

Assignment 2 - report - Intro To ML

Mtech - 2nd Sem

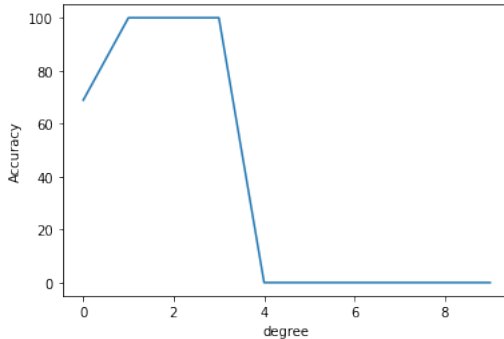
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problem 2(i) - Iris Data set

Hyper parameters[data Iris, polynomial kernel, degree=range(10), intercept=1, train data = 104, test data = 45]



1. accuracy for degree in range(10) is [68.88, 100.0, 100.0, 100.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0]
2. accuracy is max i.e 100 when we use polynomial degree [1,2,3]

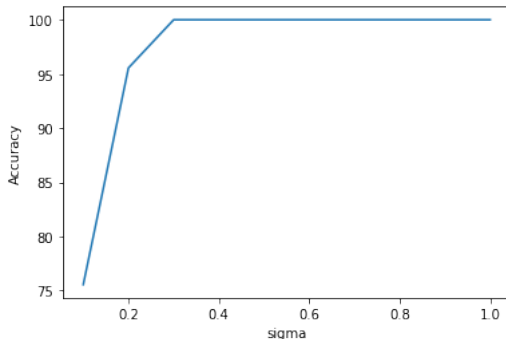
problem 2(ii) - Iris Data Set

Hyper parameters[data landsat, linear kernel, train data = 105,
test data = 45]

1. accuracy when we use linear kernel is 100.00,

problem 2(iii) - Iris Data set

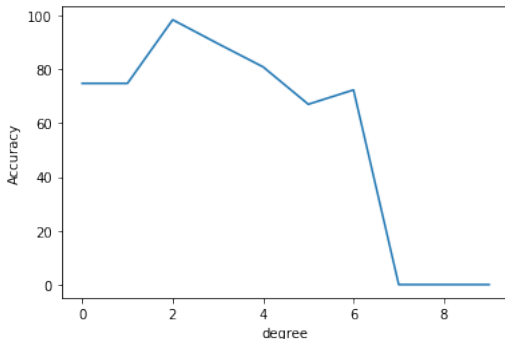
Hyper parameters[data Iris, Gaussian RBF kernel , sigmaa = range(0,1,0.1), train data = 105, test data = 45]



1. accuracy for sigma in range(0,1,0.1) is [75.55555555555556, 95.55555555555556, 100.0, 100.0, 100.0, 100.0, 100.0, 100.0, 100.0, 100.0]
2. accuracy is max i.e 100 when we use Gaussian RBF kernel with sigma [0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1]

problem 2(i) - landsat

Hyper parameters[data landsat, polynomial kernel, degree=range(10), intercept=1,
train data = 4501, test data = 1929]



1. accuracy for degree in range(10) is [74.80, 74.80, 98.44, 89.58, 80.92, 67.02, 72.36, 0.0, 0.0, 0.0]
2. accuracy is max i.e 98.44 when we use polynomial degree 2

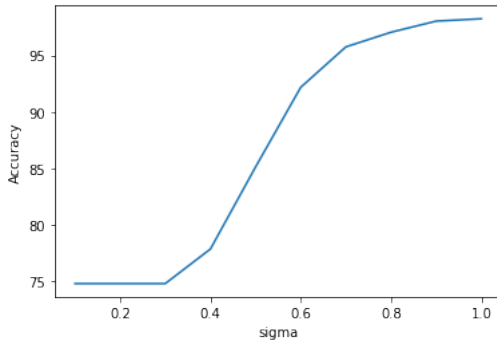
problem 2(ii) - landsat

Hyper parameters[data landsat, linear kernel, train data = 4501,
test data = 1929]

1. accuracy when we use linear kernel is 74.8055,

problem 2(iii) - landsat

Hyper parameters[data landsat, Gaussian RBF kernel , sigma = range(0,1,0.1), train data = 4501, test data = 1929]



1. accuracy for sigma in range(0,1,0.1) is [74.80, 74.80, 74.80, 77.86, 85.12, 92.17, 95.74, 97.04, 98.03, 98.23]
2. accuracy is max i.e 98.22 when we use Gaussian RBF kernel with sigma 1

PROBLEM 2 - OBSERVATIONS

1. For Iris data we get maximum accuracy i.e 100 when we use SVM with Gaussian RBF kernel of sigma greater than 0.3 and polynomial kernel of degree = [1,2,3]
2. For landsat data we get maximum accuracy ratio i.e 98.23 when we use Gaussian RBF kernel of sigma 1 and polynomial kernel of degree 2
3. As value of sigma is increasing gaussian RBF kernel is producing better results
4. As value of degree is increasing polynomial kernel is producing worst accuracy may be due to overfitting problem
5. In conclusion for given data sets SVM is producing better and faster results than ANN