Classification Report 2022-07-24-18-39-12

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

## Model : LogisticRegression

Initializing builMultiLabelModels

Classification on Training dataset :

Accuracy\_score: 73.12 %

Loss: 26.88 %

Zero\_one\_loss: 26.88 %

Hamming\_loss: 7.28 %

Classification\_report: precision recall f1-score support  
  
 0 0.78 0.59 0.67 793  
 1 0.51 0.18 0.27 455  
 2 0.92 0.91 0.91 306  
 3 1.00 0.98 0.99 41  
 4 0.89 0.93 0.91 548  
  
 micro avg 0.82 0.64 0.72 2143  
 macro avg 0.82 0.72 0.75 2143  
weighted avg 0.77 0.64 0.69 2143  
 samples avg 0.29 0.27 0.27 2143

Classification on Testing dataset :

Accuracy\_score: 70.02 %

Loss: 29.98 %

Zero\_one\_loss: 29.98 %

Hamming\_loss: 7.81 %

Classification\_report: precision recall f1-score support  
  
 0 0.74 0.59 0.66 347  
 1 0.42 0.15 0.22 202  
 2 0.92 0.92 0.92 131  
 3 1.00 1.00 1.00 18  
 4 0.89 0.93 0.91 227  
  
 micro avg 0.80 0.63 0.70 925  
 macro avg 0.79 0.72 0.74 925  
weighted avg 0.74 0.63 0.67 925  
 samples avg 0.28 0.26 0.26 925

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-24-18-39-12\Models\MultiLabelModel\_LogisticRegression.pkl

Model data: {'Accuracy': 73.12, 'Loss': 26.88, 'Hamming\_loss': 7.28, 'Model\_name': 'LogisticRegression', 'Filename': 'D:\\test\\Basic\_Python\\Project POMO\\data scraping\\Artifact\\2022-07-24-18-39-12\\Models\\MultiLabelModel\_LogisticRegression.pkl'}

## Model : KNeighborsClassifier

Initializing builMultiLabelModels

Classification on Training dataset :

Accuracy\_score: 89.12 %

Loss: 10.88 %

Zero\_one\_loss: 10.88 %

Hamming\_loss: 2.68 %

Classification\_report: precision recall f1-score support  
  
 0 0.90 0.78 0.84 793  
 1 0.89 0.89 0.89 455  
 2 0.97 0.98 0.98 306  
 3 0.97 0.88 0.92 41  
 4 0.95 0.99 0.97 548  
  
 micro avg 0.93 0.89 0.91 2143  
 macro avg 0.94 0.90 0.92 2143  
weighted avg 0.92 0.89 0.90 2143  
 samples avg 0.37 0.37 0.36 2143

Classification on Testing dataset :

Accuracy\_score: 89.15 %

Loss: 10.85 %

Zero\_one\_loss: 10.85 %

Hamming\_loss: 2.82 %

Classification\_report: precision recall f1-score support  
  
 0 0.90 0.78 0.84 347  
 1 0.90 0.88 0.89 202  
 2 0.95 1.00 0.97 131  
 3 0.93 0.78 0.85 18  
 4 0.95 0.99 0.97 227  
  
 micro avg 0.92 0.88 0.90 925  
 macro avg 0.93 0.89 0.90 925  
weighted avg 0.92 0.88 0.90 925  
 samples avg 0.36 0.36 0.36 925

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-24-18-39-12\Models\MultiLabelModel\_KNeighborsClassifier.pkl

Model data: {'Accuracy': 89.12, 'Loss': 10.88, 'Hamming\_loss': 2.68, 'Model\_name': 'KNeighborsClassifier', 'Filename': 'D:\\test\\Basic\_Python\\Project POMO\\data scraping\\Artifact\\2022-07-24-18-39-12\\Models\\MultiLabelModel\_KNeighborsClassifier.pkl'}

## Model : GaussianNB

Initializing builMultiLabelModels

Classification on Training dataset :

Accuracy\_score: 63.3 %

Loss: 36.7 %

Zero\_one\_loss: 36.7 %

Hamming\_loss: 13.18 %

Classification\_report: precision recall f1-score support  
  
 0 0.52 0.69 0.59 793  
 1 0.45 0.83 0.58 455  
 2 0.54 0.99 0.70 306  
 3 0.22 1.00 0.36 41  
 4 0.71 0.98 0.82 548  
  
 micro avg 0.53 0.84 0.65 2143  
 macro avg 0.49 0.90 0.61 2143  
weighted avg 0.55 0.84 0.66 2143  
 samples avg 0.22 0.33 0.25 2143

Classification on Testing dataset :

Accuracy\_score: 63.4 %

Loss: 36.6 %

Zero\_one\_loss: 36.6 %

Hamming\_loss: 13.73 %

Classification\_report: precision recall f1-score support  
  
 0 0.55 0.70 0.62 347  
 1 0.43 0.81 0.56 202  
 2 0.53 0.99 0.69 131  
 3 0.19 1.00 0.32 18  
 4 0.69 0.98 0.81 227  
  
 micro avg 0.52 0.84 0.64 925  
 macro avg 0.48 0.90 0.60 925  
weighted avg 0.55 0.84 0.65 925  
 samples avg 0.21 0.33 0.24 925

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-24-18-39-12\Models\MultiLabelModel\_GaussianNB.pkl

