Assignment 3 - SVM

1b. Training and Test Data Accuracies for different Kernels

Kernel	Best C	Accuracy on Train	Accuracy on Test
Linear	10	89.4	88.6
Quadratic	100	96.2	88.6
RBF	100	98.1	88.1

2a. Accuracy vs Learning Rate for all models

MLP Classifier

Training Data
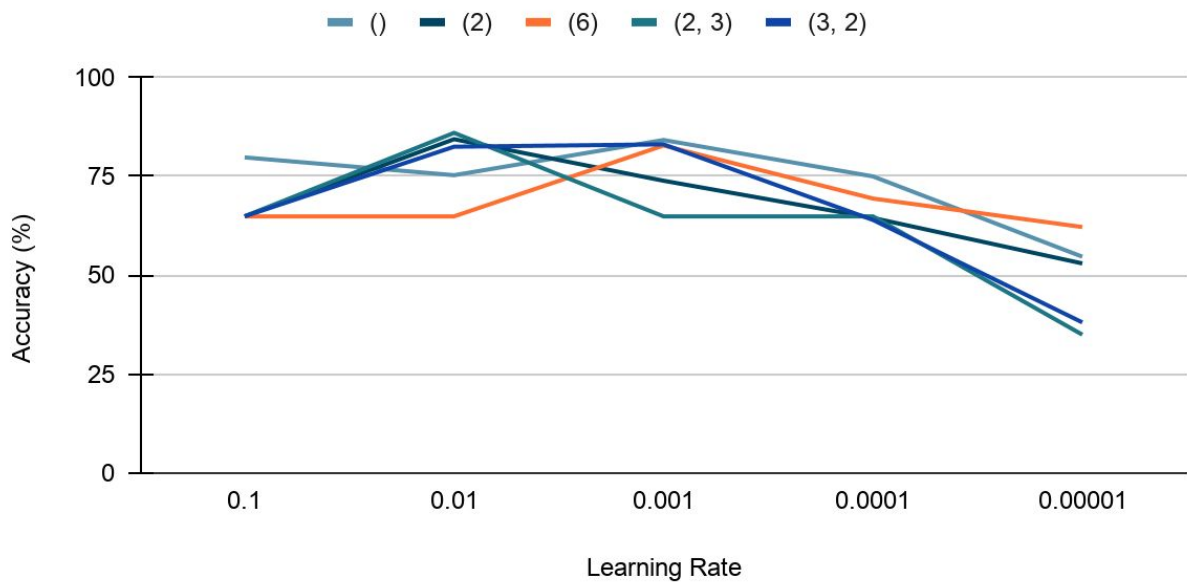
MLP Classifier

Testing Data

Legend: () — (2) — (6) — (2, 3) — (3, 2)

Accuracy (%) vs Learning Rate
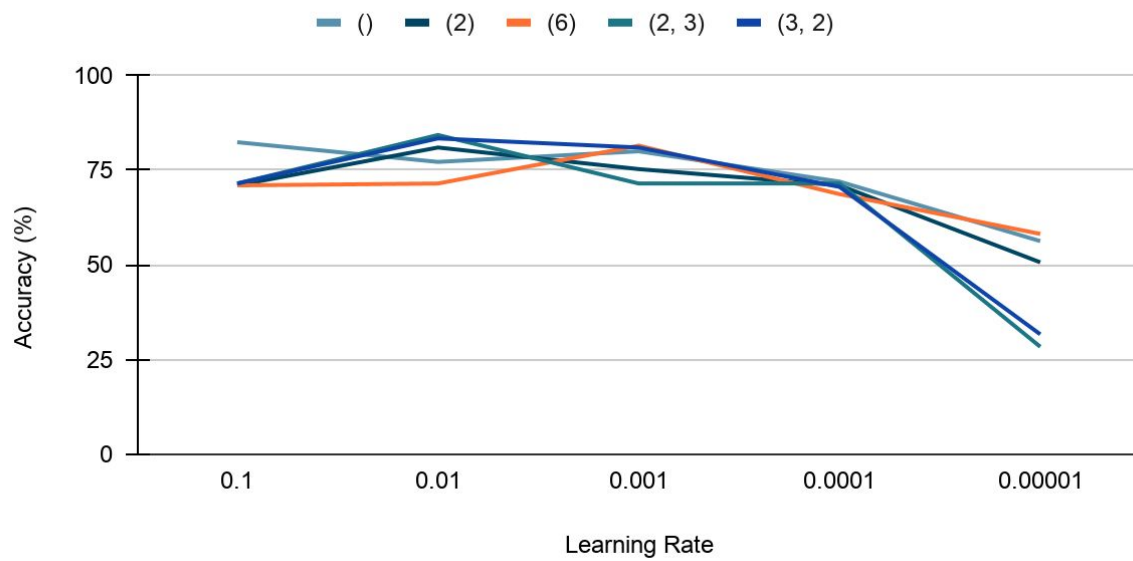
2a. Accuracy vs Models for Different Learning Rates

