Neural Networks

Son Nguyen

Data

X_1	X_2	Y

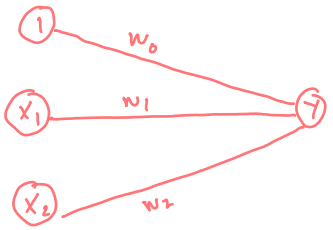
Linear model:

Assume that

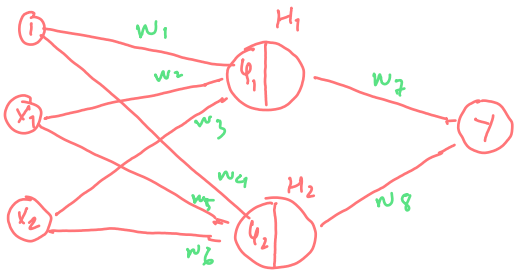
$$Y = w_0 + w_1 X_1 + w_2 X_2$$

(Algebraic presentation of linear model)

* Graphical presentation of linear model.



Input layer output layer



Input layer Hidden layer output layer

$$H_1 = \left(1 \cdot w_1 + X_1 \cdot w_2 + X_2 \cdot w_3\right)^2$$

$$H_2 = \cos\left(1 \cdot w_4 + X_1 \cdot w_5 + X_2 \cdot w_6\right)$$

$$Y = w_7 \cdot H_1 + w_8 \cdot H_2$$

φ_1, φ_2 : activation functions

$\varphi_1(t) = t^2$

$\varphi_2(t) = \cos(t)$

$$Y = w_7\left(1 \cdot w_1 + X_1 \cdot w_2 + X_2 \cdot w_3\right)^2 + w_8 \cos\left(w_4 + X_1 w_5 + X_2 w_6\right)$$