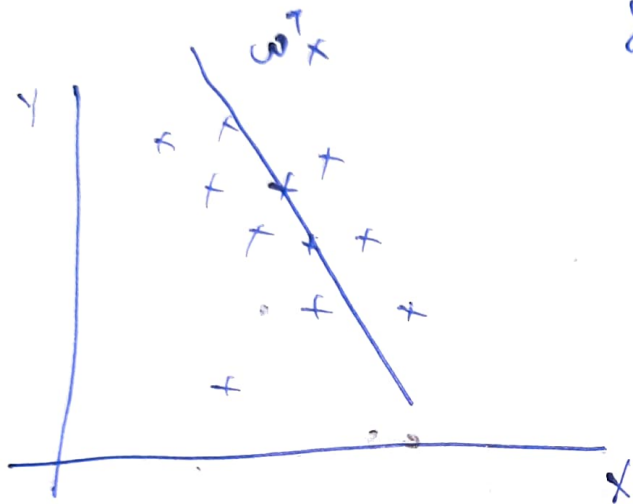


SVM For Regression

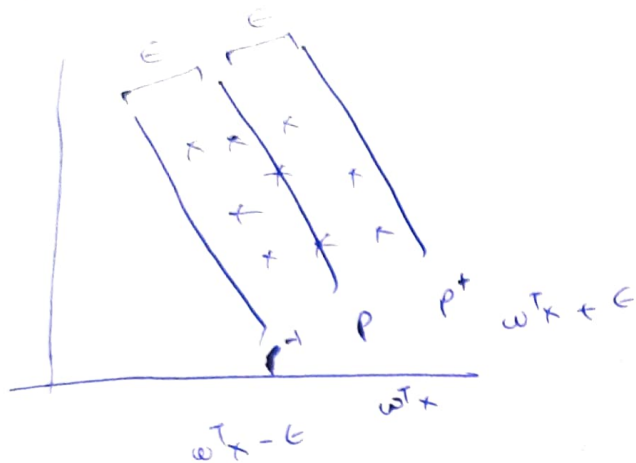
Regression \Rightarrow Best fit line that maps

$$x \rightarrow y.$$

$$y = w^T x$$



Phase 1: within the margin (hard margin)



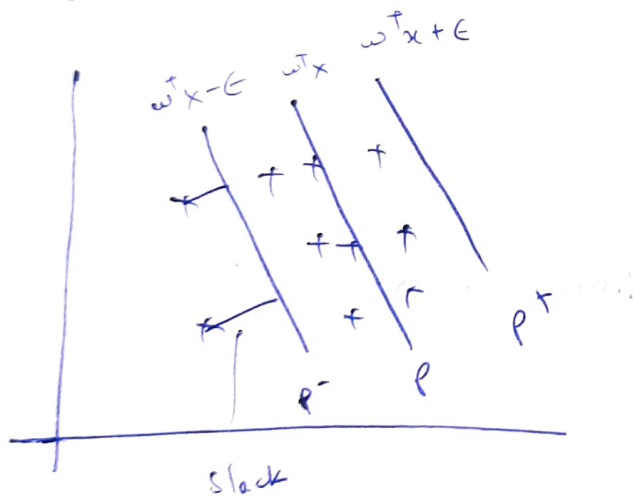
$$\min \frac{\|w\|}{2}$$

s.t.

$$|y - \hat{y}| \leq \epsilon$$

$$\Rightarrow |y - w^T x| \leq \epsilon$$

Phase 2: slack (soft margin)



$$\min \frac{\|w\|}{2} + c \sum_{i=1}^n |s_i|$$

margin error regression error

s.t. controls importance

$$|y - w^T x| \leq \epsilon + |s_i|$$