**MNIST PROJECT REPORT**

Builted a machine learning model to detect image digit from mnist dataset

Loaded mnist data set in logistic regression, decision tree, and svm

logistic regression will take some time to load the code

decision tree will take low time and satisfy to see the code and output

svm will take lot of time to load the code

I Load the mnist in 3 machine learning models

Accuracy comparison table

|  |  |
| --- | --- |
| NAMES | ACCURACY |
| LogisticRegression | 0.97178571428 |
| Decision tree | 0.44 |
| SVC | 0.976428514285714 |

**Confusion Matrix in logistic regression,decision tree and SVC :-**

Confusion Matrix in Logistic Regression :-

Confusion Matrix:

[[1289 1 6 0 5 14 12 6 8 2]

[ 0 1557 5 9 2 7 0 3 15 2]

[ 4 20 1229 25 16 8 19 15 35 9]

[ 6 7 30 1298 1 38 4 14 19 16]

[ 4 0 8 5 1194 4 13 6 12 49]

[ 7 11 8 53 16 1087 20 2 54 15]

[ 7 3 20 0 14 14 1332 2 4 0]

[ 5 4 28 4 8 5 0 1408 2 39]

[ 11 24 17 38 7 39 12 10 1186 13]

[ 7 10 7 14 40 5 0 45 22 1270]]

Confusion Matrix in Decision tree :-

Confusion Matrix:

[[1092 3 0 35 9 46 30 110 18 0]

[ 7 1330 0 78 46 8 55 5 71 0]

[ 132 166 0 69 149 10 780 33 41 0]

[ 32 36 0 940 210 112 31 28 44 0]

[ 1 6 0 17 958 39 117 102 55 0]

[ 126 16 0 157 399 312 114 102 47 0]

[ 43 52 0 62 81 57 923 81 97 0]

[ 11 42 0 6 835 31 158 398 22 0]

[ 18 141 0 116 130 153 513 13 273 0]

[ 5 12 0 30 910 172 120 90 81 0]]

Confusion Matrix in SVC :-

Confusion Matrix:

[[1329 1 3 0 1 2 2 1 4 0]

[ 0 1585 4 3 2 0 0 4 2 0]

[ 3 4 1348 2 3 2 4 8 5 1]

[ 0 2 11 1386 2 11 1 9 7 4]

[ 1 0 2 0 1269 0 3 2 2 16]

[ 0 1 2 15 2 1236 9 1 7 0]

[ 1 0 0 0 4 4 1384 0 3 0]

[ 1 6 12 1 5 1 0 1465 1 11]

[ 2 6 8 12 4 9 6 4 1303 3]

[ 5 8 2 8 14 2 0 11 5 1365]]