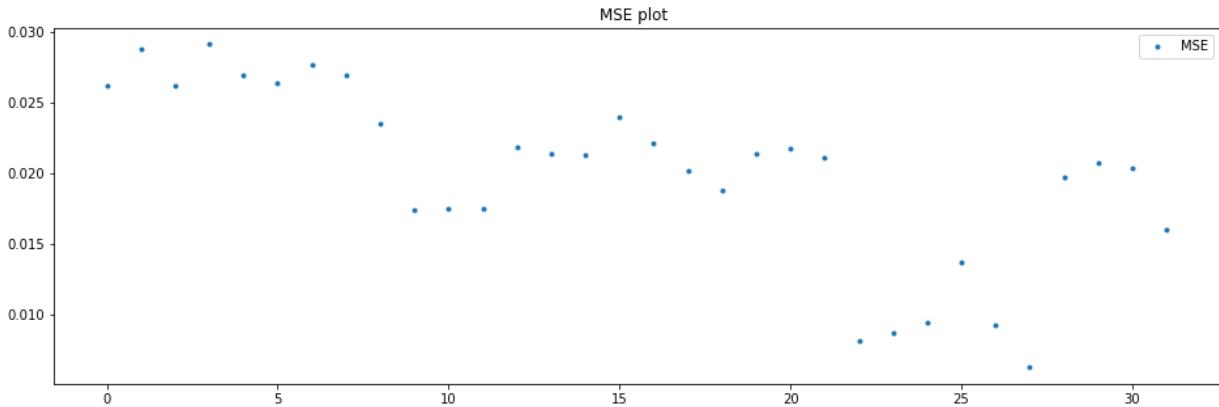
15.000: 0.523, data does not look normal (reject H₀)
 10.000: 0.596, data does not look normal (reject H₀)
 5.000: 0.715, data does not look normal (reject H₀)
 2.500: 0.834, data does not look normal (reject H₀)
 1.000: 0.992, data does not look normal (reject H₀)

Batch: 97

mean=0.0200246875, median=0.02126 , max=0.02916, min=0.00625, variance=3.90176e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.846

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)

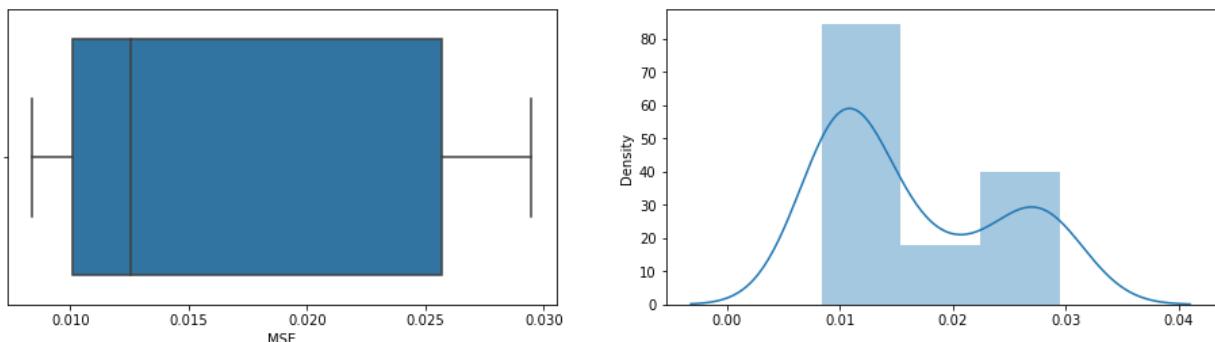
2.500: 0.834, data does not look normal (reject H0)

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

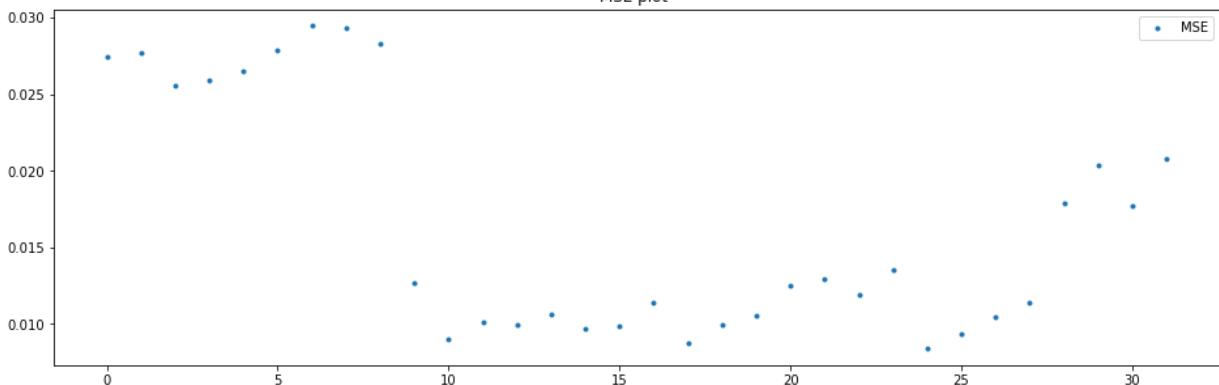
Batch: 98

mean=0.0165009375, median=0.012565 , max=0.02947, min=0.00838, variance=5.73954e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 2.449

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)

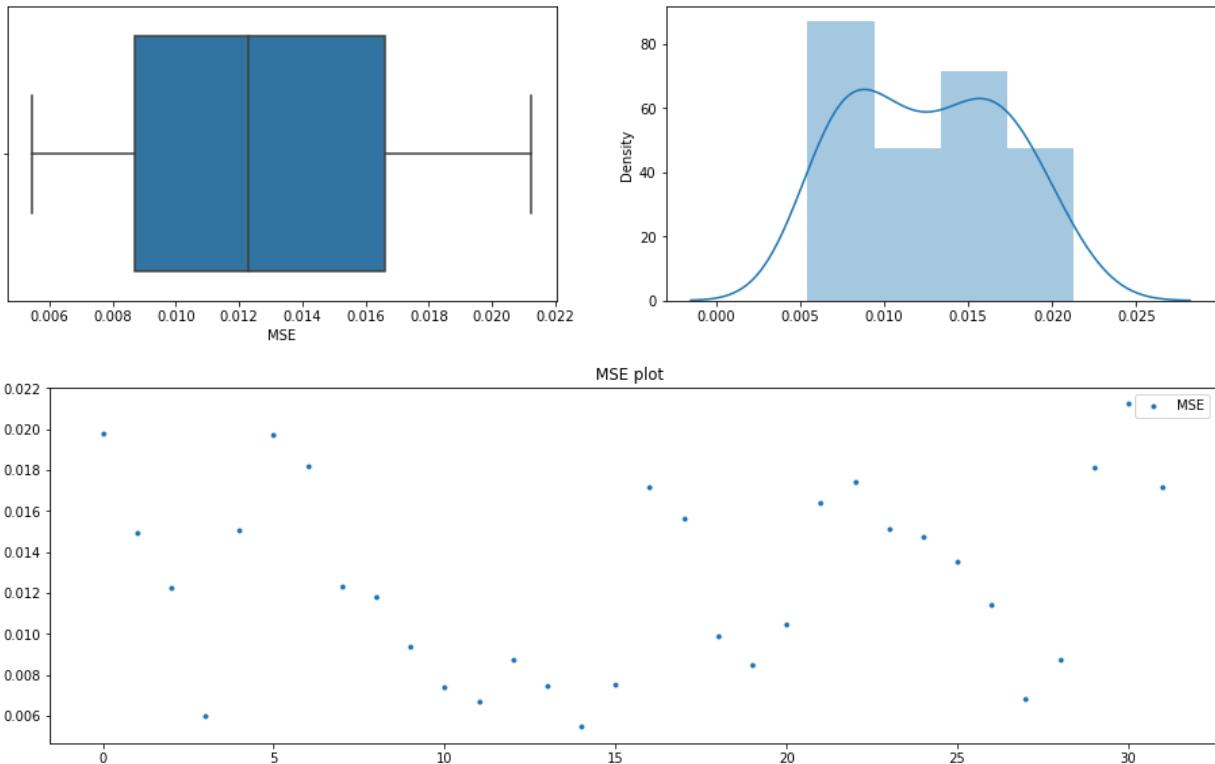
2.500: 0.834, data does not look normal (reject H0)

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

Batch: 99

mean=0.0126628125, median=0.01229 , max=0.02124, min=0.00546, variance=2.07677e-05

Boxplots and Distribution plot for Reconstruction Error

**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)

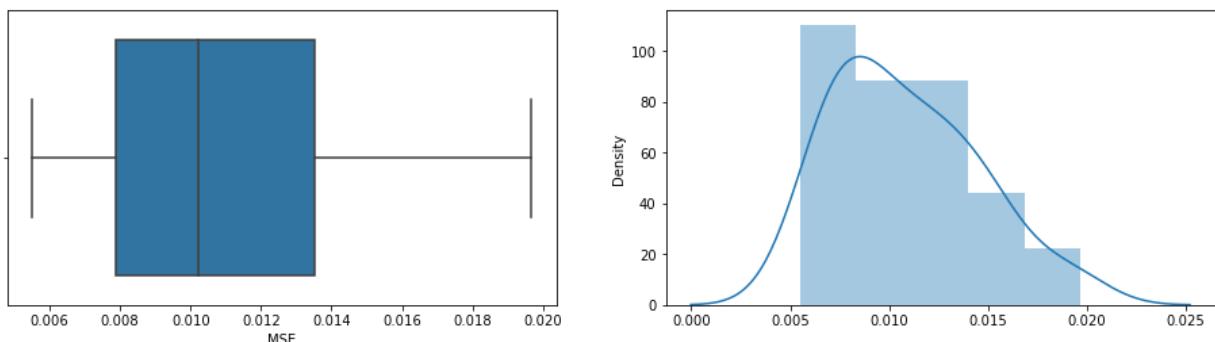
2.500: 0.834, data looks normal (fail to reject H0)

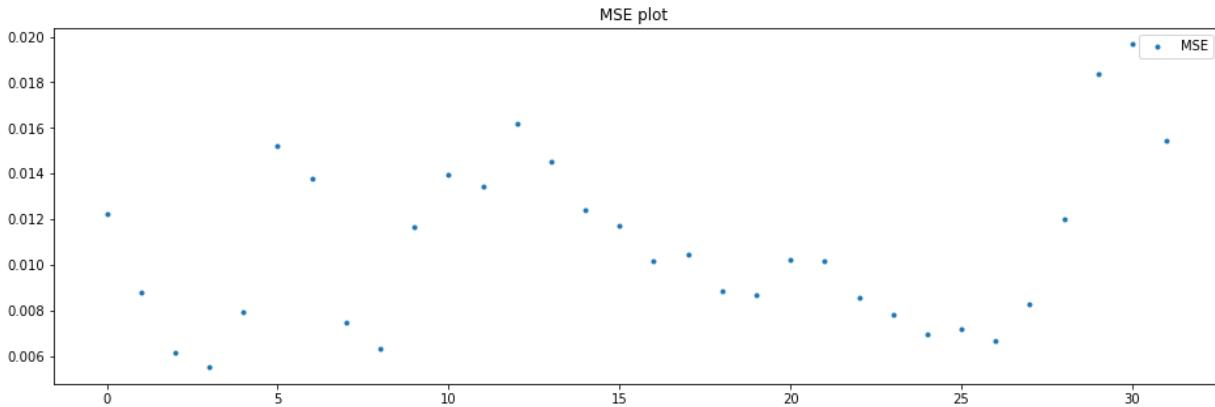
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 100

mean=0.0108378125, median=0.010215 , max=0.01967, min=0.0055, variance=1.31331e-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)

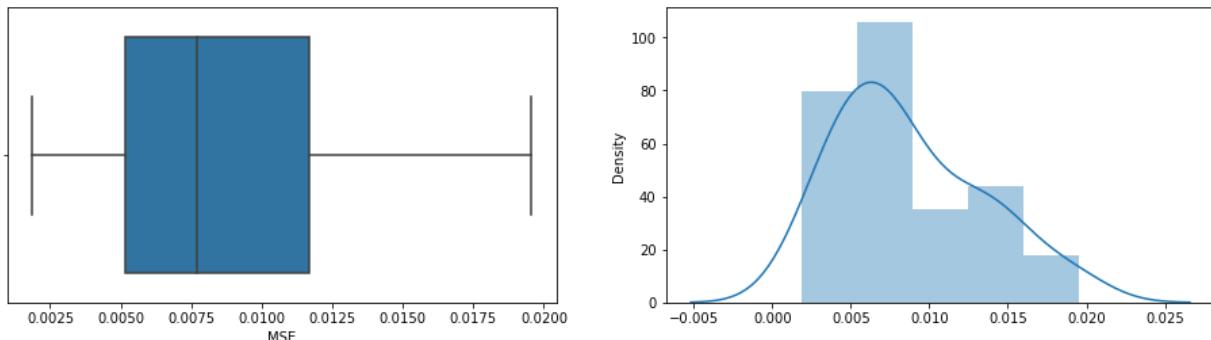
2.500: 0.834, data looks normal (fail to reject H0)

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

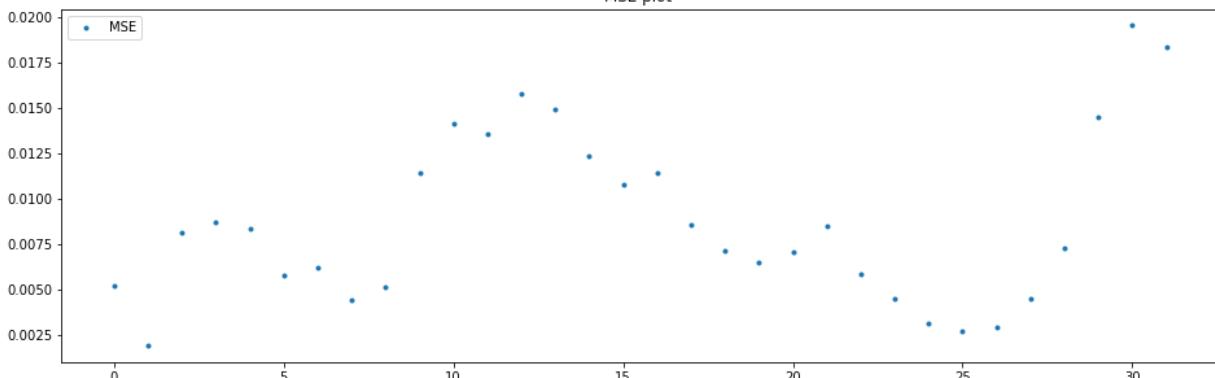
Batch: 101

mean=0.0087128125, median=0.00768 , max=0.01955, min=0.00186, variance=2.13543e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 0.643

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)

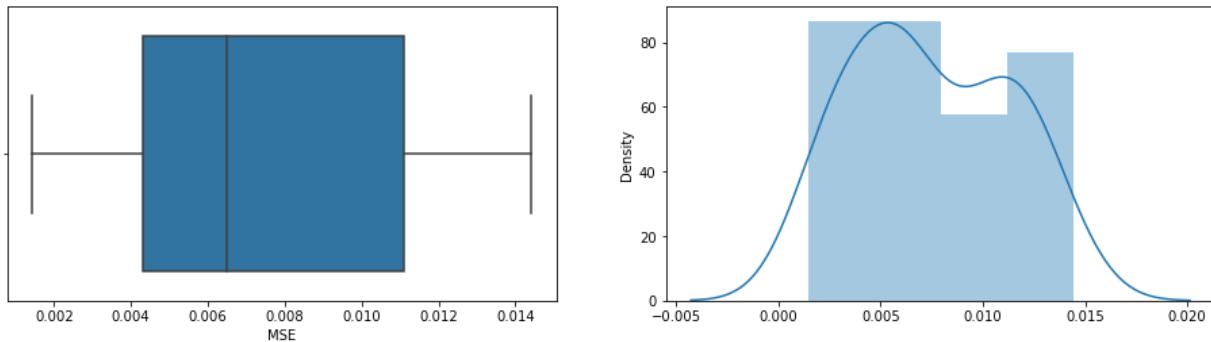
2.500: 0.834, data looks normal (fail to reject H0)

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

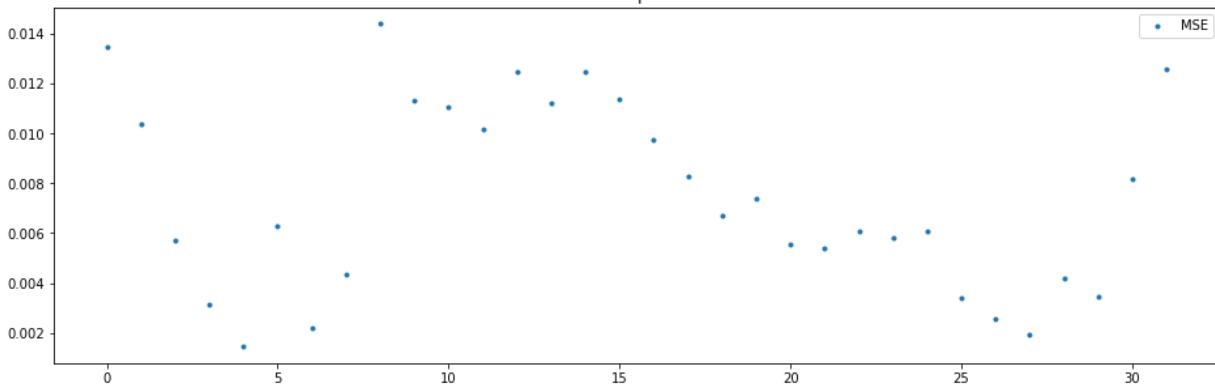
Batch: 102

mean=0.0074615625, median=0.0065 , max=0.01441, min=0.00143, variance=1.40644e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson_Darling Test**

Statistic: 0.573

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)

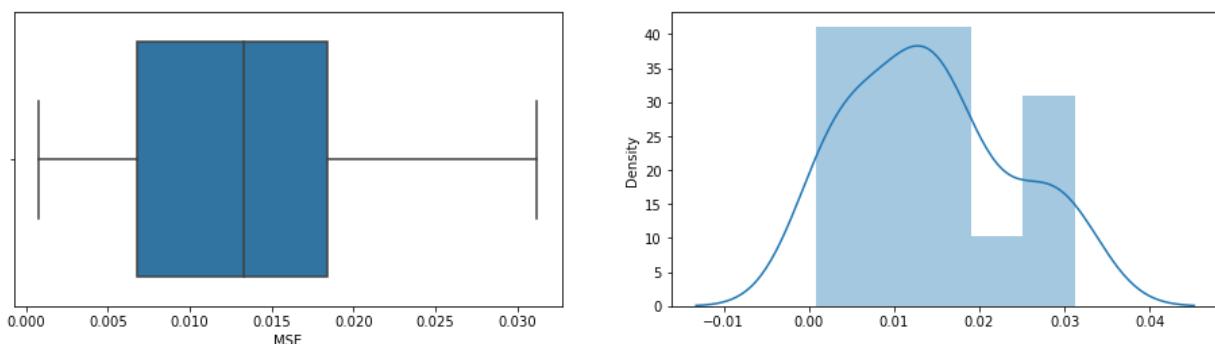
2.500: 0.834, data looks normal (fail to reject H0)

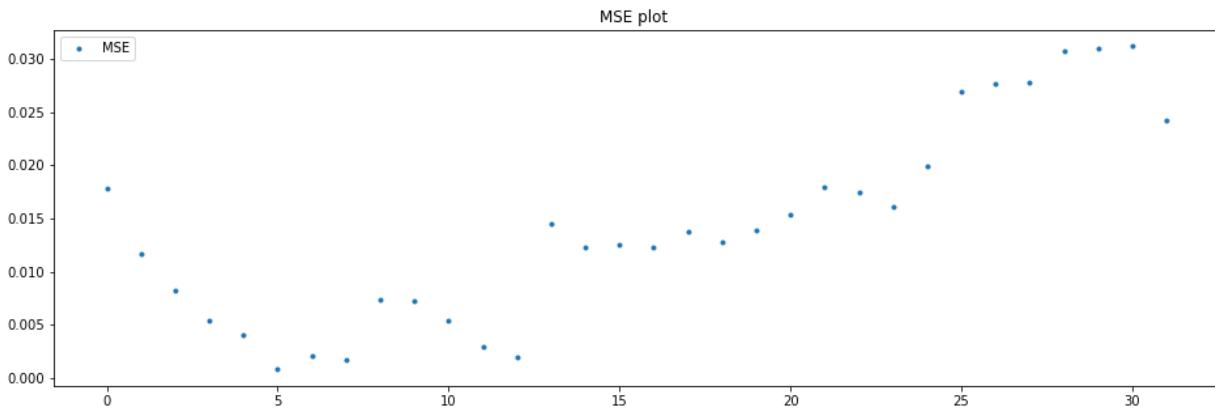
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 103

mean=0.0142153125, median=0.0133 , max=0.03118, min=0.00079, variance=8.45519e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.594

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)

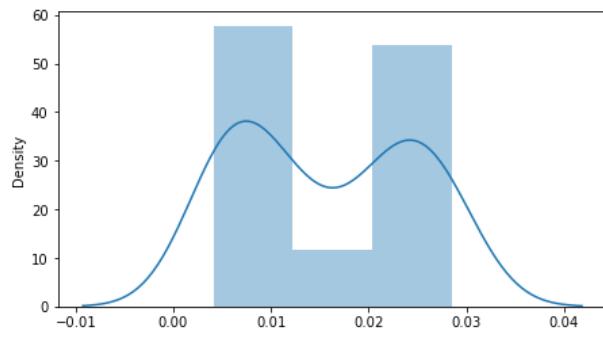
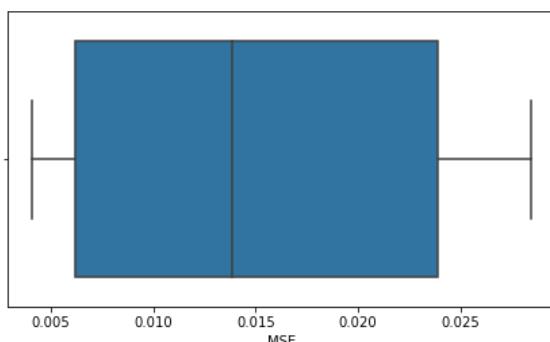
2.500: 0.834, data looks normal (fail to reject H0)

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

Batch: 104

mean=0.015618125, median=0.01384 , max=0.02845, min=0.0041, variance=7.68676e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

Scatter plot of MSE vs index showing a clear upward trend.

This scatter plot shows the Mean Squared Error (MSE) across 32 data points. The x-axis represents the index from 0 to 30, and the y-axis represents MSE from 0.005 to 0.025. The data points show a strong positive linear correlation, indicating that MSE increases as the index increases.

