In [ ]:

Assignment 4

In [70]:
```
!pip install tensorflow
import tensorflow as tf
from tensorflow.keras.layers import Dense, Activation, Flatten

from sklearn.preprocessing import StandardScaler

theScaler = StandardScaler()

from sklearn.preprocessing import MinMaxScaler

def get_TF_ProbAccuracyScores( NAME, MODEL, X, Y ) :
    probs = MODEL.predict( X )
    pred_list = []
    for p in probs :
        pred_list.append( np.argmax( p ) )
    pred = np.array( pred_list )
    acc_score = metrics.accuracy_score(Y, pred)
    p1 = probs[:,1]
    fpr, tpr, threshold = metrics.roc_curve( Y, p1)
    auc = metrics.auc(fpr,tpr)
    return [NAME, acc_score, fpr, tpr, auc]

def getTFAccuracyScores(NAME, MODEL, X, Y):
    pred = MODEL.predict(X)
    MEAN = Y.mean()
    RMSE = math.sqrt(metrics.mean_squared_error(Y, pred))
    return MEAN, RMSE
```

```
Requirement already satisfied: tensorflow in c:\anaconda\lib\site-packages (2.17.0)
Requirement already satisfied: tensorflow-intel==2.17.0 in c:\anaconda\lib\site-packages (from tensorflow) (2.17.0)
Requirement already satisfied: absl-py>=1.0.0 in c:\anaconda\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (2.1.0)
Requirement already satisfied: astunparse>=1.6.0 in c:\anaconda\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (1.6.3)
Requirement already satisfied: flatbuffers>=24.3.25 in c:\anaconda\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (24.3.25)
Requirement already satisfied: gast!=0.5.0,!=0.5.1,!=0.5.2,>=0.2.1 in c:\anaconda\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (0.6.0)
Requirement already satisfied: google-pasta>=0.1.1 in c:\anaconda\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (0.2.0)
Requirement already satisfied: h5py>=3.10.0 in c:\anaconda\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (3.11.0)
Requirement already satisfied: libclang>=13.0.0 in c:\anaconda\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (18.1.1)
Requirement already satisfied: ml-dtypes<0.5.0,>=0.3.1 in c:\anaconda\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (0.4.0)
Requirement already satisfied: opt-einsum>=2.3.2 in c:\anaconda\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (3.3.0)
Requirement already satisfied: packaging in c:\anaconda\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (23.1)
Requirement already satisfied: protobuf!=4.21.0,!=4.21.1,!=4.21.2,!=4.21.3,!=4.21.4,!=4.21.5,<5.0.0dev,>=3.20.3 in c:\anaconda\lib\site-packages (from tensorflow-intel==2.17.0->tensorfl
ow) (4.25.4)
Requirement already satisfied: requests<3,>=2.21.0 in c:\anaconda\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (2.31.0)
Requirement already satisfied: setuptools in c:\anaconda\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (68.0.0)
Requirement already satisfied: six>=1.12.0 in c:\anaconda\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (1.16.0)
Requirement already satisfied: termcolor>=1.1.0 in c:\anaconda\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (2.4.0)
Requirement already satisfied: typing-extensions>=3.6.6 in c:\anaconda\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (4.9.0)
Requirement already satisfied: wrapt>=1.11.0 in c:\anaconda\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (1.14.1)
Requirement already satisfied: grpcio<2.0,>=1.24.3 in c:\anaconda\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (1.60.0)
Requirement already satisfied: tensorboard<2.18,>=2.17 in c:\anaconda\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (2.17.0)
Requirement already satisfied: keras>=3.2.0 in c:\anaconda\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (3.4.1)
Requirement already satisfied: tensorflow-io-gcs-filesystem>=0.23.1 in c:\anaconda\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (0.31.0)
Requirement already satisfied: numpy<2.0.0,>=1.23.5 in c:\anaconda\lib\site-packages (from tensorflow-intel==2.17.0->tensorflow) (1.26.3)
Requirement already satisfied: wheel<1.0,>=0.23.0 in c:\anaconda\lib\site-packages (from astunparse>=1.6.0->tensorflow-intel==2.17.0->tensorflow) (0.38.4)
Requirement already satisfied: rich in c:\anaconda\lib\site-packages (from keras>=3.2.0->tensorflow-intel==2.17.0->tensorflow) (13.3.5)
Requirement already satisfied: namex in c:\anaconda\lib\site-packages (from keras>=3.2.0->tensorflow-intel==2.17.0->tensorflow) (0.0.8)
Requirement already satisfied: optree in c:\anaconda\lib\site-packages (from keras>=3.2.0->tensorflow-intel==2.17.0->tensorflow) (0.12.1)
Requirement already satisfied: charset-normalizer<4,>=2 in c:\anaconda\lib\site-packages (from requests<3,>=2.21.0->tensorflow-intel==2.17.0->tensorflow) (2.0.4)
Requirement already satisfied: idna<4,>=2.5 in c:\anaconda\lib\site-packages (from requests<3,>=2.21.0->tensorflow-intel==2.17.0->tensorflow) (3.4)
Requirement already satisfied: urllib3<3,>=1.21.1 in c:\anaconda\lib\site-packages (from requests<3,>=2.21.0->tensorflow-intel==2.17.0->tensorflow) (2.0.7)
Requirement already satisfied: certifi>=2017.4.17 in c:\anaconda\lib\site-packages (from requests<3,>=2.21.0->tensorflow-intel==2.17.0->tensorflow) (2024.2.2)
Requirement already satisfied: markdown>=2.6.8 in c:\anaconda\lib\site-packages (from tensorboard<2.18,>=2.17->tensorflow-intel==2.17.0->tensorflow) (3.4.1)
Requirement already satisfied: tensorboard-data-server<0.8.0,>=0.7.0 in c:\anaconda\lib\site-packages (from tensorboard<2.18,>=2.17->tensorflow-intel==2.17.0->tensorflow) (0.7.2)
Requirement already satisfied: werkzeug>=1.0.1 in c:\anaconda\lib\site-packages (from tensorboard<2.18,>=2.17->tensorflow-intel==2.17.0->tensorflow) (2.2.3)
Requirement already satisfied: MarkupSafe>=2.1.1 in c:\anaconda\lib\site-packages (from werkzeug>=1.0.1->tensorboard<2.18,>=2.17->tensorflow-intel==2.17.0->tensorflow) (2.1.3)
Requirement already satisfied: markdown-it-py<3.0.0,>=2.2.0 in c:\anaconda\lib\site-packages (from rich->keras>=3.2.0->tensorflow-intel==2.17.0->tensorflow) (2.2.0)
Requirement already satisfied: pygments<3.0.0,>=2.13.0 in c:\anaconda\lib\site-packages (from rich->keras>=3.2.0->tensorflow-intel==2.17.0->tensorflow) (2.15.1)
Requirement already satisfied: mdurl~=0.1 in c:\anaconda\lib\site-packages (from markdown-it-py<3.0.0,>=2.2.0->rich->keras>=3.2.0->tensorflow-intel==2.17.0->tensorflow) (0.1.0)
```

