Classification & Regression

Probabilistic View of Linear Regression

Classification

Why not linear Regression?

logistic Regression

METHOD: Newton's METHOD

RECALL LEAST SQUARES

Given

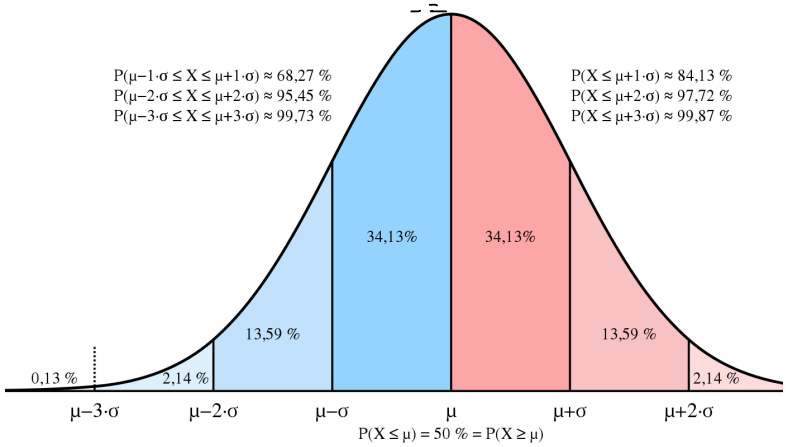
Do

Why?

Gaussian or Normal Distribution

Write $\epsilon^{(i)} \sim N(\mu, \sigma^2)$

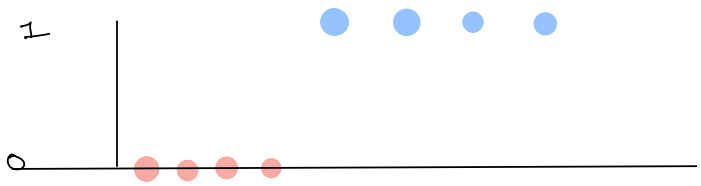
$$P(z; \mu, \sigma^2) = \frac{1}{\sigma\sqrt{2\pi}} \exp\left\{ \frac{(z-\mu)^2}{2\sigma^2} \right\}$$



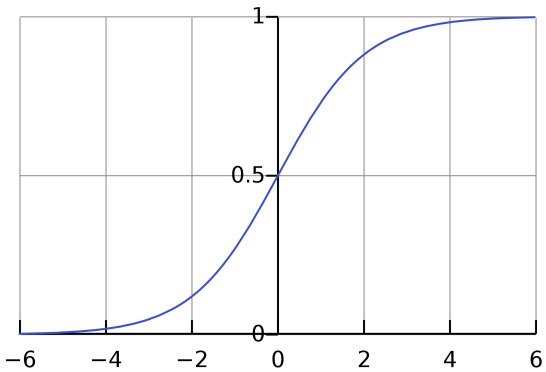
Likelihoods — Among many distributions, Pick most likely one

$\mathcal{L}(\theta) =$

Classification

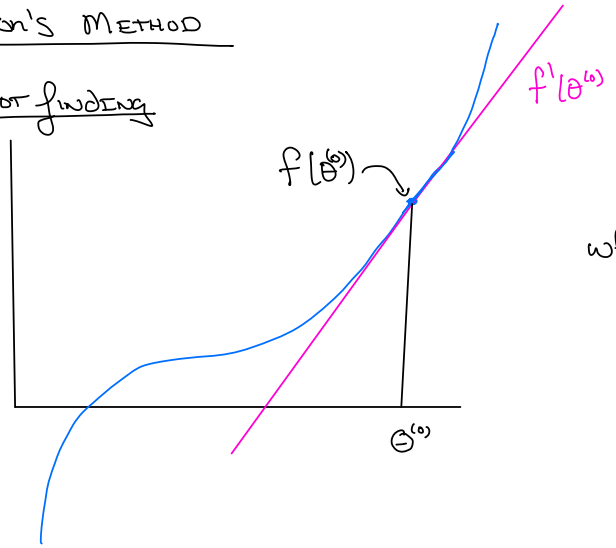


Same Recipe as linear Regression!



Newton's Method

Root finding



what is Δ_0?

To find maximum,

Rough Comparison

METHOD	Per iteration	Compute	Steps to Error ϵ^{-1}