



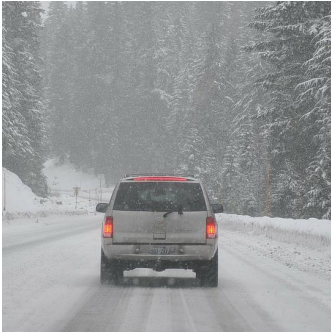
deeplearning.ai

Object Detection

Object
localization

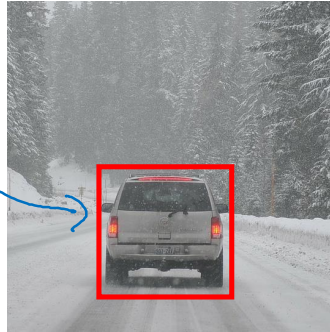
What are localization and detection?

Image classification



"Car"

Classification with
localization



"Car"

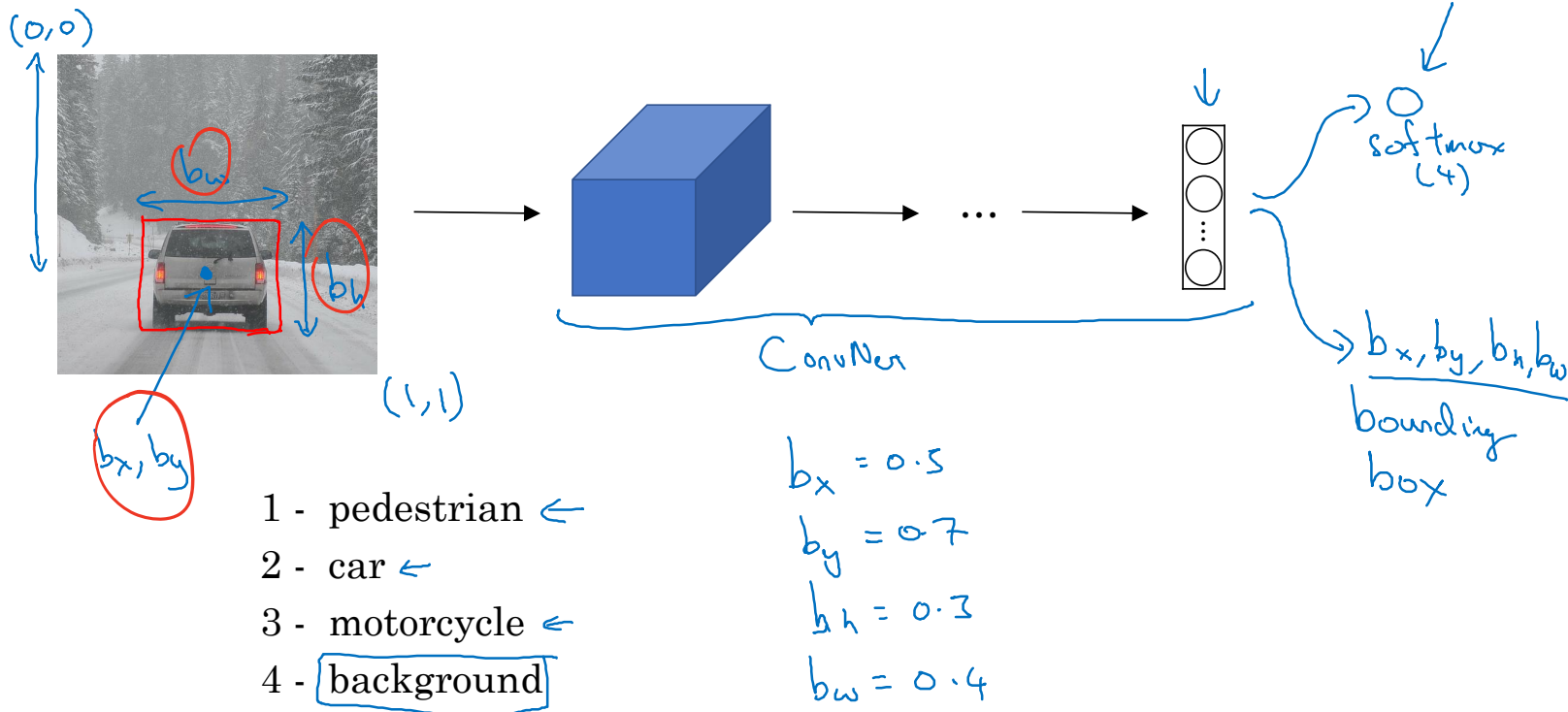
1 object

Detection



multiple
objects

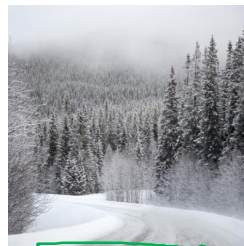
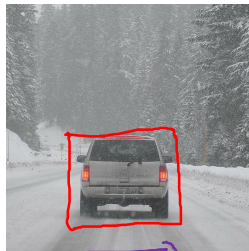
Classification with localization



Defining the target label y

- 1 - pedestrian
- 2 - car ←
- 3 - motorcycle
- 4 - background ←

Need to output b_x, b_y, b_h, b_w , class label (1-4)



$x =$

is there an object?

$$y = \begin{bmatrix} p_c \\ b_x \\ b_y \\ b_h \\ b_w \\ c_1 \\ c_2 \\ c_3 \end{bmatrix}$$

(x, y)

$$\begin{bmatrix} 1 \\ b_x \\ b_y \\ b_h \\ b_w \\ 0 \\ 1 \\ 0 \end{bmatrix}$$

$$\begin{bmatrix} 0 \\ ? \\ ? \\ ? \\ ? \\ ? \\ ? \\ ? \end{bmatrix}$$

p_c
← "don't care"