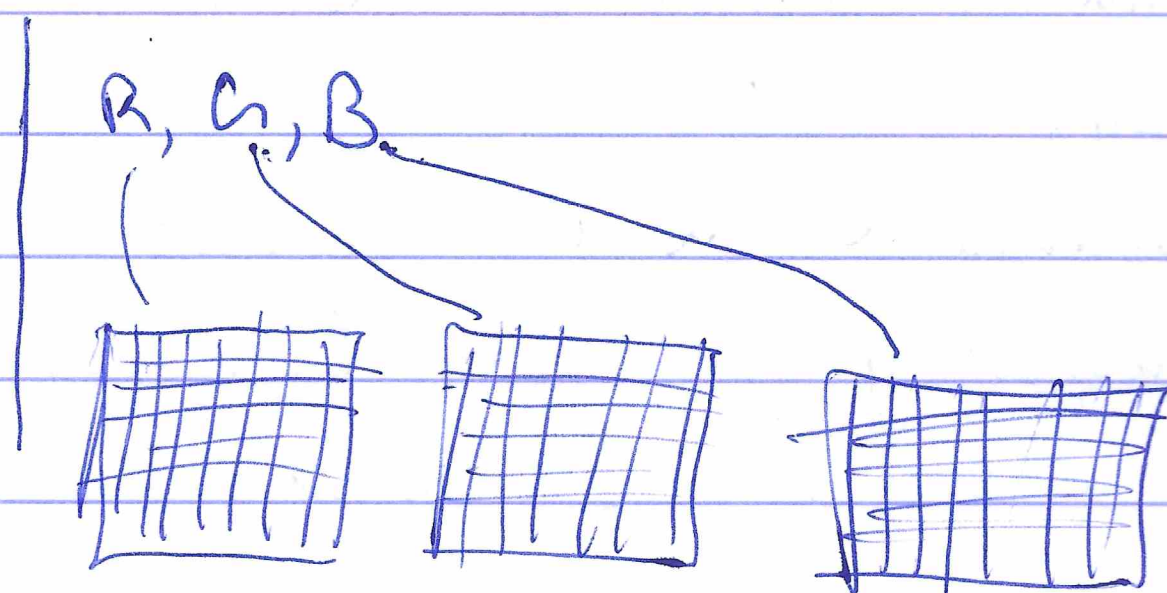


# WEEK 2: NN BASICS

Log. Reg. as a NN

Binary Classification

(1 Cat) vs (0 Non-cat)



Unroll pixel values into a feat. vector

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

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

$$n = n_x = 12288$$

Notation:

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

$$m \text{ train. examples} = \{(x^{(1)}, y^{(1)}), (x^{(2)}, y^{(2)}), \dots, (x^{(m)}, y^{(m)})\}$$

$$m = m_{\text{train}}$$

$$m_{\text{test}} = n \text{ of test examples}$$

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

$\xleftarrow{\quad m \quad}$

other convention:

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

$$Y = [y^{(1)} \quad y^{(2)} \quad \dots \quad y^{(m)}]$$
$$Y \in \mathbb{R}^{1 \times m}, \quad Y.\text{shape} = (1, m)$$