

Logistic Regression

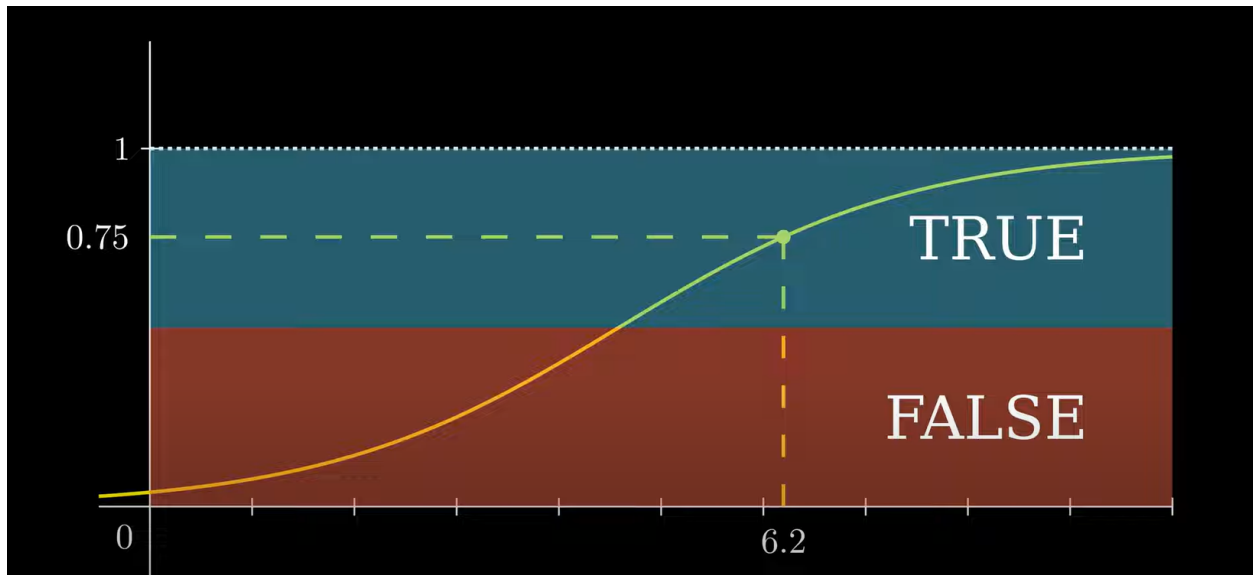
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What is Logistic Regression (LR)

- Technique that predicts the probability of an event given one or more independent variables
- Begin with input data of any numeric type
- Output is 0 or 1, T or F

Example

- Given x hours of rain, what is the probability of a flood?



Determine a threshold

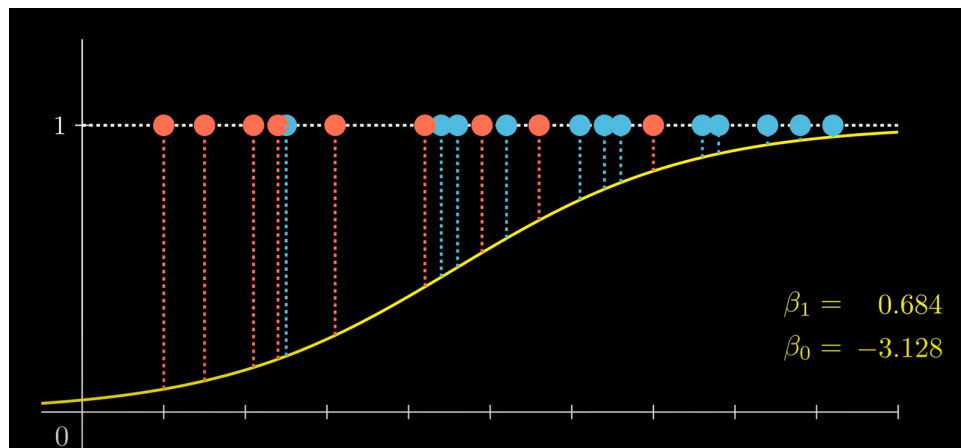
- The threshold matters because it determines whether the output will be true or false, given the two corresponding data points
- Line function:

$$f(x) = \frac{1}{1 + e^{-(\beta_1 x + \beta_0)}}$$

Maximum Likelihood Estimation

Take each point, multiply corresponding likelihoods together and get the total likelihood

- Find equation that maximizes the likelihood of the curve producing these points



Questions I have:

- How can we handle false positives and false negatives?