Georgetown University

Linear Support Vector Machine (SVM)

Linear SVM: problem formulation

- Objective: maximize the geometric “margin” between the separating hyperplane and the points that lay closest to that plane.
- Key concepts:

1. A hyperplane can be characterized by a vector, $\mathbf{w}$, that is orthogonal to it, and a bias, b, expressing its distance from the origin, $\mathbf{0}$.

2. The distance, $\|\mathbf{d}\|_2$, from any point, $\mathbf{x}_i$, to $\mathbf{w}$ has a nice closed form solution.