Model data: {'Accuracy': 63.3, 'Loss': 36.7, 'Hamming\_loss': 13.18, 'Model\_name': 'GaussianNB', 'Filename': 'D:\\test\\Basic\_Python\\Project POMO\\data scraping\\Artifact\\2022-07-24-18-39-12\\Models\\MultiLabelModel\_GaussianNB.pkl'}

## Model : SVC

Initializing builMultiLabelModels

Classification on Training dataset :

Accuracy\_score: 97.47 %

Loss: 2.53 %

Zero\_one\_loss: 2.53 %

Hamming\_loss: 0.51 %

Classification\_report: precision recall f1-score support  
  
 0 0.99 0.94 0.96 793  
 1 0.99 0.98 0.98 455  
 2 1.00 0.99 1.00 306  
 3 1.00 0.95 0.97 41  
 4 1.00 1.00 1.00 548  
  
 micro avg 0.99 0.97 0.98 2143  
 macro avg 1.00 0.97 0.98 2143  
weighted avg 0.99 0.97 0.98 2143  
 samples avg 0.41 0.41 0.41 2143

Classification on Testing dataset :

Accuracy\_score: 98.01 %

Loss: 1.99 %

Zero\_one\_loss: 1.99 %

Hamming\_loss: 0.43 %

Classification\_report: precision recall f1-score support  
  
 0 1.00 0.94 0.97 347  
 1 1.00 0.98 0.99 202  
 2 1.00 1.00 1.00 131  
 3 1.00 0.94 0.97 18  
 4 1.00 1.00 1.00 227  
  
 micro avg 1.00 0.97 0.99 925  
 macro avg 1.00 0.97 0.99 925  
weighted avg 1.00 0.97 0.99 925  
 samples avg 0.41 0.40 0.41 925

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-24-18-39-12\Models\MultiLabelModel\_SVC.pkl

Model data: {'Accuracy': 97.47, 'Loss': 2.53, 'Hamming\_loss': 0.51, 'Model\_name': 'SVC', 'Filename': 'D:\\test\\Basic\_Python\\Project POMO\\data scraping\\Artifact\\2022-07-24-18-39-12\\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 1.00 793  
 1 1.00 1.00 1.00 455  
 2 1.00 1.00 1.00 306  
 3 1.00 1.00 1.00 41  
 4 1.00 1.00 1.00 548  
  
 micro avg 1.00 1.00 1.00 2143  
 macro avg 1.00 1.00 1.00 2143  
weighted avg 1.00 1.00 1.00 2143  
 samples avg 0.43 0.43 0.43 2143

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 1.00 347  
 1 1.00 1.00 1.00 202  
 2 1.00 1.00 1.00 131  
 3 1.00 1.00 1.00 18  
 4 1.00 1.00 1.00 227  
  
 micro avg 1.00 1.00 1.00 925  
 macro avg 1.00 1.00 1.00 925  
weighted avg 1.00 1.00 1.00 925  
 samples avg 0.42 0.42 0.42 925

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-24-18-39-12\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\\2022-07-24-18-39-12\\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 1.00 793  
 1 1.00 1.00 1.00 455  
 2 1.00 1.00 1.00 306  
 3 1.00 1.00 1.00 41  
 4 1.00 1.00 1.00 548  
  
 micro avg 1.00 1.00 1.00 2143  
 macro avg 1.00 1.00 1.00 2143  
weighted avg 1.00 1.00 1.00 2143  
 samples avg 0.43 0.43 0.43 2143

Classification on Testing dataset :

Accuracy\_score: 99.92 %

Loss: 0.08 %

Zero\_one\_loss: 0.08 %

Hamming\_loss: 0.02 %

Classification\_report: precision recall f1-score support  
  
 0 1.00 1.00 1.00 347  
 1 1.00 1.00 1.00 202  
 2 1.00 1.00 1.00 131  
 3 1.00 1.00 1.00 18  
 4 1.00 1.00 1.00 227  
  
 micro avg 1.00 1.00 1.00 925  
 macro avg 1.00 1.00 1.00 925  
weighted avg 1.00 1.00 1.00 925  
 samples avg 0.42 0.42 0.42 925

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-24-18-39-12\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\\2022-07-24-18-39-12\\Models\\MultiLabelModel\_RandomForestClassifier.pkl'}

## Model : GradientBoostingClassifier

Initializing builMultiLabelModels

Classification on Training dataset :

Accuracy\_score: 98.26 %

Loss: 1.74 %

Zero\_one\_loss: 1.74 %

Hamming\_loss: 0.37 %

Classification\_report: precision recall f1-score support  
  
 0 0.98 0.99 0.98 793  
 1 0.96 0.98 0.97 455  
 2 1.00 1.00 1.00 306  
 3 1.00 1.00 1.00 41  
 4 1.00 1.00 1.00 548  
  
 micro avg 0.98 0.99 0.99 2143  
 macro avg 0.99 0.99 0.99 2143  
weighted avg 0.98 0.99 0.99 2143  
 samples avg 0.42 0.42 0.42 2143

Classification on Testing dataset :

Accuracy\_score: 98.96 %

Loss: 1.04 %

Zero\_one\_loss: 1.04 %

Hamming\_loss: 0.22 %

Classification\_report: precision recall f1-score support  
  
 0 0.99 0.99 0.99 347  
 1 0.98 0.99 0.98 202  
 2 1.00 1.00 1.00 131  
 3 1.00 1.00 1.00 18  
 4 1.00 1.00 1.00 227  
  
 micro avg 0.99 0.99 0.99 925  
 macro avg 0.99 1.00 0.99 925  
weighted avg 0.99 0.99 0.99 925  
 samples avg 0.42 0.42 0.42 925

