

## Assignment 2.1.

# Parameters for layer 1 (conv 2D):

$$\begin{aligned}
 & (\text{Kernel size} * \text{filters} * 3(\text{RGB}) / 1(\text{Grayscale}) + \text{filters}) \\
 = & (3 \times 3 \times 64 \times 3) + 64 \\
 = & 1792.
 \end{aligned}$$

# Parameters for layer 2 (conv 2D):

$$\begin{aligned}
 & (\text{Kernel size} * \text{filters of this layer} * \text{filters of prev. layer}) \\
 & + \text{filters of this layer} \\
 = & (3 \times 3 \times 32 \times 64) + 32 \\
 = & 18464
 \end{aligned}$$

# Parameters for Dense layer 1:

$$\begin{aligned}
 & [(\text{Neurons in that layer}) \times (\text{Output from flatten layer})] \\
 & + (\text{Back Propagation}) \\
 = & [512 \times 2048] + 512 \\
 = & 1049088.
 \end{aligned}$$

# Parameters for Dense layer 2:

$$\begin{aligned}
 & [(\text{Neurons in that layer}) \times (\text{O/P from prev. layer})] + \\
 & (\text{Back Propagation}) \\
 = & [128 \times 512] + 128 \\
 = & 65664.
 \end{aligned}$$

# Parameters for Dense layer 3:

$$\begin{aligned}
 = & [64 \times 128] + 64 \\
 = & 8256
 \end{aligned}$$

# Parameters for Dense layer 4:

$$\begin{aligned}
 = & [32 \times 64] + 32 \\
 = & 2080
 \end{aligned}$$

$$\begin{aligned} \# & \text{ Parameters for Dense layer 5:} \\ & = [10 \times 32] + 10 \\ & = 330 \end{aligned}$$

$$\begin{aligned} \# & \text{ Total Trainable parameters} \\ & = 1792 + 18464 + 1049088 + 65664 + 8256 + 2080 + 330 \\ & = 1145674 \end{aligned}$$