



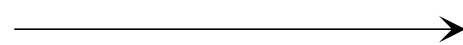
deeplearning.ai

Basics of Neural Network Programming

Binary Classification

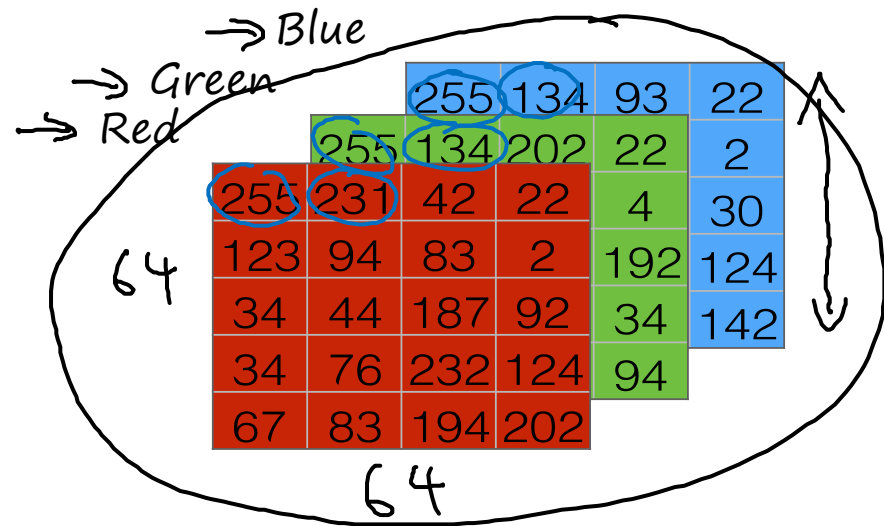
Binary Classification

64



1 (cat) vs 0 (non cat)
y

64



X =

255
231
⋮
⋮
⋮
255
134
⋮

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

$$n = n_x = 12288$$

X → y

Notation

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

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

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

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

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

Diagram illustrating the matrix X with dimensions n_x (vertical) and m (horizontal). A crossed-out diagram shows a single example $x^{(i)}$ being removed from the matrix.

$$X \in \mathbb{R}^{n_x \times m}$$

$$X.\text{shape} = (n_x, m)$$

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

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

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