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-24-18-39-12\Models\MultiLabelModel\_GradientBoostingClassifier.pkl

Model data: {'Accuracy': 98.26, 'Loss': 1.74, 'Hamming\_loss': 0.37, 'Model\_name': 'GradientBoostingClassifier', 'Filename': 'D:\\test\\Basic\_Python\\Project POMO\\data scraping\\Artifact\\2022-07-24-18-39-12\\Models\\MultiLabelModel\_GradientBoostingClassifier.pkl'}

## Model : AdaBoostClassifier

Initializing builMultiLabelModels

Classification on Training dataset :

Accuracy\_score: 97.16 %

Loss: 2.84 %

Zero\_one\_loss: 2.84 %

Hamming\_loss: 0.62 %

Classification\_report: precision recall f1-score support  
  
 0 0.97 0.97 0.97 793  
 1 0.94 0.97 0.95 455  
 2 1.00 1.00 1.00 306  
 3 1.00 1.00 1.00 41  
 4 1.00 1.00 1.00 548  
  
 micro avg 0.97 0.98 0.98 2143  
 macro avg 0.98 0.99 0.98 2143  
weighted avg 0.98 0.98 0.98 2143  
 samples avg 0.41 0.42 0.41 2143

Classification on Testing dataset :

Accuracy\_score: 97.45 %

Loss: 2.55 %

Zero\_one\_loss: 2.55 %

Hamming\_loss: 0.61 %

Classification\_report: precision recall f1-score support  
  
 0 0.97 0.95 0.96 347  
 1 0.96 0.98 0.97 202  
 2 1.00 1.00 1.00 131  
 3 1.00 1.00 1.00 18  
 4 1.00 1.00 1.00 227  
  
 micro avg 0.98 0.98 0.98 925  
 macro avg 0.99 0.99 0.99 925  
weighted avg 0.98 0.98 0.98 925  
 samples avg 0.41 0.41 0.41 925

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-24-18-39-12\Models\MultiLabelModel\_AdaBoostClassifier.pkl

Model data: {'Accuracy': 97.16, 'Loss': 2.84, 'Hamming\_loss': 0.62, 'Model\_name': 'AdaBoostClassifier', 'Filename': 'D:\\test\\Basic\_Python\\Project POMO\\data scraping\\Artifact\\2022-07-24-18-39-12\\Models\\MultiLabelModel\_AdaBoostClassifier.pkl'}

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

Classification Report on Training dataset :

Accuracy\_score: 94.6 %

Loss: 5.4 %

Zero\_one\_loss: 5.4 %

Hamming\_loss: 1.18 %

ML\_confusion\_matrix:  
 precision recall f1-score support  
  
 0 0.96 0.94 0.95 793  
 1 0.96 0.85 0.90 455  
 2 1.00 0.98 0.99 306  
 3 1.00 0.90 0.95 41  
 4 1.00 1.00 1.00 548  
  
 micro avg 0.98 0.94 0.96 2143  
 macro avg 0.98 0.93 0.96 2143  
weighted avg 0.98 0.94 0.96 2143  
 samples avg 0.41 0.40 0.40 2143

Classification Report on Testing dataset :

Accuracy\_score: 99.52 %

Loss: 0.48 %

Zero\_one\_loss: 0.48 %

Hamming\_loss: 0.1 %

ML\_confusion\_matrix:  
 precision recall f1-score support  
  
 0 1.00 0.99 1.00 347  
 1 1.00 0.99 0.99 202  
 2 1.00 1.00 1.00 131  
 3 1.00 1.00 1.00 18  
 4 1.00 1.00 1.00 227  
  
 micro avg 1.00 0.99 1.00 925  
 macro avg 1.00 1.00 1.00 925  
weighted avg 1.00 0.99 1.00 925  
 samples avg 0.42 0.42 0.42 925

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

## Model : LogisticRegression

Initializing builMultiLabelModels

Classification on Training dataset :

Accuracy\_score: 70.9 %

Loss: 29.1 %

Zero\_one\_loss: 29.1 %

Hamming\_loss: 7.79 %

Classification\_report: precision recall f1-score support  
  
 0 0.74 0.59 0.66 828  
 1 0.53 0.21 0.30 475  
 2 0.91 0.90 0.91 302  
 3 1.00 0.95 0.98 43  
 4 0.88 0.93 0.90 534  
  
 micro avg 0.80 0.64 0.71 2182  
 macro avg 0.81 0.72 0.75 2182  
weighted avg 0.76 0.64 0.68 2182  
 samples avg 0.28 0.27 0.27 2182

Classification on Testing dataset :

Accuracy\_score: 74.32 %

Loss: 25.68 %

Zero\_one\_loss: 25.68 %

Hamming\_loss: 6.81 %

Classification\_report: precision recall f1-score support  
  
 0 0.79 0.56 0.66 312  
 1 0.41 0.12 0.19 182  
 2 0.95 0.95 0.95 135  
 3 1.00 1.00 1.00 16  
 4 0.89 0.95 0.92 241  
  
 micro avg 0.84 0.65 0.73 886  
 macro avg 0.81 0.72 0.74 886  
weighted avg 0.77 0.65 0.68 886  
 samples avg 0.29 0.27 0.27 886

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-24-18-39-12\Models\MultiLabelModel\_LogisticRegression.pkl