Index	MSE
0	0.021
1	0.015
2	0.010
3	0.009
4	0.006
5	0.006
6	0.006
7	0.008
8	0.012
9	0.013
10	0.014
11	0.012
12	0.005
13	0.006
14	0.005
15	0.004
16	0.005
17	0.006
18	0.023
19	0.027
20	0.018
21	0.021
22	0.020
23	0.022
24	0.023
25	0.024
26	0.025
27	0.026
28	0.027
29	0.028
30	0.026

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)

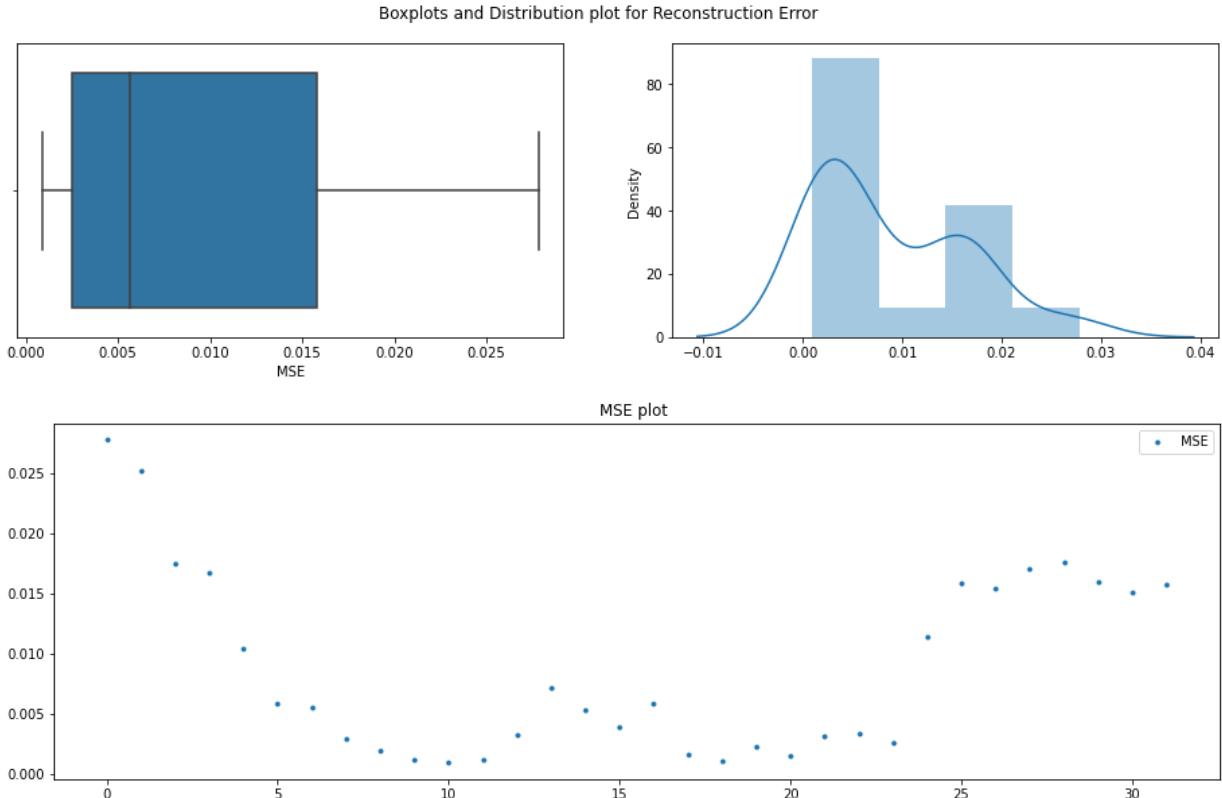
5.000: 0.715, data does not look normal (reject H0)

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

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

Batch: 105

mean=0.008820625, median=0.005685 , max=0.02781, min=0.00089, variance=5.71447e-05



Anderson_Darling Test

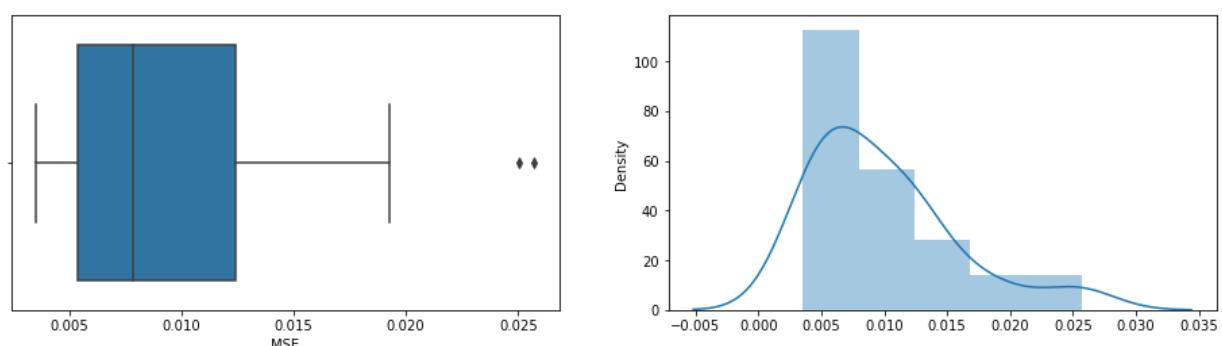
Statistic: 1.719

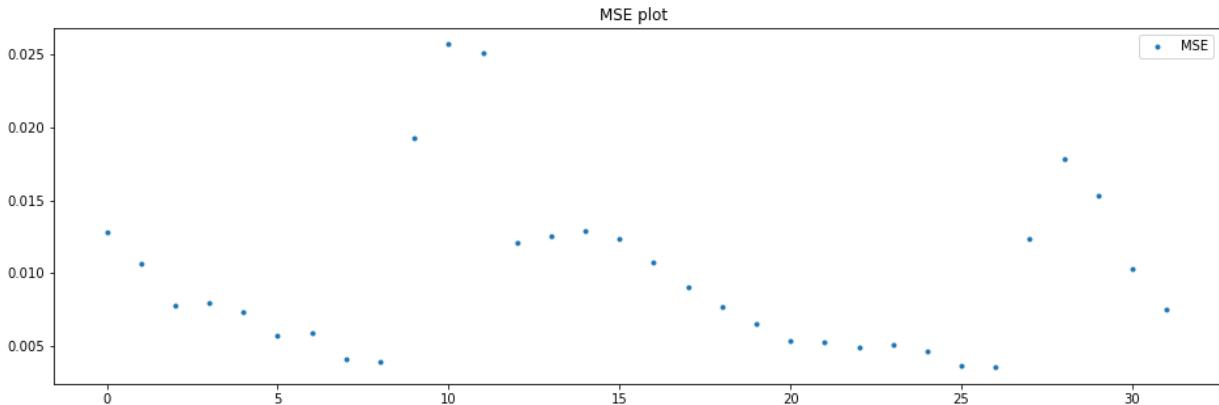
15.000: 0.523, data does not look normal (reject H0)
 10.000: 0.596, data does not look normal (reject H0)
 5.000: 0.715, data does not look normal (reject H0)
 2.500: 0.834, data does not look normal (reject H0)
 1.000: 0.992, data does not look normal (reject H0)

Batch: 106

mean=0.00987125, median=0.00785 , max=0.02571, min=0.00352, variance=3.25447e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 1.237

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)

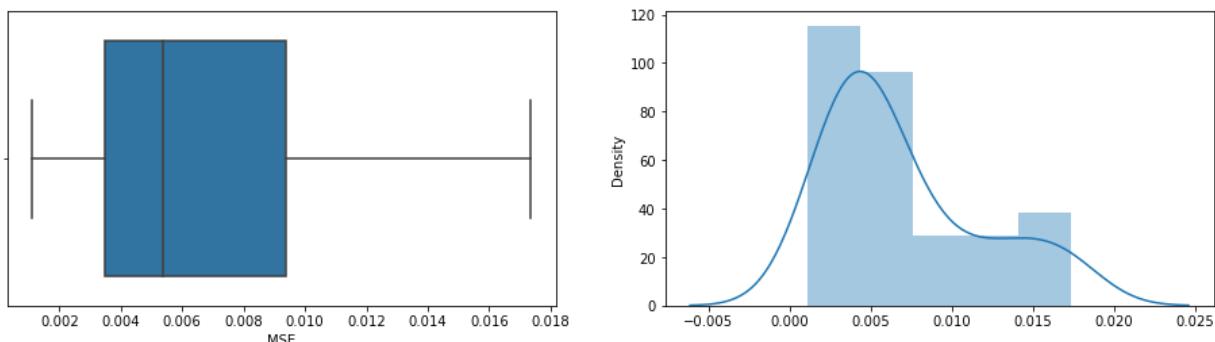
2.500: 0.834, data does not look normal (reject H0)

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

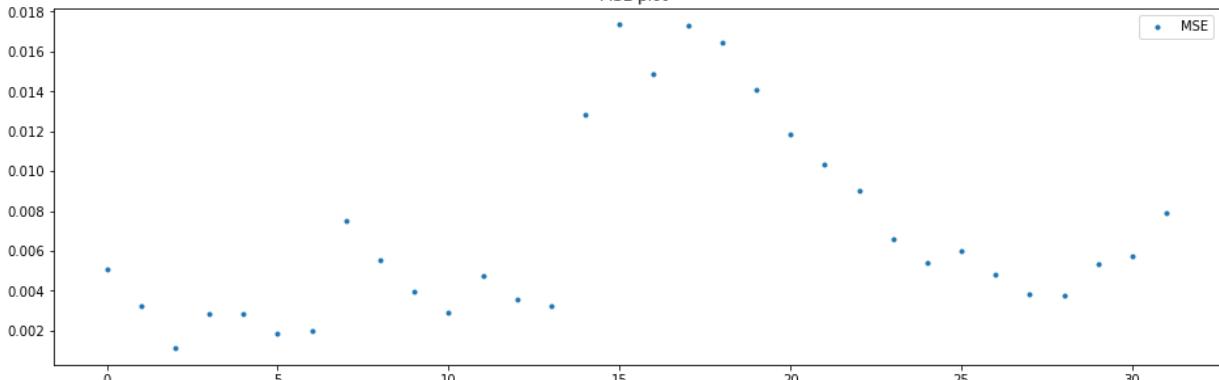
Batch: 107

mean=0.0070065625, median=0.005375 , max=0.01735, min=0.00111, variance=2.25048e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 1.691

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)

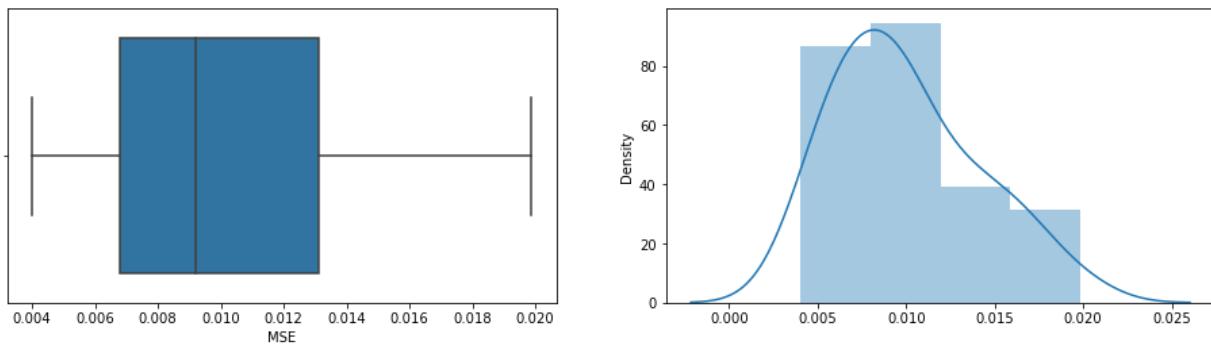
2.500: 0.834, data does not look normal (reject H0)

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

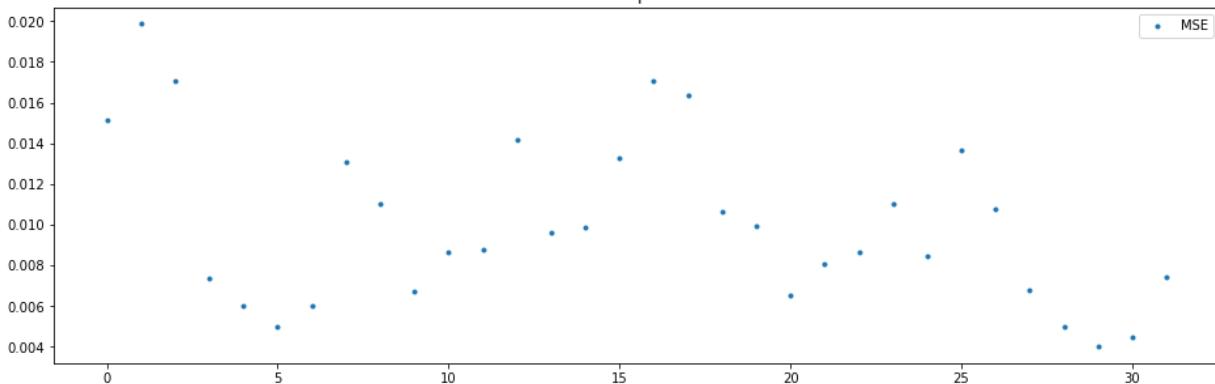
Batch: 108

mean=0.0100171875, median=0.0092 , max=0.01987, min=0.004, variance=1.63618e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson_Darling Test**

Statistic: 0.523

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)

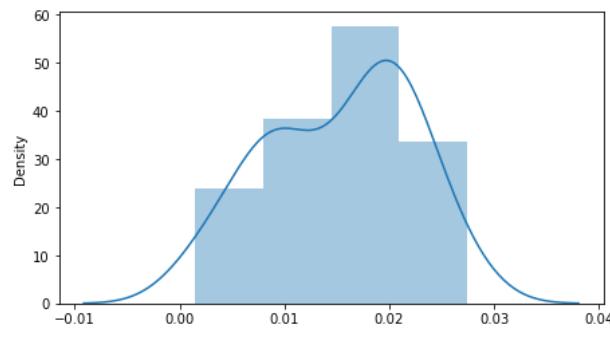
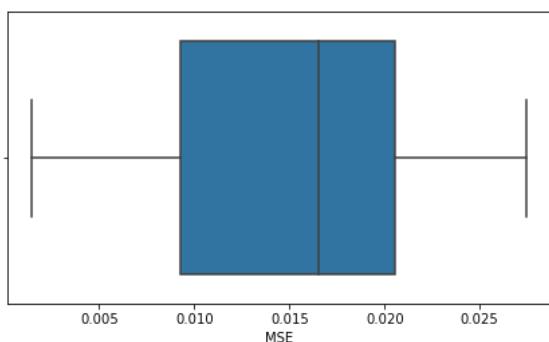
2.500: 0.834, data looks normal (fail to reject H0)

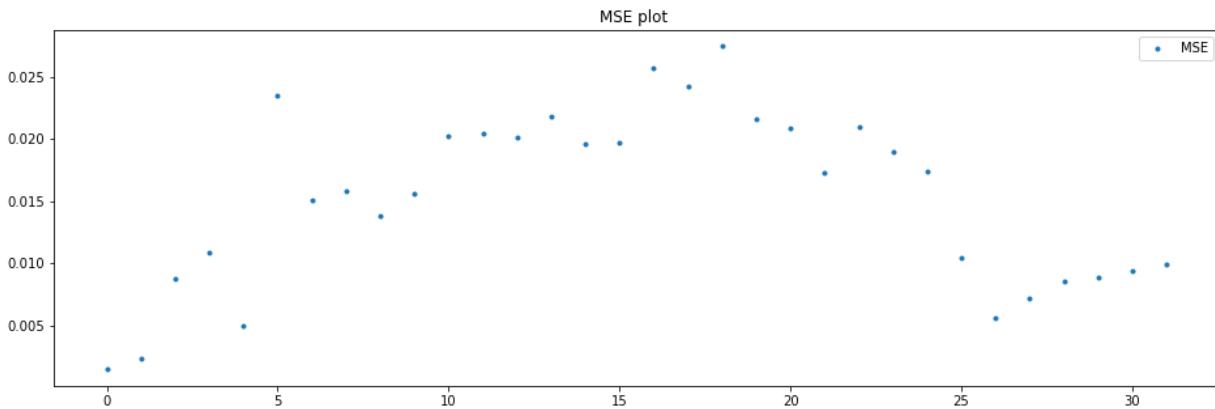
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 109

mean=0.015268125, median=0.016555 , max=0.02746, min=0.00145, variance=4.83371e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.587

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)

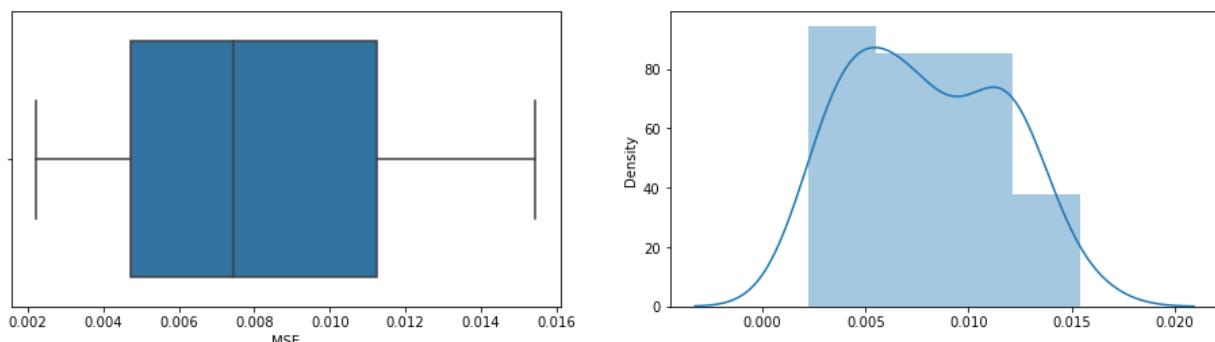
2.500: 0.834, data looks normal (fail to reject H0)

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

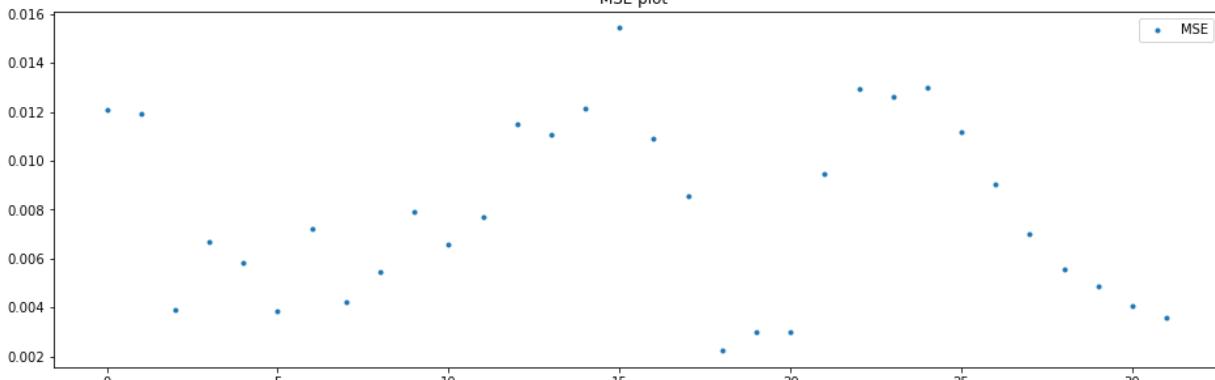
Batch: 110

mean=0.007951875, median=0.007455 , max=0.01544, min=0.00222, variance=1.30486e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 0.602

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)

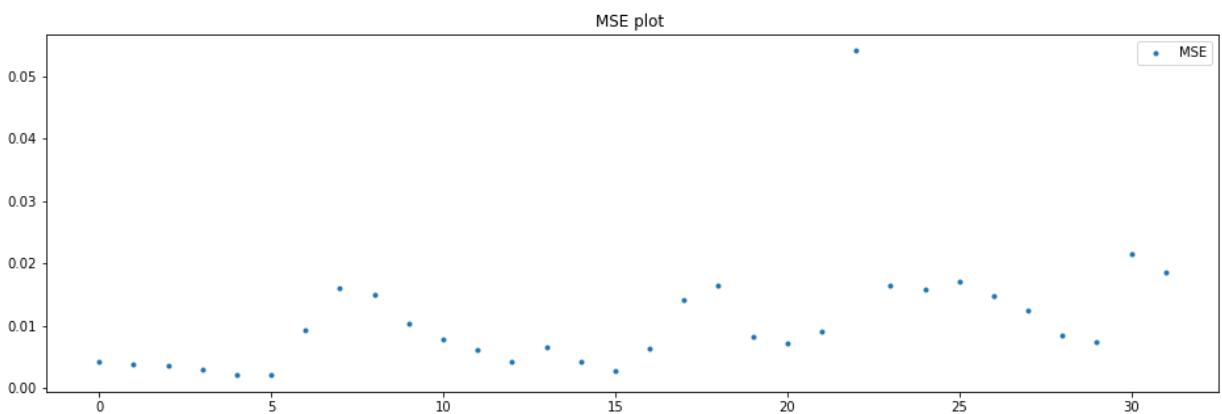
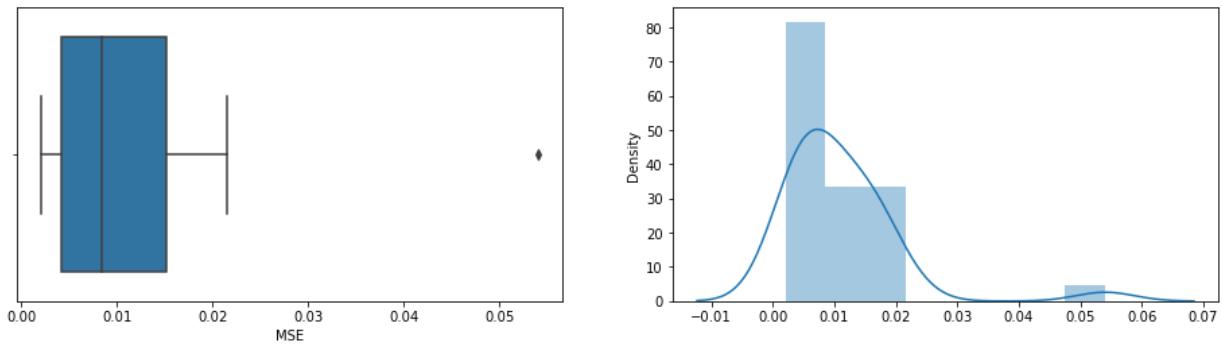
2.500: 0.834, data looks normal (fail to reject H0)

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

Batch: 111

mean=0.010945625, median=0.0084 , max=0.05406, min=0.00206, variance=8.95469e-05

Boxplots and Distribution plot for Reconstruction Error

**Anderson_Darling Test**

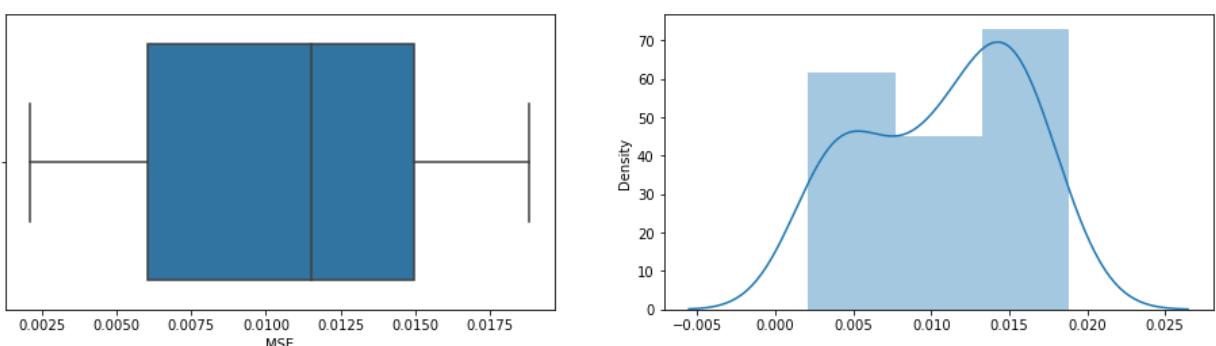
Statistic: 1.996

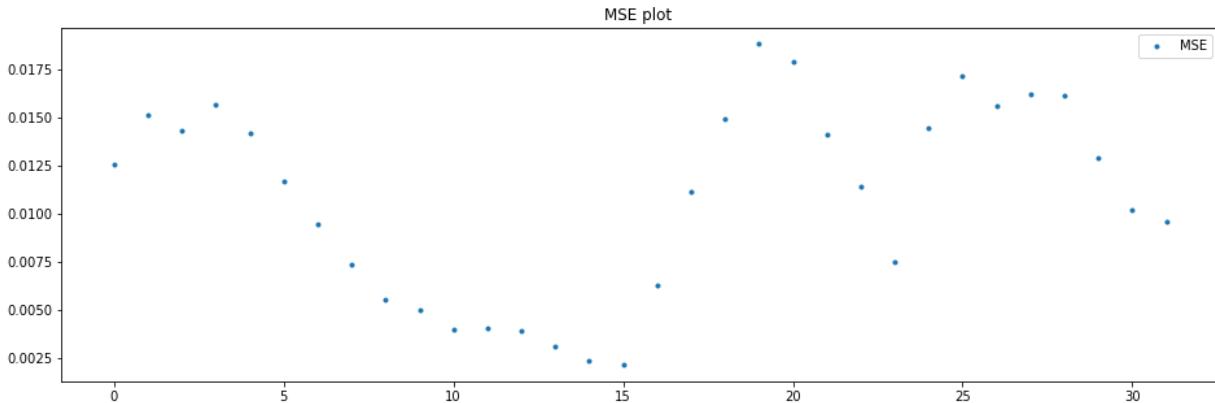
15.000: 0.523, data does not look normal (reject H₀)
 10.000: 0.596, data does not look normal (reject H₀)
 5.000: 0.715, data does not look normal (reject H₀)
 2.500: 0.834, data does not look normal (reject H₀)
 1.000: 0.992, data does not look normal (reject H₀)

Batch: 112

mean=0.0107584375, median=0.01154 , max=0.01881, min=0.00211, variance=2.52259e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.755

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)

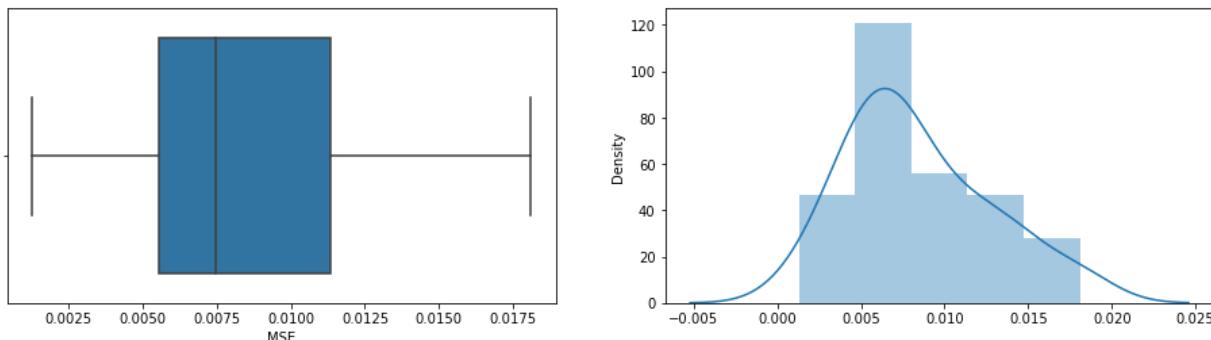
2.500: 0.834, data looks normal (fail to reject H0)

