

Linear Regression: 3 Approaches

↳ continuous functions \leftrightarrow classification

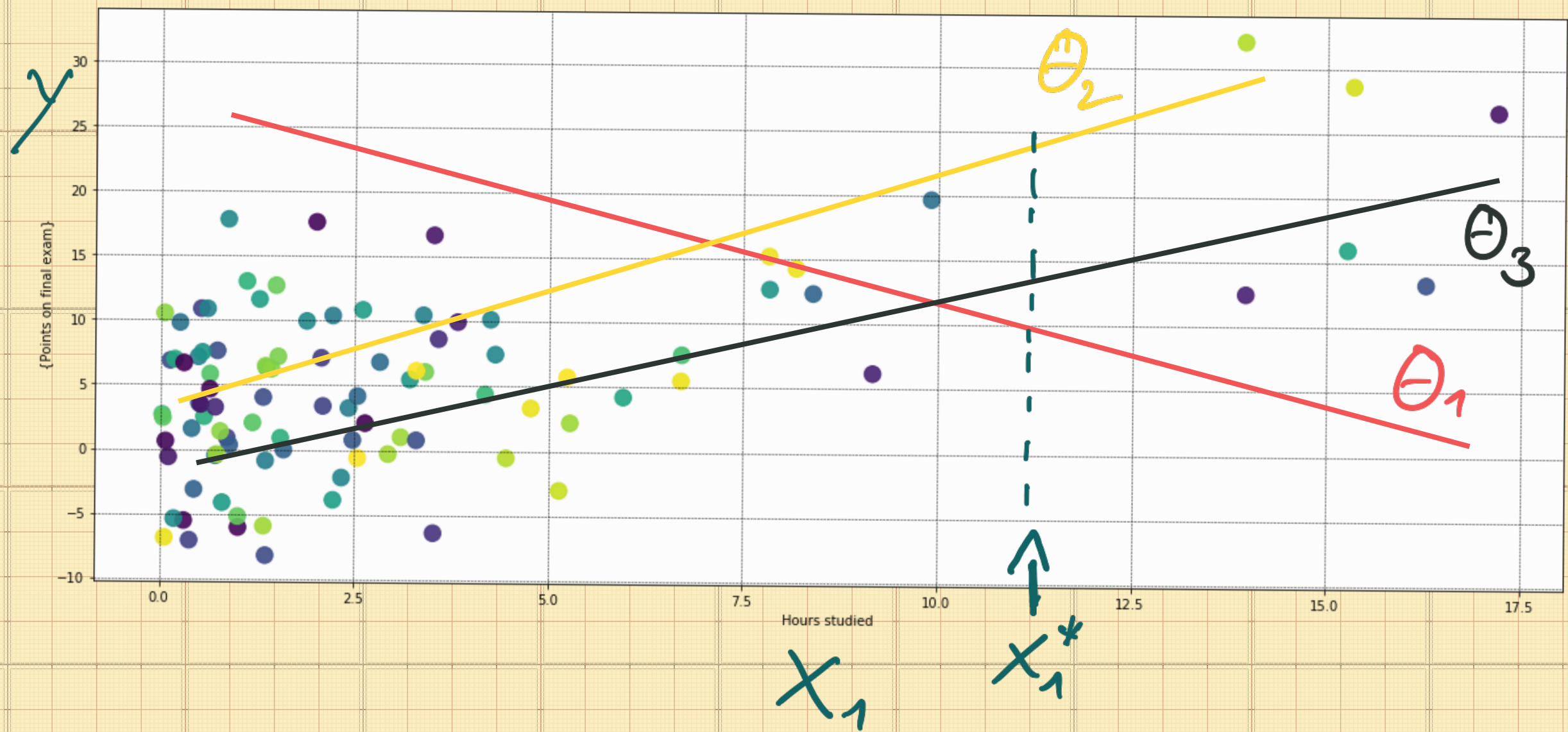
$$f: x \rightarrow y$$
$$h: y = x^T \Theta = \sum_{i=1}^p w_i x_i$$

We consider the univariate case here where we have a single feature x_1 :

$$h = w_1 x_1 + w_0 x_0 = w_1 x_1 + \underbrace{w_0 \cdot 1}_{\text{bias term}}$$

Linear: refers to the parameters!

$h = w_1 x_1^2 + w_0 x_0$ is still LR (with feature engineering)



Approach 1: Classical Linear Algebra
→ Linear Least Squares → Normal form

Approach 2: Max. Likelihood Estimate
→ Gaussian Noise → Normal form

Approach 3: Iterative Learning
→ Square Loss → approx. LLS

→ Most famous shallow ML algorithm!