Model data: {'Accuracy': 70.9, 'Loss': 29.1, 'Hamming\_loss': 7.79, 'Model\_name': 'LogisticRegression', 'Filename': 'D:\\test\\Basic\_Python\\Project POMO\\data scraping\\Artifact\\2022-07-24-18-39-12\\Models\\MultiLabelModel\_LogisticRegression.pkl'}

## Model : KNeighborsClassifier

Initializing builMultiLabelModels

Classification on Training dataset :

Accuracy\_score: 89.12 %

Loss: 10.88 %

Zero\_one\_loss: 10.88 %

Hamming\_loss: 2.66 %

Classification\_report: precision recall f1-score support  
  
 0 0.92 0.78 0.84 828  
 1 0.90 0.89 0.90 475  
 2 0.96 1.00 0.98 302  
 3 1.00 0.84 0.91 43  
 4 0.96 0.99 0.97 534  
  
 micro avg 0.93 0.89 0.91 2182  
 macro avg 0.95 0.90 0.92 2182  
weighted avg 0.93 0.89 0.91 2182  
 samples avg 0.37 0.37 0.37 2182

Classification on Testing dataset :

Accuracy\_score: 89.23 %

Loss: 10.77 %

Zero\_one\_loss: 10.77 %

Hamming\_loss: 2.82 %

Classification\_report: precision recall f1-score support  
  
 0 0.89 0.78 0.83 312  
 1 0.86 0.86 0.86 182  
 2 0.97 0.99 0.98 135  
 3 1.00 0.75 0.86 16  
 4 0.93 0.98 0.96 241  
  
 micro avg 0.91 0.88 0.90 886  
 macro avg 0.93 0.87 0.90 886  
weighted avg 0.91 0.88 0.90 886  
 samples avg 0.36 0.36 0.36 886

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-24-18-39-12\Models\MultiLabelModel\_KNeighborsClassifier.pkl

Model data: {'Accuracy': 89.12, 'Loss': 10.88, 'Hamming\_loss': 2.66, 'Model\_name': 'KNeighborsClassifier', 'Filename': 'D:\\test\\Basic\_Python\\Project POMO\\data scraping\\Artifact\\2022-07-24-18-39-12\\Models\\MultiLabelModel\_KNeighborsClassifier.pkl'}

## Model : GaussianNB

Initializing builMultiLabelModels

Classification on Training dataset :

Accuracy\_score: 62.89 %

Loss: 37.11 %

Zero\_one\_loss: 37.11 %

Hamming\_loss: 13.41 %

Classification\_report: precision recall f1-score support  
  
 0 0.55 0.68 0.61 828  
 1 0.45 0.81 0.58 475  
 2 0.53 0.99 0.69 302  
 3 0.23 1.00 0.37 43  
 4 0.69 0.98 0.81 534  
  
 micro avg 0.53 0.83 0.65 2182  
 macro avg 0.49 0.89 0.61 2182  
weighted avg 0.55 0.83 0.66 2182  
 samples avg 0.21 0.33 0.24 2182

Classification on Testing dataset :

Accuracy\_score: 64.43 %

Loss: 35.57 %

Zero\_one\_loss: 35.57 %

Hamming\_loss: 13.03 %

Classification\_report: precision recall f1-score support  
  
 0 0.49 0.70 0.58 312  
 1 0.42 0.81 0.56 182  
 2 0.56 0.99 0.71 135  
 3 0.20 1.00 0.33 16  
 4 0.74 0.98 0.84 241  
  
 micro avg 0.52 0.85 0.65 886  
 macro avg 0.48 0.90 0.60 886  
weighted avg 0.55 0.85 0.66 886  
 samples avg 0.21 0.33 0.24 886

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-24-18-39-12\Models\MultiLabelModel\_GaussianNB.pkl

Model data: {'Accuracy': 62.89, 'Loss': 37.11, 'Hamming\_loss': 13.41, 'Model\_name': 'GaussianNB', 'Filename': 'D:\\test\\Basic\_Python\\Project POMO\\data scraping\\Artifact\\2022-07-24-18-39-12\\Models\\MultiLabelModel\_GaussianNB.pkl'}

## Model : SVC

Initializing builMultiLabelModels

Classification on Training dataset :

Accuracy\_score: 97.5 %

Loss: 2.5 %

Zero\_one\_loss: 2.5 %

Hamming\_loss: 0.53 %

Classification\_report: precision recall f1-score support  
  
 0 1.00 0.94 0.97 828  
 1 0.99 0.97 0.98 475  
 2 1.00 1.00 1.00 302  
 3 1.00 0.93 0.96 43  
 4 1.00 1.00 1.00 534  
  
 micro avg 1.00 0.97 0.98 2182  
 macro avg 1.00 0.97 0.98 2182  
weighted avg 1.00 0.97 0.98 2182  
 samples avg 0.41 0.41 0.41 2182

Classification on Testing dataset :

Accuracy\_score: 98.09 %

Loss: 1.91 %

Zero\_one\_loss: 1.91 %

Hamming\_loss: 0.38 %

Classification\_report: precision recall f1-score support  
  
 0 1.00 0.94 0.97 312  
 1 1.00 0.97 0.99 182  
 2 1.00 1.00 1.00 135  
 3 1.00 1.00 1.00 16  
 4 1.00 1.00 1.00 241  
  
 micro avg 1.00 0.97 0.99 886  
 macro avg 1.00 0.98 0.99 886  
weighted avg 1.00 0.97 0.99 886  
 samples avg 0.40 0.40 0.40 886

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-24-18-39-12\Models\MultiLabelModel\_SVC.pkl

