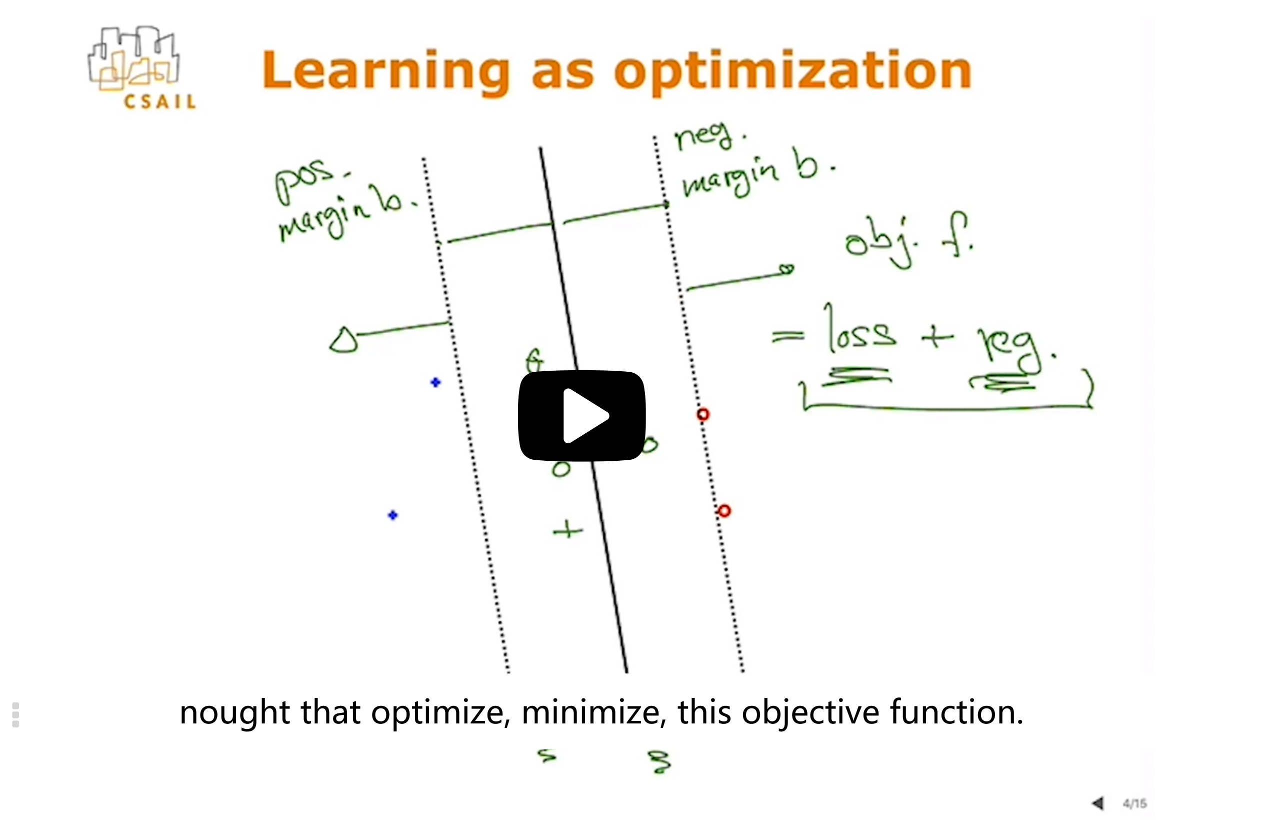
2. Introduction

Introduction



6:19 / 6:19 1.25x

naught.

That's a balance between the loss, how examples

fit within this ideal notion, and regularization,

our preference towards large mounting solutions.

So we will find--

we will formalize-- the objective function

and then find parameters theta and theta

nought that optimize, minimize, this objective function.

End of transcript. Skip to the start.

