





```
return f(**kwargs)
C:\Users\Wadie\anaconda3\lib\site-packages\sklearn\neural_network\multilayer_perceptron.py:582: ConvergenceWarning: Stochastic Optimizer: Maximum iterations (400) reached and the optimization hasn't converged yet.
  warnings.warn(
C:\Users\Wadie\anaconda3\lib\site-packages\sklearn\utils\validation.py:73: DataConversionWarning: A column-vector y was passed when a 1d array was expected. Please change the shape of y to (n_samples, ), for example using ravel().
  return f(**kwargs)
C:\Users\Wadie\anaconda3\lib\site-packages\sklearn\neural_network\multilayer_perceptron.py:582: ConvergenceWarning: Stochastic Optimizer: Maximum iterations (400) reached and the optimization hasn't converged yet.
  warnings.warn(

RandomizedSearchCV(cv=5,
                  estimator=Pipeline(steps=[('pipeline',
                                             Pipeline(steps=[('functiontransformer',
                                                             FunctionTransformer(func=<function
tion <lambda> at 0x0000000E8AAEF67B>))],
                                             ('latentdirichletallocation',
                                             LatentDirichletAllocation(learning_method='online',
                                             max_iter=5,
                                             random_state=0))])),
                  ('mlpclassifier',
                  MLPClassifier(max_iter=400,
                                random_state=0))]),
                  n_iter=12,
                  param_distributions={'mlpclassifier__alpha': [0.01, 0.001],
                                     'mlpclassifier__beta_1': array([0.001 , 0.4955, 0.99
]),
                                     'mlpclassifier__beta_2': array([0.5 , 0.745, 0.99
])}),
                  scoring='accuracy')
{'mlpclassifier__beta_2': 0.745, 'mlpclassifier__beta_1': 0.99, 'mlpclassifier__alpha': 0.01}
accuracy = 0.569
precision    recall  f1-score   support

   C11      0.14      0.08      0.10      97
   C12      0.15      0.09      0.11      46
   C13      0.25      0.42      0.31     120
   C14      0.00      0.00      0.00      25
   C15      0.59      0.79      0.67     540
   C16      0.00      0.00      0.00       3
   C17      0.31      0.21      0.25     130
   C18      0.25      0.30      0.27     132
   C21      0.15      0.07      0.10      80
   C22      0.00      0.00      0.00      13
   C23      0.00      0.00      0.00       4
   C24      0.17      0.16      0.17      57
   C31      0.13      0.05      0.07      87
   C32      0.00      0.00      0.00       7
   C33      0.00      0.00      0.00      26
   C34      0.00      0.00      0.00       2
   C41      0.00      0.00      0.00      34
   C42      0.00      0.00      0.00      31
   GCAT      0.00      0.00      0.00       8
   E11      0.25      0.04      0.06      28
   E12      0.39      0.46      0.42      78
   E13      0.20      0.05      0.08      19
   E14      0.00      0.00      0.00       6
   E21      0.42      0.43      0.42     124
   E31      0.00      0.00      0.00       3
   E41      0.00      0.00      0.00      14
   E51      0.20      0.02      0.03      55
   E71      0.56      0.50      0.53      20
   ECAT      0.00      0.00      0.00       1
   G15      0.00      0.00      0.00      28
   GCAT      0.72      0.93      0.81     589
   M11      0.41      0.56      0.47     130
   M12      0.41      0.28      0.34      74
   M13      0.41      0.35      0.38     141
   M14      0.68      0.65      0.66     247
   MCAT      0.00      0.00      0.00       1

 accuracy          0.19          0.18          0.17     3000
 macro avg          0.44          0.51          0.46     3000

C:\Users\Wadie\anaconda3\lib\site-packages\sklearn\metrics\classification.py:1221: UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels with no predicted samples. Use 'zero_division' parameter to control this behavior.
  _warn_prf(average, modifier, msg_start, len(result))
```

In [ ]: