Classification Report 2022-07-05-01-58-05

## ========== Initializing fit\_ensemble\_voting\_classifier ==========

## Model : LogisticRegression

Initializing builMultiLabelModels

Classification on Training dataset :

Accuracy\_score: 71.33 %

Loss: 28.67 %

Zero\_one\_loss: 28.67 %

Hamming\_loss: 7.72 %

Classification\_report: precision recall f1-score support  
  
 0 0.78 0.58 0.66 824  
 1 0.47 0.16 0.24 464  
 2 0.92 0.91 0.91 329  
 3 1.00 0.90 0.95 73  
 4 0.87 0.91 0.89 544  
  
 micro avg 0.81 0.63 0.71 2234  
 macro avg 0.81 0.69 0.73 2234  
weighted avg 0.76 0.63 0.68 2234  
 samples avg 0.29 0.27 0.27 2234

Classification on Testing dataset :

Accuracy\_score: 72.42 %

Loss: 27.58 %

Zero\_one\_loss: 27.58 %

Hamming\_loss: 7.69 %

Classification\_report: precision recall f1-score support  
  
 0 0.77 0.61 0.68 350  
 1 0.53 0.22 0.31 212  
 2 0.87 0.90 0.88 135  
 3 1.00 0.93 0.97 30  
 4 0.88 0.92 0.90 243  
  
 micro avg 0.81 0.65 0.72 970  
 macro avg 0.81 0.72 0.75 970  
weighted avg 0.77 0.65 0.69 970  
 samples avg 0.29 0.28 0.28 970

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-05-01-58-05\Models\MultiLabelModel\_LogisticRegression.pkl

Model data: {'Accuracy': 71.33, 'Loss': 28.67, 'Hamming\_loss': 7.72, 'Model\_name': 'LogisticRegression', 'Filename': 'D:\\test\\Basic\_Python\\Project POMO\\data scraping\\Artifact\\2022-07-05-01-58-05\\Models\\MultiLabelModel\_LogisticRegression.pkl'}

## Model : KNeighborsClassifier

Initializing builMultiLabelModels

Classification on Training dataset :

Accuracy\_score: 88.88 %

Loss: 11.12 %

Zero\_one\_loss: 11.12 %

Hamming\_loss: 2.74 %

Classification\_report: precision recall f1-score support  
  
 0 0.91 0.79 0.84 824  
 1 0.90 0.89 0.90 464  
 2 0.97 1.00 0.98 329  
 3 0.98 0.68 0.81 73  
 4 0.95 0.99 0.97 544  
  
 micro avg 0.93 0.89 0.91 2234  
 macro avg 0.94 0.87 0.90 2234  
weighted avg 0.93 0.89 0.90 2234  
 samples avg 0.37 0.37 0.37 2234

Classification on Testing dataset :

Accuracy\_score: 88.42 %

Loss: 11.58 %

Zero\_one\_loss: 11.58 %

Hamming\_loss: 2.95 %

Classification\_report: precision recall f1-score support  
  
 0 0.91 0.76 0.83 350  
 1 0.92 0.90 0.91 212  
 2 0.93 0.97 0.95 135  
 3 0.95 0.70 0.81 30  
 4 0.96 0.98 0.97 243  
  
 micro avg 0.93 0.87 0.90 970  
 macro avg 0.93 0.86 0.89 970  
weighted avg 0.93 0.87 0.90 970  
 samples avg 0.37 0.36 0.36 970

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-05-01-58-05\Models\MultiLabelModel\_KNeighborsClassifier.pkl

Model data: {'Accuracy': 88.88, 'Loss': 11.12, 'Hamming\_loss': 2.74, 'Model\_name': 'KNeighborsClassifier', 'Filename': 'D:\\test\\Basic\_Python\\Project POMO\\data scraping\\Artifact\\2022-07-05-01-58-05\\Models\\MultiLabelModel\_KNeighborsClassifier.pkl'}

## Model : GaussianNB

Initializing builMultiLabelModels

Classification on Training dataset :

Accuracy\_score: 62.41 %

Loss: 37.59 %

Zero\_one\_loss: 37.59 %

Hamming\_loss: 13.82 %

Classification\_report: precision recall f1-score support  
  
 0 0.52 0.67 0.59 824  
 1 0.44 0.80 0.57 464  
 2 0.56 0.99 0.72 329  
 3 0.26 0.96 0.40 73  
 4 0.69 0.97 0.81 544  
  
 micro avg 0.53 0.83 0.64 2234  
 macro avg 0.50 0.88 0.62 2234  
weighted avg 0.55 0.83 0.65 2234  
 samples avg 0.21 0.33 0.24 2234

Classification on Testing dataset :

Accuracy\_score: 62.81 %

Loss: 37.19 %

Zero\_one\_loss: 37.19 %

Hamming\_loss: 15.19 %

Classification\_report: precision recall f1-score support  
  
 0 0.53 0.71 0.61 350  
 1 0.42 0.83 0.56 212  
 2 0.50 0.99 0.66 135  
 3 0.20 1.00 0.33 30  
 4 0.69 0.98 0.81 243  
  
 micro avg 0.50 0.85 0.63 970  
 macro avg 0.47 0.90 0.59 970  
weighted avg 0.53 0.85 0.65 970  
 samples avg 0.21 0.34 0.24 970

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-05-01-58-05\Models\MultiLabelModel\_GaussianNB.pkl

Model data: {'Accuracy': 62.41, 'Loss': 37.59, 'Hamming\_loss': 13.82, 'Model\_name': 'GaussianNB', 'Filename': 'D:\\test\\Basic\_Python\\Project POMO\\data scraping\\Artifact\\2022-07-05-01-58-05\\Models\\MultiLabelModel\_GaussianNB.pkl'}

## Model : SVC

Initializing builMultiLabelModels

Classification on Training dataset :

Accuracy\_score: 97.43 %

Loss: 2.57 %

Zero\_one\_loss: 2.57 %

Hamming\_loss: 0.54 %

Classification\_report: precision recall f1-score support  
  
 0 0.99 0.94 0.97 824  
 1 1.00 0.97 0.98 464  
 2 1.00 1.00 1.00 329  
 3 1.00 0.92 0.96 73  
 4 1.00 0.99 1.00 544  
  
 micro avg 1.00 0.97 0.98 2234  
 macro avg 1.00 0.96 0.98 2234  
weighted avg 1.00 0.97 0.98 2234  
 samples avg 0.42 0.41 0.41 2234

Classification on Testing dataset :

Accuracy\_score: 97.01 %

Loss: 2.99 %

Zero\_one\_loss: 2.99 %

Hamming\_loss: 0.63 %

Classification\_report: precision recall f1-score support  
  
 0 1.00 0.92 0.96 350  
 1 1.00 0.97 0.98 212  
 2 1.00 1.00 1.00 135  
 3 1.00 0.90 0.95 30  
 4 1.00 0.99 1.00 243  
  
 micro avg 1.00 0.96 0.98 970  
 macro avg 1.00 0.96 0.98 970  
weighted avg 1.00 0.96 0.98 970  
 samples avg 0.41 0.40 0.40 970

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-05-01-58-05\Models\MultiLabelModel\_SVC.pkl

Model data: {'Accuracy': 97.43, 'Loss': 2.57, 'Hamming\_loss': 0.54, 'Model\_name': 'SVC', 'Filename': 'D:\\test\\Basic\_Python\\Project POMO\\data scraping\\Artifact\\2022-07-05-01-58-05\\Models\\MultiLabelModel\_SVC.pkl'}

## Model : DecisionTreeClassifier

Initializing builMultiLabelModels

Classification on Training dataset :

Accuracy\_score: 100.0 %

Loss: 0.0 %

Zero\_one\_loss: 0.0 %

Hamming\_loss: 0.0 %

Classification\_report: precision recall f1-score support  
  
 0 1.00 1.00 1.00 824  
 1 1.00 1.00 1.00 464  
 2 1.00 1.00 1.00 329  
 3 1.00 1.00 1.00 73  
 4 1.00 1.00 1.00 544  
  
 micro avg 1.00 1.00 1.00 2234  
 macro avg 1.00 1.00 1.00 2234  
weighted avg 1.00 1.00 1.00 2234  
 samples avg 0.43 0.43 0.43 2234

Classification on Testing dataset :

Accuracy\_score: 100.0 %

Loss: 0.0 %

Zero\_one\_loss: 0.0 %

Hamming\_loss: 0.0 %

Classification\_report: precision recall f1-score support  
  
 0 1.00 1.00 1.00 350  
 1 1.00 1.00 1.00 212  
 2 1.00 1.00 1.00 135  
 3 1.00 1.00 1.00 30  
 4 1.00 1.00 1.00 243  
  
 micro avg 1.00 1.00 1.00 970  
 macro avg 1.00 1.00 1.00 970  
weighted avg 1.00 1.00 1.00 970  
 samples avg 0.43 0.43 0.43 970

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-05-01-58-05\Models\MultiLabelModel\_DecisionTreeClassifier.pkl

Model data: {'Accuracy': 100.0, 'Loss': 0.0, 'Hamming\_loss': 0.0, 'Model\_name': 'DecisionTreeClassifier', 'Filename': 'D:\\test\\Basic\_Python\\Project POMO\\data scraping\\Artifact\\2022-07-05-01-58-05\\Models\\MultiLabelModel\_DecisionTreeClassifier.pkl'}

## Model : RandomForestClassifier

Initializing builMultiLabelModels

Classification on Training dataset :

Accuracy\_score: 100.0 %

Loss: 0.0 %

Zero\_one\_loss: 0.0 %

Hamming\_loss: 0.0 %

Classification\_report: precision recall f1-score support  
  
 0 1.00 1.00 1.00 824  
 1 1.00 1.00 1.00 464  
 2 1.00 1.00 1.00 329  
 3 1.00 1.00 1.00 73  
 4 1.00 1.00 1.00 544  
  
 micro avg 1.00 1.00 1.00 2234  
 macro avg 1.00 1.00 1.00 2234  
weighted avg 1.00 1.00 1.00 2234  
 samples avg 0.43 0.43 0.43 2234

Classification on Testing dataset :

Accuracy\_score: 100.0 %

Loss: 0.0 %

Zero\_one\_loss: 0.0 %

Hamming\_loss: 0.0 %

Classification\_report: precision recall f1-score support  
  
 0 1.00 1.00 1.00 350  
 1 1.00 1.00 1.00 212  
 2 1.00 1.00 1.00 135  
 3 1.00 1.00 1.00 30  
 4 1.00 1.00 1.00 243  
  
 micro avg 1.00 1.00 1.00 970  
 macro avg 1.00 1.00 1.00 970  
weighted avg 1.00 1.00 1.00 970  
 samples avg 0.43 0.43 0.43 970

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-05-01-58-05\Models\MultiLabelModel\_RandomForestClassifier.pkl

Model data: {'Accuracy': 100.0, 'Loss': 0.0, 'Hamming\_loss': 0.0, 'Model\_name': 'RandomForestClassifier', 'Filename': 'D:\\test\\Basic\_Python\\Project POMO\\data scraping\\Artifact\\2022-07-05-01-58-05\\Models\\MultiLabelModel\_RandomForestClassifier.pkl'}

## Model : GradientBoostingClassifier

Initializing builMultiLabelModels

Classification on Training dataset :

Accuracy\_score: 97.84 %

Loss: 2.16 %

Zero\_one\_loss: 2.16 %

Hamming\_loss: 0.48 %

Classification\_report: precision recall f1-score support  
  
 0 0.98 0.98 0.98 824  
 1 0.95 0.97 0.96 464  
 2 1.00 1.00 1.00 329  
 3 1.00 1.00 1.00 73  
 4 1.00 1.00 1.00 544  
  
 micro avg 0.98 0.99 0.98 2234  
 macro avg 0.99 0.99 0.99 2234  
weighted avg 0.98 0.99 0.98 2234  
 samples avg 0.42 0.43 0.42 2234

Classification on Testing dataset :

Accuracy\_score: 99.37 %

Loss: 0.63 %

Zero\_one\_loss: 0.63 %

Hamming\_loss: 0.14 %

Classification\_report: precision recall f1-score support  
  
 0 0.99 1.00 0.99 350  
 1 0.99 0.99 0.99 212  
 2 1.00 1.00 1.00 135  
 3 1.00 1.00 1.00 30  
 4 1.00 1.00 1.00 243  
  
 micro avg 0.99 1.00 1.00 970  
 macro avg 1.00 1.00 1.00 970  
weighted avg 0.99 1.00 1.00 970  
 samples avg 0.43 0.43 0.43 970

