

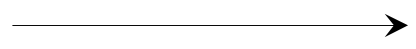


deeplearning.ai

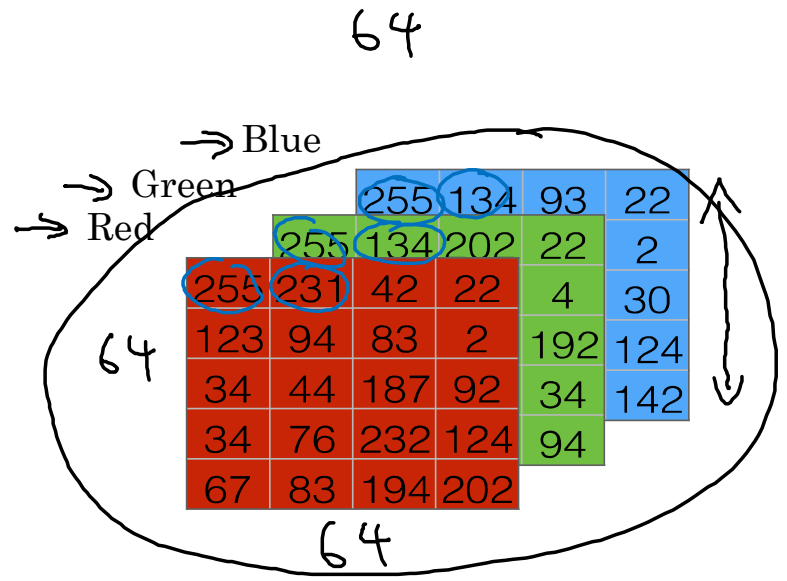
Basics of Neural Network Programming

Binary Classification

Binary Classification



1 (cat) vs 0 (non cat)
y



X =

$$\begin{bmatrix} 255 \\ 231 \\ \vdots \\ 255 \\ 134 \\ \vdots \end{bmatrix}$$

$$64 \times 64 \times 3 = 12288$$

$$n = n_x = 12288$$

$$X \longrightarrow y$$

Notation

$$(x, y) \quad x \in \mathbb{R}^{n_x}, y \in \{0, 1\}$$

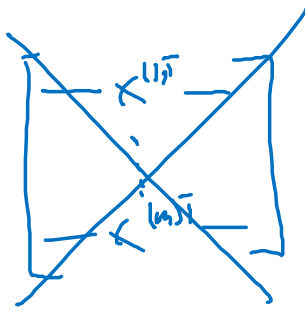
$$m \text{ training examples} : \{(\underline{x}^{(1)}, \underline{y}^{(1)}), (\underline{x}^{(2)}, \underline{y}^{(2)}), \dots, (\underline{x}^{(m)}, \underline{y}^{(m)})\}$$

$$M = M_{\text{train}}$$

$$M_{\text{test}} = \# \text{test examples.}$$

$$X = \begin{bmatrix} | & | & & | \\ x^{(1)} & x^{(2)} & \dots & x^{(m)} \\ | & | & & | \end{bmatrix} \begin{matrix} \uparrow \\ n_x \\ \downarrow \end{matrix}$$

$\xleftarrow{m} \xrightarrow{\quad}$

$$X \in \mathbb{R}^{n_x \times m} \quad X.\text{shape} = (n_x, m)$$


$$Y = [y^{(1)} \ y^{(2)} \ \dots \ y^{(m)}]$$

$$Y \in \mathbb{R}^{1 \times m}$$

$$Y.\text{shape} = (1, m)$$