Model data: {'Accuracy': 97.5, 'Loss': 2.5, 'Hamming\_loss': 0.53, 'Model\_name': 'SVC', 'Filename': 'D:\\test\\Basic\_Python\\Project POMO\\data scraping\\Artifact\\2022-07-24-18-39-12\\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 1.00 828  
 1 1.00 1.00 1.00 475  
 2 1.00 1.00 1.00 302  
 3 1.00 1.00 1.00 43  
 4 1.00 1.00 1.00 534  
  
 micro avg 1.00 1.00 1.00 2182  
 macro avg 1.00 1.00 1.00 2182  
weighted avg 1.00 1.00 1.00 2182  
 samples avg 0.43 0.43 0.43 2182

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 1.00 312  
 1 1.00 1.00 1.00 182  
 2 1.00 1.00 1.00 135  
 3 1.00 1.00 1.00 16  
 4 1.00 1.00 1.00 241  
  
 micro avg 1.00 1.00 1.00 886  
 macro avg 1.00 1.00 1.00 886  
weighted avg 1.00 1.00 1.00 886  
 samples avg 0.41 0.41 0.41 886

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-24-18-39-12\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\\2022-07-24-18-39-12\\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 1.00 828  
 1 1.00 1.00 1.00 475  
 2 1.00 1.00 1.00 302  
 3 1.00 1.00 1.00 43  
 4 1.00 1.00 1.00 534  
  
 micro avg 1.00 1.00 1.00 2182  
 macro avg 1.00 1.00 1.00 2182  
weighted avg 1.00 1.00 1.00 2182  
 samples avg 0.43 0.43 0.43 2182

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 1.00 312  
 1 1.00 1.00 1.00 182  
 2 1.00 1.00 1.00 135  
 3 1.00 1.00 1.00 16  
 4 1.00 1.00 1.00 241  
  
 micro avg 1.00 1.00 1.00 886  
 macro avg 1.00 1.00 1.00 886  
weighted avg 1.00 1.00 1.00 886  
 samples avg 0.41 0.41 0.41 886

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-24-18-39-12\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\\2022-07-24-18-39-12\\Models\\MultiLabelModel\_RandomForestClassifier.pkl'}

## Model : GradientBoostingClassifier

Initializing builMultiLabelModels

Classification on Training dataset :

Accuracy\_score: 98.08 %

Loss: 1.92 %

Zero\_one\_loss: 1.92 %

Hamming\_loss: 0.42 %

Classification\_report: precision recall f1-score support  
  
 0 0.98 0.98 0.98 828  
 1 0.96 0.98 0.97 475  
 2 1.00 1.00 1.00 302  
 3 1.00 1.00 1.00 43  
 4 1.00 1.00 1.00 534  
  
 micro avg 0.98 0.99 0.99 2182  
 macro avg 0.99 0.99 0.99 2182  
weighted avg 0.98 0.99 0.99 2182  
 samples avg 0.42 0.42 0.42 2182

Classification on Testing dataset :

Accuracy\_score: 99.12 %

Loss: 0.88 %

Zero\_one\_loss: 0.88 %

Hamming\_loss: 0.21 %

Classification\_report: precision recall f1-score support  
  
 0 0.98 1.00 0.99 312  
 1 0.98 0.98 0.98 182  
 2 1.00 1.00 1.00 135  
 3 1.00 1.00 1.00 16  
 4 1.00 1.00 1.00 241  
  
 micro avg 0.99 1.00 0.99 886  
 macro avg 0.99 1.00 0.99 886  
weighted avg 0.99 1.00 0.99 886  
 samples avg 0.41 0.41 0.41 886

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-24-18-39-12\Models\MultiLabelModel\_GradientBoostingClassifier.pkl

Model data: {'Accuracy': 98.08, 'Loss': 1.92, 'Hamming\_loss': 0.42, 'Model\_name': 'GradientBoostingClassifier', 'Filename': 'D:\\test\\Basic\_Python\\Project POMO\\data scraping\\Artifact\\2022-07-24-18-39-12\\Models\\MultiLabelModel\_GradientBoostingClassifier.pkl'}

## Model : AdaBoostClassifier

Initializing builMultiLabelModels

Classification on Training dataset :

Accuracy\_score: 97.06 %

Loss: 2.94 %

Zero\_one\_loss: 2.94 %

Hamming\_loss: 0.66 %

Classification\_report: precision recall f1-score support  
  
 0 0.97 0.96 0.97 828  
 1 0.95 0.96 0.95 475  
 2 1.00 1.00 1.00 302  
 3 1.00 1.00 1.00 43  
 4 1.00 1.00 1.00 534  
  
 micro avg 0.98 0.98 0.98 2182  
 macro avg 0.98 0.98 0.98 2182  
weighted avg 0.98 0.98 0.98 2182  
 samples avg 0.42 0.42 0.42 2182

Classification on Testing dataset :

Accuracy\_score: 97.69 %

Loss: 2.31 %

Zero\_one\_loss: 2.31 %

Hamming\_loss: 0.53 %

Classification\_report: precision recall f1-score support  
  
 0 0.96 0.98 0.97 312  
 1 0.96 0.98 0.97 182  
 2 1.00 1.00 1.00 135  
 3 1.00 1.00 1.00 16  
 4 1.00 1.00 1.00 241  
  
 micro avg 0.98 0.99 0.98 886  
 macro avg 0.98 0.99 0.99 886  
weighted avg 0.98 0.99 0.98 886  
 samples avg 0.41 0.41 0.41 886

