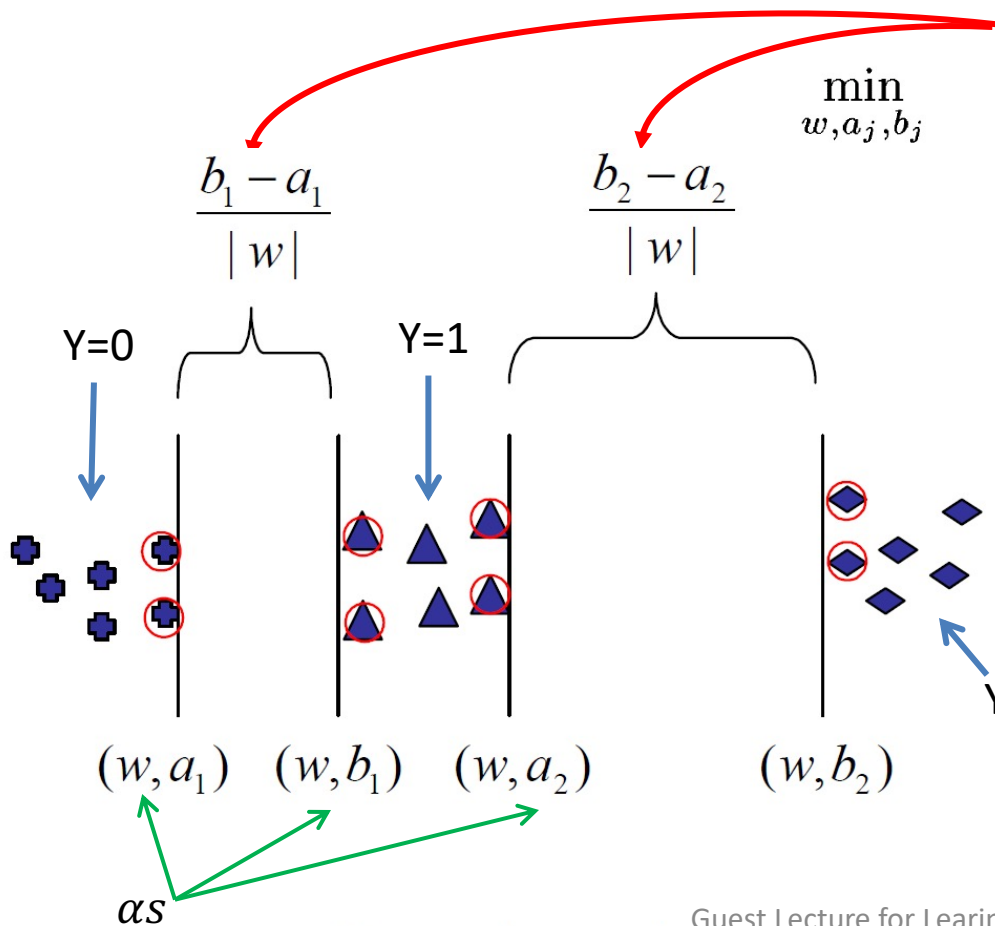


Ranking with Large Margin Principles

A. Shashua and A. Levin, NIPS 2002

- Maximizing the sum of margins



$$\min_{w, a_j, b_j}$$

$$\sum_{j=1}^{k-1} (a_j - b_j) + C \sum_i \sum_j (\epsilon_i^j + \epsilon_i^{*j+1})$$

subject to

$$a_j \leq b_j,$$

$$b_j \leq a_{j+1}, \quad j = 1, \dots, k-2$$

$$\mathbf{w} \cdot \mathbf{x}_i^j \leq a_j + \epsilon_i^j, \quad b_j - \epsilon_i^{*j+1} \leq \mathbf{w} \cdot \mathbf{x}_i^{j+1}$$

$$\mathbf{w} \cdot \mathbf{w} \leq 1, \quad \epsilon_i^j \geq 0, \epsilon_i^{*j+1} \geq 0$$

Sum-of-margins