

Experiment 1:

- HOG pixels_per_cell = (2, 2)

KNN

- $k = 5$
- accuracy = 96.56 %

SVM

- $c = 0.1$
- accuracy = 98.009 %

Random forest

- N_estimators=500
- max_features = 21
- max_depth = 21
- accuracy = 97.18 %

Experiment 2:

- HOG pixels_per_cell = (4, 4)

KNN

- $k = 5$
- accuracy = 97.49 %

SVM

- $c = 0.1$
- accuracy = 98.27 %

Random forest

- N_estimators=500
- max_features = 21
- max_depth = 21
- accuracy = 97.61 %

Experiment 3:

- HOG pixels_per_cell = (8, 8)

KNN

- $k = 5$
- accuracy = 94.84 %

SVM

- $c = 0.1$
- accuracy = 94.1 %

Random forest

- N_estimators=500
- max_features = 21
- max_depth = 21
- accuracy = 95.19 %

KNN Experiments:

- HOG pixels_per_cell = (4, 4)

KNN

- $k = 3$
- accuracy = 97 .28%
- $k = 7$
- accuracy = 97 .45%
- $k = 9$
- accuracy = 97.26 %
- $k = 11$
- accuracy = 97.24 %

SVM Experiments:

- HOG pixels_per_cell = (4, 4)
 - $c = 0.01$
 - accuracy = 97.79 %
 - $c = 2$
 - accuracy = 98.2 %
 - $c = 1$
 - accuracy = 97.79 %
 - $c = 5$
 - accuracy = 98.16 %

Random forest Experiments:

- HOG pixels_per_cell = (4, 4)
 - N_estimators=100
 - max_features = 15
 - max_depth = 15
 - accuracy = 97.17 %
 - N_estimators=200
 - max_features = 18
 - max_depth = 18
 - accuracy = 97.61 %
 - N_estimators=500
 - max_features = 18
 - max_depth = 18
 - accuracy = 97.66 %

- N_estimators=500
- max_features = 5
- max_depth = 5
- accuracy = 93.12 %

best case for KNN:

- HOG pixels_per_cell = (4, 4)
- K=7
- accuracy = 97.45%

best case for SVM:

- HOG pixels_per_cell = (4, 4)
- C = 2
- accuracy = 98.2 %

best case for Random forest:

- HOG pixels_per_cell = (4, 4)
- accuracy = 98.2 % N_estimators=500
- max_features = 18
- max_depth = 18
- accuracy = 97.66 %

Best model is SVM.