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-24-18-39-12\Models\MultiLabelModel\_AdaBoostClassifier.pkl

Model data: {'Accuracy': 97.06, 'Loss': 2.94, 'Hamming\_loss': 0.66, 'Model\_name': 'AdaBoostClassifier', 'Filename': 'D:\\test\\Basic\_Python\\Project POMO\\data scraping\\Artifact\\2022-07-24-18-39-12\\Models\\MultiLabelModel\_AdaBoostClassifier.pkl'}

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

Classification Report on Training dataset :

Accuracy\_score: 94.02 %

Loss: 5.98 %

Zero\_one\_loss: 5.98 %

Hamming\_loss: 1.32 %

ML\_confusion\_matrix:  
 precision recall f1-score support  
  
 0 0.97 0.93 0.95 828  
 1 0.97 0.83 0.90 475  
 2 0.99 0.99 0.99 302  
 3 1.00 0.88 0.94 43  
 4 0.99 1.00 1.00 534  
  
 micro avg 0.98 0.93 0.95 2182  
 macro avg 0.98 0.93 0.95 2182  
weighted avg 0.98 0.93 0.95 2182  
 samples avg 0.41 0.40 0.40 2182

Classification Report on Testing dataset :

Accuracy\_score: 99.68 %

Loss: 0.32 %

Zero\_one\_loss: 0.32 %

Hamming\_loss: 0.06 %

ML\_confusion\_matrix:  
 precision recall f1-score support  
  
 0 1.00 1.00 1.00 312  
 1 1.00 0.98 0.99 182  
 2 1.00 1.00 1.00 135  
 3 1.00 1.00 1.00 16  
 4 1.00 1.00 1.00 241  
  
 micro avg 1.00 1.00 1.00 886  
 macro avg 1.00 1.00 1.00 886  
weighted avg 1.00 1.00 1.00 886  
 samples avg 0.41 0.41 0.41 886

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

## Model : LogisticRegression

Initializing builMultiLabelModels

Classification on Training dataset :

Accuracy\_score: 70.69 %

Loss: 29.31 %

Zero\_one\_loss: 29.31 %

Hamming\_loss: 7.63 %

Classification\_report: precision recall f1-score support  
  
 0 0.75 0.61 0.67 819  
 1 0.49 0.17 0.25 471  
 2 0.93 0.91 0.92 309  
 3 1.00 0.98 0.99 43  
 4 0.88 0.93 0.91 549  
  
 micro avg 0.81 0.65 0.72 2191  
 macro avg 0.81 0.72 0.75 2191  
weighted avg 0.76 0.65 0.68 2191  
 samples avg 0.30 0.28 0.28 2191

Classification on Testing dataset :

Accuracy\_score: 73.6 %

Loss: 26.4 %

Zero\_one\_loss: 26.4 %

Hamming\_loss: 7.37 %

Classification\_report: precision recall f1-score support  
  
 0 0.77 0.51 0.61 321  
 1 0.49 0.18 0.26 186  
 2 0.92 0.92 0.92 128  
 3 1.00 0.94 0.97 16  
 4 0.88 0.92 0.90 226  
  
 micro avg 0.81 0.61 0.70 877  
 macro avg 0.81 0.69 0.73 877  
weighted avg 0.76 0.61 0.66 877  
 samples avg 0.26 0.25 0.25 877

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-24-18-39-12\Models\MultiLabelModel\_LogisticRegression.pkl

Model data: {'Accuracy': 70.69, 'Loss': 29.31, 'Hamming\_loss': 7.63, 'Model\_name': 'LogisticRegression', 'Filename': 'D:\\test\\Basic\_Python\\Project POMO\\data scraping\\Artifact\\2022-07-24-18-39-12\\Models\\MultiLabelModel\_LogisticRegression.pkl'}

## Model : KNeighborsClassifier

Initializing builMultiLabelModels

Classification on Training dataset :

Accuracy\_score: 89.3 %

Loss: 10.7 %

Zero\_one\_loss: 10.7 %

Hamming\_loss: 2.67 %

Classification\_report: precision recall f1-score support  
  
 0 0.91 0.79 0.85 819  
 1 0.89 0.90 0.90 471  
 2 0.96 0.99 0.97 309  
 3 1.00 0.81 0.90 43  
 4 0.95 0.99 0.97 549  
  
 micro avg 0.93 0.89 0.91 2191  
 macro avg 0.94 0.90 0.92 2191  
weighted avg 0.93 0.89 0.91 2191  
 samples avg 0.37 0.37 0.37 2191

Classification on Testing dataset :

Accuracy\_score: 87.48 %

Loss: 12.52 %

Zero\_one\_loss: 12.52 %

Hamming\_loss: 3.16 %

Classification\_report: precision recall f1-score support  
  
 0 0.89 0.71 0.79 321  
 1 0.91 0.83 0.87 186  
 2 0.95 0.99 0.97 128  
 3 1.00 0.56 0.72 16  
 4 0.94 0.99 0.96 226  
  
 micro avg 0.92 0.85 0.88 877  
 macro avg 0.94 0.82 0.86 877  
weighted avg 0.92 0.85 0.88 877  
 samples avg 0.33 0.33 0.33 877

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-24-18-39-12\Models\MultiLabelModel\_KNeighborsClassifier.pkl

Model data: {'Accuracy': 89.3, 'Loss': 10.7, 'Hamming\_loss': 2.67, 'Model\_name': 'KNeighborsClassifier', 'Filename': 'D:\\test\\Basic\_Python\\Project POMO\\data scraping\\Artifact\\2022-07-24-18-39-12\\Models\\MultiLabelModel\_KNeighborsClassifier.pkl'}

