MACHINE LEARNING

WEEK 1: INTRODUCTION

LECTURE 2: SVM RESULTS
Margins

\[ x^T \beta + \beta_0 = 0 \]

\[ M = \frac{1}{\|\beta\|} \]

\[ x^T \beta + \beta_0 = 0 \]

\[ M = \frac{1}{\|\beta\|} \]
Linear separation using least squares
NN  k=15
NN  \( k=1 \)
Bayes Optimal Classifier
Testing support vectors

$C = 0.01$

$C = 10000$
SVM with different Kernels

SVM - Degree-4 Polynomial in Feature Space

SVM - Radial Kernel in Feature Space

Training Error: 0.180
Test Error: 0.245
Bayes Error: 0.210

Training Error: 0.160
Test Error: 0.218
Bayes Error: 0.210
Optimization via coordinate descent
Constraint for just $\alpha_1$ and $\alpha_2$