भारतीय प्रौद्योगिकी संस्थान हैदराबाद
Indian Institute of Technology
Hyderabad

Assignment EE 5327

Optimization

March 11, 2019
Max. Marks 10

1. Solve

$$\min_{\mathbf{w},d} \frac{1}{2}\|\mathbf{w}\|^2 \tag{1}$$

$$\text{s.t} \quad y_i\left(\mathbf{x}_i^T\mathbf{w} + d\right) \geq 1, \quad i = 1, 2 \tag{2}$$

for $\mathbf{x}_1 = \begin{pmatrix}2\\1\end{pmatrix}, y_1 = 1$ and $\mathbf{x}_2 = \begin{pmatrix}0.8\\-0.6\end{pmatrix}, y_2 = -1$ graphically.

2. Show that the above exercise is a convex optimization problem.

3. Repeat the above exercise using KKT conditions.

4. Repeat the above exercise using *cvxpy*.