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

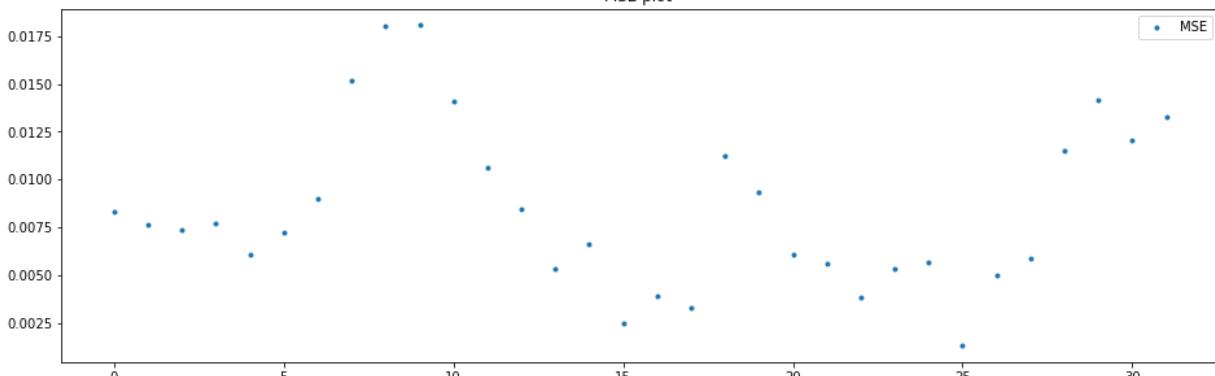
Batch: 113

mean=0.008423125, median=0.00748 , max=0.01808, min=0.00129, variance=1.82134e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 0.610

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

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

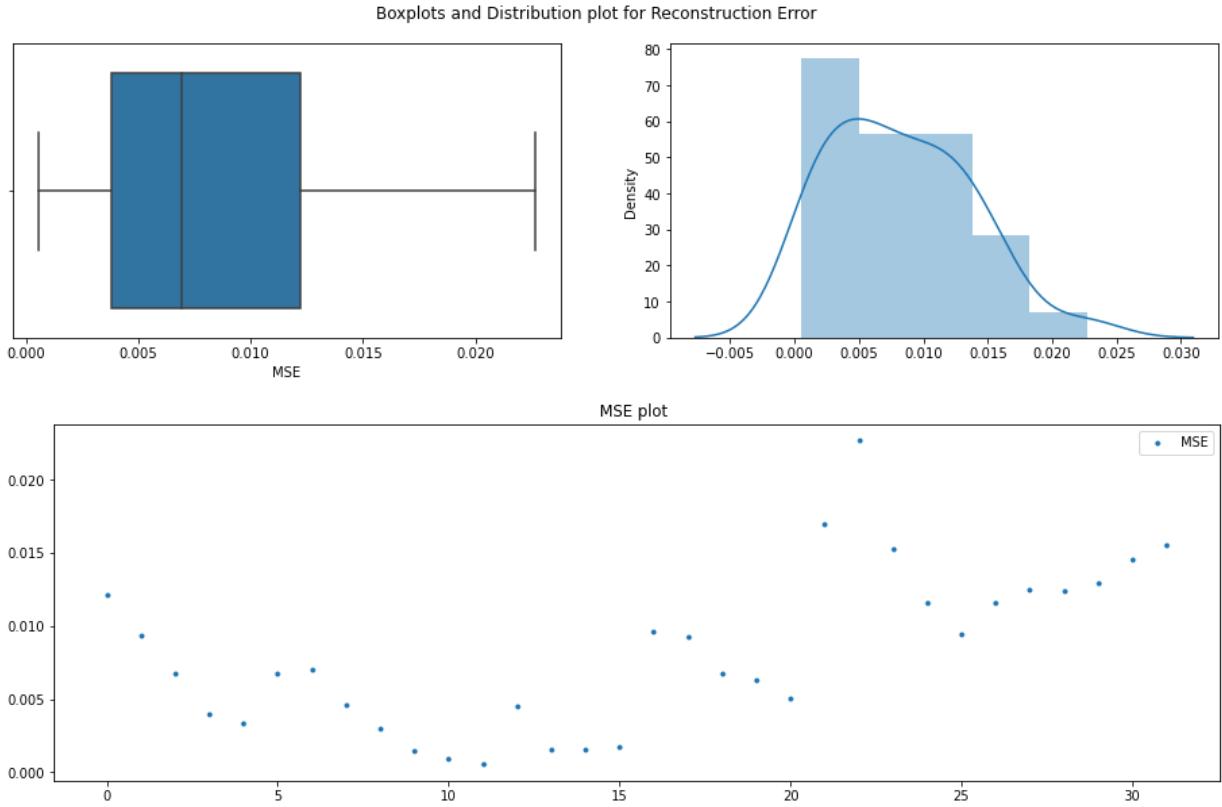
5.000: 0.715, data looks normal (fail to reject H0)

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=0.008188125, median=0.00691 , max=0.0227, min=0.00054, variance=2.93565e-05



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)

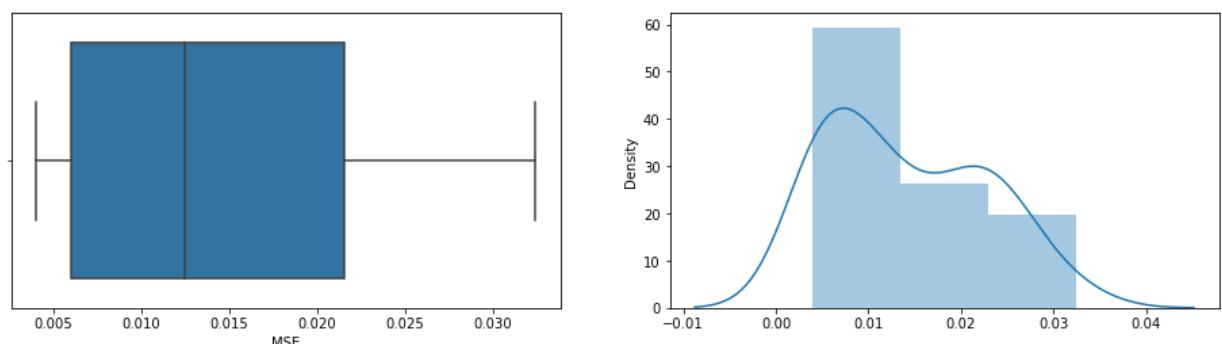
2.500: 0.834, data looks normal (fail to reject H0)

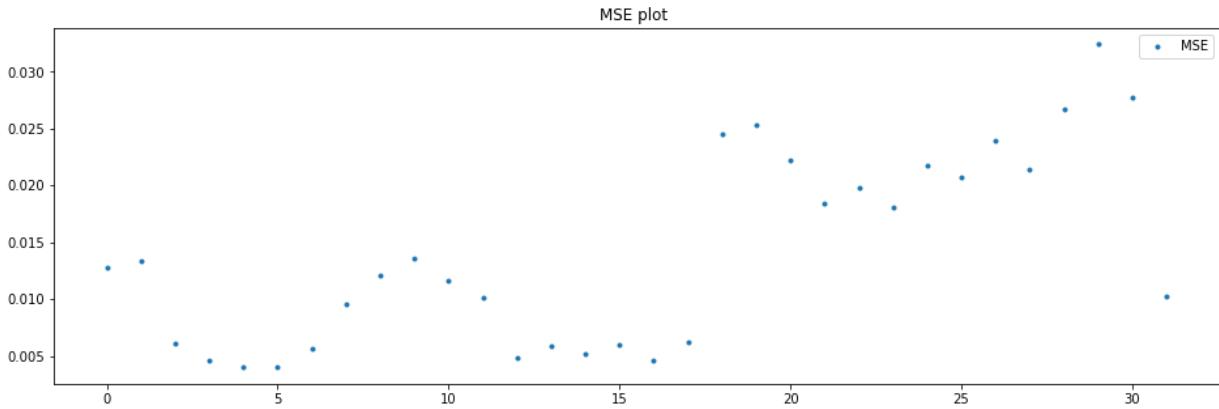
1.000: 0.992, data looks normal (fail to reject H0)

Batch: 115

mean=0.01418, median=0.012495 , max=0.03241, min=0.004, variance=7.01392e-05

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 1.024

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)

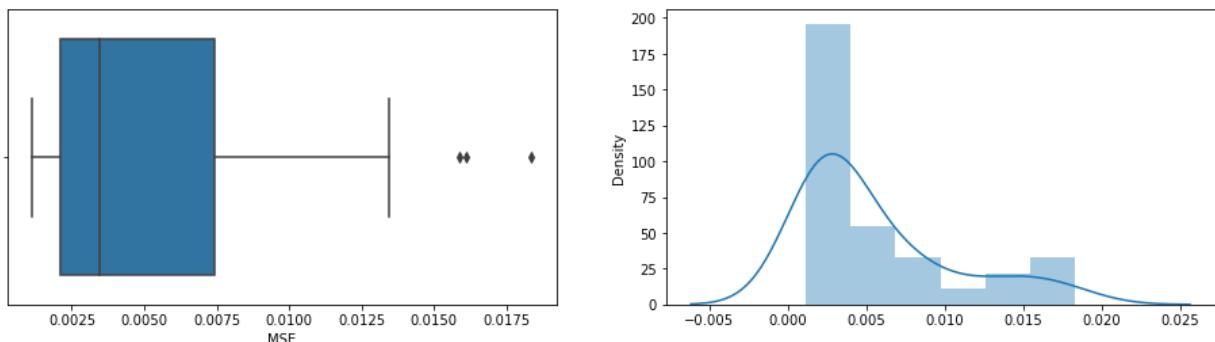
2.500: 0.834, data does not look normal (reject H0)

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

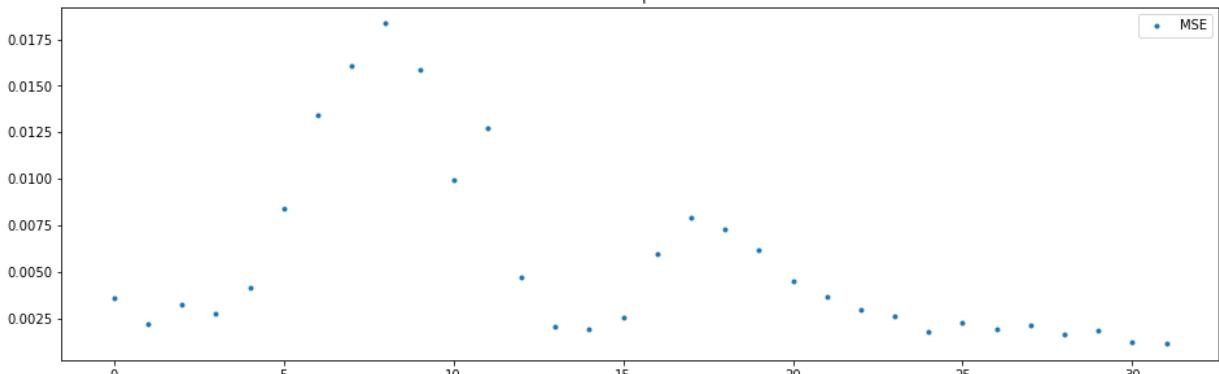
Batch: 116

mean=0.00554, median=0.003435 , max=0.01835, min=0.00113, variance=2.29094e-05

Boxplots and Distribution plot for Reconstruction Error



MSE plot



Anderson_Darling Test

Statistic: 2.559

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)

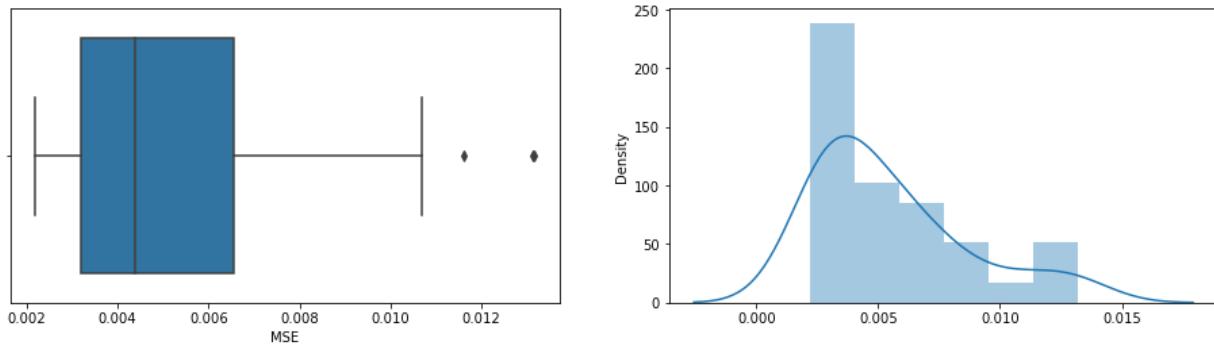
2.500: 0.834, data does not look normal (reject H0)

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

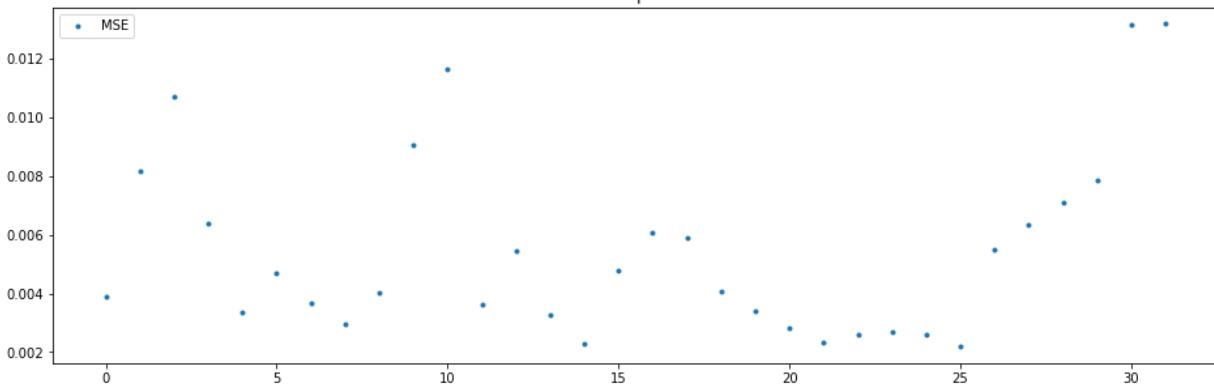
Batch: 117

mean=0.005488125, median=0.00437 , max=0.01317, min=0.00218, variance=9.6815e-06

Boxplots and Distribution plot for Reconstruction Error



MSE plot

**Anderson_Darling Test**

Statistic: 1.492

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)

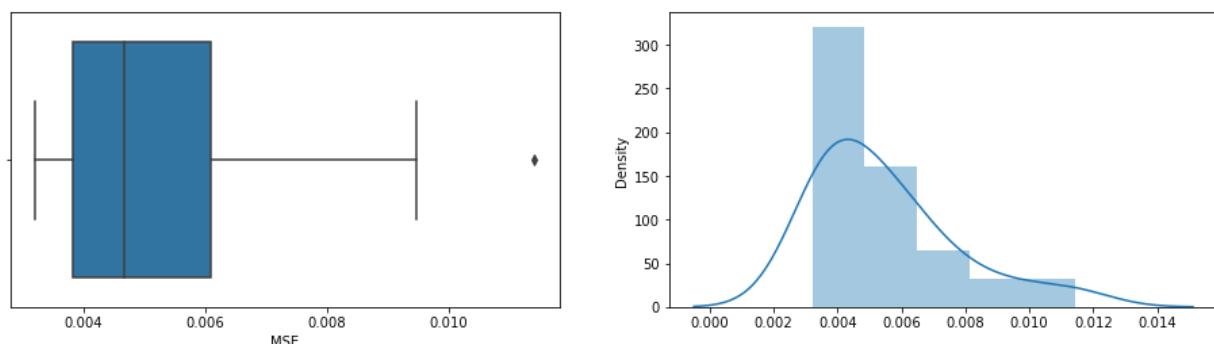
2.500: 0.834, data does not look normal (reject H0)

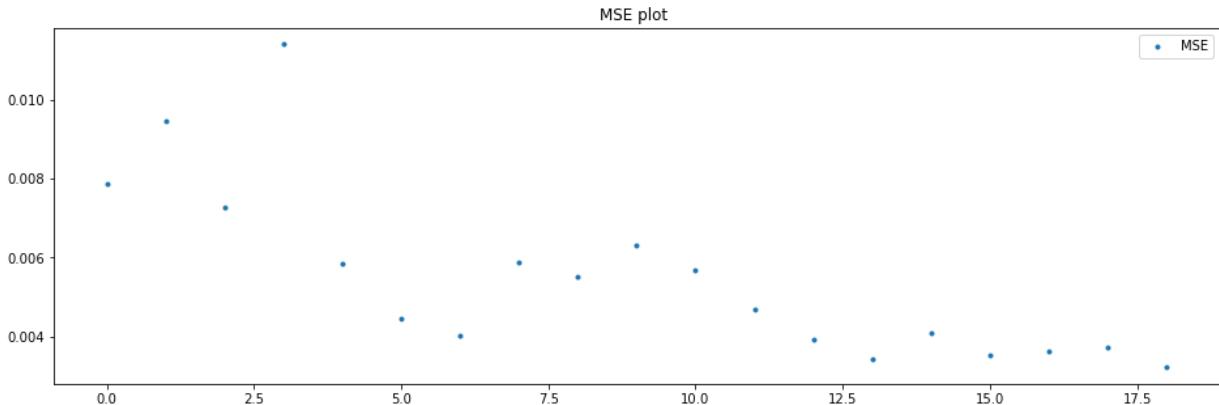
1.000: 0.992, data does not look normal (reject H0)

Batch: 118

mean=0.0054684211, median=0.00467 , max=0.01141, min=0.00321, variance=4.6887e-06

Boxplots and Distribution plot for Reconstruction Error





Anderson_Darling Test

Statistic: 0.923

15.000: 0.505, data does not look normal (reject H0)

10.000: 0.575, data does not look normal (reject H0)

5.000: 0.690, data does not look normal (reject H0)

2.500: 0.804, data does not look normal (reject H0)

1.000: 0.957, data looks normal (fail to reject H0)

Instance Threshold

```
In [58]: instance_thresh_pos,zscore_list_pos=compute_instance_threshold_firstN_batches(batch_r
```



```
In [59]: instance_thresh_pos
```


Out[59]: 0.0426

Batch Threshold

```
In [60]: thres_iqr_batch_pos, thres_zscore_batch_pos=compute_batch_threshold_testdata(batch_a
```



```
In [61]: thres_zscore_batch_pos
```


Out[61]: 0.0397

Count Threshold

```
In [62]: # Counts the MSE values exceeding threshold in each batch
exceed_count_pos,total_pos=threshold_exceed_count(batch_mse_values_pos,instance_thres
```

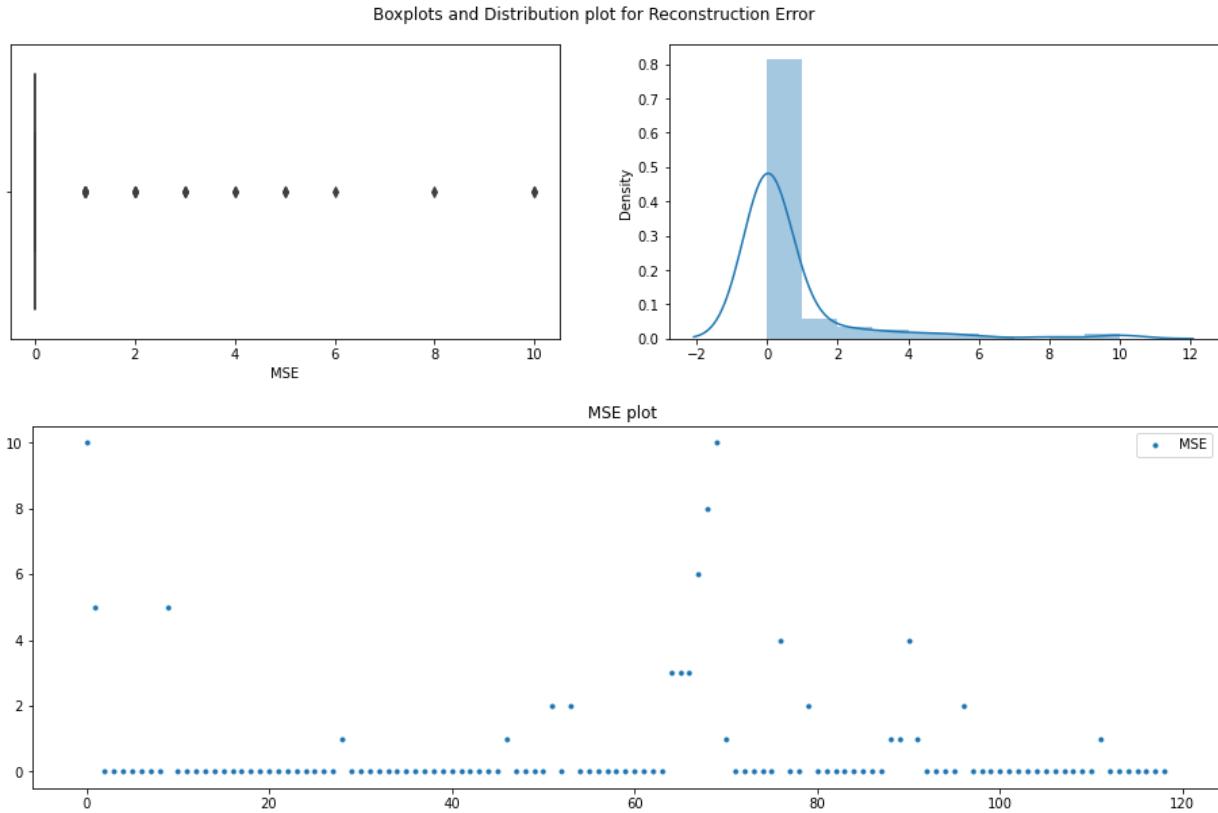


```
In [63]: exceed_list_pos=[]
for key in exceed_count_pos.keys():
    exceed_list_pos.append(exceed_count_pos[key])
```



```
In [64]: plot_results(exceed_list_pos)
```


mean=0.6386554622,median=0.0 ,max=10,min=0,variance=3.2223713015



```
In [65]: exceed_list_pos;
```

```
In [66]: count_thresh_pos=np.median(exceed_list_pos)
```

```
In [67]: count_thresh_pos
```

```
Out[67]: 0.0
```

6. working on stream data without any drift introduced

```
In [68]: stream
```

	day	period	nswprice	nswdemand	vicprice	vicdemand	transfer	class
40780	0.5	0.596	0.073	0.465	0.005	0.570	0.478	UP
40781	0.5	0.617	0.072	0.459	0.005	0.557	0.476	UP
40782	0.5	0.638	0.054	0.452	0.004	0.542	0.495	DOWN
40783	0.5	0.660	0.049	0.456	0.003	0.531	0.518	DOWN
40784	0.5	0.681	0.051	0.461	0.003	0.532	0.504	DOWN
...
45307	1.0	0.915	0.044	0.341	0.003	0.255	0.405	DOWN

	day	period	nswprice	nswdemand	vicprice	vicdemand	transfer	class
45308	1.0	0.936	0.045	0.356	0.003	0.241	0.421	DOWN
45309	1.0	0.957	0.044	0.341	0.003	0.248	0.362	DOWN
45310	1.0	0.979	0.067	0.329	0.005	0.345	0.207	UP
45311	1.0	1.000	0.051	0.289	0.004	0.355	0.231	DOWN

4532 rows × 8 columns

```
In [69]: stream2=stream.copy()
del stream2['class']
```

```
In [70]: stream2
```

	day	period	nswprice	nswdemand	vicprice	vicdemand	transfer
40780	0.5	0.596	0.073	0.465	0.005	0.570	0.478
40781	0.5	0.617	0.072	0.459	0.005	0.557	0.476
40782	0.5	0.638	0.054	0.452	0.004	0.542	0.495
40783	0.5	0.660	0.049	0.456	0.003	0.531	0.518
40784	0.5	0.681	0.051	0.461	0.003	0.532	0.504
...
45307	1.0	0.915	0.044	0.341	0.003	0.255	0.405
45308	1.0	0.936	0.045	0.356	0.003	0.241	0.421
45309	1.0	0.957	0.044	0.341	0.003	0.248	0.362
45310	1.0	0.979	0.067	0.329	0.005	0.345	0.207
45311	1.0	1.000	0.051	0.289	0.004	0.355	0.231

4532 rows × 7 columns

```
In [71]: 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 [73]:

```
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):
        all_excede_list.append(b)# Keep track of batches exceeding layer 2 thresholds

return all_excede_list,mse_list_layer1 , exceed_count_layer1 ,avg_mse_layer2,exceed_count_layer2
```

In [74]:

```
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
                           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={}# Holds average reconstruction error for layer 2
                           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_l2[b],exceed_count_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,mse_dict_L1,exceed_count_L1,avg_mse_l1,layer_one_instance_exceed_list,all_excede_list,exceed_count_L2,avg_mse_l2,layer_two_instance_exceed_list)

                               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(exceed_count_L2[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,all_excede_list,exceed_count_layer2_instance_thresh ,exceed_count_L2,avg_mse_l2,layer_two_instance_exceed_list)
```

In [75]:

```
# This function takes two lists of Batch recon.error values and Exceed Counts along
# If a batch exceeds both thresholds , warning is generated and for 3 consecutive batches
def detect_drift(batch_mse,exceed_list, Thresh,count_thresh):
    n=0 # total number of batches where recon error exceeds threshold
    count=0 ## counts the number of consecutive batches exceeding threshold
    w_index_list=[] # Contains indices of batches where batch recon. error exceeds threshold
    drift_batches=[]
    for i in range(0,len(batch_mse)):
        #print (batch_mse)
        if(((batch_mse[i]>Thresh)) and (exceed_list[i]>count_thresh)):
            print(' Threshold exceeds at batch : {}'.format(i))
            n=n+1

