eCornell

CHEAT SHEET

Logistic Regression

Algorithm Name	Logistic Regression
Description	Logistic regression is a probabilistic linear model. In essence, a logistic regression classifier produce the probability $P(y = 1\|\mathbf{x})$ via the sigmoid function.
Applicability	Binary classification problems.
Assumptions	None.
Underlying Mathematical Principles	• Linear classification model • Sigmoid function • Convex loss function
Additional Details	• There is no closed form solution for logistic regression, but since the loss function is convex, we can use gradient descent to find the optimal solution. • There is no hyperparameter if you only want to find the MLE solution. But for MAP solution, you have to tune a λ parameter to incorporate your prior.
Example	Predict whether a candidate with win an election based on the amount of campaign funds spent and whether or not the candidate is currently in office.