|  |  |  |  |
| --- | --- | --- | --- |
| after increasing the data | kernel | Acc training | Acc testing |
| svm | rbf | 98. 29% | 94. 94% |
| svm | linear | 98. 24% | 94. 28% |
| svm | poly | 87. 58% | 85. 93% |
| svm | sigmoid | 88. 20% | 88. 79% |

|  |  |  |  |
| --- | --- | --- | --- |
| Before increasing the data | kernel | Acc training | Acc testing |
| svm | rbf | 98. 44% | 95. 13% |
| svm | linear | 98. 40% | 94. 38% |
| svm | poly | 88. 17% | 86. 63% |
| svm | sigmoid | 88. 12% | 88. 55% |

|  |  |  |
| --- | --- | --- |
| After increasing the data | Acc training | Acc testing |
| Naive Bayes | 96. 74% | 95. 09% |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Before increasing the data | Acc training | Acc testing |
| Naive Bayes | 96. 98% | 95. 50% |

|  |  |  |
| --- | --- | --- |
| After increasing the data | Acc training | Acc testing |
| RandomForest | 93. 41% | 93. 51% |

|  |  |  |
| --- | --- | --- |
| Before increasing the data | Acc training | Acc testing |
| RandomForest | 93. 49% | 93. 79% |

|  |  |  |  |
| --- | --- | --- | --- |
| after increasing the data | kernel | Acc training | Acc testing |
| DecisionTree | entropy | 95. 44% | 94. 00% |
| DecisionTree | gini | 95. 54% | 94. 06% |

|  |  |  |  |
| --- | --- | --- | --- |
| Before increasing the data | kernel | Acc training | Acc testing |
| DecisionTree | entropy | 95. 55% | 94. 29% |
| DecisionTree | gini | 95. 67% | 94. 28% |

RNN

RNN LSTM with 2 activation layer='relu' and 'sigmoid , Dropout=0.5 ,early\_stopping ,

LSTM=64

File name:’Rnn1’

|  |  |  |
| --- | --- | --- |
| Before increasing the data | Epoch 5 | 99.41% |
| after increasing the data | Epoch 6 | 99.47% |

RNN LSTM with 2 activation layer='relu' and 'sigmoid , Dropout=0.5 ,early\_stopping ,

LSTM=256

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Before increasing the data | File name | Number of Epoch | activation layer | Accuracy |
| RNN LSTM | Rnn2\_before | Epoch 8 | relu , sigmoid | 99.38% |
| RNN LSTM | Rnn2\_before | Epoch 5 | sigmoid , sigmoid | 99.21% |
| RNN LSTM | Rnn2\_before | Epoch 4 | softsign , softsign | 96.21% |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| After increasing the data | File name | Number of Epoch | activation layer | Accuracy |
| RNN LSTM | Rnn2\_after | Epoch 10 | relu , sigmoid | 99.50% |
| RNN LSTM | Rnn2\_after | Epoch 4 | sigmoid , sigmoid | 99.47% |
| RNN LSTM | Rnn2\_after | Epoch 6 | softsign , softsign | 99.50% |

RNN LSTM with 2 activation layer='relu' and 'sigmoid , Dropout=0.5 ,early\_stopping ,

LSTM=256 and use different splitting techniques “k\_fold” place “train\_test\_split”

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Before increasing the data | File name | Number of k\_fold | activation layer | Accuracy |
| RNN LSTM | Rnn3\_before | 6 | relu , sigmoid | 99.77% |
| RNN LSTM | Rnn6\_before | 10 | relu , sigmoid | 99.84% |

RNN LSTM with 2 activation layer='relu' and 'sigmoid , Dropout=0.3 ,early\_stopping ,

LSTM=256 and use different splitting techniques “k\_fold” place “train\_test\_split”

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Before increasing the data | File name | Number of k\_fold | activation layer | Accuracy |
| RNN LSTM | Rnn5\_before | 10 | relu , sigmoid | 99.86% |
|  |  |  |  |  |

RNN LSTM with 3 activation layer=“ relu” , “ relu” and “ sigmoid” Dropout=0.3 ,early\_stopping ,

LSTM=256 and use different splitting techniques “k\_fold” place “train\_test\_split”

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| After increasing the data | File name | Number of k\_fold | activation layer | Accuracy |
| RNN LSTM | Rnn4\_after | 10 | relu , relu , sigmoid | 99.82% |
| RNN LSTM | Rnn5\_after | 10 | relu , sigmoid | 99.85% |

**Previous and the proposed work with the same dataset before increasing it**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Maha, Daniyal, Suaad | Vishal, Sachin | Vishal, Sachin | Proposed |
| RNN | 94% | 99.5% | 99.22% | 99.86% |
| SVM |  |  | 98.66% | 94.8% |
| Naïve bayes |  |  | 96.8% | 95.8% |