

SUPPORT VECTOR CLASSIFIER

1 Shape of x_train_subset: (10000, 784) Training and Testing sets
 Shape of y_train_subset: (10000,) after flattening and
 Shape of x_test_subset: (2000, 784) normalization
 Shape of y_test_subset: (2000,)

2 Training SVC for linear kernel...
 Classification Report for SVC with linear kernel:

	precision	recall	f1-score	support
0	0.91	0.96	0.94	175
1	0.96	0.99	0.98	234
2	0.89	0.89	0.89	219
3	0.84	0.88	0.86	207
4	0.90	0.94	0.92	217
5	0.89	0.84	0.87	179
6	0.90	0.93	0.91	178
7	0.89	0.86	0.88	205
8	0.89	0.83	0.86	192
9	0.89	0.84	0.86	194
accuracy			0.90	2000
macro avg	0.90	0.90	0.90	2000
weighted avg	0.90	0.90	0.90	2000

Training SVC for poly kernel...
Classification Report for SVC with poly kernel:

	precision	recall	f1-score	support
0	0.95	0.96	0.95	175
1	0.91	0.99	0.95	234
2	0.95	0.92	0.94	219
3	0.93	0.93	0.93	207
4	0.94	0.95	0.94	217
5	0.93	0.96	0.94	179
6	0.94	0.95	0.95	178
7	0.92	0.90	0.91	205
8	0.94	0.88	0.91	192
9	0.93	0.91	0.92	194
accuracy			0.93	2000
macro avg	0.93	0.93	0.93	2000
weighted avg	0.93	0.93	0.93	2000

Training SVC for rbf kernel...
Classification Report for SVC with rbf kernel:

	precision	recall	f1-score	support
0	0.96	0.99	0.97	175
1	0.97	0.99	0.98	234
2	0.95	0.96	0.95	219
3	0.92	0.92	0.92	207
4	0.95	0.95	0.95	217
5	0.95	0.93	0.94	179
6	0.94	0.96	0.95	178
7	0.93	0.91	0.92	205
8	0.95	0.92	0.93	192
9	0.93	0.91	0.92	194
accuracy			0.94	2000
macro avg	0.94	0.94	0.94	2000
weighted avg	0.94	0.94	0.94	2000

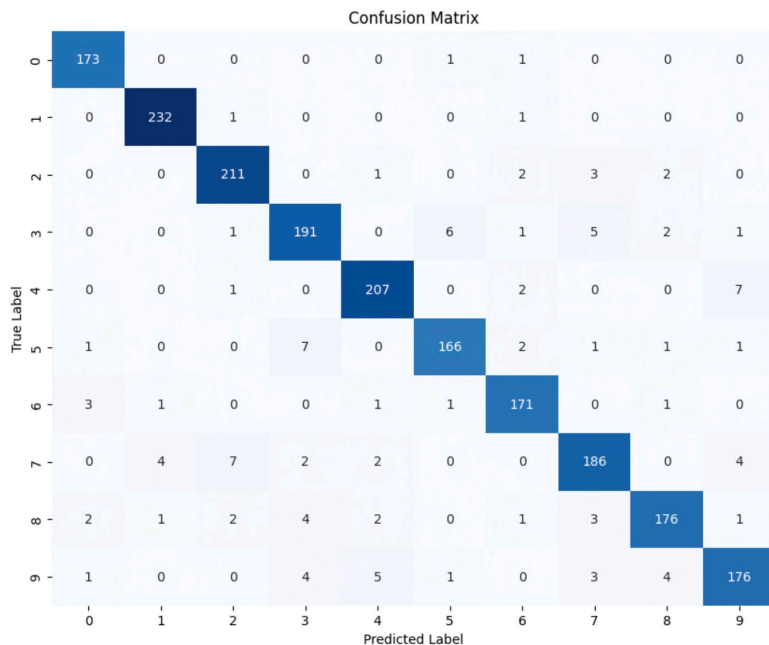
3 Best hyperparameters from GridSearchCV:
{'C': 100, 'gamma': 0.01}

Best hyperparameters from RandomizedSearchCV:
{'gamma': 0.01, 'C': 100}

4 Classification Report for SVC with rbf kernel for best hyperparameters tuned using GridSearchCV:

	precision	recall	f1-score	support
0	0.96	0.99	0.97	175
1	0.97	0.99	0.98	234
2	0.95	0.96	0.95	219
3	0.92	0.92	0.92	207
4	0.95	0.95	0.95	217
5	0.95	0.93	0.94	179
6	0.94	0.96	0.95	178
7	0.93	0.91	0.92	205
8	0.95	0.92	0.93	192
9	0.93	0.91	0.92	194
accuracy			0.94	2000
macro avg	0.94	0.94	0.94	2000
weighted avg	0.94	0.94	0.94	2000

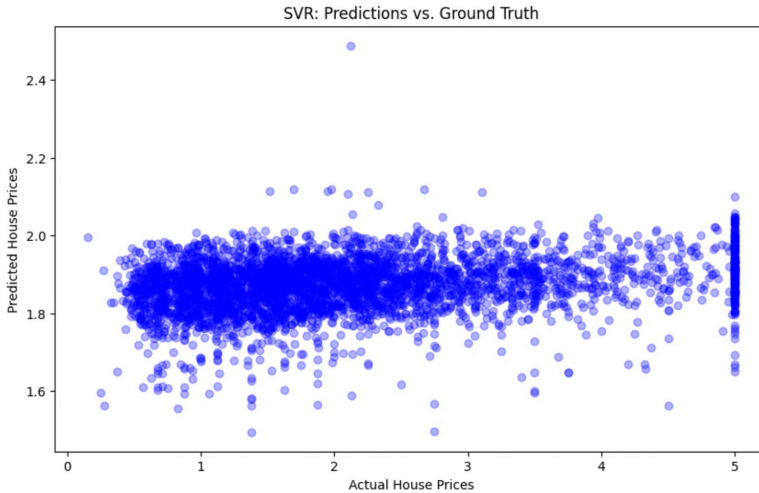
5



SUPPORT VECTOR REGRESSION

1 Shape of X_{train} : (16512, 8)
Shape of y_{train} : (16512,)
Shape of X_{test} : (4128, 8)
Shape of y_{test} : (4128,)

2 Mean Squared Error (MSE): 1.3922086000291185



3 Best epsilon parameter obtained: 1.0

4 Mean Squared Error (MSE): 1.3558710340977345