        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)
            w_count+=1

    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)
    print(" Number of Warnings: " + str(n))
```

In [76]:

```
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 : []
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
Batch Number : 38
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
```

```
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]

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 : []

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 : []

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 : []
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 : []

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
```

```
Heloo
```

```
Number of Drifted Batches0
```

```
[]
```

7. Working with Drifted Data

Feature Ranking based on Mutual Information

```
In [77]:
```

```
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 [78]:
```

```
rank_list=feature_rank(data,'class')
```

```
In [79]:
```

```
rank_list
```

```
Out[79]: nswprice      0.169535
          period        0.069585
          vicprice       0.067096
          nswdemand      0.065112
          vicdemand      0.029933
          transfer        0.012664
          day             0.001807
          dtype: float64
```

In [80]: stream

Out[80]:

	day	period	nswprice	nswdemand	vicprice	vicdemand	transfer	class
40780	0.5	0.596	0.073	0.465	0.005	0.570	0.478	UP
40781	0.5	0.617	0.072	0.459	0.005	0.557	0.476	UP
40782	0.5	0.638	0.054	0.452	0.004	0.542	0.495	DOWN
40783	0.5	0.660	0.049	0.456	0.003	0.531	0.518	DOWN
40784	0.5	0.681	0.051	0.461	0.003	0.532	0.504	DOWN
...
45307	1.0	0.915	0.044	0.341	0.003	0.255	0.405	DOWN
45308	1.0	0.936	0.045	0.356	0.003	0.241	0.421	DOWN
45309	1.0	0.957	0.044	0.341	0.003	0.248	0.362	DOWN
45310	1.0	0.979	0.067	0.329	0.005	0.345	0.207	UP
45311	1.0	1.000	0.051	0.289	0.004	0.355	0.231	DOWN

4532 rows × 8 columns

In [81]:

```
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 [82]: stream_top25,stream_bottom25=inject_sudden_drift(stream,rank_list,batch_size=32,fper=0.05)  
  
In [83]: batches_d=make_batches(stream_top25)  
  
In [84]: #batches_d=dict(list(batches_d.items())[:30])
```

Drift Detection through AE-DDM

```
In [85]: 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, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 5

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

Batch Number : 22

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, 22, 23, 24, 25, 26, 27, 28, 29, 30, 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

Batch Number : 23

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 4

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

Batch Number : 25

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: [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 : 26

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, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 8

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

Batch Number : 28

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: [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

Batch Number : 29

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 4

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

Batch Number : 31

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: [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

Batch Number : 32

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, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 5

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

Batch Number : 34

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: [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

Batch Number : 35

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, 12, 13, 14, 16, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 17

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, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 25

Batch Number : 37

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

Batch Number : 38

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 12, 13, 14, 15, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 11, 12, 13, 14, 15]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 9

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: [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: 19

Batch Number : 40

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: [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

Batch Number : 41

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, 12, 14, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 9

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

Batch Number : 43

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: [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

Batch Number : 44

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, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 6

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, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 24

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: [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

Batch Number : 47

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, 12, 13, 14, 15, 16, 17, 18, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 13

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

Batch Number : 49

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: [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

Batch Number : 50

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 24, 25, 26, 2

7, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 5

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

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: [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 : 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, 26, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 9

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

Batch Number : 55

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, 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

Batch Number : 56

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, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 6

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, 29, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 22

Batch Number : 58

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, 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

Batch Number : 59

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 25, 26, 27, 2

8, 29, 30, 31]

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 : 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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

Batch Number : 61

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: [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 : 62

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 4

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

Batch Number : 64

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: [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

Batch Number : 65

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 4

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

Batch Number : 67

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: [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

Batch Number : 68

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, 14, 15, 16, 17, 18, 19, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 14

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

Batch Number : 70

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: [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

Batch Number : 71

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 4

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

Batch Number : 73

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: [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

Batch Number : 74

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 4

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

Batch Number : 76

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: [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

Batch Number : 77

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, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 5

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, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 21

Batch Number : 79

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: [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

Batch Number : 80

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 4

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

Batch Number : 82

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, 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 : 83

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 4

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

Batch Number : 85

Data Points Exceeding Layer 1 Encoder Instance Threshold : [1, 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: [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

Batch Number : 86

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 4

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

Batch Number : 88

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: [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 : 89

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, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 9

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

Batch Number : 91

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: [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

Batch Number : 92

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

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

Batch Number : 94

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: [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

Batch Number : 95

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, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 6

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

Batch Number : 97

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: [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

Batch Number : 98

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, 14, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 9

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, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 24

Batch Number : 100

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, 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: 27

Batch Number : 101

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 4

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

Batch Number : 103

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

Batch Number : 104

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, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 5

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

Batch Number : 106

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: [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 : 107

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, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 6

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

Batch Number : 109

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

Batch Number : 110

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, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 8

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

Batch Number : 112

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: [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

Batch Number : 113

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 4

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

Batch Number : 115

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: [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

Batch Number : 116

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, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 5

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

Batch Number : 118

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: [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

Batch Number : 119

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 22, 24, 26, 27, 28, 29, 30, 31]

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 : 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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

Batch Number : 121

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: [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 : 122

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, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 6

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

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: [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 : 125

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, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 7

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

Batch Number : 127

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

Batch Number : 128

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 18, 20, 21, 22, 23, 24, 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

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

Batch Number : 130

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: [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 : 131

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, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 7

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

Batch Number : 133

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: [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

Batch Number : 134

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, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 5

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

Batch Number : 136

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: [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 : 137

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, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 7

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

Batch Number : 139

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: [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 : 140

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]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 4

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

Heloo

Threshold exceeds at batch : 21
[21]
Warning Level at Batch 21
Threshold exceeds at batch : 22
[21, 22]
Warning Level at Batch 22
Threshold exceeds at batch : 24
[24]
Warning Level at Batch 24
Threshold exceeds at batch : 25
[24, 25]
Warning Level at Batch 25
Threshold exceeds at batch : 26
[24, 25, 26]
Drift Confirmed at Batch No : 24
Threshold exceeds at batch : 27
[24, 25, 26, 27]
Drift Confirmed at Batch No : 25
Threshold exceeds at batch : 28
[24, 25, 26, 27, 28]
Drift Confirmed at Batch No : 26
Threshold exceeds at batch : 30
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 31
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 33
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 34
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 35
[24, 25, 26, 27, 28]
Drift Confirmed at Batch No : 33
Threshold exceeds at batch : 36
[24, 25, 26, 27, 28]
Drift Confirmed at Batch No : 34
Threshold exceeds at batch : 37
[24, 25, 26, 27, 28]
Drift Confirmed at Batch No : 35
Threshold exceeds at batch : 38
[24, 25, 26, 27, 28]
Drift Confirmed at Batch No : 36
Threshold exceeds at batch : 39
[24, 25, 26, 27, 28]

```
Drift Confirmed at Batch No : 37
Threshold exceeds at batch : 40
[24, 25, 26, 27, 28]
Drift Confirmed at Batch No : 38
Threshold exceeds at batch : 42
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 43
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 45
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 46
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 47
[24, 25, 26, 27, 28]
Drift Confirmed at Batch No : 45
Threshold exceeds at batch : 48
[24, 25, 26, 27, 28]
Drift Confirmed at Batch No : 46
Threshold exceeds at batch : 49
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 51
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 52
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 54
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 55
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 57
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 58
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 60
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 61
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 63
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 64
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 66
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 67
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 68
[24, 25, 26, 27, 28]
Drift Confirmed at Batch No : 66
Threshold exceeds at batch : 69
[24, 25, 26, 27, 28]
Drift Confirmed at Batch No : 67
Threshold exceeds at batch : 70
[24, 25, 26, 27, 28]
Drift Confirmed at Batch No : 68
Threshold exceeds at batch : 72
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 73
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 75
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 76
[24, 25, 26, 27, 28]
```

```
Threshold exceeds at batch : 78
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 79
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 81
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 82
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 84
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 85
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 87
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 88
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 89
[24, 25, 26, 27, 28]
Drift Confirmed at Batch No : 87
Threshold exceeds at batch : 90
[24, 25, 26, 27, 28]
Drift Confirmed at Batch No : 88
Threshold exceeds at batch : 91
[24, 25, 26, 27, 28]
Drift Confirmed at Batch No : 89
Threshold exceeds at batch : 92
[24, 25, 26, 27, 28]
Drift Confirmed at Batch No : 90
Threshold exceeds at batch : 93
[24, 25, 26, 27, 28]
Drift Confirmed at Batch No : 91
Threshold exceeds at batch : 94
[24, 25, 26, 27, 28]
Drift Confirmed at Batch No : 92
Threshold exceeds at batch : 96
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 97
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 98
[24, 25, 26, 27, 28]
Drift Confirmed at Batch No : 96
Threshold exceeds at batch : 99
[24, 25, 26, 27, 28]
Drift Confirmed at Batch No : 97
Threshold exceeds at batch : 100
[24, 25, 26, 27, 28]
Drift Confirmed at Batch No : 98
Threshold exceeds at batch : 102
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 103
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 105
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 106
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 108
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 109
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 110
[24, 25, 26, 27, 28]
Drift Confirmed at Batch No : 108
```

```
Threshold exceeds at batch : 111
[24, 25, 26, 27, 28]
Drift Confirmed at Batch No : 109
Threshold exceeds at batch : 112
[24, 25, 26, 27, 28]
Drift Confirmed at Batch No : 110
Threshold exceeds at batch : 114
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 115
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 117
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 118
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 120
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 121
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 123
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 124
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 126
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 127
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 129
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 130
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 131
[24, 25, 26, 27, 28]
Drift Confirmed at Batch No : 129
Threshold exceeds at batch : 132
[24, 25, 26, 27, 28]
Drift Confirmed at Batch No : 130
Threshold exceeds at batch : 133
[24, 25, 26, 27, 28]
Drift Confirmed at Batch No : 131
Threshold exceeds at batch : 135
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 136
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 138
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 139
[24, 25, 26, 27, 28]
Threshold exceeds at batch : 141
[24, 25, 26, 27, 28]
Number of Drifted Batches30
[24, 25, 26, 33, 34, 35, 36, 37, 38, 39, 45, 46, 47, 66, 67, 68, 87, 88, 89, 90, 91, 92, 96, 97, 98, 108, 109, 110, 129, 130, 131]
```

Students t Test

In [86]:

```
# 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 [87]:

```
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 [88]:

```
perform_t_test()
```

```
Layer 1 Reconstruction Error Values for Normal and Drifted Data
Test statistic is 23.085067
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 -23.503824
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 24.799264
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 18.843229
 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.

Drift Analysis Through Plots

In [89]:

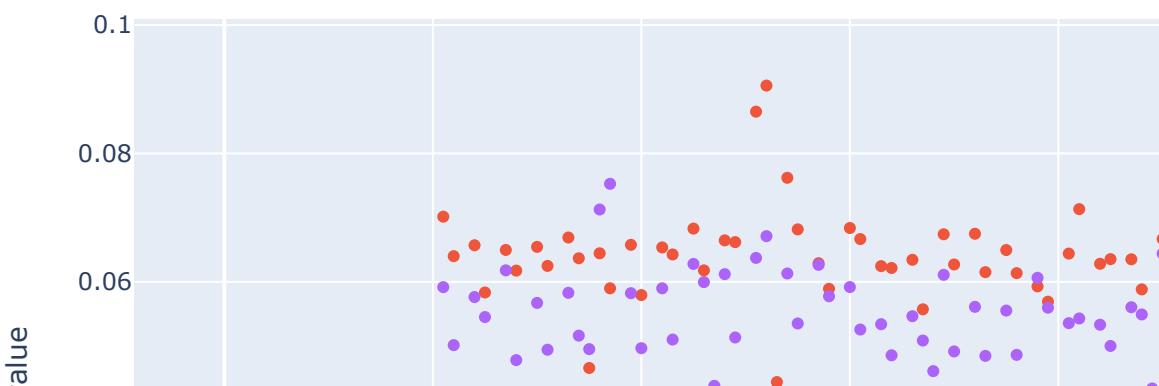
```
def visual_analysis():
    df_plotting=pd.DataFrame()
    df_plotting['mse_list_layer1_n']=mse_list_layer1_n
    df_plotting['mse_list_layer1_d']=mse_list_layer1_d
    df_plotting['avg_mse_l2_list_d']=list(avg_mse_l2_list_d.values())
    df_plotting['avg_mse_l2_list_n']=list(avg_mse_l2_list_n.values())
    df_plotting['exceed_count_list_layer1_n']=exceed_count_list_layer1_n
    df_plotting['exceed_count_list_layer1_d']=exceed_count_list_layer1_d
    df_plotting['exceed_count_L2_countThresh_n']=list(exceed_count_L2_countThresh_n)
    df_plotting['exceed_count_L2_countThresh_d']=list(exceed_count_L2_countThresh_d)

    from plotly import express as px
    fig = px.scatter(df_plotting, x=df_plotting.index, y=[df_plotting['mse_list_layer1_n'],
    fig.show()
    fig2 = px.scatter(df_plotting, x=df_plotting.index, y=[df_plotting['exceed_count_list_layer1_n'],
    fig2.show()
    return df_plotting
```

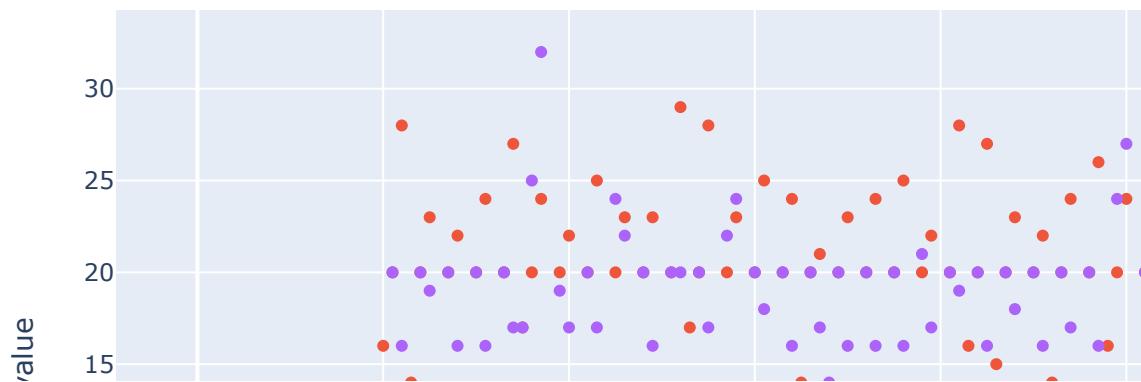
In [90]:

```
df_plotting=visual_analysis()
```

Reconstruction Error Plots



Exceed Count Plots



Effect on Classification Performance

In [91]:

train

Out[91]:

	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

	day	period	nswprice	nswdemand	vicprice	vicdemand	transfer	class
4	0.167	0.085	0.042	0.251	0.003	0.423	0.415	DOWN
...
31713	0.500	0.702	0.091	0.716	0.006	0.828	0.155	UP
31714	0.500	0.723	0.040	0.671	0.003	0.758	0.297	DOWN
31715	0.500	0.745	0.039	0.639	0.003	0.715	0.378	DOWN
31716	0.500	0.766	0.035	0.599	0.002	0.658	0.410	DOWN
31717	0.500	0.787	0.045	0.599	0.003	0.627	0.416	DOWN

31718 rows × 8 columns

In [92]:

```
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 [93]:

```
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 [94]:

```
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 : 0.9997162494482628 , Test Accuracy :0.6894725226219378  
Train Recall Score : 0.9997013811123554 , Test Recall Score :0.7148880105401845  
Train Precision Score: 0.9996267542550015 , Test Precision score: 0.658495145631068  
Train f1 Score: 0.9996640662909186 , Test f1 socre score: 0.6103487064116986  
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 :0.6351798719929376  
Train Recall Score : 0.9994774169466218 , Test Recall Score :0.6787878787878788  
Train Precision Score: 1.0 , Test Precision score: 0.6091274532986521  
Train f1 Score: 0.9997386401822052 , Test f1 socre score: 0.5524340553291872  
Training MLP:  
Train Accuracy : 0.7903398701053029 , Test Accuracy :0.6934451555947915  
Train Recall Score : 0.662635311683464 , Test Recall Score :0.6392621870882741  
Train Precision Score: 0.8063959298628146 , Test Precision score: 0.635910878112713  
Train f1 Score: 0.727481353987378 , Test f1 socre score: 0.6325945241199479
```

```
In [95]: 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 [96]: 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: 0.769
Precision:0.833
F1_Score:0.8
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 :0.719
Recall: 0.615
Precision:0.667
F1_Score:0.64
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 :0.719
Recall: 0.867
Precision:0.65
F1_Score:0.743
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 :0.688
Recall: 0.769
Precision:0.588
F1_Score:0.667
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 :0.969
Recall: 1.0
Precision:0.964
F1_Score:0.982
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 :0.688
Recall: 0.889
Precision:0.471
F1_Score:0.615
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 :0.688
Recall: 0.556
Precision:0.455
F1_Score:0.5
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 :0.719
Recall: 0.824
Precision:0.7
F1_Score:0.757
Batch 6:MLP
Accuracy :0.531
Recall: 0.647
Precision:0.55
F1_Score:0.595
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 :0.938
Recall: 0.967
Precision:0.967
F1_Score:0.967
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 :0.938
Recall: 1.0
Precision:0.926
F1_Score:0.962
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 :0.969
Recall: 1.0
Precision:0.962
F1_Score:0.98
Batch 9:LogReg
Accuracy :0.5
Recall: 1.0
Precision:0.273
F1_Score:0.429
Batch 9:RF
Accuracy :0.531
Recall: 1.0
Precision:0.286
F1_Score:0.444
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 :0.531
Recall: 1.0
Precision:0.286
F1_Score:0.444
Batch 10:LogReg
Accuracy :0.906
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 10:RF
Accuracy :0.875
Recall: 1.0
Precision:0.765
F1_Score:0.867
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 :0.75
Recall: 0.846
Precision:0.647
F1_Score:0.733
```

```
Batch 10:MLP
Accuracy :0.938
Recall: 1.0
Precision:0.867
F1_Score:0.929
Batch 11:LogReg
Accuracy :0.969
Recall: 1.0
Precision:0.952
F1_Score:0.976
Batch 11:RF
Accuracy :0.938
Recall: 0.95
Precision:0.95
F1_Score:0.95
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 :0.938
Recall: 1.0
Precision:0.909
F1_Score:0.952
Batch 12:LogReg
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 12:RF
Accuracy :0.938
Recall: 1.0
Precision:0.867
F1_Score:0.929
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 :0.781
Recall: 0.923
Precision:0.667
F1_Score:0.774
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 :0.875
Recall: 1.0
Precision:0.857
F1_Score:0.923
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 :0.812
Recall: 0.958
Precision:0.821
F1_Score:0.885
Batch 13:MLP
Accuracy :0.906
Recall: 1.0
Precision:0.889
```

```
F1_Score:0.941
Batch 14:LogReg
Accuracy :0.906
Recall: 0.947
Precision:0.9
F1_Score:0.923
Batch 14:RF
Accuracy :0.969
Recall: 0.947
Precision:1.0
F1_Score:0.973
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 :0.906
Recall: 1.0
Precision:0.864
F1_Score:0.927
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 :0.75
Recall: 1.0
Precision:0.529
F1_Score:0.692
Batch 16:LogReg
Accuracy :0.656
Recall: 0.421
Precision:1.0
F1_Score:0.593
Batch 16:RF
Accuracy :0.812
Recall: 1.0
Precision:0.76
F1_Score:0.864
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 :0.438
Recall: 0.421
Precision:0.533
F1_Score:0.471
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 :0.938
Recall: 0.947
Precision:0.947
F1_Score:0.947
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 :0.844
Recall: 0.895
Precision:0.85
F1_Score:0.872
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 :0.844
Recall: 1.0
Precision:0.792
F1_Score:0.884
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 :0.75
Recall: 0.895
Precision:0.739
F1_Score:0.81
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 :0.938
Recall: 0.966
Precision:0.966
F1_Score:0.966
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 :0.219
```

```
Recall: 0.778
Precision:0.233
F1_Score:0.359
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 :0.25
Recall: 0.667
Precision:0.222
F1_Score:0.333
Batch 20:MLP
Accuracy :0.188
Recall: 0.667
Precision:0.207
F1_Score:0.316
Batch 21:LogReg
Accuracy :0.281
Recall: 0.75
Precision:0.31
F1_Score:0.439
Batch 21:RF
Accuracy :0.344
Recall: 0.917
Precision:0.355
F1_Score:0.512
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 :0.344
Recall: 0.833
Precision:0.345
F1_Score:0.488
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 :0.5
Recall: 0.842
Precision:0.552
F1_Score:0.667
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 :0.094
Recall: 0.429
Precision:0.107
F1_Score:0.171
Batch 25:LogReg
Accuracy :0.688
Recall: 1.0
Precision:0.688
F1_Score:0.815
Batch 25:RF
Accuracy :0.719
Recall: 1.0
Precision:0.71
F1_Score:0.83
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 :0.594
Recall: 0.923
Precision:0.5
F1_Score:0.649
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 :0.438
Recall: 0.923
Precision:0.414
F1_Score:0.571
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 :0.5
Recall: 0.833
Precision:0.536
F1_Score:0.652
Batch 30:LogReg
Accuracy :0.469
Recall: 0.923
Precision:0.429
F1_Score:0.585
Batch 30:RF
Accuracy :0.469
Recall: 0.923
Precision:0.429
F1_Score:0.585
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 :0.562
Recall: 1.0
Precision:0.481
F1_Score:0.65
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 :0.594
Recall: 0.875
Precision:0.56
F1_Score:0.683
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 :0.594
Recall: 0.85
Precision:0.63
F1_Score:0.723
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 :0.625
Recall: 0.9
Precision:0.643
F1_Score:0.75
Batch 32:MLP
Accuracy :0.562
Recall: 0.85
Precision:0.607
F1_Score:0.708
Batch 33:LogReg
Accuracy :0.219
Recall: 0.667
Precision:0.214
F1_Score:0.324
Batch 33:RF
Accuracy :0.25
Recall: 0.778
Precision:0.241
F1_Score:0.368
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 :0.656
Recall: 0.786
Precision:0.579
F1_Score:0.667
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 :0.344
Recall: 0.786
Precision:0.379
F1_Score:0.512
Batch 36:LogReg
Accuracy :0.219
Recall: 0.75
Precision:0.111
F1_Score:0.194
Batch 36:RF
Accuracy :0.406
Recall: 0.75
Precision:0.143
F1_Score:0.24
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 :0.531
Recall: 1.0
Precision:0.5

```
F1_Score:0.667
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 :0.625
Recall: 0.8
Precision:0.741
F1_Score:0.769
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 :0.688
Recall: 0.84
Precision:0.778
F1_Score:0.808
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 :0.406
Recall: 0.786
Precision:0.407
F1_Score:0.537
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 :0.531
Recall: 0.786
Precision:0.478
F1_Score:0.595
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 :0.5
Recall: 1.0
Precision:0.407
F1_Score:0.579
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 :0.656
Recall: 1.0
Precision:0.5
F1_Score:0.667

```
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 :0.562
Recall: 1.0
Precision:0.364
F1_Score:0.533
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 :0.469
Recall: 1.0
Precision:0.37
F1_Score:0.541
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 :0.219
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 44:MLP
Accuracy :0.438
Recall: 1.0
Precision:0.357

F1_Score:0.526
Batch 45:LogReg
Accuracy :0.281
Recall: 1.0
Precision:0.148
F1_Score:0.258
Batch 45:RF
Accuracy :0.5
Recall: 1.0
Precision:0.2
F1_Score:0.333
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 :0.406
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 45:MLP
Accuracy :0.25
Recall: 1.0
Precision:0.143
F1_Score:0.25
Batch 46:LogReg
Accuracy :0.156
Recall: 1.0
Precision:0.156
F1_Score:0.27
Batch 46:RF
Accuracy :0.219
Recall: 1.0
Precision:0.167
F1_Score:0.286
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 :0.219
Recall: 0.667
Precision:0.077
F1_Score:0.138
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 :0.438
Recall: 1.0
Precision:0.333
F1_Score:0.5
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 :0.406
Recall: 1.0
Precision:0.321
F1_Score:0.486
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 :0.844
Recall: 0.931
Precision:0.9
F1_Score:0.915
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 :0.875
Recall: 0.966
Precision:0.903
F1_Score:0.933
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 :0.688
Recall: 0.947
Precision:0.667
F1_Score:0.783
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 :0.469
Recall: 1.0
Precision:0.32
F1_Score:0.485
Batch 51:MLP
Accuracy :0.344
Recall: 1.0
Precision:0.276
F1_Score:0.432
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 :0.75
Recall: 0.92
Precision:0.793
F1_Score:0.852
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 :0.5
Recall: 0.882
Precision:0.517
F1_Score:0.652
Batch 53:MLP
Accuracy :0.469
Recall: 0.824
Precision:0.5
F1_Score:0.622
Batch 54:LogReg
Accuracy :0.5
Recall: 0.875
Precision:0.5
F1_Score:0.636
Batch 54:RF
Accuracy :0.5
Recall: 0.875
Precision:0.5
F1_Score:0.636
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 :0.5
Recall: 0.875
Precision:0.5
F1_Score:0.636
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 :0.75
Recall: 1.0
Precision:0.6
F1_Score:0.75
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 :0.469
Recall: 1.0
Precision:0.414
F1_Score:0.585
Batch 57:LogReg
Accuracy :0.406
Recall: 0.8
Precision:0.429
F1_Score:0.558
Batch 57:RF
Accuracy :0.656
Recall: 0.867
Precision:0.591
F1_Score:0.703
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 :0.406
Recall: 0.8
Precision:0.429
F1_Score:0.558
Batch 58:LogReg
Accuracy :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 58:RF
Accuracy :0.469
Recall: 1.0
Precision:0.414
F1_Score:0.585
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 :0.312
Recall: 0.667
Precision:0.308
F1_Score:0.421
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 :0.812
Recall: 0.833
Precision:0.909
F1_Score:0.87
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 :0.469
Recall: 1.0
Precision:0.433
F1_Score:0.605
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 :0.406
Recall: 1.0
Precision:0.367
F1_Score:0.537
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 :0.156
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 62:MLP
Accuracy :0.125
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 :0.188
Recall: 0.556
Precision:0.185
F1_Score:0.278
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 :0.406
Recall: 0.667
Precision:0.273
F1_Score:0.387
Batch 63:MLP
Accuracy :0.156
Recall: 0.556
Precision:0.179
F1_Score:0.27
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 :0.625
Recall: 0.857
Precision:0.667
F1_Score:0.75
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 :0.594
Recall: 0.857
Precision:0.643
F1_Score:0.735
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 :0.406
Recall: 0.632
Precision:0.5
F1_Score:0.558
Batch 66:MLP
Accuracy :0.531
Recall: 0.842
Precision:0.571
F1_Score:0.681
Batch 67:LogReg
Accuracy :0.531
Recall: 1.0
Precision:0.531
F1_Score:0.694
Batch 67:RF
Accuracy :0.562
Recall: 1.0
Precision:0.548
F1_Score:0.708
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 :0.344
Recall: 1.0
Precision:0.125
```