In [71]:
```
theScaler = StandardScaler()
theScaler.fit(X_train)

#data scaling - normalizes data to help improve performance and convergence speed of nueral network
U_train = theScaler.transform( X_train )
U_test = theScaler.transform( X_test )

#made into dataframes
U_train = pd.DataFrame( U_train )
U_test = pd.DataFrame( U_test )

#designate columns
U_train.columns = list( X_train.columns.values )
U_test.columns = list( X_train.columns.values )

#make network
#input dimensions
F_theShapeSize = U_train.shape[1]
#activation function
F_theActivation = tf.keras.activations.softplus
#Loss function
F_theLossMetric = tf.keras.losses.SparseCategoricalCrossentropy()
#optimizer used
F_theOptimizer = tf.keras.optimizers.Adam()
#training epcohs
F_theEpochs = 100

#number of layers
F_theUnits = int( 2*F_theShapeSize / 3 )


F_LAYER_01 = tf.keras.layers.Dense( units=F_theUnits, activation=F_theActivation, input_dim=F_theShapeSize )
#dropout layer
F_LAYER_DROP = tf.keras.layers.Dropout( 0.2 )
F_LAYER_02 = tf.keras.layers.Dense( units=F_theUnits, activation=F_theActivation )
#output layer
F_LAYER_OUTPUT = tf.keras.layers.Dense( units=5, activation=tf.keras.activations.softmax )
```

```
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:767: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if not hasattr(array, "sparse") and array.dtypes.apply(is_sparse).any():
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:605: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype):
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:614: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype) or not is_extension_array_dtype(pd_dtype):
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:767: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if not hasattr(array, "sparse") and array.dtypes.apply(is_sparse).any():
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:605: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype):
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:614: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype) or not is_extension_array_dtype(pd_dtype):
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:767: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if not hasattr(array, "sparse") and array.dtypes.apply(is_sparse).any():
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:605: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype):
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:614: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype) or not is_extension_array_dtype(pd_dtype):
C:\Anaconda\Lib\site-packages\keras\src\layers\core\dense.py:87: UserWarning: Do not pass an `input_shape`/`input_dim` argument to a layer. When using Sequential models, prefer using an `Input(shape)` object as the first layer in the model instead.
  super().__init__(activity_regularizer=activity_regularizer, **kwargs)
```

