

⇒ Loss Functions:

1, Mean Absolute Error: (Regression Based)

$$\text{Error} = \hat{y}_i - y_i$$

$$\text{Error}_{\text{abs}} = |\hat{y}_i - y_i|$$

$$\text{SAE} = \sum_{i=1}^n |\hat{y}_i - y_i|$$

$$\text{MAE} = \frac{1}{N} \sum_{i=1}^n |\hat{y}_i - y_i|$$

⇒

$$\hat{y} = \beta_0 + \beta_1 x_i$$

Intercept

Slope

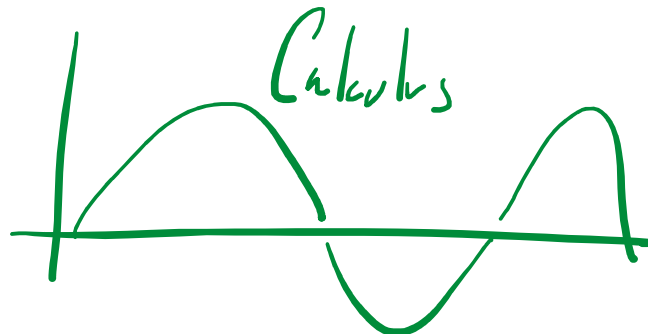
$$\hat{y} = \underset{\substack{\text{Weights} \\ \downarrow}}{W} x + \underset{\text{Bias}}{b}$$

$$\hat{y} = \sum_{i=1}^n w_i x_i + b' \rightarrow \text{Intercept}$$

Slope

⇒ Classification

⇒ Continuous (float)



⇒ Discrete (int)



Summation Probability

$$\left. \begin{array}{l} y_{\text{yes}} = 1 \\ y_{\text{no}} = 0 \end{array} \right\} \sum \sum y + \sum N$$

⇒ Logarithmic Loss (Binary Cross Entropy)

$$BCE_{(LL)} = \frac{1}{N} \sum_{i=1}^n \underbrace{-y_i \times \log(\hat{y}_i)}_{\text{yes}} + \underbrace{(1-y_i) \times \log(1-\hat{y}_i)}_{\text{no}}$$

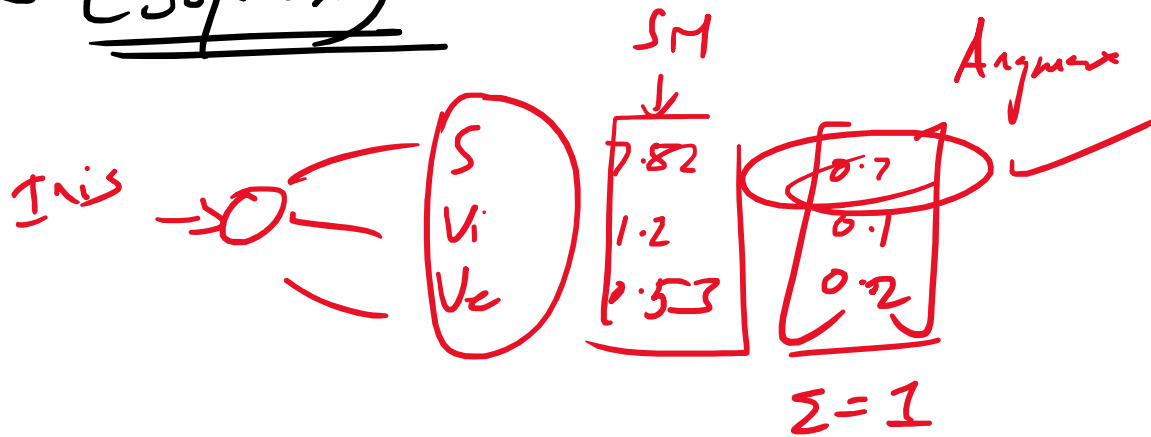
Probability
of Yes/True/1

Prob of
No/False/0

=> Multi-label Classification : This Dataset

Setosa Virginica Versicolour

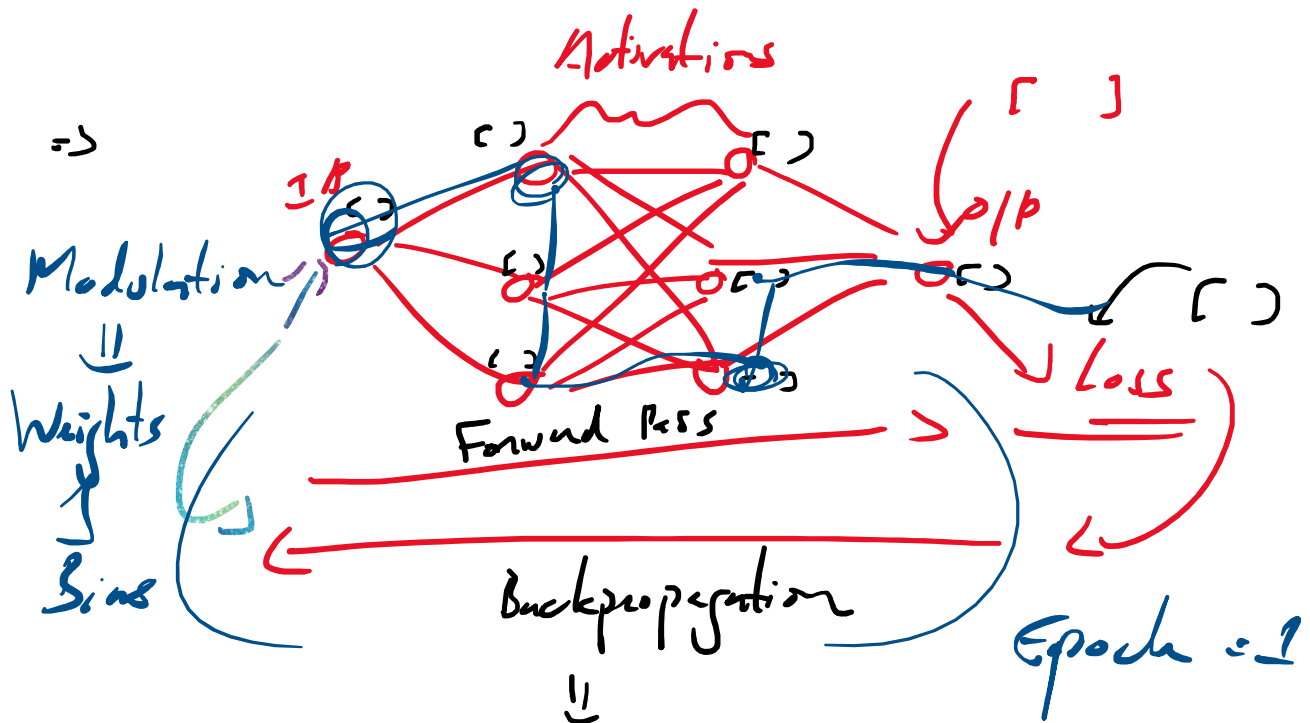
Activation (Softmax)



$$\text{Softmax} = \frac{\exp^{x_i}}{\sum_i^n \exp^{x_i}}$$

=> Categorical Cross Entropy (Logarithmic CCE)

$$L_{CCE} = - \sum_{i=1}^n (y_i \times \log(\hat{y}_i))$$



\Rightarrow Inherently use Optimizers

\Rightarrow Local Minima of Global Minima

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