Project
NetID : vj3004
Name : Krina Bharatbhai Patel

DecisionTreeClassifier

Parameters and their values	Training error	Test error
criterion = gini splitter = best max_depth = 2 max_features = 4 min_samples_leaf = 1	0.2357	0.2101
Criterion = gini splitter = best max_depth = 2 max_features = 8 min_samples_leaf = 1	0.2280	0.2269
criterion = gini splitter = best max_depth = 10 max_features = 4 min_samples_leaf = 1	0.0431	0.2773
criterion = gini splitter = best max_depth = 10 max_features = 8 min_samples_leaf = 1	0.0185	0.2857
criterion = gini splitter = best max_depth = 10 max_features = 8 min_samples_leaf = 3	0.0724	0.3025

MultiLayer Perceptron

Parameters and their values	Training error	Test error
activation = relu batch_size = auto hidden_layer_sizes = (10,) learning_rate = constant alpha = 0.001	0.2881	0.3529
activation = relu batch_size = auto hidden_layer_sizes = (10,)	0.2789	0.3193

learning_rate = adaptive alpha = 0.001		
activation = relu batch_size = auto hidden_layer_sizes = (50,) learning_rate = constant alpha = 0.001	0.2881	0.3613
activation = relu batch_size = auto hidden_layer_sizes = (50,) learning_rate = adaptive alpha = 0.001	0.2250	0.3277
activation = relu batch_size = auto hidden_layer_sizes = (50,) learning_rate = adaptive alpha = 0.05	0.2650	0.3277

RandomForest Classifier

Parameters and their values	Training error	Test error
max_features = auto criterion = entropy n_estimators = 200 max_depth = 10 min_samples_split = 5	0.0262	0.2269
max_features = auto criterion = entropy n_estimators = 200 max_depth = 20 min_samples_split = 5	0.0046	0.2353
max_features = auto criterion = entropy n_estimators = 500 max_depth = 10 min_samples_split = 5	0.0247	0.2437
max_features = auto criterion = entropy n_estimators = 500 max_depth = 20 min_samples_split = 5	0.0077	0.2185

max_features = auto criterion = entropy n_estimators = 500 max_depth = 20 min_samples_split = 10	0.0462	0.2185

GradientBoosting Classifier

Parameters and their values	Training error	Test error
max_features = auto loss = deviance n_estimators = 20 max_depth = 5 min_samples_split = 200	0.1695	0.2437
max_features = auto loss = deviance n_estimators = 20 max_depth = 10 min_samples_split = 200	0.1726	0.2521
max_features = auto loss = deviance n_estimators = 80 max_depth = 5 min_samples_split = 200	0.1109	0.2269
max_features = auto loss = deviance n_estimators = 80 max_depth = 5 min_samples_split = 400	0.1572	0.2269
max_features = auto loss = deviance n_estimators = 80 max_depth = 10 min_samples_split = 400	0.1402	0.2017