```
F1_Score:0.222
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 :0.938
Recall: 0.963
Precision:0.963
F1_Score:0.963
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 :0.5
Recall: 0.833
Precision:0.536
F1_Score:0.652
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 :0.531
Recall: 0.889
Precision:0.552
F1_Score:0.681
Batch 71:MLP
Accuracy :0.531
Recall: 0.833
Precision:0.556
F1_Score:0.667
Batch 72:LogReg
Accuracy :0.375
Recall: 0.833
Precision:0.357
F1_Score:0.5
Batch 72:RF
Accuracy :0.375
Recall: 0.833
Precision:0.357
F1_Score:0.5
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: 0.917
Precision:0.407
F1_Score:0.564

```
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 :0.344
Recall: 0.667
Precision:0.091
F1_Score:0.16
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 :0.406
Recall: 0.846
Precision:0.393
F1_Score:0.537
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 :0.469
Recall: 0.923
Precision:0.429
F1_Score:0.585
Batch 74:MLP
Accuracy :0.406
Recall: 0.846
Precision:0.393
F1_Score:0.537
Batch 75:LogReg
Accuracy :0.188
Recall: 0.6
Precision:0.214
F1_Score:0.316
Batch 75:RF
Accuracy :0.219
Recall: 0.6
Precision:0.222
F1_Score:0.324
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 :0.188
Recall: 0.6
Precision:0.214
```

```
F1_Score:0.316
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 :0.469
Recall: 1.0
Precision:0.15
F1_Score:0.261
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 :0.219
Recall: 0.667
Precision:0.077
F1_Score:0.138
Batch 77:MLP
Accuracy :0.219
Recall: 1.0
Precision:0.107
F1_Score:0.194
Batch 78:LogReg
Accuracy :0.312
Recall: 0.667
Precision:0.37
F1_Score:0.476
Batch 78:RF
Accuracy :0.344
Recall: 0.6
Precision:0.375
F1_Score:0.462
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: 1.0
Precision:0.594
F1_Score:0.745
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 :0.812
Recall: 0.957
Precision:0.815
F1_Score:0.88
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 :0.781
Recall: 0.957
Precision:0.786
F1_Score:0.863
Batch 80:MLP
Accuracy :0.812
Recall: 0.957
Precision:0.815
F1_Score:0.88
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 :0.594
Recall: 0.909
Precision:0.455
F1_Score:0.606
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 :0.5
Recall: 0.923
Precision:0.444
F1_Score:0.6
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 :0.438
Recall: 0.857
Precision:0.429
F1_Score:0.571
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 :0.344
Recall: 0.643
Precision:0.36
F1_Score:0.462
Batch 83:MLP
Accuracy :0.406
Recall: 0.786
Precision:0.407
F1_Score:0.537
Batch 84:LogReg
Accuracy :0.344
Recall: 1.0
Precision:0.222
F1_Score:0.364
Batch 84:RF
Accuracy :0.375
Recall: 1.0
Precision:0.231
F1_Score:0.375
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 :0.688
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 84:MLP
Accuracy :0.344
Recall: 1.0
Precision:0.222
F1_Score:0.364
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 :0.375
Recall: 0.9
Precision:0.321
F1_Score:0.474
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 :0.469
Recall: 1.0
Precision:0.19
F1_Score:0.32
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 :0.25
Recall: 1.0
Precision:0.143
F1_Score:0.25
Batch 88:LogReg
Accuracy :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 88:RF
Accuracy :0.719
Recall: 1.0
Precision:0.69
F1_Score:0.816
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 :0.375
Recall: 1.0
Precision:0.048
F1_Score:0.091
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: 0.81
Precision:0.63
F1_Score:0.708
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 :0.5
Recall: 0.714
Precision:0.6
F1_Score:0.652
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 :0.219
Recall: 0.8
Precision:0.143
F1_Score:0.242
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 :0.344
Recall: 0.875
Precision:0.259
F1_Score:0.4
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 :0.688
Recall: 0.6
Precision:0.5
F1_Score:0.545
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 :0.844
Recall: 0.905
Precision:0.864
F1_Score:0.884
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 :0.375
Recall: 1.0
Precision:0.231
F1_Score:0.375
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 :0.438
Recall: 1.0
Precision:0.25
F1_Score:0.4
Batch 95:MLP
Accuracy :0.312
Recall: 1.0
Precision:0.214
F1_Score:0.353
Batch 96:LogReg
Accuracy :0.188
Recall: 1.0
Precision:0.071
F1_Score:0.133

```
Batch 96:RF
Accuracy :0.188
Recall: 1.0
Precision:0.071
F1_Score:0.133
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 :0.188
Recall: 1.0
Precision:0.071
F1_Score:0.133
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 :0.844
Recall: 0.895
Precision:0.85
F1_Score:0.872
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 :0.594
Recall: 0.895
Precision:0.607
F1_Score:0.723
Batch 99:LogReg
Accuracy :0.312
Recall: 1.0
Precision:0.185
F1_Score:0.312
Batch 99:RF
Accuracy :0.406
Recall: 1.0
Precision:0.208

```
F1_Score:0.345
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 :0.312
Recall: 1.0
Precision:0.185
F1_Score:0.312
Batch 100:LogReg
Accuracy :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 100:RF
Accuracy :0.531
Recall: 1.0
Precision:0.516
F1_Score:0.681
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 :0.75
Recall: 0.852
Precision:0.852
F1_Score:0.852
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 :0.75
Recall: 0.852
Precision:0.852
F1_Score:0.852
Batch 101:MLP
Accuracy :0.75
Recall: 0.852
Precision:0.852
F1_Score:0.852
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 :0.656
Recall: 1.0
Precision:0.45
F1_Score:0.621
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 :0.719
Recall: 1.0
Precision:0.625
F1_Score:0.769

```
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 :0.594
Recall: 1.0
Precision:0.536
F1_Score:0.698
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 :0.594
Recall: 0.6
Precision:0.562
F1_Score:0.581
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 :0.406
Recall: 1.0
Precision:0.321
F1_Score:0.486
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 :0.812
Recall: 1.0
Precision:0.6
F1_Score:0.75
Batch 105:MLP
Accuracy :0.438
Recall: 1.0
Precision:0.333
F1_Score:0.5
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 :0.5
Recall: 1.0
Precision:0.429
F1_Score:0.6
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 :0.406
Recall: 1.0
Precision:0.095
F1_Score:0.174
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 :0.188
Recall: 1.0
Precision:0.071
F1_Score:0.133
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 :0.688
Recall: 0.929
Precision:0.591
F1_Score:0.722
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 :0.438
Recall: 0.857
Precision:0.429
F1_Score:0.571
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 :0.844
Recall: 0.952
Precision:0.833
F1_Score:0.889
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 :0.531
Recall: 0.765
Precision:0.542
F1_Score:0.634
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 :0.219
Recall: 0.75
Precision:0.111
F1_Score:0.194
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 :0.406
Recall: 0.5
Precision:0.105
F1_Score:0.174
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 :0.5
Recall: 1.0
Precision:0.36
F1_Score:0.529
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 :0.531
Recall: 0.882
Precision:0.536
F1_Score:0.667
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 :0.25
Recall: 0.75
Precision:0.214
F1_Score:0.333
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 :0.781
Recall: 0.833
Precision:0.789
F1_Score:0.811
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 :0.5
Recall: 0.833
Precision:0.536
F1_Score:0.652
Batch 120:LogReg
Accuracy :0.188
Recall: 1.0
Precision:0.037
F1_Score:0.071
Batch 120:RF
Accuracy :0.375
Recall: 1.0
Precision:0.048
F1_Score:0.091
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 :0.781
Recall: 0.889
Precision:0.857
F1_Score:0.873
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 :0.719
Recall: 0.815
Precision:0.846
F1_Score:0.83
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 :0.406
Recall: 1.0
Precision:0.321
F1_Score:0.486
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: 1.0
Precision:0.375
F1_Score:0.545
Batch 123:MLP
Accuracy :0.438
Recall: 1.0
Precision:0.333
F1_Score:0.5
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 :0.812
Recall: 1.0
Precision:0.739
F1_Score:0.85
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 :0.688
Recall: 1.0
Precision:0.643
F1_Score:0.783
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 :0.688
Recall: 0.944
Precision:0.654
F1_Score:0.773
Batch 125:MLP
Accuracy :0.719
Recall: 1.0
Precision:0.667
F1_Score:0.8
Batch 126:LogReg
Accuracy :0.469
Recall: 1.0
Precision:0.37
F1_Score:0.541
Batch 126:RF
Accuracy :0.438
Recall: 1.0
Precision:0.357
F1_Score:0.526
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 :0.5
Recall: 0.5
Precision:0.312
F1_Score:0.385
Batch 126:MLP
Accuracy :0.469
Recall: 1.0
Precision:0.37
F1_Score:0.541
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 :0.562
Recall: 1.0
Precision:0.5
F1_Score:0.667
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 :0.594
Recall: 1.0
Precision:0.519
F1_Score:0.683
Batch 129:LogReg
Accuracy :0.25
Recall: 1.0
Precision:0.111
F1_Score:0.2
Batch 129:RF
Accuracy :0.438
Recall: 1.0
Precision:0.143
F1_Score:0.25
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 :0.25
Recall: 1.0
Precision:0.04

```
F1_Score:0.077
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 :0.688
Recall: 1.0
Precision:0.583
F1_Score:0.737
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 :0.812
Recall: 0.885
Precision:0.885
F1_Score:0.885
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 :0.906
Recall: 0.952
Precision:0.909
F1_Score:0.93
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 :0.562
Recall: 0.895
Precision:0.586
F1_Score:0.708
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 :0.625
Recall: 0.947
Precision:0.621
F1_Score:0.75

```
Batch 134:MLP
Accuracy :0.562
Recall: 0.842
Precision:0.593
F1_Score:0.696
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 :0.406
Recall: 0.615
Precision:0.364
F1_Score:0.457
Batch 135:MLP
Accuracy :0.312
Recall: 0.692
Precision:0.333
F1_Score:0.45
Batch 136:LogReg
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 136:RF
Accuracy :0.625
Recall: 1.0
Precision:0.613
F1_Score:0.76
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 :0.719
Recall: 0.947
Precision:0.692
F1_Score:0.8
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 :0.625
Recall: 0.9
Precision:0.643
F1_Score:0.75
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: 0.9
Precision:0.643
F1_Score:0.75
Batch 137:MLP
Accuracy :0.656
Recall: 0.9
Precision:0.667

F1_Score:0.766
Batch 138:LogReg
Accuracy :0.438
Recall: 1.0
Precision:0.333
F1_Score:0.5
Batch 138:RF
Accuracy :0.406
Recall: 1.0
Precision:0.321
F1_Score:0.486
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 :0.594
Recall: 0.909
Precision:0.455
F1_Score:0.606
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 :0.406
Recall: 0.909
Precision:0.357
F1_Score:0.513
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 :0.35
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 [97]:

```

## 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']])
    #fig.show()
    #fig2 = px.line(df2, x=df2.index, y=[df2['LogReg_accuracy'],df2['RF_accuracy'],df2['KNN_accuracy'],df2['SVM_accuracy']])
    #fig2.show()

    #fig3 = px.line(df, x=df.index, y=[df['LogReg_recall'],df['RF_recall'],df['KNN_recall'],df['SVM_recall']])
    # fig3.show()
    #fig4 = px.line(df2, x=df2.index,y=[df2['LogReg_recall'],df2['RF_recall'],df2['KNN_recall'],df2['SVM_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']])

    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']])
    #fig6.show()

```

In [98]:

df2

Out[98]:

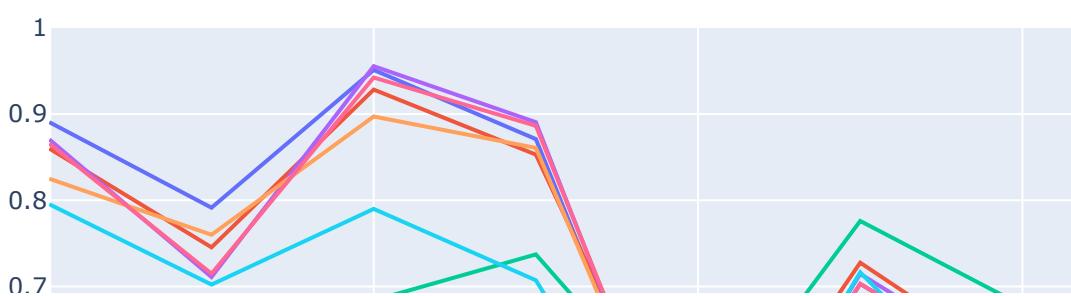
	LogReg_accuracy	LogReg_precision	LogReg_recall	LogReg	RF_accuracy	RF_precision	RF_recall
0	0.8936	0.8408	0.9538	0.8906	0.8502	0.7998	0.9538
1	0.8250	0.7962	0.8850	0.7914	0.7628	0.6670	0.9308
2	0.9438	0.9174	0.9894	0.9512	0.9190	0.8878	0.9794
3	0.8814	0.9544	0.8420	0.8710	0.8312	0.7764	0.9826
4	0.2688	0.2952	0.7048	0.4060	0.3438	0.3254	0.7932
5	0.5752	0.5798	0.9042	0.7030	0.6250	0.6122	0.9042
6	0.4500	0.4500	0.8880	0.5902	0.4626	0.4600	0.9102

	LogReg_accuracy	LogReg_precision	LogReg_recall	LogReg	RF_accuracy	RF_precision	RF_recall
7	0.4188	0.4232	0.8324	0.5344	0.5248	0.4740	0.8244
8	0.5502	0.4932	1.0000	0.6426	0.5564	0.4960	1.0000
9	0.4062	0.3308	1.0000	0.4358	0.4440	0.3354	0.9196
10	0.5688	0.5488	0.9292	0.6750	0.5562	0.5420	0.9292
11	0.5500	0.5582	0.9266	0.6774	0.7062	0.6716	0.9400
12	0.4188	0.3850	0.7112	0.4768	0.4190	0.3830	0.7112
13	0.4624	0.4348	0.9176	0.5538	0.5374	0.4820	0.9176
14	0.4438	0.4448	0.9024	0.5550	0.4438	0.4448	0.9024
15	0.3876	0.3766	0.8534	0.4964	0.4440	0.3870	0.8400
16	0.4936	0.4514	0.9486	0.5876	0.5000	0.4548	0.9628
17	0.3750	0.3036	0.9800	0.4258	0.4626	0.3248	0.9800
18	0.3624	0.3740	0.8320	0.4838	0.3624	0.3740	0.8320
19	0.3436	0.2762	0.9790	0.3952	0.4188	0.3282	0.9790
20	0.5438	0.5346	0.9482	0.6630	0.5376	0.5318	0.9482
21	0.3626	0.2952	1.0000	0.4284	0.4186	0.2986	1.0000
22	0.5626	0.5418	0.9086	0.6464	0.5876	0.5628	0.8944
23	0.3998	0.3968	0.8814	0.5326	0.4436	0.4418	0.8814
24	0.5438	0.5130	0.9704	0.6028	0.5936	0.5248	0.9778
25	0.5314	0.4584	1.0000	0.5986	0.5502	0.4536	1.0000
26	0.5248	0.5302	0.9454	0.6200	0.5936	0.5500	0.9560
27	0.5250	0.5104	0.9184	0.6460	0.5186	0.5070	0.9184
28	0.2690	0.2350	0.9545	0.3540	0.3470	0.2775	0.9545

29 rows × 32 columns

In [99]:

```
df2=df2[0:12]
plt_classification_results(df,df2)
```



B. Bottom 25 Sudden Drift

In [234...]

```
#stream_top25, stream_bottom25=inject_sudden_drift(stream, rank_list, batch_size=32, fper
```

In [100...]

```
batches_d=make_batches(stream_bottom25)
```

In [101...]

```
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, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 12

Batch Number : 25

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 : 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, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 13

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, 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: [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: 28
```

```
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: [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
```

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, 1, 2, 3, 17, 18, 19, 20, 21, 22]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 10

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, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 12

Batch Number : 46

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 : 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, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 14

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]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [1, 2, 3, 4, 5, 15, 17, 19]

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 : [6, 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 : []
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, 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: [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: 28

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: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 24

Batch Number : 58

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 16, 17, 18, 19, 20]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 1

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, 23, 24, 25, 26, 27, 28, 29, 30, 31]
```

Data Points Exceeding Layer 2 Encoder Instance Threshold: [20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 12

Batch Number : 67

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 : 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, 11, 12, 13, 14, 15, 16, 17, 18]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 12

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, 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: [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: 28

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, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 25

Batch Number : 79

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 15, 16, 17, 18, 19, 20, 21, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 2

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, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 12

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

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, 12, 13, 14, 1

5] Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 8

Batch Number : 90

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 17, 19]

```
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, 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: [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: 28

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, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 25

Batch Number : 100

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 17]

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 : [1, 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, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 12

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

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, 11, 12, 13, 14, 15, 16]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 10

Batch Number : 111

Data Points Exceeding Layer 1 Encoder Instance Threshold : [16, 17, 18, 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, 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: [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: 28
```

```
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, 26, 27, 28, 29, 30, 31]
```

```
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 26
```

```
*****
```

```
Batch Number : 121
```

```
Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 15, 16, 17, 18, 20, 31]
```

```
Data Points Exceeding Layer 2 Encoder Instance Threshold: [0]
```

```
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 1
```

```
*****
```

```
Batch Number : 122
```

```
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 : 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, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 12

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

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, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 11, 12, 13, 14, 15, 16]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 10

Batch Number : 132

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 15, 16, 17, 18, 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, 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: [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: 28

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

Heloo

Threshold exceeds at batch : 25
[25]

Warning Level at Batch 25
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 : 45

[45]
Warning Level at Batch 45
Threshold exceeds at batch : 46

[45, 46]
Warning Level at Batch 46
Threshold exceeds at batch : 47

[45, 46, 47]
Drift Confirmed at Batch No : 45

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 : 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 : 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 : 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 : 140
[140]
Warning Level at Batch 140
Threshold exceeds at batch : 141
[140, 141]
Warning Level at Batch 141
Number of Drifted Batches1
[45]
```

In [102...]

```
# 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 9.742533
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 -6.696087
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 6.921165
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.
```

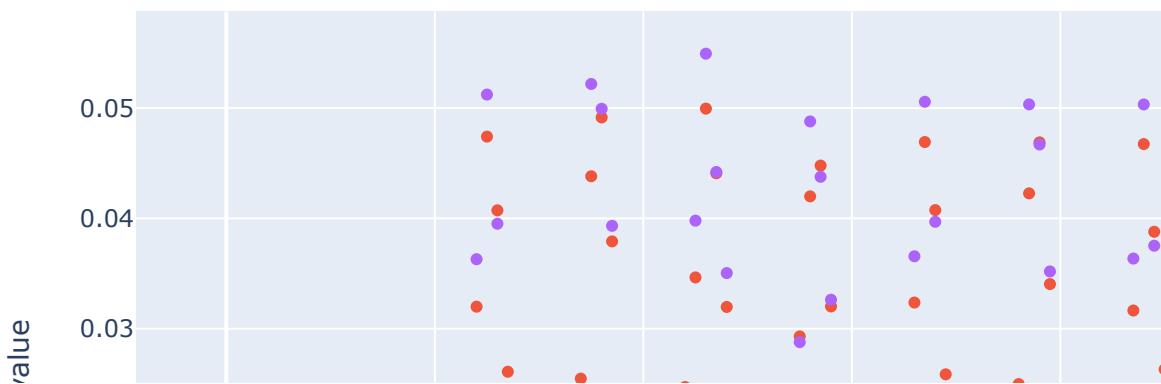
```
Layer 2 Exceed Count Values for Normal and Drifted Data
Test statistic is 5.807580
```

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.

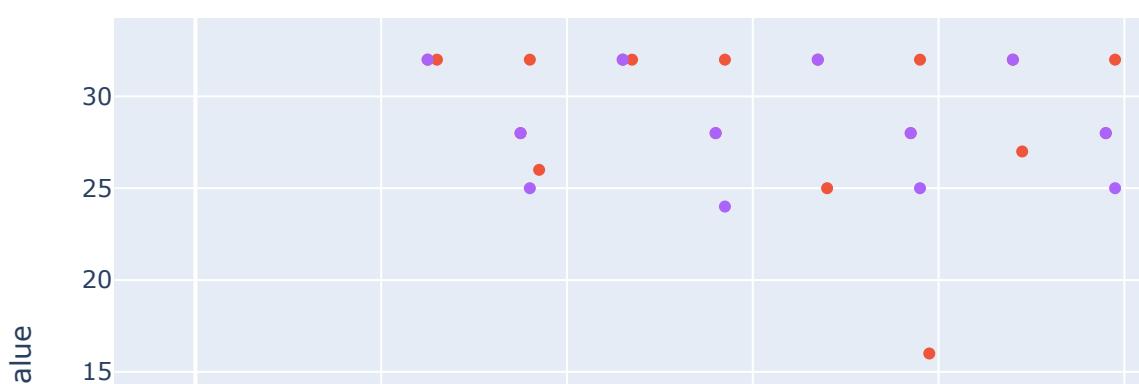
In [103...]