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-05-01-58-05\Models\MultiLabelModel\_GradientBoostingClassifier.pkl

Model data: {'Accuracy': 97.84, 'Loss': 2.16, 'Hamming\_loss': 0.48, 'Model\_name': 'GradientBoostingClassifier', 'Filename': 'D:\\test\\Basic\_Python\\Project POMO\\data scraping\\Artifact\\2022-07-05-01-58-05\\Models\\MultiLabelModel\_GradientBoostingClassifier.pkl'}

## Model : AdaBoostClassifier

Initializing builMultiLabelModels

Classification on Training dataset :

Accuracy\_score: 96.45 %

Loss: 3.55 %

Zero\_one\_loss: 3.55 %

Hamming\_loss: 0.8 %

Classification\_report: precision recall f1-score support  
  
 0 0.97 0.96 0.96 824  
 1 0.93 0.95 0.94 464  
 2 1.00 1.00 1.00 329  
 3 1.00 1.00 1.00 73  
 4 1.00 1.00 1.00 544  
  
 micro avg 0.97 0.97 0.97 2234  
 macro avg 0.98 0.98 0.98 2234  
weighted avg 0.97 0.97 0.97 2234  
 samples avg 0.42 0.42 0.42 2234

Classification on Testing dataset :

Accuracy\_score: 98.27 %

Loss: 1.73 %

Zero\_one\_loss: 1.73 %

Hamming\_loss: 0.39 %

Classification\_report: precision recall f1-score support  
  
 0 0.97 0.97 0.97 350  
 1 0.99 0.99 0.99 212  
 2 1.00 1.00 1.00 135  
 3 1.00 1.00 1.00 30  
 4 1.00 1.00 1.00 243  
  
 micro avg 0.99 0.99 0.99 970  
 macro avg 0.99 0.99 0.99 970  
weighted avg 0.99 0.99 0.99 970  
 samples avg 0.42 0.42 0.42 970

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-05-01-58-05\Models\MultiLabelModel\_AdaBoostClassifier.pkl

Model data: {'Accuracy': 96.45, 'Loss': 3.55, 'Hamming\_loss': 0.8, 'Model\_name': 'AdaBoostClassifier', 'Filename': 'D:\\test\\Basic\_Python\\Project POMO\\data scraping\\Artifact\\2022-07-05-01-58-05\\Models\\MultiLabelModel\_AdaBoostClassifier.pkl'}

## Ensemble\_Voting\_Classifier\_Result >>>

Classification Report on Training dataset :

Accuracy\_score: 93.81 %

Loss: 6.19 %

Zero\_one\_loss: 6.19 %

Hamming\_loss: 1.35 %

ML\_confusion\_matrix:  
 precision recall f1-score support  
  
 0 0.96 0.92 0.94 824  
 1 0.94 0.88 0.91 464  
 2 1.00 0.99 0.99 329  
 3 1.00 0.90 0.95 73  
 4 1.00 0.99 1.00 544  
  
 micro avg 0.97 0.94 0.95 2234  
 macro avg 0.98 0.94 0.96 2234  
weighted avg 0.97 0.94 0.95 2234  
 samples avg 0.41 0.40 0.40 2234

Classification Report on Testing dataset :

Accuracy\_score: 99.76 %

Loss: 0.24 %

Zero\_one\_loss: 0.24 %

Hamming\_loss: 0.05 %

ML\_confusion\_matrix:  
 precision recall f1-score support  
  
 0 1.00 1.00 1.00 350  
 1 1.00 0.99 1.00 212  
 2 1.00 1.00 1.00 135  
 3 1.00 1.00 1.00 30  
 4 1.00 1.00 1.00 243  
  
 micro avg 1.00 1.00 1.00 970  
 macro avg 1.00 1.00 1.00 970  
weighted avg 1.00 1.00 1.00 970  
 samples avg 0.43 0.43 0.43 970