In [73]:

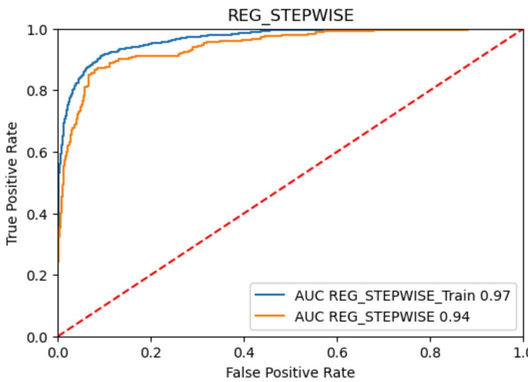
```
CLM = tf.keras.Sequential()
CLM.add( F_LAYER_01 )
CLM.add( F_LAYER_DROP )
CLM.add( F_LAYER_02 )
CLM.add( F_LAYER_OUTPUT )
CLM.compile( loss=F_theLossMetric, optimizer=F_theOptimizer)
CLM.fit( U_train, Y_train[FLAG], epochs=F_theEpochs, verbose=False )

TRAIN_CLM = get_TF_ProbAccuracyScores( WHO + "_Train", CLM, U_train, Y_train[ FLAG ] )
TEST_CLM = get_TF_ProbAccuracyScores( WHO, CLM, U_test, Y_test[ FLAG ] )

print_ROC_Curve( WHO, [ TRAIN_CLM, TEST_CLM ] )
print_Accuracy( WHO + " CLASSIFICATION ACCURACY", [ TRAIN_CLM, TEST_CLM ] )
```

```
149/149 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step
17/38 ━━━━━━━━━━━━━━━━━━━━ 0s 3ms/step
```

```
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:605: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype):
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:614: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype) or not is_extension_array_dtype(pd_dtype):
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:605: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype):
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:614: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype) or not is_extension_array_dtype(pd_dtype):
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:605: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype):
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:614: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype) or not is_extension_array_dtype(pd_dtype):
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:605: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype):
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:614: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype) or not is_extension_array_dtype(pd_dtype):
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:605: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype):
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:614: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype) or not is_extension_array_dtype(pd_dtype):
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:605: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype):
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:614: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype) or not is_extension_array_dtype(pd_dtype):
```

```
38/38 ━━━━━━━━━━━━━━━━━━━━ 0s 4ms/step
```

```
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:605: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype):
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:614: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype) or not is_extension_array_dtype(pd_dtype):
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:605: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype):
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:614: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype) or not is_extension_array_dtype(pd_dtype):
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:605: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype):
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:614: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype) or not is_extension_array_dtype(pd_dtype):
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:605: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype):
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:614: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype) or not is_extension_array_dtype(pd_dtype):
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:605: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype):
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:614: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype) or not is_extension_array_dtype(pd_dtype):
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:605: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype):
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:614: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype) or not is_extension_array_dtype(pd_dtype):
```




```
REG_STEPWISE CLASSIFICATION ACCURACY
======
REG_STEPWISE_Train  =  0.9318372483221476
REG_STEPWISE  =  0.9043624161073825
------
```

