

1.

for most of my test

(a) Error that including column ones is smaller than that of not including column ones. It is because column ones gives intercept to predictions $y = wx + w_0$. However, the difference is rather small and could be ignored.

(d) Naive Bayes { 'usecolumnones': True }
 avg error : 25.214
 std error : 0.2539

Logistic Regression { 'stepsize' : 0.05 }
 avg error : 23.979
 std error : 0.4988

Neural Network { 'epochs' : 1000, 'nh' : 4 }
 avg error : 23.204
 std error : 0.178

2

(a) Kernel Logistic Regression { 'centers' : 40, 'stepsize' : 0.01, 'kernel' : 'linear' }
 avg error : 31.59 std error : 1.33 The performance is worse than that of algorithms from Q1

(b)

Random classifier : avg error : 50.30 std error : 0.173
 centers: 40 . Hamming kernel : avg error : 45.94 std error : 1.3423
 Hamming kernel logistic regression has lower avg error but higher std error

Bonus (b)

avg error and std error are smaller using stratified-kfold since each fold has a good representative of the whole

Neural Network { 'epochs': 1000, 'nh': 4 }

avg error: 22.224 std error: 0.201

Naive Bayes { 'usecolumnones': true }

avg error: 25.013 std error: 0.247

Logistic Regression { 'stepsize': 0.05 }

avg error: 23.96 std error: 0.359