## Model : GaussianNB

Initializing builMultiLabelModels

Classification on Training dataset :

Accuracy\_score: 62.72 %

Loss: 37.28 %

Zero\_one\_loss: 37.28 %

Hamming\_loss: 13.34 %

Classification\_report: precision recall f1-score support  
  
 0 0.54 0.69 0.61 819  
 1 0.45 0.82 0.58 471  
 2 0.54 0.99 0.70 309  
 3 0.22 0.98 0.36 43  
 4 0.70 0.98 0.82 549  
  
 micro avg 0.54 0.84 0.65 2191  
 macro avg 0.49 0.89 0.61 2191  
weighted avg 0.55 0.84 0.66 2191  
 samples avg 0.22 0.34 0.25 2191

Classification on Testing dataset :

Accuracy\_score: 64.35 %

Loss: 35.65 %

Zero\_one\_loss: 35.65 %

Hamming\_loss: 13.44 %

Classification\_report: precision recall f1-score support  
  
 0 0.50 0.68 0.58 321  
 1 0.41 0.80 0.54 186  
 2 0.56 0.99 0.71 128  
 3 0.18 0.94 0.30 16  
 4 0.70 0.97 0.82 226  
  
 micro avg 0.51 0.83 0.63 877  
 macro avg 0.47 0.88 0.59 877  
weighted avg 0.54 0.83 0.65 877  
 samples avg 0.20 0.31 0.23 877

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-24-18-39-12\Models\MultiLabelModel\_GaussianNB.pkl

Model data: {'Accuracy': 62.72, 'Loss': 37.28, 'Hamming\_loss': 13.34, 'Model\_name': 'GaussianNB', 'Filename': 'D:\\test\\Basic\_Python\\Project POMO\\data scraping\\Artifact\\2022-07-24-18-39-12\\Models\\MultiLabelModel\_GaussianNB.pkl'}

## Model : SVC

Initializing builMultiLabelModels

Classification on Training dataset :

Accuracy\_score: 97.13 %

Loss: 2.87 %

Zero\_one\_loss: 2.87 %

Hamming\_loss: 0.61 %

Classification\_report: precision recall f1-score support  
  
 0 0.99 0.93 0.96 819  
 1 0.99 0.98 0.98 471  
 2 1.00 0.99 1.00 309  
 3 1.00 0.93 0.96 43  
 4 1.00 0.99 1.00 549  
  
 micro avg 0.99 0.96 0.98 2191  
 macro avg 1.00 0.96 0.98 2191  
weighted avg 0.99 0.96 0.98 2191  
 samples avg 0.41 0.41 0.41 2191

Classification on Testing dataset :

Accuracy\_score: 97.85 %

Loss: 2.15 %

Zero\_one\_loss: 2.15 %

Hamming\_loss: 0.45 %

Classification\_report: precision recall f1-score support  
  
 0 1.00 0.94 0.97 321  
 1 1.00 0.97 0.99 186  
 2 1.00 1.00 1.00 128  
 3 1.00 0.88 0.93 16  
 4 1.00 1.00 1.00 226  
  
 micro avg 1.00 0.97 0.98 877  
 macro avg 1.00 0.96 0.98 877  
weighted avg 1.00 0.97 0.98 877  
 samples avg 0.39 0.39 0.39 877

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-24-18-39-12\Models\MultiLabelModel\_SVC.pkl

Model data: {'Accuracy': 97.13, 'Loss': 2.87, 'Hamming\_loss': 0.61, 'Model\_name': 'SVC', 'Filename': 'D:\\test\\Basic\_Python\\Project POMO\\data scraping\\Artifact\\2022-07-24-18-39-12\\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 1.00 819  
 1 1.00 1.00 1.00 471  
 2 1.00 1.00 1.00 309  
 3 1.00 1.00 1.00 43  
 4 1.00 1.00 1.00 549  
  
 micro avg 1.00 1.00 1.00 2191  
 macro avg 1.00 1.00 1.00 2191  
weighted avg 1.00 1.00 1.00 2191  
 samples avg 0.43 0.43 0.43 2191

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 1.00 321  
 1 1.00 1.00 1.00 186  
 2 1.00 1.00 1.00 128  
 3 1.00 1.00 1.00 16  
 4 1.00 1.00 1.00 226  
  
 micro avg 1.00 1.00 1.00 877  
 macro avg 1.00 1.00 1.00 877  
weighted avg 1.00 1.00 1.00 877  
 samples avg 0.41 0.41 0.41 877

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-24-18-39-12\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\\2022-07-24-18-39-12\\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 1.00 819  
 1 1.00 1.00 1.00 471  
 2 1.00 1.00 1.00 309  
 3 1.00 1.00 1.00 43  
 4 1.00 1.00 1.00 549  
  
 micro avg 1.00 1.00 1.00 2191  
 macro avg 1.00 1.00 1.00 2191  
weighted avg 1.00 1.00 1.00 2191  
 samples avg 0.43 0.43 0.43 2191

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 1.00 321  
 1 1.00 1.00 1.00 186  
 2 1.00 1.00 1.00 128  
 3 1.00 1.00 1.00 16  
 4 1.00 1.00 1.00 226  
  
 micro avg 1.00 1.00 1.00 877  
 macro avg 1.00 1.00 1.00 877  
weighted avg 1.00 1.00 1.00 877  
 samples avg 0.41 0.41 0.41 877

