Assignment - 1

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Q1: We know that joint distribution is

$P(A,B)$ = P(event A happening & event B happening)

$P(A,B) = P(B|A)\,P(A)$ → If B is conditionally dependent on A

↓ Joint distribution for Bivariate random variables.

→ Linear Regression

↳ our hypothesis

$H(X) = F(x_1, x_2, x_3, x_4)$

This is learnt by working on minimizing the cost function (Mean squared error), and doesn't deal with probabilities.

Thus, we can't calculate $F(x_1, x_2, x_3, x_4, Y)$ on this information

→ Logistic Regression

↳ our hypothesis

$H(X)$ is function.

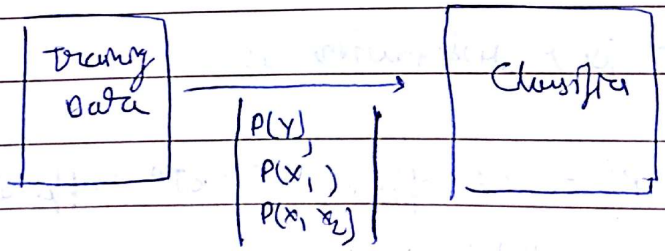
$H(X) = P(Y|\, x_1 x_2 x_3 x_4) \cdot P(x_1 x_2 x_3 x_4)$

This is just $P(Y=2)$ given $\{x_1 x_2 x_3 x_4\}$

$\frac{1}{1+e^{-\theta x}}$ [Probability that Y=1]

But H doesn't contain $P(x_1, x_2, x_3, x_4)$ from that classifier.

→ Naive Bayes classifier says
'When developing Naive classifier



our classifier is already built by calculating joint probabilities. Thus it contains information by which we can compute

$P(Y, x_1, x_2, x_3, x_4)$