```
df_plotting=visual_analysis()
```

Reconstruction Error Plots



Exceed Count Plots



In [104]:

```
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: 0.769
Precision:0.833
F1_Score:0.8
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 :0.719
Recall: 0.615
Precision:0.667
F1_Score:0.64
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 :0.719
Recall: 0.867
Precision:0.65
F1_Score:0.743
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 :0.688
Recall: 0.769
Precision:0.588
F1_Score:0.667
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 :0.969
Recall: 1.0
Precision:0.964
F1_Score:0.982
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 :0.688
Recall: 0.889
Precision:0.471
F1_Score:0.615
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 :0.688
Recall: 0.556
Precision:0.455
F1_Score:0.5
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 :0.719
Recall: 0.824
Precision:0.7
F1_Score:0.757
Batch 6:MLP
Accuracy :0.531
Recall: 0.647
Precision:0.55
F1_Score:0.595
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 :0.938
Recall: 0.967
Precision:0.967
F1_Score:0.967
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 :0.938
Recall: 1.0
Precision:0.926
F1_Score:0.962
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 :0.969
Recall: 1.0
Precision:0.962
F1_Score:0.98
Batch 9:LogReg
Accuracy :0.5
Recall: 1.0
Precision:0.273
F1_Score:0.429
Batch 9:RF
Accuracy :0.531
Recall: 1.0
Precision:0.286
F1_Score:0.444
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 :0.531
Recall: 1.0
Precision:0.286
F1_Score:0.444
Batch 10:LogReg
Accuracy :0.906
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 10:RF
Accuracy :0.875
Recall: 1.0
Precision:0.765
F1_Score:0.867
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 :0.75
Recall: 0.846
Precision:0.647
F1_Score:0.733
Batch 10:MLP
Accuracy :0.938
Recall: 1.0
Precision:0.867
F1_Score:0.929
Batch 11:LogReg
Accuracy :0.969
Recall: 1.0
Precision:0.952
F1_Score:0.976
Batch 11:RF
Accuracy :0.938
Recall: 0.95
Precision:0.95
F1_Score:0.95
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 :0.938
```

Recall: 1.0
Precision:0.909
F1_Score:0.952
Batch 12:LogReg
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 12:RF
Accuracy :0.938
Recall: 1.0
Precision:0.867
F1_Score:0.929
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 :0.781
Recall: 0.923
Precision:0.667
F1_Score:0.774
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 :0.875
Recall: 1.0
Precision:0.857
F1_Score:0.923
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 :0.812
Recall: 0.958
Precision:0.821
F1_Score:0.885
Batch 13:MLP
Accuracy :0.906
Recall: 1.0
Precision:0.889
F1_Score:0.941
Batch 14:LogReg
Accuracy :0.906
Recall: 0.947
Precision:0.9
F1_Score:0.923
Batch 14:RF
Accuracy :0.969
Recall: 0.947
Precision:1.0
F1_Score:0.973
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 :0.906
Recall: 1.0
Precision:0.864
F1_Score:0.927
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 :0.75
Recall: 1.0
Precision:0.529
F1_Score:0.692
Batch 16:LogReg
Accuracy :0.656
Recall: 0.421
Precision:1.0
F1_Score:0.593
Batch 16:RF
Accuracy :0.812
Recall: 1.0
Precision:0.76
F1_Score:0.864
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 :0.438
Recall: 0.421
Precision:0.533
F1_Score:0.471
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 :0.938
Recall: 0.947
Precision:0.947
F1_Score:0.947
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 :0.844
Recall: 0.895
Precision:0.85
F1_Score:0.872
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 :0.844
Recall: 1.0
Precision:0.792
F1_Score:0.884
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 :0.75
Recall: 0.895
Precision:0.739
F1_Score:0.81
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 :0.938
Recall: 0.966
Precision:0.966
F1_Score:0.966
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 :0.5
Recall: 1.0
Precision:0.36
F1_Score:0.529
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 :0.375
Recall: 0.333
Precision:0.176
F1_Score:0.231
Batch 20:MLP
Accuracy :0.438
Recall: 1.0
Precision:0.333
F1_Score:0.5
Batch 21:LogReg
Accuracy :0.625
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 21:RF
Accuracy :0.625
Recall: 1.0
Precision:0.5

F1_Score:0.667
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 :0.562
Recall: 1.0
Precision:0.44
F1_Score:0.611
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 :0.812
Recall: 0.909
Precision:0.667
F1_Score:0.769
Batch 22:MLP
Accuracy :0.406
Recall: 1.0
Precision:0.367
F1_Score:0.537
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 :0.812
Recall: 1.0
Precision:0.76
F1_Score:0.864
Batch 24:LogReg
Accuracy :0.562
Recall: 1.0
Precision:0.333
F1_Score:0.5
Batch 24:RF
Accuracy :0.625
Recall: 1.0
Precision:0.368
F1_Score:0.538
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 :0.812
Recall: 0.909
Precision:0.833
F1_Score:0.87

```
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 :0.906
Recall: 1.0
Precision:0.85
F1_Score:0.919
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 :0.75
Recall: 0.824
Precision:0.737
F1_Score:0.778
Batch 26:MLP
Accuracy :0.906
Recall: 1.0
Precision:0.85
F1_Score:0.919
Batch 27:LogReg
Accuracy :0.75
Recall: 0.385
Precision:1.0
F1_Score:0.556
Batch 27:RF
Accuracy :0.812
Recall: 1.0
Precision:0.684
F1_Score:0.813
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 :0.531
Recall: 0.846
Precision:0.458
F1_Score:0.595
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 :0.938
Recall: 1.0
Precision:0.923

```
F1_Score:0.96
Batch 29:LogReg
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 29:RF
Accuracy :0.875
Recall: 1.0
Precision:0.818
F1_Score:0.9
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 :0.781
Recall: 0.889
Precision:0.762
F1_Score:0.821
Batch 29:MLP
Accuracy :0.938
Recall: 1.0
Precision:0.9
F1_Score:0.947
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 :0.875
Recall: 1.0
Precision:0.8
F1_Score:0.889
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 :0.906
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 :0.75
Recall: 1.0
Precision:0.529
F1_Score:0.692
Batch 33:RF
Accuracy :0.969
Recall: 1.0
Precision:0.9
F1_Score:0.947
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 :0.75
Recall: 1.0
Precision:0.529
F1_Score:0.692
Batch 34:LogReg
Accuracy :0.562
Recall: 1.0
Precision:0.533
F1_Score:0.696
Batch 34:RF
Accuracy :0.594
Recall: 1.0
Precision:0.552
F1_Score:0.711
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 :0.75
```

Recall: 0.929
Precision:0.65
F1_Score:0.765
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 :0.812
Recall: 1.0
Precision:0.7
F1_Score:0.824
Batch 36:LogReg
Accuracy :0.844
Recall: 0.5
Precision:0.4
F1_Score:0.444
Batch 36:RF
Accuracy :0.562
Recall: 1.0
Precision:0.222
F1_Score:0.364
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 :0.5
Recall: 0.75
Precision:0.167
F1_Score:0.273
Batch 37:LogReg
Accuracy :0.531
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 37:RF
Accuracy :0.625
Recall: 0.2
Precision:1.0
F1_Score:0.333
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 :0.844
Recall: 0.667
Precision:1.0
F1_Score:0.8
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 :0.562
Recall: 0.44
Precision:1.0
F1_Score:0.611
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 :0.812
Recall: 0.714

Precision:0.833
F1_Score:0.769
Batch 39:MLP
Accuracy :0.875
Recall: 0.786
Precision:0.917
F1_Score:0.846
Batch 40:LogReg
Accuracy :0.938
Recall: 0.909
Precision:1.0
F1_Score:0.952
Batch 40:RF
Accuracy :0.938
Recall: 1.0
Precision:0.917
F1_Score:0.957
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 :0.719
Recall: 0.727
Precision:0.842
F1_Score:0.78
Batch 40:MLP
Accuracy :0.938
Recall: 0.909
Precision:1.0
F1_Score:0.952
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 :0.906
Recall: 0.957
Precision:0.917
F1_Score:0.936
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 :0.844
Recall: 1.0
Precision:0.667
F1_Score:0.8
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 :0.625
Recall: 0.9
Precision:0.45
F1_Score:0.6
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 :0.469
Recall: 1.0
Precision:0.19
F1_Score:0.32
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 :0.656
Recall: 1.0
Precision:0.267
F1_Score:0.421
Batch 45:MLP
Accuracy :0.531
Recall: 1.0
Precision:0.211
F1_Score:0.348
Batch 46:LogReg
```

Accuracy :0.906
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 46:RF
Accuracy :0.312
Recall: 1.0
Precision:0.185
F1_Score:0.312
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 :0.312
Recall: 1.0
Precision:0.185
F1_Score:0.312
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 :0.906
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 47:MLP
Accuracy :0.969
Recall: 1.0
Precision:0.75
F1_Score:0.857
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 :0.75
Recall: 0.111
Precision:1.0
F1_Score:0.2
Batch 49:LogReg
Accuracy :0.25
Recall: 0.172
Precision:1.0
F1_Score:0.294
```

```
Batch 49:RF
Accuracy :0.812
Recall: 0.793
Precision:1.0
F1_Score:0.885
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 :0.594
Recall: 0.586
Precision:0.944
F1_Score:0.723
Batch 49:MLP
Accuracy :0.594
Recall: 0.552
Precision:1.0
F1_Score:0.711
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 :0.844
Recall: 0.842
Precision:0.889
F1_Score:0.865
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 :0.688
Recall: 0.75
Precision:0.429
F1_Score:0.545
Batch 51:MLP
Accuracy :0.75
Recall: 1.0
Precision:0.5
F1_Score:0.667
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 :0.781
Recall: 0.92
Precision:0.821
F1_Score:0.868
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 :0.781
Recall: 1.0
Precision:0.708
F1_Score:0.829
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: 0.765
Precision:0.722
F1_Score:0.743
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 :0.812
Recall: 1.0
Precision:0.727
F1_Score:0.842
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 :0.875
Recall: 1.0
Precision:0.871
F1_Score:0.931
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 :0.844
Recall: 0.926
Precision:0.893
F1_Score:0.909
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 :0.719
Recall: 1.0
Precision:0.625
F1_Score:0.769
Batch 58:LogReg
Accuracy :0.844
Recall: 0.583
Precision:1.0
F1_Score:0.737
Batch 58:RF
Accuracy :0.75
Recall: 1.0
Precision:0.6
F1_Score:0.75
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 :0.594
Recall: 0.75
Precision:0.474
F1_Score:0.581
Batch 58:MLP
Accuracy :0.688
Recall: 1.0
Precision:0.545
F1_Score:0.706
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 :0.469
Recall: 0.5
Precision:0.706
F1_Score:0.585
Batch 59:MLP
Accuracy :1.0
Recall: 1.0
Precision:1.0

```
F1_Score:1.0
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 :0.312
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 60:MLP
Accuracy :0.625
Recall: 1.0
Precision:0.52
F1_Score:0.684
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 :0.344
Recall: 0.818
Precision:0.321
F1_Score:0.462
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 :0.469
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 :0.625
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 :0.812
Recall: 0.667
Precision:0.667
F1_Score:0.667
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 :0.75
Recall: 0.778
Precision:0.538
F1_Score:0.636
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 :0.594
Recall: 0.6
Precision:0.947
F1_Score:0.735
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 :0.969
Recall: 1.0
Precision:0.955
F1_Score:0.977
Batch 66:LogReg
Accuracy :0.875
Recall: 1.0
Precision:0.826
F1_Score:0.905
Batch 66:RF
Accuracy :0.938
```

Recall: 1.0
Precision:0.905
F1_Score:0.95
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 :0.594
Recall: 0.579
Precision:0.688
F1_Score:0.629
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 :0.781
Recall: 0.333
Precision:0.167
F1_Score:0.222
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 :0.406
Recall: 0.333
Precision:0.056
F1_Score:0.095
Batch 68:MLP
Accuracy :0.656
Recall: 1.0
Precision:0.214
F1_Score:0.353
Batch 69:LogReg
Accuracy :0.75
Recall: 0.111
Precision:1.0
F1_Score:0.2
Batch 69:RF
Accuracy :0.906
Recall: 0.667
Precision:1.0
F1_Score:0.8
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 :0.531
Recall: 0.333
Precision:0.25
F1_Score:0.286
Batch 69:MLP
Accuracy :0.812
Recall: 0.667
Precision:0.667
F1_Score:0.667
Batch 70:LogReg
Accuracy :0.938
Recall: 0.926
Precision:1.0
F1_Score:0.962
Batch 70:RF
Accuracy :0.969
Recall: 0.963
Precision:1.0
F1_Score:0.981
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: 0.889

Precision:0.923
F1_Score:0.906
Batch 70:MLP
Accuracy :0.906
Recall: 0.926
Precision:0.962
F1_Score:0.943
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 :0.812
Recall: 0.944
Precision:0.773
F1_Score:0.85
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 :0.75
Recall: 0.833
Precision:0.625
F1_Score:0.714
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 :0.844
Recall: 1.0
Precision:0.706
F1_Score:0.828
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 :0.719
Recall: 0.333
Precision:0.125
F1_Score:0.182
Batch 73:MLP
Accuracy :0.625
```

Recall: 1.0
Precision:0.2
F1_Score:0.333
Batch 74:LogReg
Accuracy :0.625
Recall: 0.615
Precision:0.533
F1_Score:0.571
Batch 74:RF
Accuracy :0.688
Recall: 0.538
Precision:0.636
F1_Score:0.583
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 :0.656
Recall: 0.769
Precision:0.556
F1_Score:0.645
Batch 75:LogReg
Accuracy :0.844
Recall: 0.9
Precision:0.692
F1_Score:0.783
Batch 75:RF
Accuracy :0.875
Recall: 0.7
Precision:0.875
F1_Score:0.778
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 :0.625
Recall: 0.3
Precision:0.375
F1_Score:0.333
Batch 75:MLP
Accuracy :0.75
Recall: 0.9
Precision:0.562
F1_Score:0.692
Batch 76:LogReg
Accuracy :0.719
Recall: 1.0
Precision:0.679
F1_Score:0.809
Batch 76:RF
Accuracy :0.656
Recall: 0.947
Precision:0.643
F1_Score:0.766
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 :0.688
Recall: 1.0
Precision:0.655
F1_Score:0.792
Batch 77:LogReg
```

```
Accuracy :0.812
Recall: 1.0
Precision:0.333
F1_Score:0.5
Batch 77:RF
Accuracy :0.5
Recall: 1.0
Precision:0.158
F1_Score:0.273
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 :0.469
Recall: 1.0
Precision:0.15
F1_Score:0.261
Batch 78:LogReg
Accuracy :0.688
Recall: 0.333
Precision:1.0
F1_Score:0.5
Batch 78:RF
Accuracy :0.5
Recall: 0.667
Precision:0.476
F1_Score:0.556
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 :0.562
Recall: 0.733
Precision:0.524
F1_Score:0.611
Batch 78:MLP
Accuracy :0.469
Recall: 0.6
Precision:0.45
F1_Score:0.514
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 :0.562
Recall: 0.263
Precision:1.0
F1_Score:0.417
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 :0.75
Recall: 0.913
Precision:0.778
F1_Score:0.84
Batch 80:MLP
Accuracy :0.844
Recall: 0.783
Precision:1.0
F1_Score:0.878
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 :0.719
Recall: 0.818
Precision:0.562
F1_Score:0.667
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 :0.938
Recall: 1.0
Precision:0.867
F1_Score:0.929
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 :0.625
Recall: 0.786
Precision:0.55
F1_Score:0.647
Batch 83:MLP
Accuracy :0.75
Recall: 0.929
Precision:0.65
F1_Score:0.765
Batch 84:LogReg
Accuracy :0.938
Recall: 0.833
Precision:0.833
F1_Score:0.833
Batch 84:RF
Accuracy :0.875
Recall: 0.833
Precision:0.625
F1_Score:0.714
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 :0.969
Recall: 1.0
Precision:0.857
F1_Score:0.923
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 :0.844
Recall: 0.833
Precision:0.769
F1_Score:0.8
Batch 85:MLP
Accuracy :0.719
Recall: 1.0
Precision:0.571
F1_Score:0.727
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 :0.594
Recall: 0.8
Precision:0.421
F1_Score:0.552
Batch 86:MLP
Accuracy :0.562
Recall: 1.0
Precision:0.417
F1_Score:0.588
Batch 87:LogReg
Accuracy :0.688
Recall: 1.0
Precision:0.286
F1_Score:0.444
Batch 87:RF
Accuracy :0.469
Recall: 1.0
Precision:0.19
F1_Score:0.32
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 :0.469
Recall: 1.0
Precision:0.19
F1_Score:0.32
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 :0.875
Recall: 1.0
Precision:0.2
F1_Score:0.333
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 :0.625
Recall: 1.0
Precision:0.077
F1_Score:0.143
Batch 90:LogReg
Accuracy :0.344
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 90:RF
Accuracy :0.531
Recall: 0.286
Precision:1.0
F1_Score:0.444
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 :0.438
Recall: 0.476
Precision:0.588
F1_Score:0.526
Batch 90:MLP
Accuracy :0.5
Recall: 0.238
Precision:1.0

```
F1_Score:0.385
Batch 91:LogReg
Accuracy :0.875
Recall: 0.2
Precision:1.0
F1_Score:0.333
Batch 91:RF
Accuracy :0.656
Recall: 0.6
Precision:0.25
F1_Score:0.353
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 :0.906
Recall: 0.6
Precision:0.75
F1_Score:0.667
Batch 91:MLP
Accuracy :0.906
Recall: 0.4
Precision:1.0
F1_Score:0.571
Batch 92:LogReg
Accuracy :0.781
Recall: 0.125
Precision:1.0
F1_Score:0.222
Batch 92:RF
Accuracy :0.844
Recall: 0.375
Precision:1.0
F1_Score:0.545
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 :0.812
Recall: 0.25
Precision:1.0
F1_Score:0.4
Batch 93:LogReg
Accuracy :0.719
Recall: 0.1
Precision:1.0
F1_Score:0.182
Batch 93:RF
Accuracy :0.688
Recall: 0.2
Precision:0.5
F1_Score:0.286
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 :0.719
Recall: 0.1
Precision:1.0
F1_Score:0.182
Batch 93:MLP
Accuracy :0.75
Recall: 0.2
Precision:1.0
F1_Score:0.333
Batch 94:LogReg
Accuracy :0.812
Recall: 0.762

Precision:0.941
F1_Score:0.842
Batch 94:RF
Accuracy :0.656
Recall: 0.619
Precision:0.812
F1_Score:0.703
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 :0.688
Recall: 1.0
Precision:0.375
F1_Score:0.545
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 :0.656
Recall: 0.167
Precision:0.143
F1_Score:0.154
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 :0.938
Recall: 1.0
Precision:0.5
F1_Score:0.667
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 :0.812
Recall: 1.0
Precision:0.25
F1_Score:0.4
Batch 97:LogReg
Accuracy :0.625
Recall: 1.0
Precision:0.429
F1_Score:0.6
Batch 97:RF
Accuracy :0.438
```

Recall: 1.0
Precision:0.333
F1_Score:0.5
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 :0.25
Recall: 0.889
Precision:0.258
F1_Score:0.4
Batch 97:MLP
Accuracy :0.406
Recall: 1.0
Precision:0.321
F1_Score:0.486
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: 0.947
Precision:0.9
F1_Score:0.923
Batch 99:LogReg
Accuracy :0.906
Recall: 0.6
Precision:0.75
F1_Score:0.667
Batch 99:RF
Accuracy :0.5
Recall: 1.0
Precision:0.238
F1_Score:0.385
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 :0.406
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 :0.5
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 :0.625
Recall: 0.5
Precision:0.667
F1_Score:0.571
Batch 101:LogReg
Accuracy :0.219
Recall: 0.074
Precision:1.0
F1_Score:0.138
Batch 101:RF
Accuracy :0.688
Recall: 0.63
Precision:1.0
F1_Score:0.773
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 :0.688
Recall: 0.704
```

```
Precision:0.905
F1_Score:0.792
Batch 101:MLP
Accuracy :0.688
Recall: 0.63
Precision:1.0
F1_Score:0.773
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 :0.75
Recall: 0.667
Precision:0.545
F1_Score:0.6
Batch 102:MLP
Accuracy :0.844
Recall: 0.667
Precision:0.75
F1_Score:0.706
Batch 103:LogReg
Accuracy :0.844
Recall: 0.667
Precision:1.0
F1_Score:0.8
Batch 103:RF
Accuracy :0.906
Recall: 0.933
Precision:0.875
F1_Score:0.903
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 :0.906
Recall: 0.933
Precision:0.875
F1_Score:0.903
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 :0.906
Recall: 1.0
Precision:0.75
F1_Score:0.857
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 :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 106:LogReg
Accuracy :0.688
Recall: 1.0
Precision:0.615
F1_Score:0.762
Batch 106:RF
Accuracy :0.812
Recall: 1.0
Precision:0.727
F1_Score:0.842
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 :0.75
Recall: 0.938
Precision:0.682
F1_Score:0.789
Batch 106:MLP
Accuracy :0.656
Recall: 1.0
Precision:0.593
F1_Score:0.744
Batch 107:LogReg
Accuracy :0.719
Recall: 1.0
Precision:0.571
F1_Score:0.727
Batch 107:RF
Accuracy :0.688
Recall: 1.0
Precision:0.545
F1_Score:0.706
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 :0.719
Recall: 1.0
Precision:0.571
F1_Score:0.727
Batch 108:LogReg
```

Accuracy :0.562
Recall: 1.0
Precision:0.125
F1_Score:0.222
Batch 108:RF
Accuracy :0.406
Recall: 1.0
Precision:0.095
F1_Score:0.174
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: 0.0
Precision:0.0
F1_Score:0.0
Batch 108:MLP
Accuracy :0.406
Recall: 1.0
Precision:0.095
F1_Score:0.174
Batch 109:LogReg
Accuracy :0.875
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 109:RF
Accuracy :0.25
Recall: 1.0
Precision:0.143
F1_Score:0.25
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 :0.156
Recall: 1.0
Precision:0.129
F1_Score:0.229
Batch 110:LogReg
Accuracy :0.594
Recall: 0.071
Precision:1.0
F1_Score:0.133
Batch 110:RF
Accuracy :0.531
Recall: 0.143
Precision:0.4
F1_Score:0.211
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 :0.438
Recall: 0.143
Precision:0.25
F1_Score:0.182
Batch 110:MLP
Accuracy :0.812
Recall: 0.786
Precision:0.786
F1_Score:0.786
Batch 111:LogReg
Accuracy :0.156
Recall: 0.0
Precision:0.0
F1_Score:0.0

```
Batch 111:RF
Accuracy :0.188
Recall: 0.037
Precision:1.0
F1_Score:0.071
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 :0.281
Recall: 0.222
Precision:0.75
F1_Score:0.343
Batch 111:MLP
Accuracy :0.156
Recall: 0.0
Precision:0.0
F1_Score:0.0
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 :0.938
Recall: 1.0
Precision:0.913
F1_Score:0.955
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: 0.765
Precision:0.867
F1_Score:0.812
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 :0.719
Recall: 0.765
Precision:0.722
F1_Score:0.743
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 :0.906
Recall: 0.75
Precision:0.6

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 :0.719
Recall: 0.25
Precision:0.143
F1_Score:0.182
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 :0.844
Recall: 0.778
Precision:0.7
F1_Score:0.737
Batch 115:MLP
Accuracy :0.781
Recall: 1.0
Precision:0.562
F1_Score:0.72
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 :0.688
Recall: 0.529
Precision:0.818
F1_Score:0.643
Batch 116:MLP
Accuracy :0.688
Recall: 0.882
Precision:0.652
F1_Score:0.75
Batch 117:LogReg
Accuracy :0.844
Recall: 1.0
Precision:0.615
F1_Score:0.762
Batch 117:RF
Accuracy :0.875
Recall: 0.625
Precision:0.833
F1_Score:0.714
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 :0.688
Recall: 0.5
Precision:0.4
F1_Score:0.444
Batch 117:MLP
Accuracy :0.812
Recall: 1.0
Precision:0.571
F1_Score:0.727
Batch 118:LogReg
Accuracy :0.719
Recall: 1.0
Precision:0.591
F1_Score:0.743
Batch 118:RF
Accuracy :0.469
Recall: 1.0
Precision:0.433
F1_Score:0.605
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 :0.438
Recall: 1.0
Precision:0.419
F1_Score:0.591
Batch 119:LogReg
Accuracy :0.938
Recall: 1.0
Precision:0.9
F1_Score:0.947
Batch 119:RF
Accuracy :0.812
Recall: 0.889
Precision:0.8
F1_Score:0.842
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 :0.875
Recall: 1.0
Precision:0.818
F1_Score:0.9
Batch 120:LogReg
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 120:RF
Accuracy :0.375
Recall: 1.0
Precision:0.048
F1_Score:0.091
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 :0.312
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 :0.219
Recall: 0.038
Precision:1.0
F1_Score:0.074
Batch 121:MLP
Accuracy :0.344
Recall: 0.269
Precision:0.778

```
F1_Score:0.4
Batch 122:LogReg
Accuracy :0.688
Recall: 0.63
Precision:1.0
F1_Score:0.773
Batch 122:RF
Accuracy :0.781
Recall: 0.741
Precision:1.0
F1_Score:0.851
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 :0.688
Recall: 0.741
Precision:0.87
F1_Score:0.8
Batch 122:MLP
Accuracy :0.75
Recall: 0.704
Precision:1.0
F1_Score:0.826
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 :0.812
Recall: 1.0
Precision:0.6
F1_Score:0.75
Batch 123:MLP
Accuracy :0.906
Recall: 1.0
Precision:0.75
F1_Score:0.857
Batch 124:LogReg
Accuracy :0.906
Recall: 1.0
Precision:0.85
F1_Score:0.919
Batch 124:RF
Accuracy :0.719
Recall: 1.0
Precision:0.654
F1_Score:0.791
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 :0.875
Recall: 1.0
Precision:0.818
F1_Score:0.9
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 :0.938
Recall: 1.0
Precision:0.9
F1_Score:0.947
Batch 126:LogReg
Accuracy :0.875
Recall: 1.0
Precision:0.714
F1_Score:0.833
Batch 126:RF
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
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 :0.75
Recall: 0.9
Precision:0.562
F1_Score:0.692
Batch 126:MLP
Accuracy :0.969
Recall: 1.0
Precision:0.909
F1_Score:0.952
Batch 127:LogReg
Accuracy :0.688
Recall: 1.0
Precision:0.667
F1_Score:0.8
Batch 127:RF
Accuracy :0.719
Recall: 1.0
Precision:0.69
F1_Score:0.816
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 :0.906
Recall: 1.0
Precision:0.87
F1_Score:0.93
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 :0.375
Recall: 0.667
Precision:0.095
F1_Score:0.167
Batch 129:MLP
Accuracy :0.438
Recall: 1.0
Precision:0.143
F1_Score:0.25
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 :0.062
Recall: 1.0
Precision:0.032
F1_Score:0.062
Batch 131:LogReg
Accuracy :0.562
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 131:RF
Accuracy :0.5
Recall: 0.214
Precision:0.375
F1_Score:0.273
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 :0.719
Recall: 0.643
Precision:0.692
F1_Score:0.667
Batch 132:LogReg
Accuracy :0.188
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 132:RF
Accuracy :0.281
Recall: 0.115
Precision:1.0
F1_Score:0.207
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 :0.188
Recall: 0.231

Precision:0.5
F1_Score:0.316
Batch 132:MLP
Accuracy :0.281
Recall: 0.115
Precision:1.0
F1_Score:0.207
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 :0.688
Recall: 0.571
Precision:0.923
F1_Score:0.706
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 :0.844
Recall: 1.0
Precision:0.792
F1_Score:0.884
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 :0.469
Recall: 0.368
Precision:0.583
F1_Score:0.452
Batch 134:MLP
Accuracy :0.812
Recall: 0.947
Precision:0.783
F1_Score:0.857
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 :0.781
Recall: 0.769
Precision:0.714
F1_Score:0.741
Batch 135:MLP
Accuracy :0.781
```

Recall: 0.615
Precision:0.8
F1_Score:0.696
Batch 136:LogReg
Accuracy :0.844
Recall: 1.0
Precision:0.792
F1_Score:0.884
Batch 136:RF
Accuracy :0.938
Recall: 1.0
Precision:0.905
F1_Score:0.95
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 :0.844
Recall: 1.0
Precision:0.792
F1_Score:0.884
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 :0.844
Recall: 0.85
Precision:0.895
F1_Score:0.872
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 :0.75
Recall: 1.0
Precision:0.529
F1_Score:0.692
Batch 138:MLP
Accuracy :0.531
Recall: 1.0
Precision:0.375
F1_Score:0.545
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 :0.469
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 :0.656
Recall: 0.909
Precision:0.5
F1_Score:0.645
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 :0.812
Recall: 1.0
Precision:0.647
F1_Score:0.786
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 [105...]: df2=df2[0:12]
plt_classification_results(df,df2)
```

C Gradual Drift Top25/ Top30%

In [106...]