Video

Download video file

Transcripts

Download SubRip (.srt) file

Download Text (.txt) file

xuetangX.com 学堂在线

Review: Distance from a Line to a Point

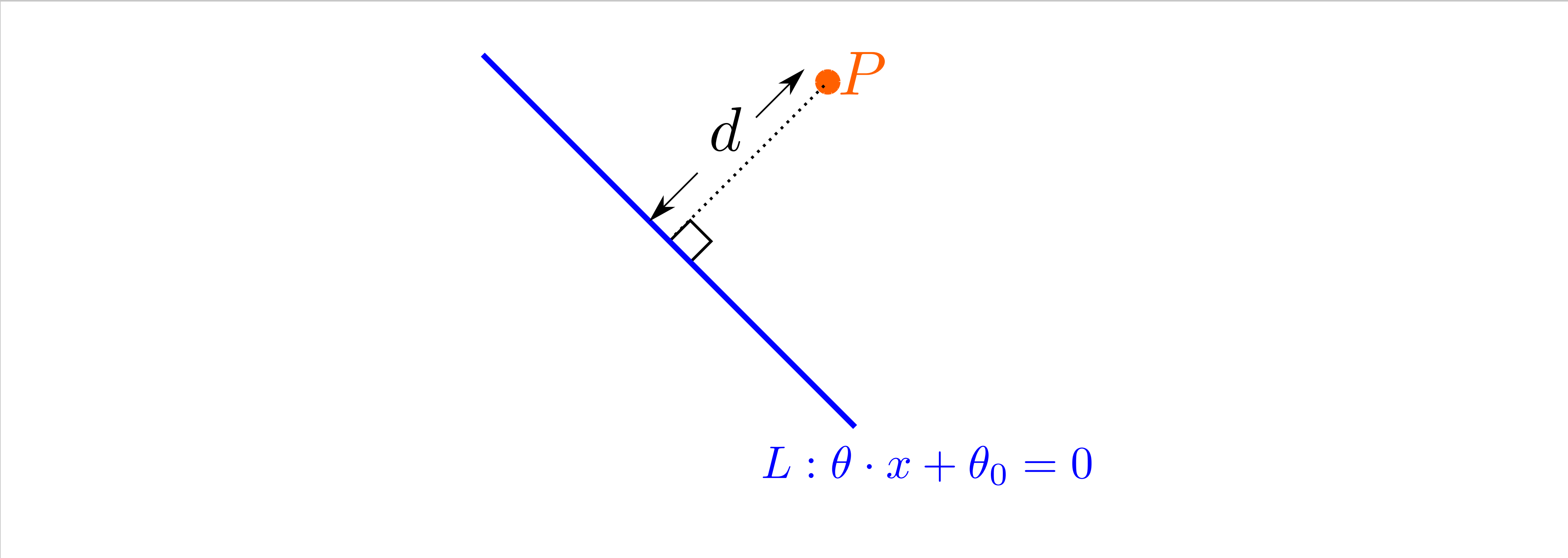
1/1 point (graded)

Consider a line L in $\mathbb{R}^2$ given by the equation

$$L : \theta \cdot x + \theta_0 = 0$$

where θ is a vector normal to the line L. Let the point P be the endpoint of a vector x_0 (so the coordinates of P equal the components of x_0).

What is the the shortest distance d between the line L and the point P? Express d in terms of θ, θ_0, x, x_0.



$d =$

θ垂直于L，因此将x0投射到θ上，再除以norm(θ)，就是没有offset的情况下的最短距离
有offset就加上offset就行（平移）

- ( ) $\frac{|\theta \cdot x + \theta_0|}{||\ \theta\ ||}$
- (•) $\frac{|\theta \cdot x_0 + \theta_0|}{||\ \theta\ ||}$ ✔
- ( ) $\frac{|\theta \cdot \theta_0 + \theta_0|}{||\ \theta\ ||}$
- ( ) $|\theta \cdot x_0 + \theta_0|$

Solution:

If there is no offset θ_0, The distance d is the projection from x_0 to θ, which is $\frac{|x_0 \cdot \theta|}{||\theta||}$ (definition of projection). With the offset θ_0 added, d is $\frac{|x_0 \cdot \theta + \theta_0|}{||\theta||}$. Thus the distance from a $L : \theta \cdot x + \theta_0 = 0$ to the point $P = x_0$ is given by $\frac{|\theta \cdot x_0 + \theta_0|}{||\theta||}$.

Submit You have used 1 of 3 attempts

Answers are displayed within the problem

Discussion

Show Discussion

Topic: Unit 1 Linear Classifiers and Generalizations (2 weeks):Lecture 3 Hinge loss, Margin boundaries and Regularization / 2. Introduction