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-24-18-39-12\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\\2022-07-24-18-39-12\\Models\\MultiLabelModel\_RandomForestClassifier.pkl'}

## Model : GradientBoostingClassifier

Initializing builMultiLabelModels

Classification on Training dataset :

Accuracy\_score: 97.95 %

Loss: 2.05 %

Zero\_one\_loss: 2.05 %

Hamming\_loss: 0.47 %

Classification\_report: precision recall f1-score support  
  
 0 0.98 0.98 0.98 819  
 1 0.96 0.98 0.97 471  
 2 1.00 1.00 1.00 309  
 3 1.00 1.00 1.00 43  
 4 1.00 1.00 1.00 549  
  
 micro avg 0.98 0.99 0.98 2191  
 macro avg 0.99 0.99 0.99 2191  
weighted avg 0.98 0.99 0.98 2191  
 samples avg 0.42 0.42 0.42 2191

Classification on Testing dataset :

Accuracy\_score: 99.36 %

Loss: 0.64 %

Zero\_one\_loss: 0.64 %

Hamming\_loss: 0.14 %

Classification\_report: precision recall f1-score support  
  
 0 0.99 1.00 0.99 321  
 1 0.98 0.99 0.99 186  
 2 1.00 1.00 1.00 128  
 3 1.00 1.00 1.00 16  
 4 1.00 1.00 1.00 226  
  
 micro avg 0.99 1.00 0.99 877  
 macro avg 0.99 1.00 1.00 877  
weighted avg 0.99 1.00 0.99 877  
 samples avg 0.40 0.40 0.40 877

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-24-18-39-12\Models\MultiLabelModel\_GradientBoostingClassifier.pkl

Model data: {'Accuracy': 97.95, 'Loss': 2.05, 'Hamming\_loss': 0.47, 'Model\_name': 'GradientBoostingClassifier', 'Filename': 'D:\\test\\Basic\_Python\\Project POMO\\data scraping\\Artifact\\2022-07-24-18-39-12\\Models\\MultiLabelModel\_GradientBoostingClassifier.pkl'}

## Model : AdaBoostClassifier

Initializing builMultiLabelModels

Classification on Training dataset :

Accuracy\_score: 96.82 %

Loss: 3.18 %

Zero\_one\_loss: 3.18 %

Hamming\_loss: 0.7 %

Classification\_report: precision recall f1-score support  
  
 0 0.97 0.96 0.96 819  
 1 0.95 0.96 0.96 471  
 2 1.00 1.00 1.00 309  
 3 1.00 1.00 1.00 43  
 4 1.00 1.00 1.00 549  
  
 micro avg 0.98 0.98 0.98 2191  
 macro avg 0.98 0.98 0.98 2191  
weighted avg 0.98 0.98 0.98 2191  
 samples avg 0.42 0.42 0.42 2191

Classification on Testing dataset :

Accuracy\_score: 97.93 %

Loss: 2.07 %

Zero\_one\_loss: 2.07 %

Hamming\_loss: 0.48 %

Classification\_report: precision recall f1-score support  
  
 0 0.98 0.97 0.98 321  
 1 0.96 0.96 0.96 186  
 2 1.00 1.00 1.00 128  
 3 1.00 1.00 1.00 16  
 4 1.00 1.00 1.00 226  
  
 micro avg 0.98 0.98 0.98 877  
 macro avg 0.99 0.99 0.99 877  
weighted avg 0.98 0.98 0.98 877  
 samples avg 0.40 0.40 0.40 877

File saved: D:\test\Basic\_Python\Project POMO\data scraping\Artifact\2022-07-24-18-39-12\Models\MultiLabelModel\_AdaBoostClassifier.pkl

Model data: {'Accuracy': 96.82, 'Loss': 3.18, 'Hamming\_loss': 0.7, 'Model\_name': 'AdaBoostClassifier', 'Filename': 'D:\\test\\Basic\_Python\\Project POMO\\data scraping\\Artifact\\2022-07-24-18-39-12\\Models\\MultiLabelModel\_AdaBoostClassifier.pkl'}

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

Classification Report on Training dataset :

Accuracy\_score: 94.94 %

Loss: 5.06 %

Zero\_one\_loss: 5.06 %

Hamming\_loss: 1.09 %

ML\_confusion\_matrix:  
 precision recall f1-score support  
  
 0 0.97 0.92 0.95 819  
 1 0.97 0.89 0.93 471  
 2 1.00 0.99 0.99 309  
 3 1.00 1.00 1.00 43  
 4 1.00 1.00 1.00 549  
  
 micro avg 0.98 0.94 0.96 2191  
 macro avg 0.99 0.96 0.97 2191  
weighted avg 0.98 0.94 0.96 2191  
 samples avg 0.41 0.40 0.40 2191

Classification Report on Testing dataset :

Accuracy\_score: 99.84 %

Loss: 0.16 %

Zero\_one\_loss: 0.16 %

Hamming\_loss: 0.03 %

ML\_confusion\_matrix:  
 precision recall f1-score support  
  
 0 1.00 1.00 1.00 321  
 1 1.00 0.99 1.00 186  
 2 1.00 1.00 1.00 128  
 3 1.00 1.00 1.00 16  
 4 1.00 1.00 1.00 226  
  
 micro avg 1.00 1.00 1.00 877  
 macro avg 1.00 1.00 1.00 877  
weighted avg 1.00 1.00 1.00 877  
 samples avg 0.41 0.40 0.40 877