```
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 [107]: df_drifted_top25_all,df_drifted_bottom25_all=inject_gradual_drift(stream,rank_list,batch_size)
```

```
In [108...]: batches_d=make_batches(df_drifted_top25_all)

In [109...]: 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 : []

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 : [12, 13, 14, 15, 16, 31]
```

```
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 : [1, 2, 3, 6]
```

```
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 : []
```

```
Data Points Exceeding Layer 2 Encoder Instance Threshold: []
```

```
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0
```

```
*****
```

```
Batch Number : 38
```

```
Data Points Exceeding Layer 1 Encoder Instance Threshold : [10, 11, 12, 13, 14, 15, 16]
```

```
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 : [27, 28, 29, 30]
```

```
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 : [11, 12, 13, 14]
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 : [27, 28, 29, 30]
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 : [12, 13, 14]
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 : [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

Batch Number : 46

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 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 : 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 : [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

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

Batch Number : 50

Data Points Exceeding Layer 1 Encoder Instance Threshold : [12, 13]

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, 12, 13]

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 : [3, 4, 5, 6, 7, 8, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [22, 23, 24, 25, 26, 27, 28]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 7

Batch Number : 53

Data Points Exceeding Layer 1 Encoder Instance Threshold : [19, 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

Batch Number : 54

Data Points Exceeding Layer 1 Encoder Instance Threshold : [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 : 55

Data Points Exceeding Layer 1 Encoder Instance Threshold : [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 : 56

Data Points Exceeding Layer 1 Encoder Instance Threshold : [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]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [11, 12, 13, 14, 15, 16]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 6

Batch Number : 57

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 14, 15, 16, 17, 19]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [1, 2, 3, 4, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 11

Batch Number : 58

Data Points Exceeding Layer 1 Encoder Instance Threshold : [4, 5, 6, 7, 16, 18, 19, 20, 21, 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, 15, 16, 18]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 17

Batch Number : 59

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 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]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [10, 11, 12, 13, 14, 15]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 6

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, 24, 25, 26, 27, 28, 29, 30, 31]
Data Points Exceeding Layer 2 Encoder Instance Threshold: [6, 7, 8, 9, 10, 11, 25, 26, 27, 28, 29, 30, 31]
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 13

Batch Number : 61
Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 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]
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 : [11, 12, 13, 14, 15]
Data Points Exceeding Layer 2 Encoder Instance Threshold: [13]
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 1

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

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

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

Batch Number : 66

Data Points Exceeding Layer 1 Encoder Instance Threshold : [27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 4

Batch Number : 67

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, 22, 23, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 1

Batch Number : 68

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 17

Batch Number : 69

Data Points Exceeding Layer 1 Encoder Instance Threshold : [24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 26, 27, 28, 29, 30]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 9

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: [0, 23, 26]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 3

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: [10, 11, 12, 13, 14, 15]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 6

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: [5, 6, 7, 8, 9, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 12

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: []

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 0

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: [10, 11, 12, 13, 14, 15]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 6

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: [25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 7

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: [0, 7, 8, 9, 10]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 5

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: [9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 22, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 14

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: [16, 17, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 13

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, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 30

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, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 16

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: [16, 24, 25, 26, 27, 28, 29, 30]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 8

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: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 22

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: [8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 24]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 14

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, 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 : 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

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, 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 : 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, 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 : 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

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, 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 : 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, 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 : 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: [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 : 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, 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 : 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, 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 : 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

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, 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,
, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,
, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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, 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,
, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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
```

```
*****
```

```
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
```

```
*****
```

```
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
```

```
*****
```

```
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
```

```
*****
```

```
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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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,
, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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,
, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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,
, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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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*****
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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
```

```
*****
```

```
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
```

```
*****
```

```
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
```

```
*****
```

```
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

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

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

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

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

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

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

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

Heloo

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 : 68
[68]
Warning Level at Batch 68
Threshold exceeds at batch : 71
[71]
Warning Level at Batch 71
Threshold exceeds at batch : 72
[71, 72]
Warning Level at Batch 72
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 : 79
[77, 78, 79]
Drift Confirmed at Batch No : 77
Threshold exceeds at batch : 80
[77, 78, 79, 80]
Drift Confirmed at Batch No : 78
Threshold exceeds at batch : 81
[77, 78, 79, 80, 81]
Drift Confirmed at Batch No : 79
Threshold exceeds at batch : 82
[77, 78, 79, 80, 81, 82]
Drift Confirmed at Batch No : 80
Threshold exceeds at batch : 83
[77, 78, 79, 80, 81, 82, 83]
Drift Confirmed at Batch No : 81
Threshold exceeds at batch : 84
[77, 78, 79, 80, 81, 82, 83, 84]
Drift Confirmed at Batch No : 82
Threshold exceeds at batch : 85
[77, 78, 79, 80, 81, 82, 83, 84, 85]
Drift Confirmed at Batch No : 83
Threshold exceeds at batch : 86
[77, 78, 79, 80, 81, 82, 83, 84, 85, 86]
Drift Confirmed at Batch No : 84
Threshold exceeds at batch : 87
[77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87]
Drift Confirmed at Batch No : 85

Threshold exceeds at batch : 88
[77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88]
Drift Confirmed at Batch No : 86
Threshold exceeds at batch : 89
[77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89]
Drift Confirmed at Batch No : 87
Threshold exceeds at batch : 90
[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
[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
[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
[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
[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
[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
[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
[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
[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
[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
[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
[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
[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
[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
[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
[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
[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
[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
[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
[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
[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
[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
[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
[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
[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
[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
[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
[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
[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
[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

[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

[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

[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

[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

[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

[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

[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]
Drift Confirmed at Batch No : 124
Threshold exceeds at batch : 127

[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]
Drift Confirmed at Batch No : 125
Threshold exceeds at batch : 128

[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]
Drift Confirmed at Batch No : 126
Threshold exceeds at batch : 129

[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]
Drift Confirmed at Batch No : 127
Threshold exceeds at batch : 130

[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

[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

[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]

5, 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
[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
[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
[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
[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
[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
[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
[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
[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
[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 Batches63
[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 [110...]

```
perform_t_test()
```

```
Layer 1 Reconstruction Error Values for Normal and Drifted Data
Test statistic is 13.012738
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 -14.416490
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.
```

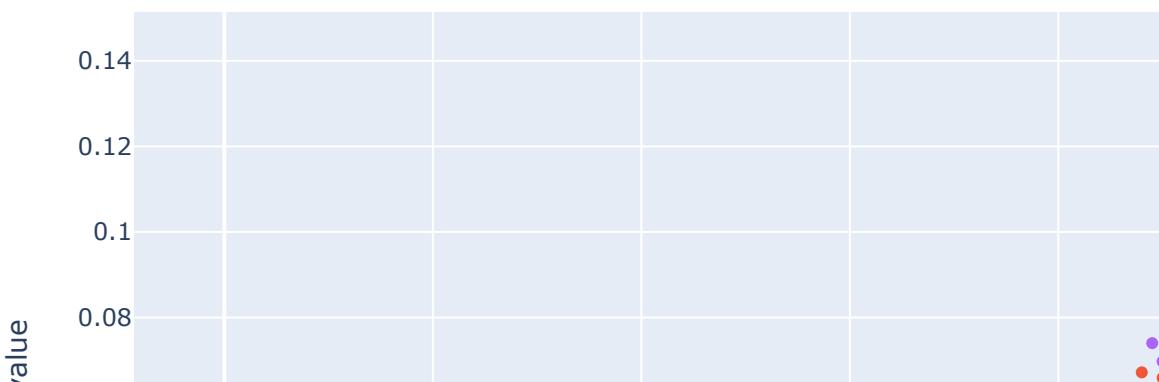
```
Layer 2 Reconstruction Error Values for Normal and Drifted Data
Test statistic is 12.177909
p-value for two tailed test is 0.000000
Conclusion :
Since p-value(=0.000000) < alpha(=0.05) We reject the null hypothesis H0 and Accept H
1 . So we conclude that
There is a drift in the dataset at 0.05 level of significance.
```

```
Layer 2 Exceed Count Values for Normal and Drifted Data
Test statistic is 11.726939
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 [111...]

```
df_plotting=visual_analysis()
```

Reconstruction Error Plots



Exceed Count Plots



In [112]:

```
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: 0.769
Precision:0.833
F1_Score:0.8
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 :0.719
Recall: 0.615
Precision:0.667
F1_Score:0.64
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 :0.719
Recall: 0.867
Precision:0.65
F1_Score:0.743
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 :0.688
Recall: 0.769
Precision:0.588
F1_Score:0.667
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 :0.969
Recall: 1.0
Precision:0.964
F1_Score:0.982
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 :0.688
Recall: 0.889
Precision:0.471
F1_Score:0.615
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 :0.688
Recall: 0.556
Precision:0.455
F1_Score:0.5
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 :0.719
Recall: 0.824
Precision:0.7
F1_Score:0.757
Batch 6:MLP
Accuracy :0.531
Recall: 0.647
Precision:0.55
F1_Score:0.595
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 :0.938
Recall: 0.967
Precision:0.967
F1_Score:0.967
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 :0.938
Recall: 1.0
Precision:0.926
F1_Score:0.962
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 :0.969
Recall: 1.0
Precision:0.962
F1_Score:0.98
Batch 9:LogReg
Accuracy :0.5
Recall: 1.0
Precision:0.273
F1_Score:0.429
Batch 9:RF
Accuracy :0.531
Recall: 1.0
Precision:0.286
F1_Score:0.444
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 :0.531
Recall: 1.0
Precision:0.286
F1_Score:0.444
Batch 10:LogReg
Accuracy :0.906
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 10:RF
Accuracy :0.875
Recall: 1.0
Precision:0.765
F1_Score:0.867
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 :0.75
Recall: 0.846
Precision:0.647
F1_Score:0.733
Batch 10:MLP
Accuracy :0.938
Recall: 1.0
Precision:0.867
F1_Score:0.929
Batch 11:LogReg
Accuracy :0.969
Recall: 1.0
Precision:0.952
F1_Score:0.976
Batch 11:RF
Accuracy :0.938
```

Recall: 0.95
Precision:0.95
F1_Score:0.95
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 :0.938
Recall: 1.0
Precision:0.909
F1_Score:0.952
Batch 12:LogReg
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 12:RF
Accuracy :0.938
Recall: 1.0
Precision:0.867
F1_Score:0.929
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 :0.781
Recall: 0.923
Precision:0.667
F1_Score:0.774
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 :0.875
Recall: 1.0
Precision:0.857
F1_Score:0.923
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 :0.812
Recall: 0.958
Precision:0.821
F1_Score:0.885
Batch 13:MLP
Accuracy :0.906
Recall: 1.0
Precision:0.889
F1_Score:0.941
Batch 14:LogReg
Accuracy :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
Batch 14:RF
Accuracy :0.625
Recall: 1.0
Precision:0.613
F1_Score:0.76
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 :0.562
Recall: 0.947
Precision:0.581
F1_Score:0.72
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 :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
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 :0.562
Recall: 0.789
Precision:0.6
F1_Score:0.682
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 :0.625
Recall: 0.737
Precision:0.667
F1_Score:0.7
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 :0.188
Recall: 0.444
Precision:0.16
F1_Score:0.235
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 :0.406
Recall: 0.833
Precision:0.37
F1_Score:0.513
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 :0.594
Recall: 1.0
Precision:0.458
F1_Score:0.629
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 :0.531
Recall: 0.895
Precision:0.567
F1_Score:0.694
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 :0.312
Recall: 1.0
Precision:0.241
F1_Score:0.389
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 :0.469
Recall: 0.692
Precision:0.409
F1_Score:0.514
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 :0.75
Recall: 0.833
Precision:0.833
F1_Score:0.833
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 :0.719
Recall: 0.889
Precision:0.696
F1_Score:0.78
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 :0.406
Recall: 0.538
Precision:0.35
F1_Score:0.424
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 :0.562
Recall: 0.812
Precision:0.542
F1_Score:0.65
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 :0.562
Recall: 0.9
Precision:0.6
F1_Score:0.72
```

```
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 :0.375
Recall: 0.889
Precision:0.296
F1_Score:0.444
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 :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
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 :0.406
Recall: 0.929
Precision:0.419
F1_Score:0.578
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 :0.375
Recall: 1.0
Precision:0.167
F1_Score:0.286
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 :0.625
Recall: 0.643
Precision:0.562
F1_Score:0.6
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 :0.719
Recall: 0.818
Precision:0.783
F1_Score:0.8
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 :0.375
Recall: 0.909
Precision:0.345
F1_Score:0.5
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 :0.219
Recall: 0.875
Precision:0.226
F1_Score:0.359
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 :0.719
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 :0.312
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 :0.094
Recall: 0.75
Precision:0.097
F1_Score:0.171
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 :0.781
Recall: 0.862
Precision:0.893
F1_Score:0.877
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 :0.25
Recall: 1.0
Precision:0.25
F1_Score:0.4
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: 0.125
Precision:0.067
F1_Score:0.087
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 :0.656
Recall: 0.64
Precision:0.889
F1_Score:0.744
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 :0.469
Recall: 0.824
Precision:0.5
F1_Score:0.622
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 :0.5
Recall: 1.0
Precision:0.5
F1_Score:0.667
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 :0.844
Recall: 1.0
Precision:0.844
F1_Score:0.915
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 :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
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 :0.719
Recall: 1.0
Precision:0.625
F1_Score:0.769
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 :0.344
Recall: 0.667
Precision:0.32
F1_Score:0.432
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 :0.344
Recall: 0.077
Precision:0.1
F1_Score:0.087
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 :0.438
Recall: 0.273
Precision:0.231
F1_Score:0.25
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 :0.281
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 :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
```

```
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 :0.844
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 :0.656
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 :0.625
Recall: 0.952
Precision:0.645
F1_Score:0.769
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 :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
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 :0.406
Recall: 0.444
Precision:0.222
F1_Score:0.296
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 :0.5
Recall: 0.519
Precision:0.824
F1_Score:0.636
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: 0.278
Precision:0.417
F1_Score:0.333
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 :0.375
Recall: 0.25
Precision:0.214
F1_Score:0.231
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 :0.25
Recall: 1.0
Precision:0.111
F1_Score:0.2
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 :0.406
Recall: 0.769
Precision:0.385
F1_Score:0.513
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 :0.312
Recall: 1.0
Precision:0.312
F1_Score:0.476
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 :0.562
Recall: 0.947
Precision:0.581
F1_Score:0.72
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 :0.438
Recall: 0.273
Precision:0.231
F1_Score:0.25
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 :0.719
Recall: 0.385
Precision:0.833
F1_Score:0.526
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 :0.344
Recall: 0.5
Precision:0.333
F1_Score:0.4
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 :0.156
Recall: 0.833
Precision:0.161
F1_Score:0.27
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 :0.344
Recall: 0.917
Precision:0.355
F1_Score:0.512
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 :0.312
Recall: 1.0
Precision:0.312
F1_Score:0.476
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 :0.125
Recall: 1.0
Precision:0.125
F1_Score:0.222
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 :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
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 :0.562
Recall: 0.714
Precision:0.652
F1_Score:0.682
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 :0.969
Recall: 0.8
Precision:1.0
F1_Score:0.889
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 :0.656
Recall: 0.375
Precision:0.333
F1_Score:0.353
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 :0.5
Recall: 0.6
Precision:0.333
F1_Score:0.429
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 :0.625
Recall: 0.905
Precision:0.655
F1_Score:0.76

```
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 :0.219
Recall: 0.833
Precision:0.172
F1_Score:0.286
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 :0.062
Recall: 1.0
Precision:0.062
F1_Score:0.118
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 :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
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 :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
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 :0.469
Recall: 0.407
Precision:0.917
F1_Score:0.564
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 :0.531
Recall: 0.333
Precision:0.25
F1_Score:0.286
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 :0.469
Recall: 0.067
Precision:0.25
F1_Score:0.105
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 :0.531
Recall: 0.933
Precision:0.5
F1_Score:0.651
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 :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
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 :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
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 :0.5
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 :0.375
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 :0.375
Recall: 1.0
Precision:0.375
F1_Score:0.545
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 :0.062
Recall: 1.0

Precision:0.062
F1_Score:0.118
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 :0.125
Recall: 1.0
Precision:0.125
F1_Score:0.222
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 :0.312
Recall: 0.143
Precision:0.429
F1_Score:0.214
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 :0.344
Recall: 0.294
Precision:0.357
F1_Score:0.323
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 :0.531
Recall: 0.5
Precision:0.133
F1_Score:0.211
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 :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
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 :0.469
Recall: 0.882
Precision:0.5
F1_Score:0.638
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 :0.25
Recall: 1.0
Precision:0.25
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 :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
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 :0.562
Recall: 1.0
Precision:0.562
F1_Score:0.72
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 :0.375
Recall: 0.444
Precision:0.706
F1_Score:0.545
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 :0.219
Recall: 0.0
Precision:0.0
F1_Score:0.0
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 :0.25
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 :0.562
Recall: 1.0
Precision:0.562
F1_Score:0.72
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 :0.562
Recall: 0.889
Precision:0.571
F1_Score:0.696
```

```
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 :0.312
Recall: 1.0
Precision:0.312
F1_Score:0.476
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 :0.312
Recall: 1.0
Precision:0.312
F1_Score:0.476
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 :0.625
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 :0.438
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 :0.438
Recall: 1.0
Precision:0.438
F1_Score:0.609
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 :0.094
Recall: 1.0
Precision:0.094
F1_Score:0.171
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 :0.031
Recall: 1.0
Precision:0.031
F1_Score:0.061
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 :0.312
Recall: 0.143
Precision:0.429
F1_Score:0.214
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 :0.375
Recall: 0.316
Precision:0.462
F1_Score:0.375
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 :0.469
Recall: 0.462
Precision:0.375
F1_Score:0.414
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 :0.594
Recall: 1.0
Precision:0.594
F1_Score:0.745
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 :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769
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 :0.25
Recall: 0.889
Precision:0.258
F1_Score:0.4
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 :0.594
Recall: 0.95
```

```
Precision:0.613
F1_Score:0.745
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 :0.344
Recall: 1.0
Precision:0.344
F1_Score:0.512
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 [113...]: plt_classification_results(df,df2)
```



Gradual Drift Bottom 25 % / 30 %

In [114...]

```
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
```

```
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 : [30, 31]

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 : [0, 1, 2, 3, 4, 6, 7, 8, 9, 10, 12, 13, 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 : 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 : [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

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 : [29, 30]

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 : [0]

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 : [29, 30, 31]

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, 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, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 23

Batch Number : 36

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 16, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 6, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 14

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, 24, 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, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 26

Batch Number : 38

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 8, 9, 10, 11, 12, 13, 14, 15, 16]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 8, 9, 10, 11, 12, 13, 14, 15, 16]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 12

Batch Number : 39

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

Batch Number : 40

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 : 41

Data Points Exceeding Layer 1 Encoder Instance Threshold : [10, 11, 12, 13, 14, 15, 25]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [9, 10, 11, 12, 13, 14, 15]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 7

Batch Number : 42

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [3, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 8

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

Batch Number : 44

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 10, 11, 12, 13, 14, 15, 29]

```
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 : [0, 1, 2, 3, 4, 5, 15, 16, 26, 27, 28, 29, 30, 31]
```

```
Data Points Exceeding Layer 2 Encoder Instance Threshold: [25, 26, 27, 28, 29, 30, 31]
```

```
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 7
```

```
Batch Number : 46
```

```
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, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21]
```

```
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 22
```

```
Batch Number : 47
```

```
Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 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]
```

```
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 12
```

```
Batch Number : 48
```

```
Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 16, 17, 27, 28, 29, 30]
```

```
Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 26, 27, 28, 29, 30, 31]
```

```
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 11
```

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 : [12, 13]

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]

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, 26]

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 : [28, 29, 30]

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 : [5, 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, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 25

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, 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, 15, 16, 17, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 21

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, 23, 24, 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, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 24

Batch Number : 59

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, 22, 23, 24, 26, 27, 28, 30]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 23]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

Batch Number : 60

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 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, 9, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 16

Batch Number : 61

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 7]

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 : 62

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 4, 5, 11, 12, 13, 14, 15, 19, 23, 25, 29, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [5, 9, 10, 11, 12, 13, 14, 15]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 8

Batch Number : 63

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 4, 6, 8, 9, 29]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [25, 26, 27, 28, 29, 30]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 6

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 : [5, 12, 13, 14]

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 : [28, 29, 30, 31]

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 : [0, 1, 2, 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, 2, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 26

Batch Number : 68

Data Points Exceeding Layer 1 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]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 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: 26

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, 20, 21, 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, 12, 13, 14, 15, 16, 17, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 29

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, 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

Batch Number : 71

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 9, 10, 11, 12, 13, 14, 15, 16, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 4, 5, 9, 10, 11, 12, 13, 14, 15, 16, 23, 28]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 13

Batch Number : 72

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 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, 16, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 15

Batch Number : 73

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 19, 20, 22, 23, 24, 25, 29, 30]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 6, 7, 10, 11, 24, 25]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 10

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, 22, 23, 24, 25, 26, 27]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 22, 23, 24]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 19

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, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [8, 9, 16, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 14

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, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17, 18]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 18

Batch Number : 77

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, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 4, 5, 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: 28

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, 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 : 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

Batch Number : 80

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 8, 9, 10, 11, 12, 13, 14, 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, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 27

Batch Number : 81

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 14, 15, 16, 17, 18, 19, 20, 21, 24, 25, 26, 27, 28, 29, 30, 31]
Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 14, 15, 16, 17, 18, 19, 20, 21, 24, 25, 26, 27, 28, 29, 30, 31]
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 20

Batch Number : 82

Data Points Exceeding Layer 1 Encoder Instance Threshold : [5, 31]
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 : [0, 1, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 21]
Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 17]
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 14

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: [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: 25

Batch Number : 85

Data Points Exceeding Layer 1 Encoder Instance Threshold : [0, 1, 2, 3, 4, 5, 6, 7, 14, 15, 16, 17, 18, 19, 23, 24, 25, 27, 28, 29, 30, 31]
Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 4, 5, 14, 15, 16, 17, 18, 29, 30, 31]
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 11

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, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 29

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: [2, 7, 8, 9, 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: 25

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

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, 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 : 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, 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 : 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: [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 : 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, 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 : 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, 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 : 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, 18, 19, 21, 24, 26, 27, 28, 29, 30, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 27

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, 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 : 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, 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 : 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, 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 : 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

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

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

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

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

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

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

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, 22, 23, 24, 25, 26, 27, 28, 29, 30,

31]

Data Points Exceeding Layer 2 Encoder Instance Threshold: [0, 1, 2, 3, 4, 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

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

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

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

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

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

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

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

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]
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```
Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32
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*****
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```
Batch Number : 114
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```
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 : 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
```

```
*****
```

```
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
```

```
*****
```

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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,
, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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,
, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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,
, 31]

Number of Data Points Exceeding Layer 2 Encoder Instance thresholds: 32

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
```

```
*****
```

```
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
```

```
*****
```

```
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
```

```
*****
```

```
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
```

```
*****
```

```
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

Heloo

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 : 37

[35, 36, 37]
Drift Confirmed at Batch No : 35
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 : 70
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 68
Threshold exceeds at batch : 71
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 69
Threshold exceeds at batch : 72
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 70
Threshold exceeds at batch : 74
[56, 57, 58, 59, 60]
Threshold exceeds at batch : 75
[56, 57, 58, 59, 60]
Threshold exceeds at batch : 76
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 74
Threshold exceeds at batch : 77
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 75
Threshold exceeds at batch : 78
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 76
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 : 84
[56, 57, 58, 59, 60]
Threshold exceeds at batch : 85
[56, 57, 58, 59, 60]
Threshold exceeds at batch : 86
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 84
Threshold exceeds at batch : 87
[56, 57, 58, 59, 60]
Drift Confirmed at Batch No : 85
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]
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 Batches70
[35, 56, 57, 58, 67, 68, 69, 70, 74, 75, 76, 77, 78, 79, 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 [115...]