MLP Classifier

Legend: () — (2) — (6) — (2, 3) — (3, 2)

Accuracy (%) vs Learning Rate
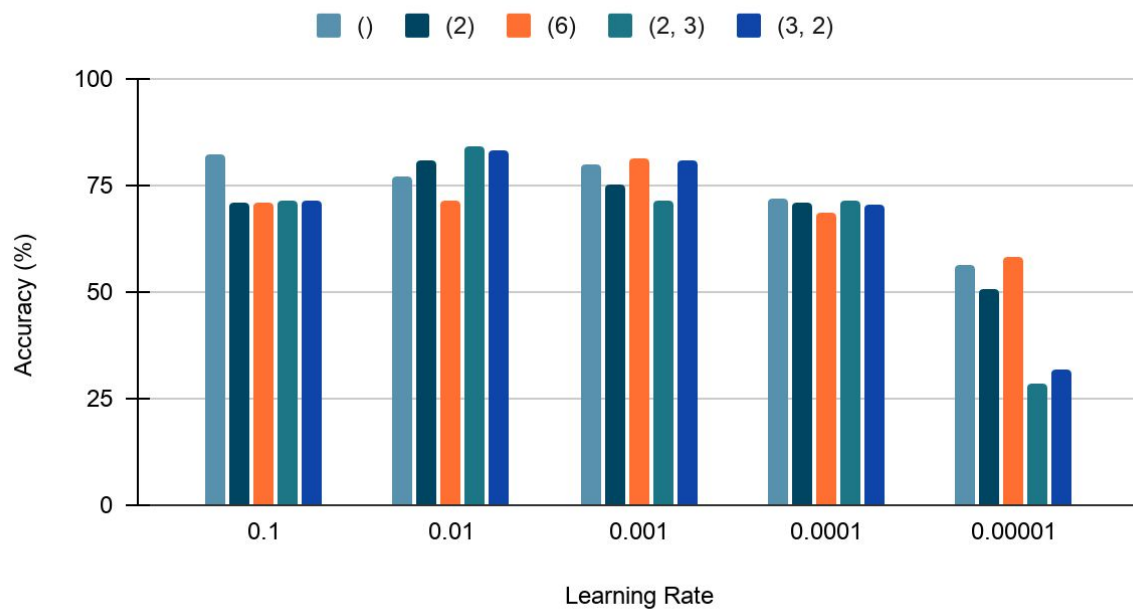
2b. JUSTIFY THE NUMBER OF INPUT AND OUTPUT NODES in DATASET

#Input nodes is the #attributes, i.e, 41.

#Output nodes is 1, because P(A) = 1-P(not A), so if P(A) < 0.5, the predicted output is not A, and if P(A) >= 0.5, the predicted output is A. So with one node we can predict output.

2c. ARCHITECTURE AND HYPER PARAMETERS OF THE BEST FOUND MODEL. JUSTIFY

The best found model is the model with (2, 3) architecture and 0.01 learning rate. This is possibly because we need to identify 2 kinds of sub-things from 41 attributes and then from those 2-subthings, we need to identify 3 pre-output-things which are used to determine the output.

3. COMPARE THE PERFORMANCES OF BOTH THE CLASSIFIERS.

In almost all of the runs, SVMs performed slightly better than the ANNs by 2-4%.