Perceptron

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$$\mathbf{x} = [x_1 \ x_2 \ \ldots\ldots \ x_p]^T, \qquad x_j \in \boldsymbol{R}$$

$$\boldsymbol{w} = [w_1 \ w_2 \ \ldots\ldots \ w_p]^T, \qquad w_j \in \boldsymbol{R}$$

$$v = \sum_{i=1}^{p} w_i x_i - \theta = w^T x - \theta$$

$$y = \mathrm{sgn}(v)$$

$$\mathrm{sgn}(v) = \begin{cases} +1, & v \geq 0 \\ -1, & v \geq 0 \end{cases}$$