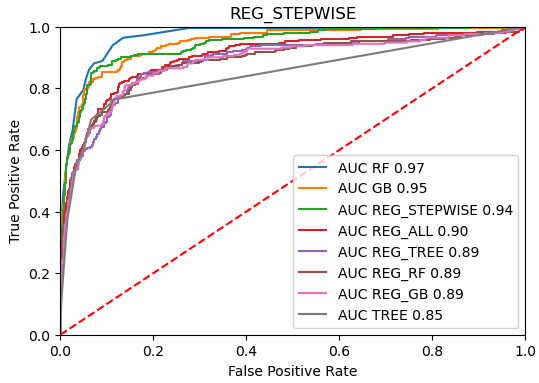
In [74]:

```python
import numpy as np
from keras.models import Sequential
from keras.layers import Dense
from keras.layers import Dropout
import math
from sklearn import metrics

#define model
AMT = Sequential()
AMT.add(Dense(128, input_shape=(5,), activation='relu'))
AMT.add(Dense(64, activation='relu'))
AMT.add(Dropout(0.2))
AMT.add(Dense(1, activation='linear'))
AMT.compile(optimizer='adam', loss='mse')

#reshape
V_train_reshaped = V_train[GB_amt].to_numpy().reshape(-1, 5)  # Adjust the second dimension (5) as needed
V_test_reshaped = V_test[GB_amt].to_numpy().reshape(-1, 5)

#train
AMT.fit(V_train_reshaped, Z_train[LOSS], epochs=A_theEpochs, verbose=False)

#accuracy function
def getAmtAccuracyScores(NAME, MODEL, X, Y):
    pred = MODEL.predict(X)
    MEAN = Y.mean()
    RMSE = math.sqrt(metrics.mean_squared_error(Y, pred))
    return MEAN, RMSE

#eval model
TRAIN_AMT = getAmtAccuracyScores(WHO + "_Train", AMT, V_train_reshaped, Z_train[LOSS])
TEST_AMT = getAmtAccuracyScores(WHO, AMT, V_test_reshaped, Z_test[LOSS])

#print
print(f'Training RMSE: {TRAIN_AMT[1]}')
print(f'Test RMSE: {TEST_AMT[1]}')

TF_CLM = TEST_CLM.copy()
RMSE_TEST_AMT = TEST_AMT[1]
TF_AMT = RMSE_TEST_AMT
```

```
C:\Anaconda\Lib\site-packages\keras\src\layers\core\dense.py:87: UserWarning: Do not pass an `input_shape`/`input_dim` argument to a layer. When using Sequential models, prefer using an `Input(shape)` object as the first layer in the model instead.
  super().__init__(activity_regularizer=activity_regularizer, **kwargs)
```

```
149/149 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step
23/38 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:605: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype):
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:614: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype) or not is_extension_array_dtype(pd_dtype):
38/38 ━━━━━━━━━━━━━━━━━━━━ 0s 4ms/step
Training RMSE: 3524.265254500898
Test RMSE: 4045.470773273413
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:605: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype):
C:\Anaconda\Lib\site-packages\sklearn\utils\validation.py:614: FutureWarning: is_sparse is deprecated and will be removed in a future version. Check `isinstance(dtype, pd.SparseDtype)` instead.
  if is_sparse(pd_dtype) or not is_extension_array_dtype(pd_dtype):
```

In [75]:
```
ALL_CLM = [ TREE_CLM, RF_CLM, GB_CLM, REG_ALL_CLM, REG_TREE_CLM, REG_RF_CLM, REG_GB_CLM, TF_CLM ]

ALL_CLM = sorted( ALL_CLM, key = lambda x: x[4], reverse=True )
print_ROC_Curve( WHO, ALL_CLM )

ALL_CLM = sorted( ALL_CLM, key = lambda x: x[1], reverse=True )
print_Accuracy( "ALL CLASSIFICATION ACCURACY", ALL_CLM )



ALL_AMT = [ TREE_AMT, RF_AMT, GB_AMT, REG_ALL_AMT, REG_TREE_AMT, REG_RF_AMT, REG_GB_AMT, TF_AMT ]
print_Accuracy( "ALL DAMAGE MODEL ACCURACY", ALL_AMT )
```




```
ALL CLASSIFICATION ACCURACY
======
RF  =  0.9161073825503355
GB  =  0.9043624161073825
REG_STEPWISE  =  0.9043624161073825
REG_ALL  =  0.8800335570469798
REG_RF  =  0.8791946308724832
REG_TREE  =  0.8758389261744967
TREE  =  0.8758389261744967
REG_GB  =  0.875
------


ALL DAMAGE MODEL ACCURACY
======
TREE  =  3897.663736539515
RF  =  3028.8246823918666
GB  =  3077.494290676056
REG_ALL  =  4027.4426338655644
REG_TREE  =  4255.587745569308
REG_RF  =  4243.440594173769
REG_GB  =  4268.9622840948505
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[75], line 12
      7 print_Accuracy( "ALL CLASSIFICATION ACCURACY", ALL_CLM )
     11 ALL_AMT = [ TREE_AMT, RF_AMT, GB_AMT, REG_ALL_AMT, REG_TREE_AMT, REG_RF_AMT, REG_GB_AMT, TF_AMT ]
---> 12 print_Accuracy( "ALL DAMAGE MODEL ACCURACY", ALL_AMT )

Cell In[20], line 33, in print_Accuracy(TITLE, LIST)
     31 print( "======" )
     32 for theResults in LIST :
---> 33     NAME = theResults[0]
     34     ACC = theResults[1]
     35     print( NAME, " = ", ACC )

TypeError: 'float' object is not subscriptable
```

In [ ]: