



deeplearning.ai





deeplearning.ai

# Object Detection

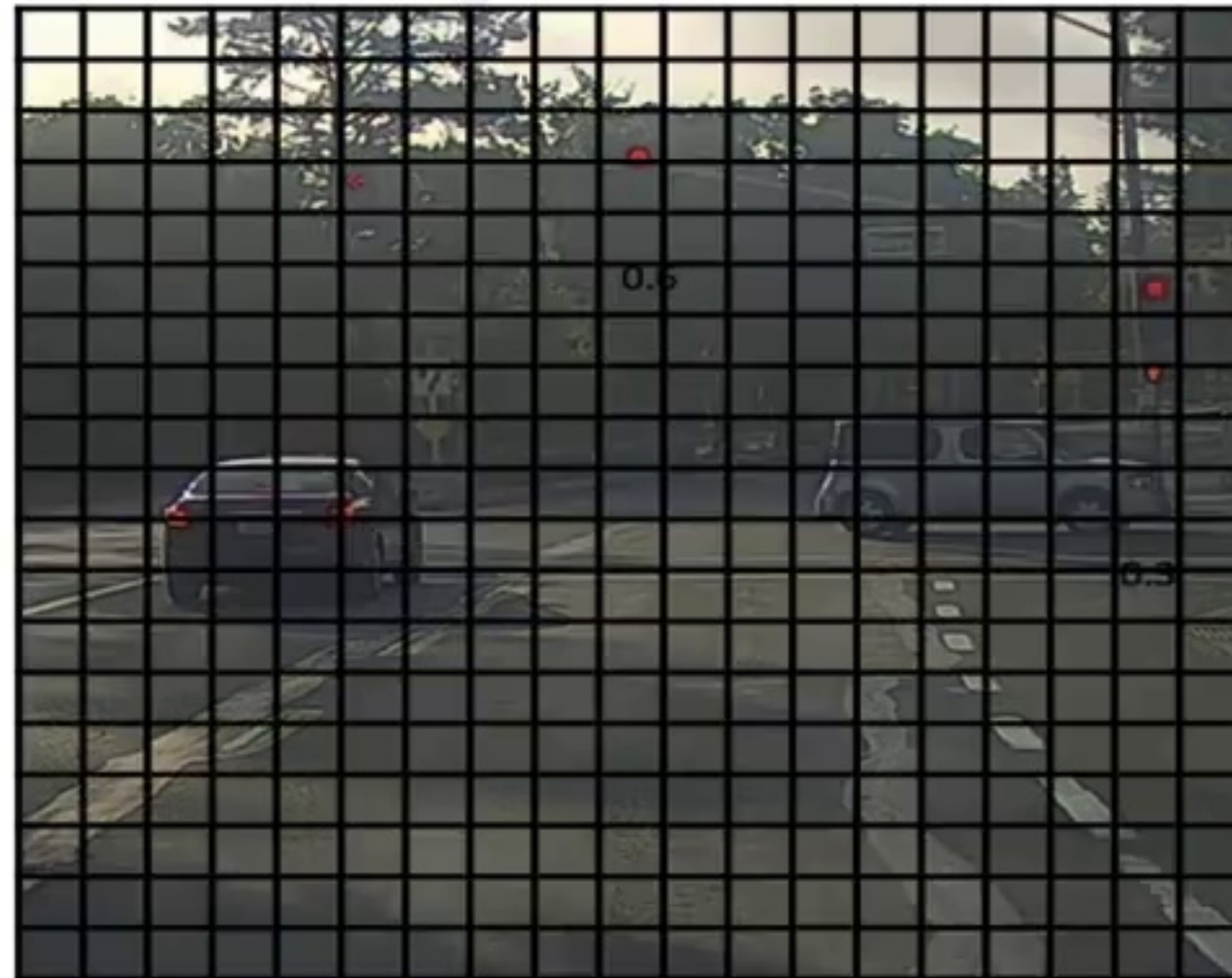
---

**Non-max  
suppression**

# Non-max suppression example



# Non-max suppression example



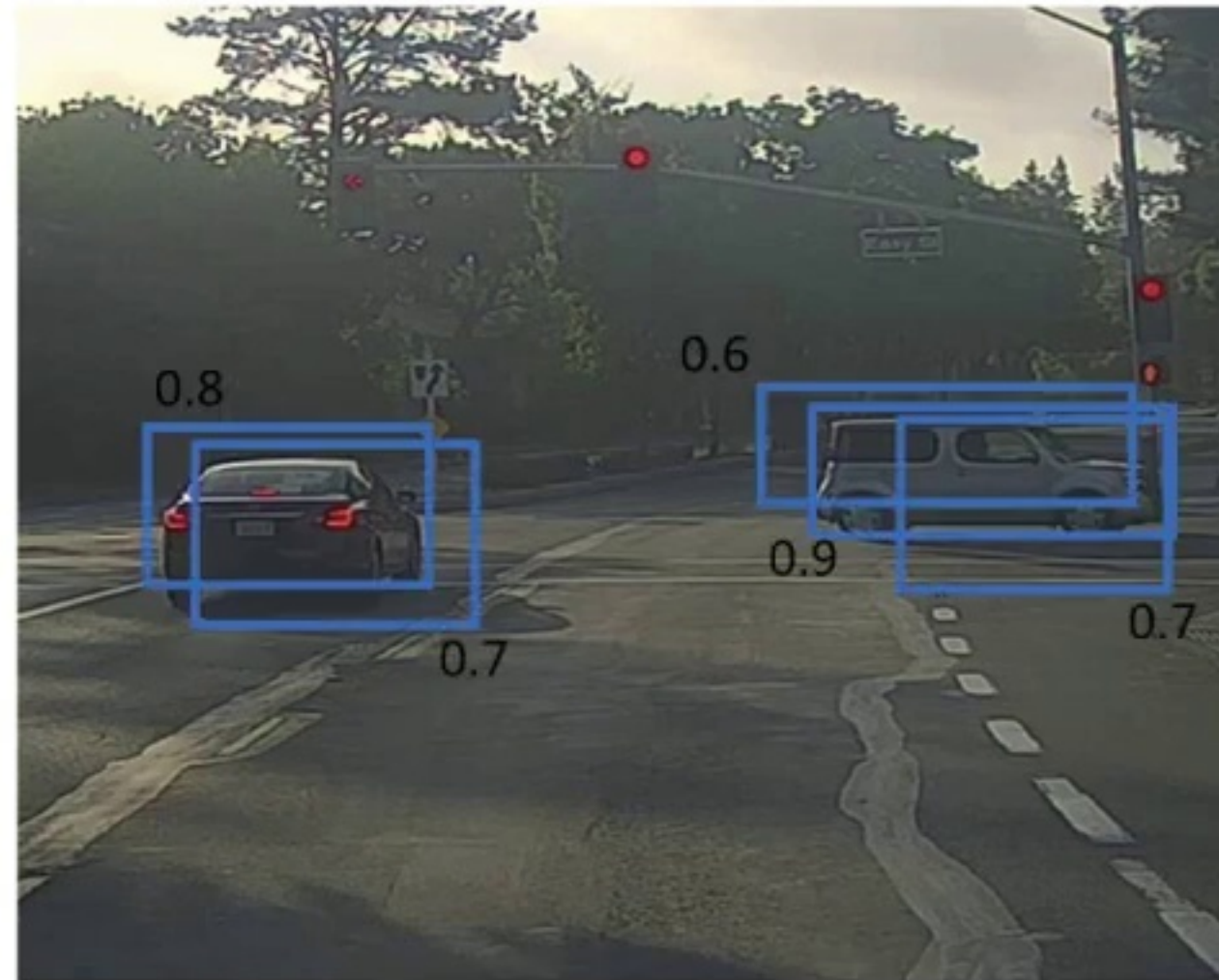


# Non-max suppression example



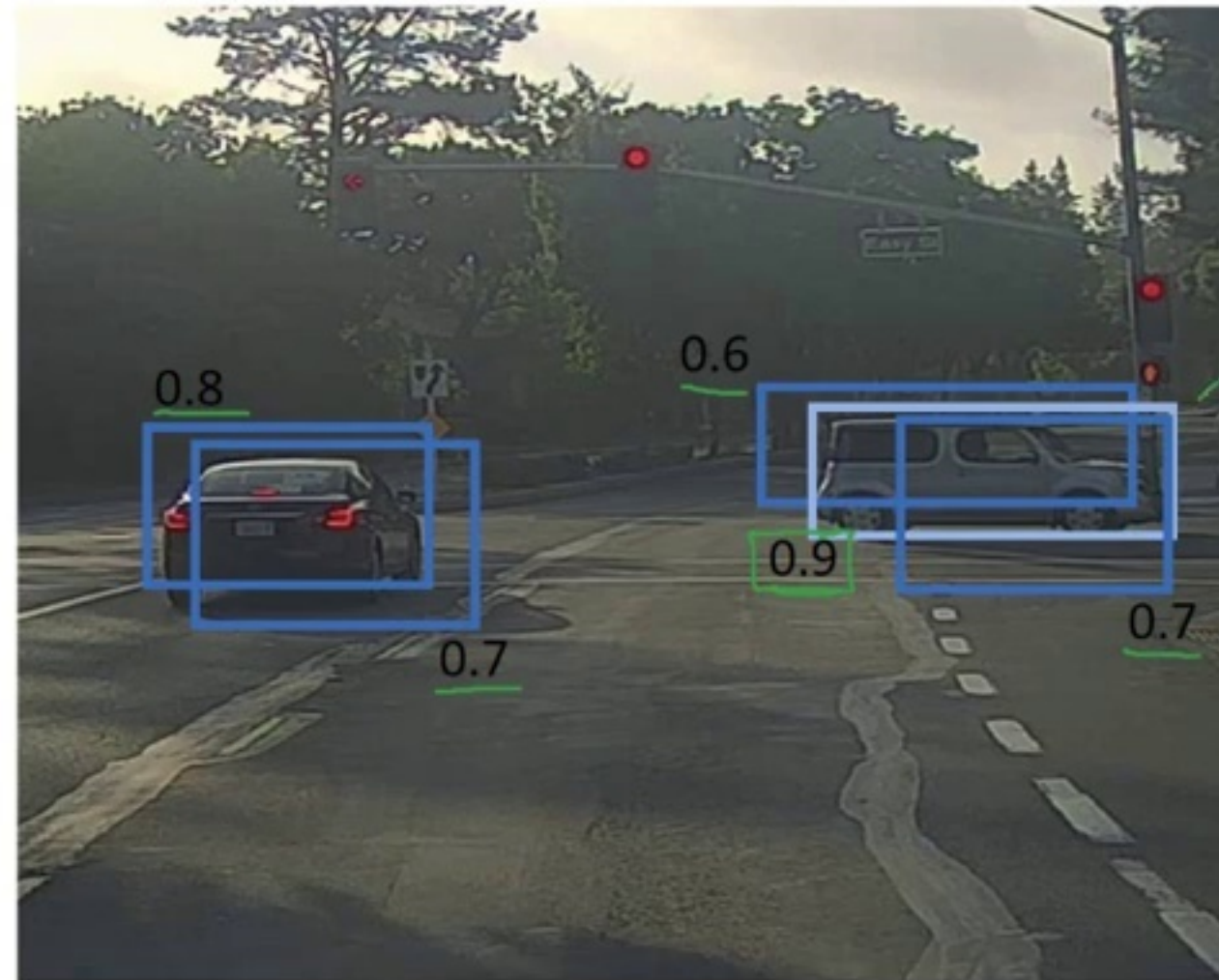
19x19

# Non-max suppression example



$p_c$

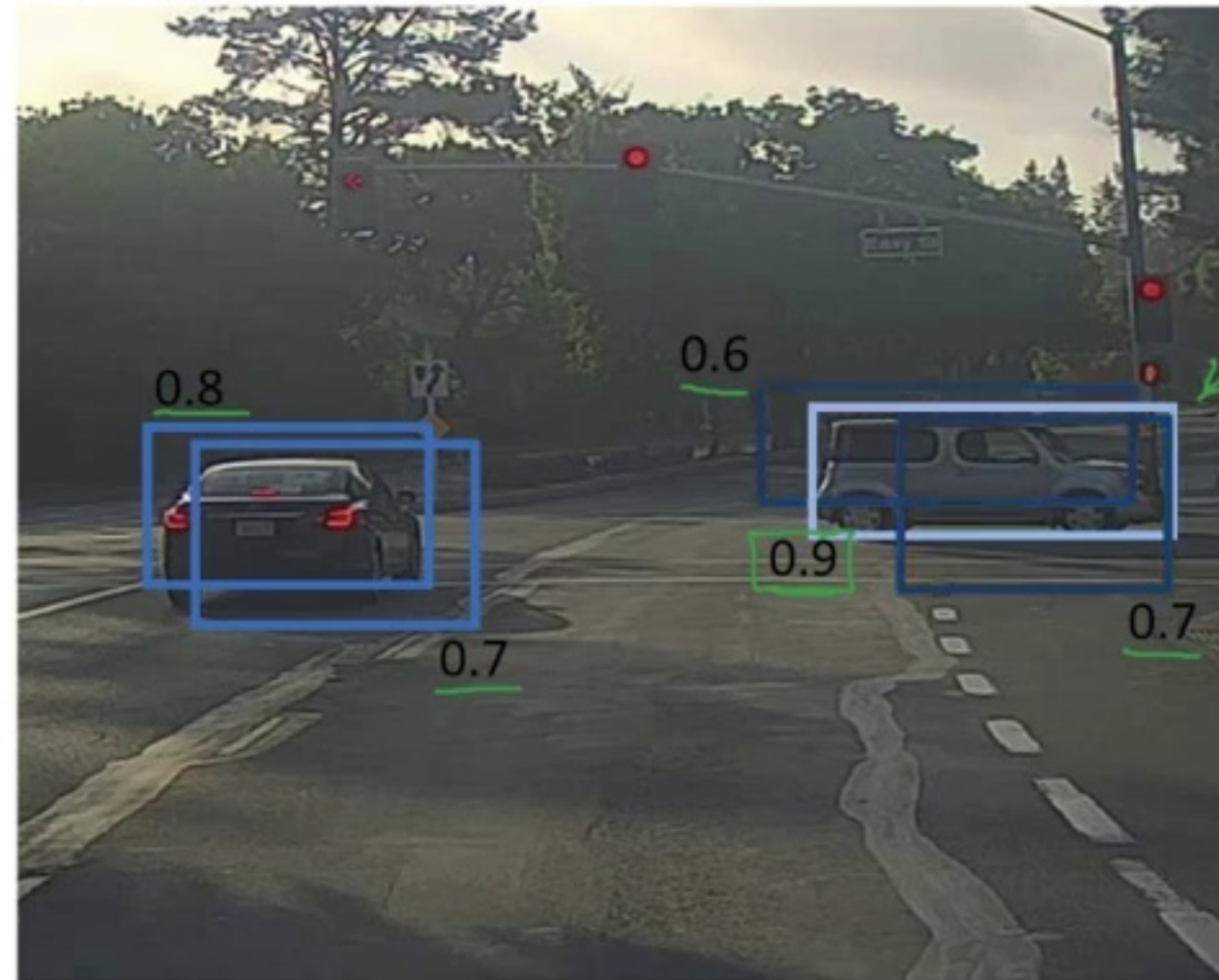
# Non-max suppression example



$p_c$



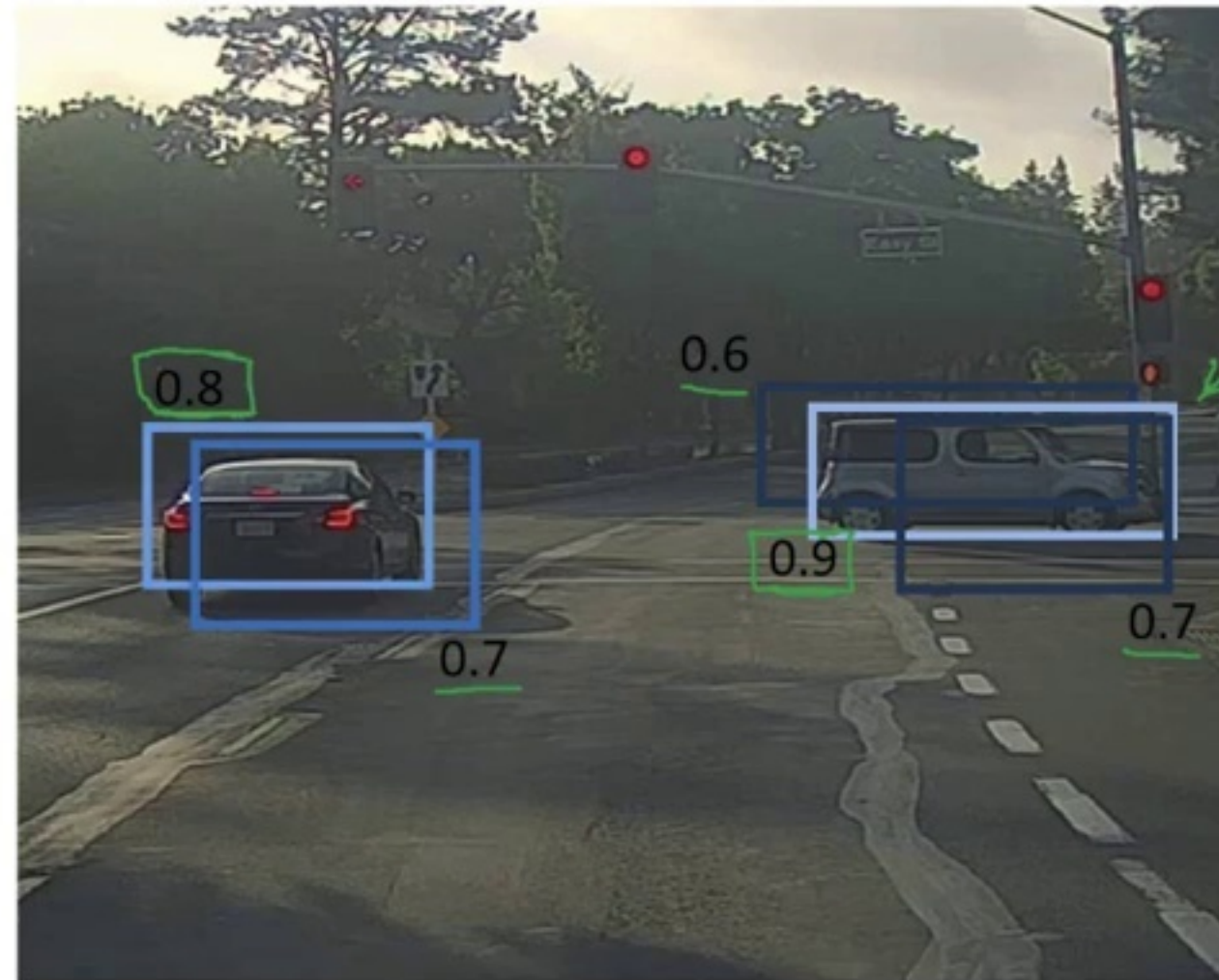
# Non-max suppression example



$p_c$

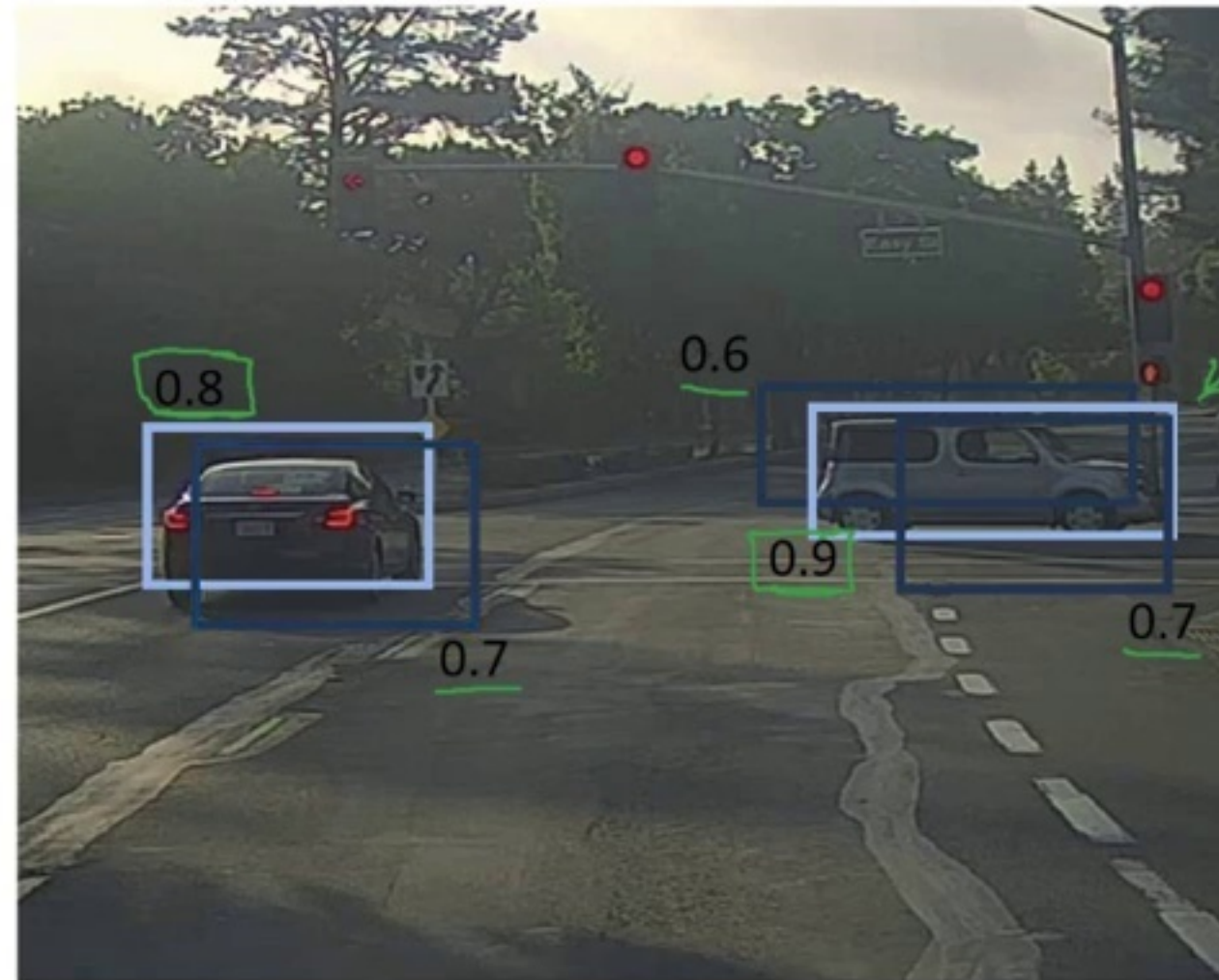


# Non-max suppression example



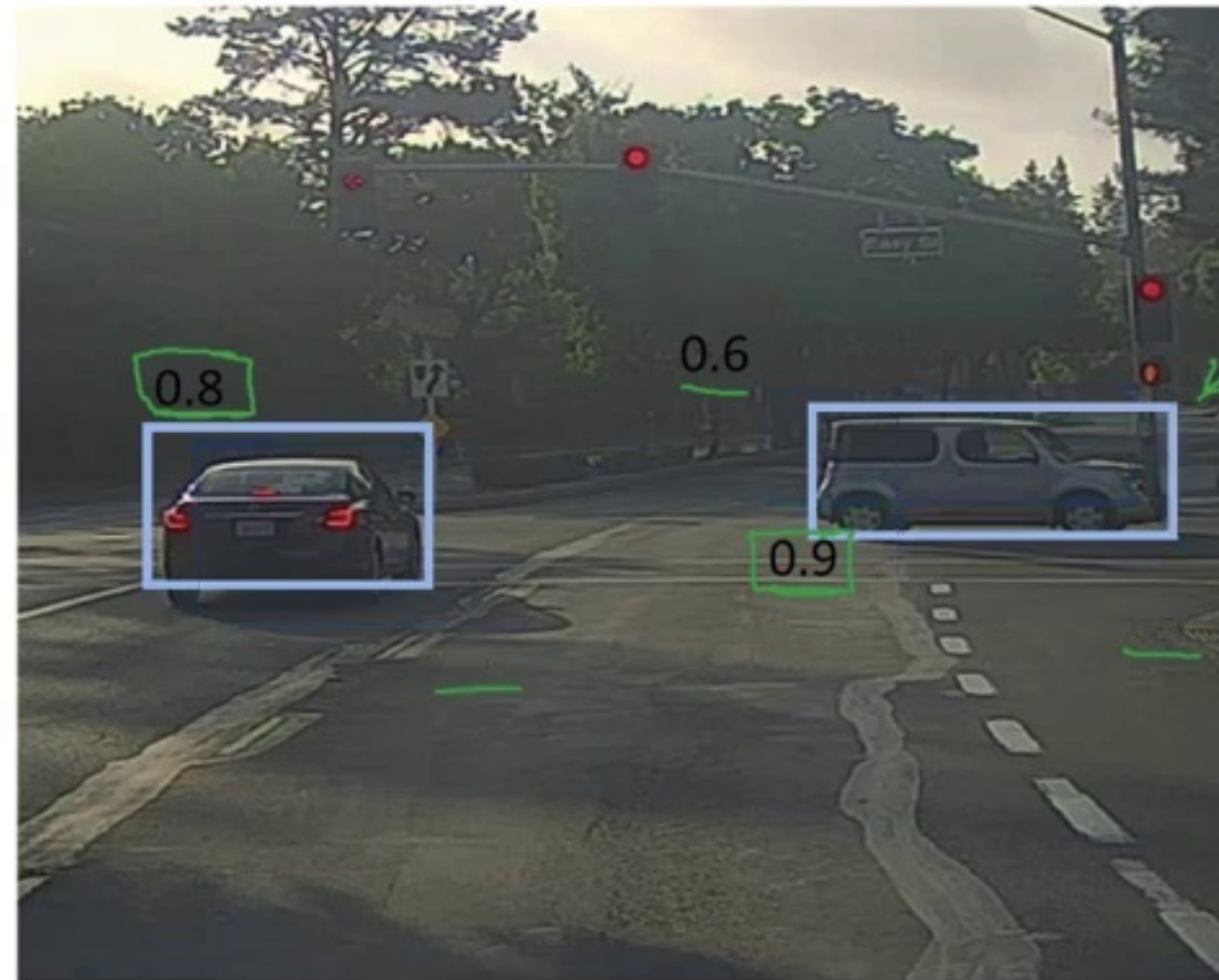
$p_c$

# Non-max suppression example



$p_c$

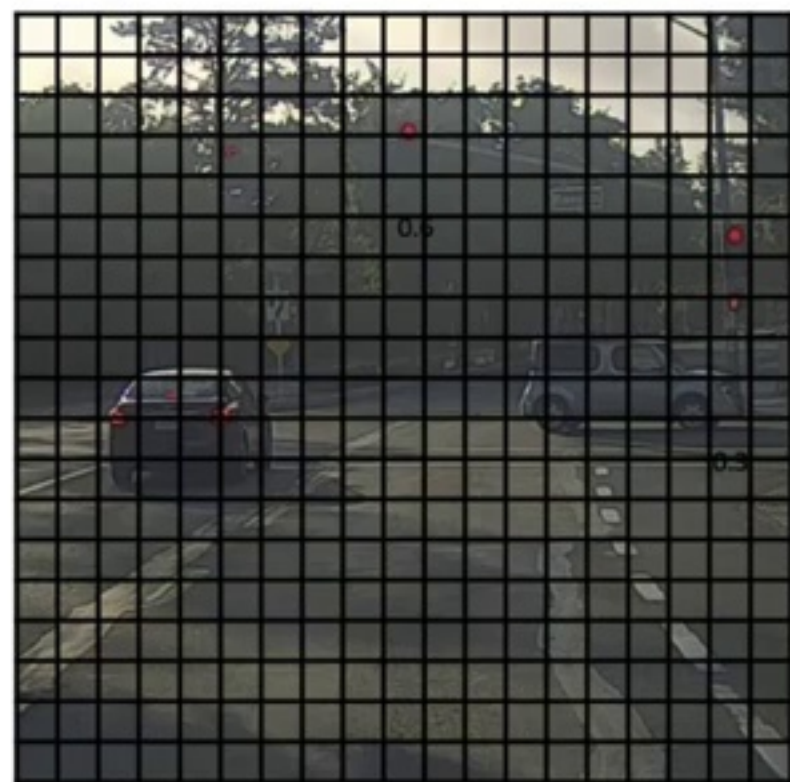
# Non-max suppression example



$p_c$



# Non-max suppression algorithm



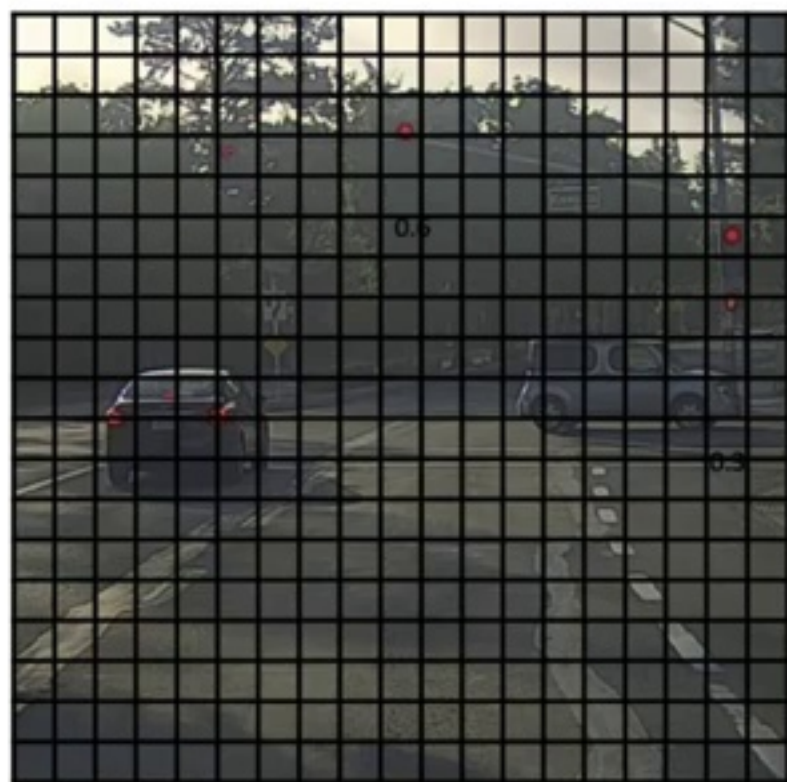
19× 19

Each output prediction is:

$$\begin{bmatrix} p_c \\ b_x \\ b_y \\ b_h \\ b_w \end{bmatrix}$$



# Non-max suppression algorithm



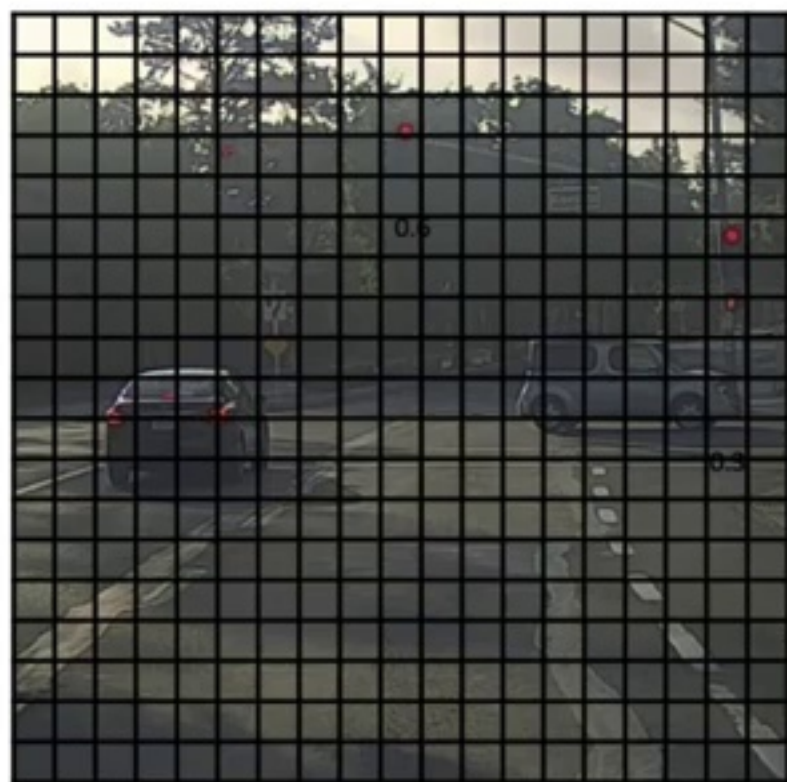
19x 19

Each output prediction is:

$$\begin{bmatrix} p_c \\ b_x \\ b_y \\ b_h \\ b_w \end{bmatrix}$$



# Non-max suppression algorithm



19x 19

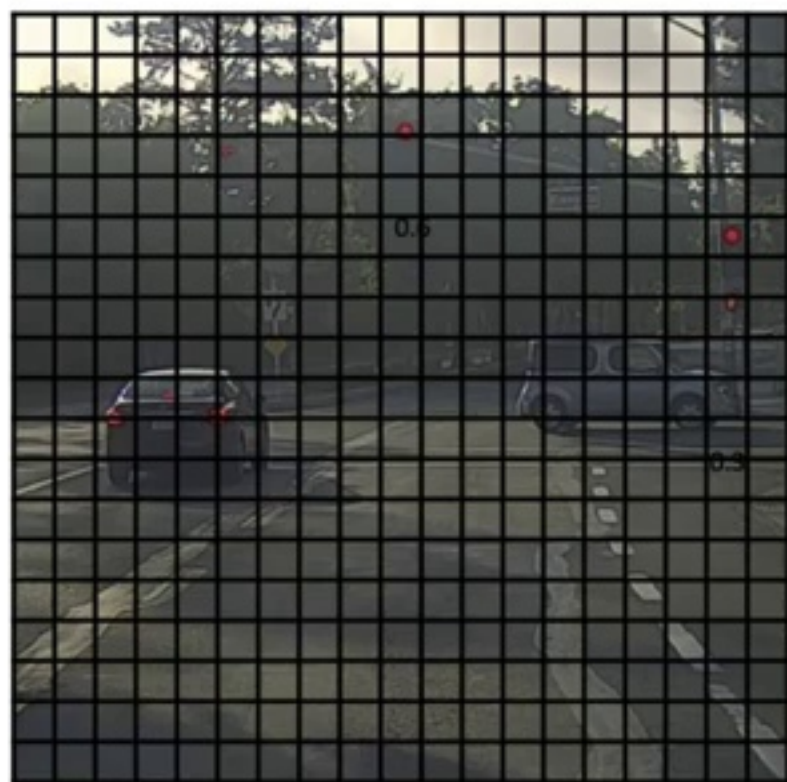
Each output prediction is:

$$\begin{bmatrix} p_c \\ b_x \\ b_y \\ b_h \\ b_w \end{bmatrix}$$



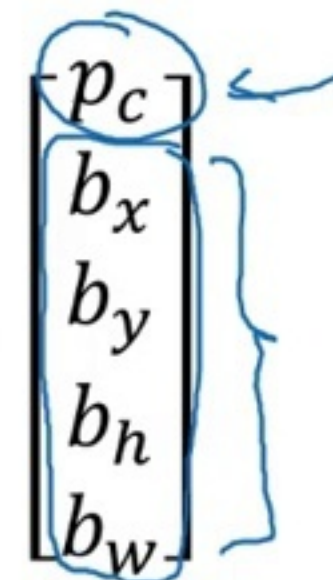
Discard all boxes with  $p_c \leq 0.6$

# Non-max suppression algorithm



19x 19

Each output prediction is:

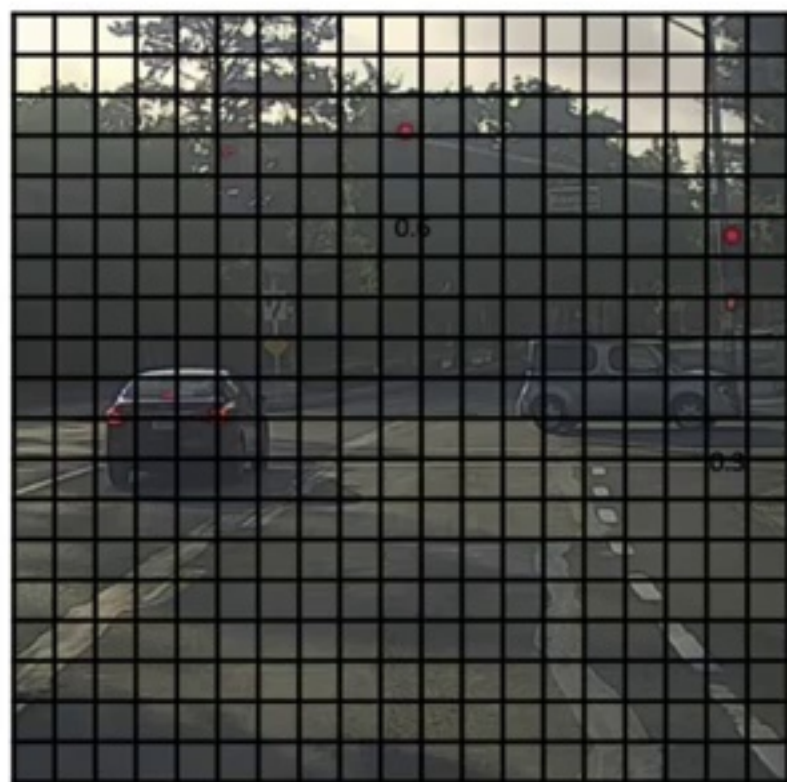


Discard all boxes with  $p_c \leq 0.6$

While there are any remaining boxes:

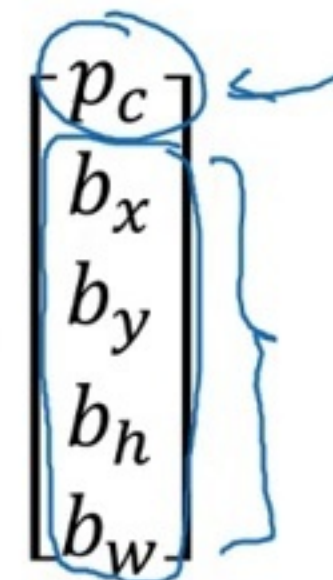


# Non-max suppression algorithm



19x 19

Each output prediction is:



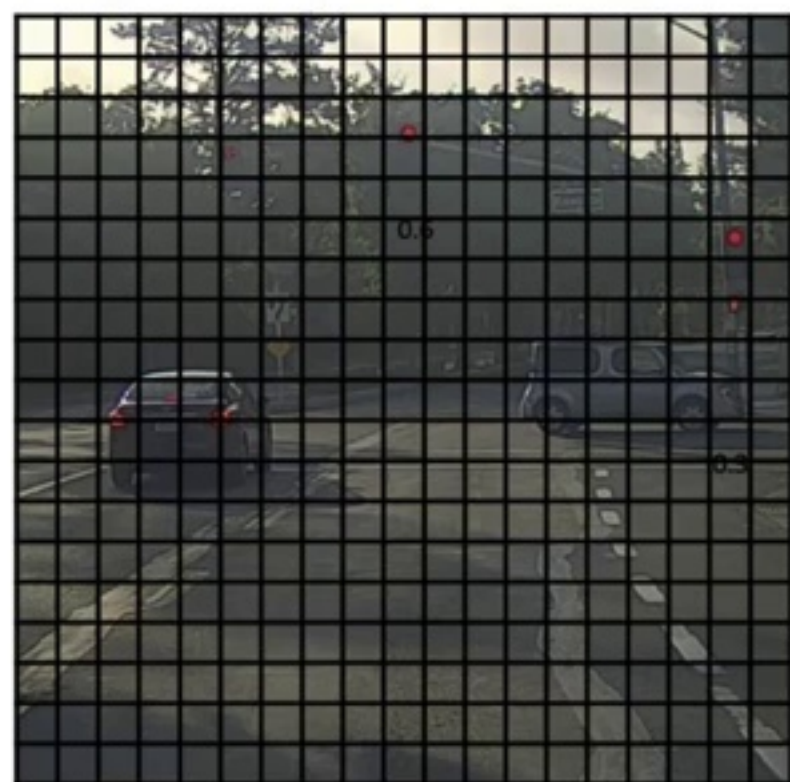
Discard all boxes with  $p_c \leq 0.6$

While there are any remaining boxes:

- Pick the box with the largest  $p_c$   
Output that as a prediction.

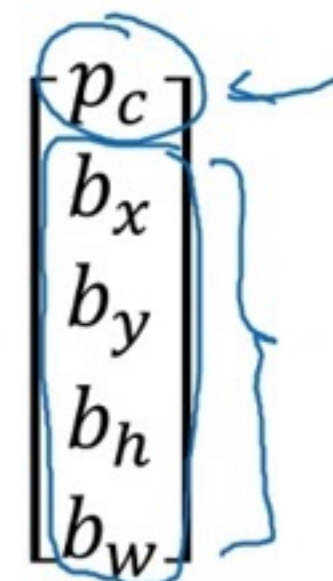


# Non-max suppression algorithm



19x 19

Each output prediction is:

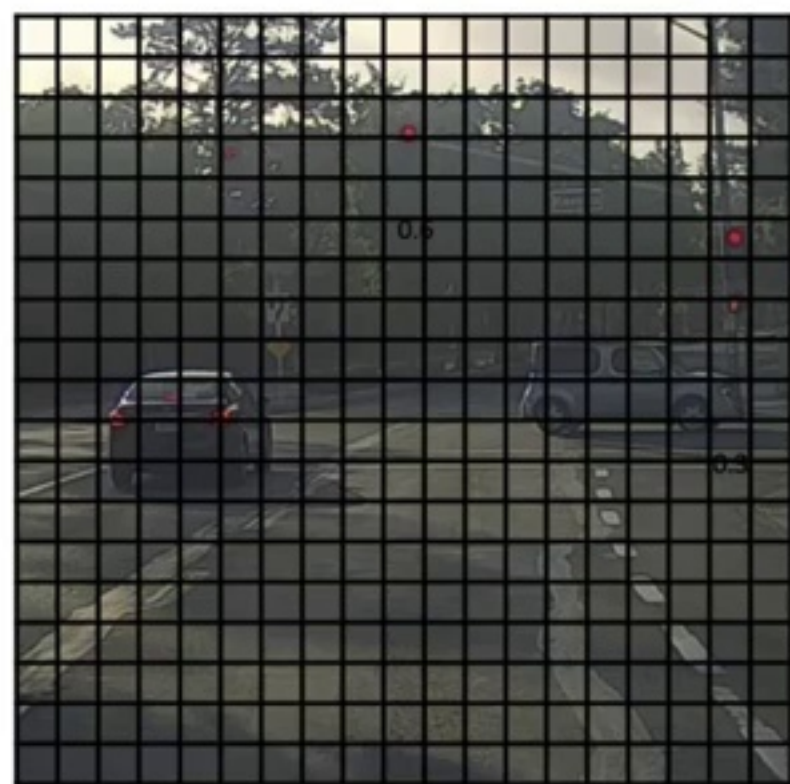


Discard all boxes with  $p_c \leq 0.6$

While there are any remaining boxes:

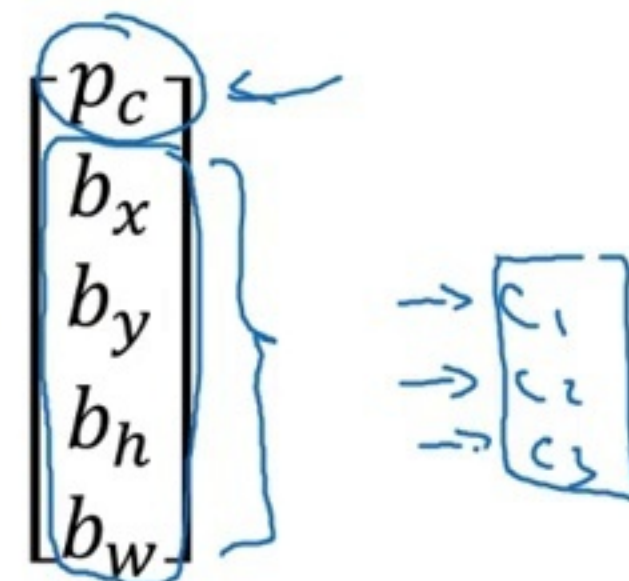
- Pick the box with the largest  $p_c$  }  
Output that as a prediction.
- Discard any remaining box with  $\text{IoU} \geq 0.5$  with the box output in the previous step

# Non-max suppression algorithm



19x 19

Each output prediction is:



Discard all boxes with  $p_c \leq 0.6$

→ While there are any remaining boxes:

- Pick the box with the largest  $p_c$   
Output that as a prediction.
- Discard any remaining box with  $\text{IoU} \geq 0.5$  with the box output in the previous step