deeplearning.ai

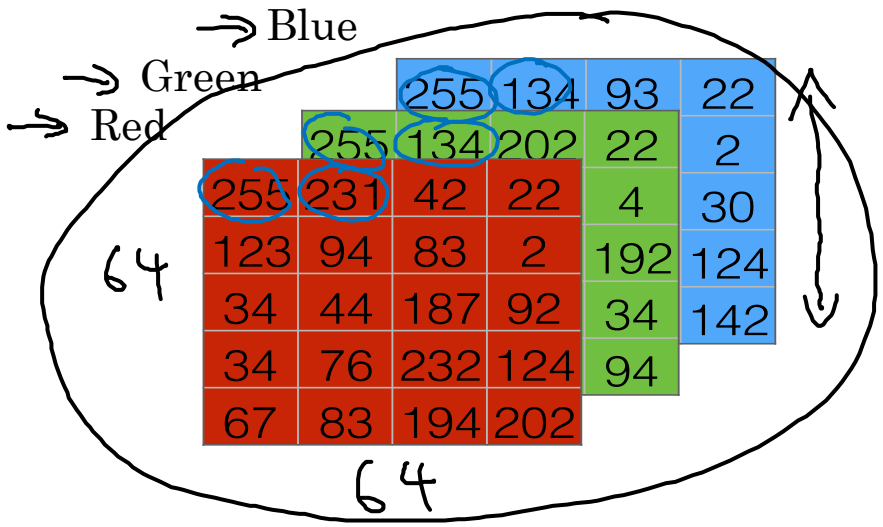
# Basics of Neural Network Programming

## Binary Classification

# Binary Classification

64

64




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

1 (cat) vs 0 (non cat)

$y$

Unroll

$64 \times 64 \times 3 = 12288$

$n = n_x = 12288$

$x \longrightarrow y$

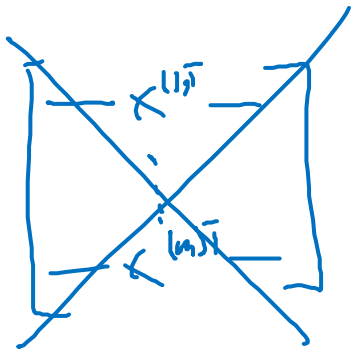
# Notation

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

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

$M = M_{train}$ $\qquad$ $M_{test}$ = #test examples.

$$X = \begin{bmatrix} | & | & & | \\ x^{(1)} & x^{(2)} & \cdots & x^{(m)} \\ | & | & & | \end{bmatrix} \quad n_x \uparrow \downarrow, \quad \leftarrow m \rightarrow$$




$$Y = \begin{bmatrix} y^{(1)} & y^{(2)} & \cdots & y^{(m)} \end{bmatrix}$$

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

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

$Y.shape = (1, m)$

Andrew Ng