```
perform_t_test()
```

```
Layer 1 Reconstruction Error Values for Normal and Drifted Data
Test statistic is 19.394143
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 -15.784457
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.
```

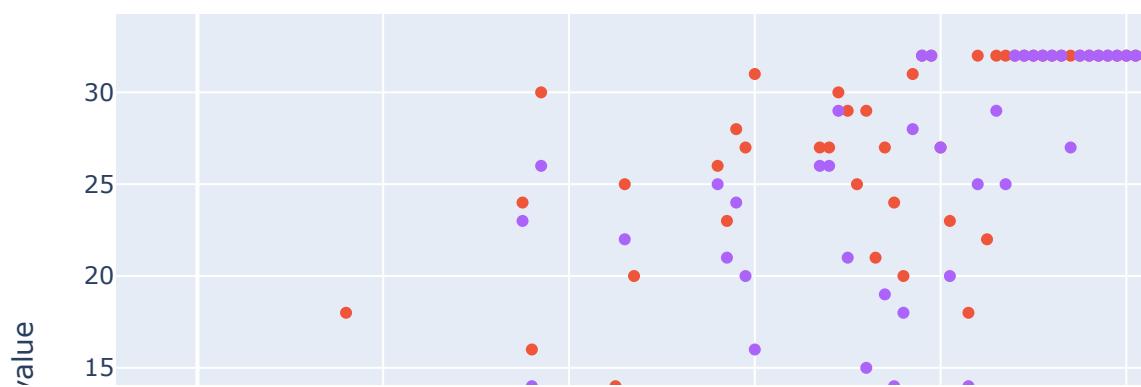
```
Layer 2 Reconstruction Error Values for Normal and Drifted Data
Test statistic is 15.890950
p-value for two tailed test is 0.000000
Conclusion :
Since p-value(=0.000000) < alpha(=0.05) We reject the null hypothesis H0 and Accept H
1 . So we conclude that
There is a drift in the dataset at 0.05 level of significance.
```

```
Layer 2 Exceed Count Values for Normal and Drifted Data
Test statistic is 14.239715
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 [116...]

```
df_plotting=visual_analysis()
```

Exceed Count Plots



In [117...]

```
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: 0.769
Precision:0.833
F1_Score:0.8
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 :0.719
Recall: 0.615
Precision:0.667
F1_Score:0.64
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 :0.719
Recall: 0.867
Precision:0.65
```

F1_Score:0.743
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 :0.688
Recall: 0.769
Precision:0.588
F1_Score:0.667
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 :0.969
Recall: 1.0
Precision:0.964
F1_Score:0.982
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 :0.688
Recall: 0.889
Precision:0.471
F1_Score:0.615
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 :0.688
Recall: 0.556
Precision:0.455
F1_Score:0.5
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 :0.719
Recall: 0.824
Precision:0.7
F1_Score:0.757
Batch 6:MLP
Accuracy :0.531
Recall: 0.647
Precision:0.55
F1_Score:0.595
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 :0.938
Recall: 0.967
Precision:0.967
F1_Score:0.967
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 :0.938
Recall: 1.0
Precision:0.926
F1_Score:0.962
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 :0.969
Recall: 1.0
Precision:0.962
F1_Score:0.98
Batch 9:LogReg
Accuracy :0.5
```

Recall: 1.0
Precision:0.273
F1_Score:0.429
Batch 9:RF
Accuracy :0.531
Recall: 1.0
Precision:0.286
F1_Score:0.444
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 :0.531
Recall: 1.0
Precision:0.286
F1_Score:0.444
Batch 10:LogReg
Accuracy :0.906
Recall: 1.0
Precision:0.812
F1_Score:0.897
Batch 10:RF
Accuracy :0.875
Recall: 1.0
Precision:0.765
F1_Score:0.867
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 :0.75
Recall: 0.846
Precision:0.647
F1_Score:0.733
Batch 10:MLP
Accuracy :0.938
Recall: 1.0
Precision:0.867
F1_Score:0.929
Batch 11:LogReg
Accuracy :0.969
Recall: 1.0
Precision:0.952
F1_Score:0.976
Batch 11:RF
Accuracy :0.938
Recall: 0.95
Precision:0.95
F1_Score:0.95
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 :0.938
Recall: 1.0
Precision:0.909
F1_Score:0.952
Batch 12:LogReg
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 12:RF
```

Accuracy :0.938
Recall: 1.0
Precision:0.867
F1_Score:0.929
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 :0.781
Recall: 0.923
Precision:0.667
F1_Score:0.774
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 :0.875
Recall: 1.0
Precision:0.857
F1_Score:0.923
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 :0.812
Recall: 0.958
Precision:0.821
F1_Score:0.885
Batch 13:MLP
Accuracy :0.906
Recall: 1.0
Precision:0.889
F1_Score:0.941
Batch 14:LogReg
Accuracy :0.938
Recall: 1.0
Precision:0.905
F1_Score:0.95
Batch 14:RF
Accuracy :0.875
Recall: 0.947
Precision:0.857
F1_Score:0.9
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 :0.656
Recall: 0.632
Precision:0.75
F1_Score:0.686
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 :0.906
Recall: 0.947
Precision:0.9
F1_Score:0.923
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 :0.75
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 :0.781
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 :0.656
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 :0.812
Recall: 0.828
Precision:0.96
F1_Score:0.889
Batch 19:MLP
```

Accuracy :0.938
Recall: 1.0
Precision:0.935
F1_Score:0.967
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 :0.438
Recall: 0.667
Precision:0.286
F1_Score:0.4
Batch 20:MLP
Accuracy :0.438
Recall: 1.0
Precision:0.333
F1_Score:0.5
Batch 21:LogReg
Accuracy :0.625
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 21:RF
Accuracy :0.625
Recall: 1.0
Precision:0.5
F1_Score:0.667
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 :0.531
Recall: 1.0
Precision:0.444
F1_Score:0.615
Batch 21:MLP
Accuracy :0.594
Recall: 1.0
Precision:0.48
F1_Score:0.649
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 :0.625
Recall: 1.0
Precision:0.478
F1_Score:0.647
Batch 22:MLP
Accuracy :0.594
Recall: 1.0
Precision:0.458
F1_Score:0.629

```
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 :0.5
Recall: 0.857
Precision:0.286
F1_Score:0.429
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 :0.469
Recall: 0.714
Precision:0.25
F1_Score:0.37
Batch 24:MLP
Accuracy :0.719
Recall: 1.0
Precision:0.438
F1_Score:0.609
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 :0.812
Recall: 0.909
Precision:0.833
F1_Score:0.87
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 :0.781
Recall: 0.882
Precision:0.75
F1_Score:0.811
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 :0.812
Recall: 0.765
Precision:0.867
F1_Score:0.812
Batch 26:MLP
Accuracy :0.875
Recall: 0.941
Precision:0.842
F1_Score:0.889
Batch 27:LogReg
Accuracy :0.906
Recall: 0.923
Precision:0.857
F1_Score:0.889
Batch 27:RF
Accuracy :0.781
Recall: 0.923
Precision:0.667
F1_Score:0.774
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 :0.719
Recall: 0.923
Precision:0.6
F1_Score:0.727
Batch 28:LogReg
Accuracy :0.906
Recall: 1.0
Precision:0.889
F1_Score:0.941
Batch 28:RF
Accuracy :0.938
Recall: 1.0
Precision:0.923
F1_Score:0.96
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 :0.938
Recall: 1.0

Precision:0.9
F1_Score:0.947
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 :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 :0.875
Recall: 1.0
Precision:0.765
F1_Score:0.867

```
Batch 30:DT
Accuracy :0.75
Recall: 0.923
Precision:0.632
F1_Score:0.75
Batch 30:MLP
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
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 :0.938
Recall: 0.9
Precision:1.0
F1_Score:0.947
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 :0.875
Recall: 0.85
Precision:0.944
F1_Score:0.895
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 :0.75
Recall: 1.0
Precision:0.529
F1_Score:0.692
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 :0.562
Recall: 1.0
Precision:0.391

F1_Score:0.562
Batch 33:MLP
Accuracy :0.594
Recall: 1.0
Precision:0.409
F1_Score:0.581
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 :0.469
Recall: 0.75
Precision:0.48
F1_Score:0.585
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 :0.75
Recall: 1.0
Precision:0.636
F1_Score:0.778
Batch 36:LogReg
Accuracy :0.938
Recall: 0.5
Precision:1.0
F1_Score:0.667
Batch 36:RF
Accuracy :0.562
Recall: 1.0
Precision:0.222
F1_Score:0.364
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 :0.594
Recall: 0.5
Precision:0.154
F1_Score:0.235
Batch 36:MLP
Accuracy :0.469
Recall: 0.75

Precision:0.158
F1_Score:0.261
Batch 37:LogReg
Accuracy :0.625
Recall: 0.2
Precision:1.0
F1_Score:0.333
Batch 37:RF
Accuracy :0.562
Recall: 0.933
Precision:0.519
F1_Score:0.667
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 :0.312
Recall: 0.267
Precision:0.267
F1_Score:0.267
Batch 37:MLP
Accuracy :0.969
Recall: 1.0
Precision:0.938
F1_Score:0.968
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 :0.625
Recall: 0.56
Precision:0.933
F1_Score:0.7
Batch 39:LogReg
Accuracy :0.938
Recall: 1.0
Precision:0.875
F1_Score:0.933
Batch 39:RF
Accuracy :0.844
Recall: 0.786
Precision:0.846
F1_Score:0.815
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 :0.969
Recall: 1.0
Precision:0.933
F1_Score:0.966
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 :0.812
Recall: 1.0
Precision:0.647
F1_Score:0.786
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 :0.844
Recall: 1.0
Precision:0.688
F1_Score:0.815
Batch 42:LogReg
Accuracy :0.844
Recall: 1.0
Precision:0.615
F1_Score:0.762
Batch 42:RF
Accuracy :0.594
Recall: 1.0
Precision:0.381
F1_Score:0.552
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 :0.781
Recall: 1.0
Precision:0.533
F1_Score:0.696
Batch 43:LogReg
Accuracy :0.875
Recall: 1.0
Precision:0.852
F1_Score:0.92
Batch 43:RF
```

Accuracy :0.719
Recall: 1.0
Precision:0.719
F1_Score:0.836
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 :0.719
Recall: 1.0
Precision:0.719
F1_Score:0.836
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 :0.562
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 :0.469
Recall: 1.0
Precision:0.19
F1_Score:0.32
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 :0.5
Recall: 1.0
Precision:0.2
F1_Score:0.333
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 :0.656
Recall: 1.0
Precision:0.214
F1_Score:0.353
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 :0.531
```

Recall: 1.0
Precision:0.167
F1_Score:0.286
Batch 47:MLP
Accuracy :0.969
Recall: 1.0
Precision:0.75
F1_Score:0.857
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 :0.531
Recall: 0.222
Precision:0.2
F1_Score:0.211
Batch 48:MLP
Accuracy :0.75
Recall: 0.111
Precision:1.0
F1_Score:0.2
Batch 49:LogReg
Accuracy :0.281
Recall: 0.207
Precision:1.0
F1_Score:0.343
Batch 49:RF
Accuracy :0.719
Recall: 0.69
Precision:1.0
F1_Score:0.816
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 :0.625
Recall: 0.655
Precision:0.905
F1_Score:0.76
Batch 49:MLP
Accuracy :0.344
Recall: 0.276
Precision:1.0
F1_Score:0.432
Batch 50:LogReg
Accuracy :0.875
Recall: 0.789
Precision:1.0
F1_Score:0.882
Batch 50:RF
Accuracy :0.875
Recall: 0.842
Precision:0.941
F1_Score:0.889
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 :0.906
Recall: 0.842
Precision:1.0
F1_Score:0.914
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 :0.719
Recall: 0.875
Precision:0.467
F1_Score:0.609
Batch 51:MLP
Accuracy :0.719
Recall: 1.0
Precision:0.471
F1_Score:0.64
Batch 52:LogReg
Accuracy :0.875
Recall: 1.0
Precision:0.862
F1_Score:0.926
Batch 52:RF
Accuracy :0.875
Recall: 1.0
Precision:0.862
F1_Score:0.926
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 :0.781
Recall: 1.0
Precision:0.708
F1_Score:0.829
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 :0.5
Recall: 0.706
Precision:0.522
F1_Score:0.6
Batch 53:MLP
Accuracy :0.75
Recall: 1.0
Precision:0.68
F1_Score:0.81

```
Batch 54:LogReg
Accuracy :0.75
Recall: 1.0
Precision:0.667
F1_Score:0.8
Batch 54:RF
Accuracy :0.75
Recall: 1.0
Precision:0.667
F1_Score:0.8
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 :0.594
Recall: 0.875
Precision:0.56
F1_Score:0.683
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 :0.844
Recall: 1.0
Precision:0.844
F1_Score:0.915
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 :0.906
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 :0.5
Recall: 0.733
Precision:0.478
F1_Score:0.579
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 :0.531
Recall: 1.0
Precision:0.444
F1_Score:0.615
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 :0.938
Recall: 0.958
Precision:0.958
F1_Score:0.958
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 :0.625
Recall: 1.0

```
Precision:0.52
F1_Score:0.684
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 :0.625
Recall: 0.769
Precision:0.526
F1_Score:0.625
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 :0.344
Recall: 0.909
Precision:0.333
F1_Score:0.488
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 :0.25
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 :0.375
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: 0.889
Precision:0.348
F1_Score:0.5
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 :0.875
Recall: 0.933
Precision:0.933
```

```
F1_Score:0.933
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 :0.656
Recall: 0.81
Precision:0.708
F1_Score:0.756
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 :0.875
Recall: 1.0
Precision:0.826
F1_Score:0.905
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 :0.812
Recall: 1.0
Precision:0.76
F1_Score:0.864
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 :0.5
Recall: 0.882
Precision:0.517
F1_Score:0.652
Batch 67:MLP
Accuracy :0.531
Recall: 1.0

```
Precision:0.531
F1_Score:0.694
Batch 68:LogReg
Accuracy :0.969
Recall: 1.0
Precision:0.75
F1_Score:0.857
Batch 68:RF
Accuracy :0.625
Recall: 1.0
Precision:0.2
F1_Score:0.333
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 :0.688
Recall: 1.0
Precision:0.231
F1_Score:0.375
Batch 69:LogReg
Accuracy :0.875
Recall: 0.889
Precision:0.727
F1_Score:0.8
Batch 69:RF
Accuracy :0.531
Recall: 0.778
Precision:0.35
F1_Score:0.483
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 :0.625
Recall: 0.889
Precision:0.421
F1_Score:0.571
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 :0.875
Recall: 1.0
Precision:0.818
F1_Score:0.9
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 :0.594
Recall: 0.917
Precision:0.478
F1_Score:0.629
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 :0.094
Recall: 1.0
Precision:0.094
F1_Score:0.171
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 :0.094
Recall: 1.0
Precision:0.094
F1_Score:0.171
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 :0.688
Recall: 1.0
Precision:0.565
F1_Score:0.722
Batch 75:LogReg
Accuracy :0.625
Recall: 1.0
Precision:0.455
F1_Score:0.625
Batch 75:RF
Accuracy :0.531
Recall: 0.9
Precision:0.391
F1_Score:0.545
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 :0.406
Recall: 0.7
Precision:0.304
F1_Score:0.424
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 :0.438
Recall: 1.0
Precision:0.143
F1_Score:0.25

```
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 :0.562
Recall: 0.8
Precision:0.522
F1_Score:0.632
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 :0.594
```

```
Recall: 0.733
Precision:0.55
F1_Score:0.629
Batch 78:MLP
Accuracy :0.469
Recall: 0.6
Precision:0.45
F1_Score:0.514
Batch 79:LogReg
Accuracy :0.469
Recall: 0.105
Precision:1.0
F1_Score:0.19
Batch 79:RF
Accuracy :0.75
Recall: 0.789
Precision:0.789
F1_Score:0.789
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 :0.875
Recall: 0.947
Precision:0.857
F1_Score:0.9
Batch 80:LogReg
Accuracy :0.844
Recall: 0.783
Precision:1.0
F1_Score:0.878
Batch 80:RF
Accuracy :0.781
Recall: 0.87
Precision:0.833
F1_Score:0.851
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 :0.812
Recall: 0.913
Precision:0.84
F1_Score:0.875
Batch 80:MLP
Accuracy :0.875
Recall: 0.87
Precision:0.952
F1_Score:0.909
Batch 81:LogReg
Accuracy :0.844
Recall: 1.0
Precision:0.688
F1_Score:0.815
Batch 81:RF
Accuracy :0.719
Recall: 1.0
Precision:0.55
F1_Score:0.71
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 :0.688
Recall: 1.0
Precision:0.524
F1_Score:0.688
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 :0.562
Recall: 0.929
Precision:0.5
F1_Score:0.65
Batch 83:MLP
Accuracy :0.562
Recall: 1.0
Precision:0.5
F1_Score:0.667
Batch 84:LogReg
Accuracy :0.406
Recall: 1.0
Precision:0.24
F1_Score:0.387
Batch 84:RF
Accuracy :0.344
Recall: 0.833
Precision:0.2
F1_Score:0.323
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 :0.469
Recall: 0.9
Precision:0.36
F1_Score:0.514
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 :0.531
Recall: 0.9
Precision:0.391
F1_Score:0.545
Batch 86:MLP
Accuracy :0.5
Recall: 1.0
Precision:0.385
F1_Score:0.556
Batch 87:LogReg
Accuracy :0.562
Recall: 1.0
Precision:0.222
F1_Score:0.364
Batch 87:RF
Accuracy :0.438
Recall: 1.0
Precision:0.182
F1_Score:0.308
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 :0.438
Recall: 1.0
Precision:0.182
F1_Score:0.308
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 :0.562
Recall: 0.85
Precision:0.607
F1_Score:0.708
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 :0.438
Recall: 0.0
Precision:0.0
F1_Score:0.0
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 :0.562
Recall: 1.0
Precision:0.067
F1_Score:0.125
Batch 90:LogReg
Accuracy :0.531
Recall: 0.286
Precision:1.0
F1_Score:0.444
Batch 90:RF
Accuracy :0.75
Recall: 0.81
Precision:0.81
F1_Score:0.81
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 :0.625
Recall: 0.571
Precision:0.8
F1_Score:0.667
Batch 90:MLP
Accuracy :0.719
Recall: 0.714
Precision:0.833
F1_Score:0.769
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: 1.0
Precision:0.156
F1_Score:0.27
Batch 92:LogReg
Accuracy :0.688
Recall: 0.875
Precision:0.438
F1_Score:0.583
Batch 92:RF
Accuracy :0.5
Recall: 1.0
Precision:0.333
F1_Score:0.5
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 :0.5
Recall: 0.875
Precision:0.318
F1_Score:0.467
Batch 93:LogReg
Accuracy :0.781
Recall: 0.6
Precision:0.667
F1_Score:0.632
Batch 93:RF
Accuracy :0.438
Recall: 0.8
Precision:0.333
F1_Score:0.471
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 :0.406
Recall: 0.7
Precision:0.304
F1_Score:0.424
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 :0.656
Recall: 1.0
Precision:0.656
F1_Score:0.792
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 :0.5
Recall: 1.0
Precision:0.273
F1_Score:0.429
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 :0.469
Recall: 1.0
Precision:0.261
F1_Score:0.414
Batch 96:LogReg
Accuracy :0.5
Recall: 1.0
Precision:0.111
F1_Score:0.2
Batch 96:RF
Accuracy :0.375
Recall: 1.0
Precision:0.091
F1_Score:0.167
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 :0.375
Recall: 1.0
Precision:0.091
F1_Score:0.167
Batch 97:LogReg
Accuracy :0.438
Recall: 1.0
Precision:0.333
F1_Score:0.5
Batch 97:RF
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
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 :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
Batch 97:MLP
Accuracy :0.281
Recall: 1.0
Precision:0.281
F1_Score:0.439
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: 0.895

Precision:0.895
F1_Score:0.895
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 :0.375
Recall: 1.0
Precision:0.2
F1_Score:0.333
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 :0.656
Recall: 1.0
Precision:0.593
F1_Score:0.744
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 :0.656
Recall: 1.0
Precision:0.593
F1_Score:0.744
Batch 101:LogReg
Accuracy :0.719
Recall: 0.667
Precision:1.0
F1_Score:0.8
Batch 101:RF
Accuracy :0.906
Recall: 0.926
Precision:0.962
F1_Score:0.943
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 :0.781
Recall: 0.815
Precision:0.917
F1_Score:0.863
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 :0.562
Recall: 1.0
Precision:0.391
F1_Score:0.562
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 :0.531
Recall: 0.889
Precision:0.364
F1_Score:0.516
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 :0.781
Recall: 1.0
Precision:0.682
F1_Score:0.811
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 :0.75
Recall: 1.0
Precision:0.652
F1_Score:0.789
Batch 104:MLP
Accuracy :0.812
Recall: 1.0
Precision:0.714
F1_Score:0.833
Batch 105:LogReg
Accuracy :0.625
Recall: 1.0
Precision:0.429
F1_Score:0.6
Batch 105:RF
```

```
Accuracy :0.531
Recall: 1.0
Precision:0.375
F1_Score:0.545
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 :0.562
Recall: 1.0
Precision:0.391
F1_Score:0.562
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 :0.656
Recall: 1.0
Precision:0.522
F1_Score:0.686
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 :0.656
Recall: 1.0
Precision:0.522
F1_Score:0.686
Batch 108:LogReg
Accuracy :0.438
Recall: 1.0
Precision:0.1
F1_Score:0.182
Batch 108:RF
Accuracy :0.375
Recall: 1.0
Precision:0.091
F1_Score:0.167
```

```
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 :0.188
Recall: 0.0
Precision:0.0
F1_Score:0.0
Batch 108:MLP
Accuracy :0.406
Recall: 1.0
Precision:0.095
F1_Score:0.174
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 :0.156
Recall: 1.0
Precision:0.129
F1_Score:0.229
Batch 110:LogReg
Accuracy :0.594
Recall: 0.071
Precision:1.0
F1_Score:0.133
Batch 110:RF
Accuracy :0.844
Recall: 0.929
Precision:0.765
F1_Score:0.839
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 :0.656
Recall: 1.0
Precision:0.56
F1_Score:0.718
Batch 110:MLP
Accuracy :0.875
Recall: 0.929
Precision:0.812
F1_Score:0.867
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 :0.656
Recall: 0.63
Precision:0.944
F1_Score:0.756
Batch 111:MLP
Accuracy :0.812
Recall: 0.778
Precision:1.0
F1_Score:0.875
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 :0.781
Recall: 0.941
Precision:0.727
F1_Score:0.821
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 :0.688
Recall: 0.824
Precision:0.667
F1_Score:0.737
Batch 113:MLP
Accuracy :0.781
Recall: 0.941
Precision:0.727
F1_Score:0.821
Batch 114:LogReg
Accuracy :0.438
Recall: 0.75
Precision:0.15
F1_Score:0.25
Batch 114:RF
Accuracy :0.375
Recall: 0.75
Precision:0.136
F1_Score:0.231
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: 0.75
Precision:0.136
F1_Score:0.231
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 :0.219
Recall: 0.778
Precision:0.233
F1_Score:0.359
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 :0.719
Recall: 0.941
Precision:0.667
F1_Score:0.78
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 :0.438
Recall: 0.875
Precision:0.292
F1_Score:0.438
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 :0.406
Recall: 1.0
Precision:0.406
F1_Score:0.578
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 :0.844
Recall: 0.944
Precision:0.81
F1_Score:0.872
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 :0.875
Recall: 1.0
Precision:0.818
F1_Score:0.9
Batch 120:LogReg
Accuracy :1.0
Recall: 1.0
Precision:1.0
F1_Score:1.0
Batch 120:RF
Accuracy :0.312
Recall: 1.0
Precision:0.043
F1_Score:0.083
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 :0.344
Recall: 1.0
Precision:0.045
F1_Score:0.087
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 :0.938
Recall: 1.0
Precision:0.929
F1_Score:0.963
Batch 122:LogReg
Accuracy :0.75
Recall: 0.704
Precision:1.0
F1_Score:0.826
Batch 122:RF
Accuracy :0.938
Recall: 0.926

```
Precision:1.0
F1_Score:0.962
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 :0.844
Recall: 0.852
Precision:0.958
F1_Score:0.902
Batch 122:MLP
Accuracy :0.875
Recall: 0.852
Precision:1.0
F1_Score:0.92
Batch 123:LogReg
Accuracy :0.531
Recall: 1.0
Precision:0.375
F1_Score:0.545
Batch 123:RF
Accuracy :0.531
Recall: 1.0
Precision:0.375
F1_Score:0.545
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 :0.438
Recall: 1.0
Precision:0.333
F1_Score:0.5
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 :0.656
Recall: 1.0
Precision:0.56
F1_Score:0.718
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 :0.562
Recall: 0.857
Precision:0.5
F1_Score:0.632
Batch 128:MLP
Accuracy :0.656
Recall: 1.0
Precision:0.56
F1_Score:0.718
Batch 129:LogReg
Accuracy :0.562
Recall: 1.0
Precision:0.176
F1_Score:0.3
Batch 129:RF
Accuracy :0.438
Recall: 1.0
Precision:0.143
F1_Score:0.25
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 :0.406
Recall: 1.0

Precision:0.136
F1_Score:0.24
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 :0.062
Recall: 1.0
Precision:0.032
F1_Score:0.062
Batch 131:LogReg
Accuracy :0.594
Recall: 0.071
Precision:1.0
F1_Score:0.133
Batch 131:RF
Accuracy :0.719
Recall: 0.929
Precision:0.619
F1_Score:0.743
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 :0.812
Recall: 0.808
Precision:0.955
F1_Score:0.875
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 :0.688
Recall: 0.692
Precision:0.9
F1_Score:0.783
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 :0.625
Recall: 0.952
Precision:0.645
F1_Score:0.769
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 :0.625
Recall: 0.789
Precision:0.652
F1_Score:0.714
Batch 134:MLP
Accuracy :0.75
Recall: 1.0
Precision:0.704
F1_Score:0.826
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 :0.844
Recall: 1.0
Precision:0.8
F1_Score:0.889
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 :0.75
Recall: 0.95
Precision:0.731
F1_Score:0.826
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 :0.531
Recall: 1.0
Precision:0.375
F1_Score:0.545
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 :0.625
Recall: 1.0
Precision:0.625
F1_Score:0.769

```
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 :0.656
Recall: 1.0
Precision:0.5
F1_Score:0.667
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 [118...]: plt_classification_results(df,df2)
```



