

# Question

# Mapping

# Architecture

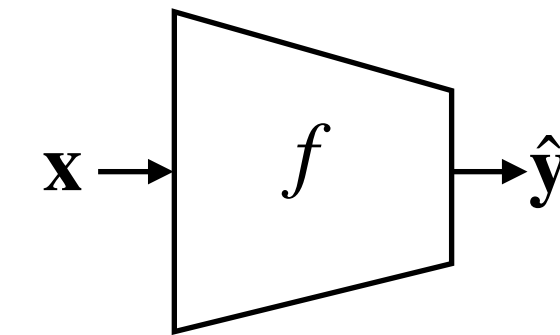
# Functional form

Classification

Is object class  $c$  present in the image?



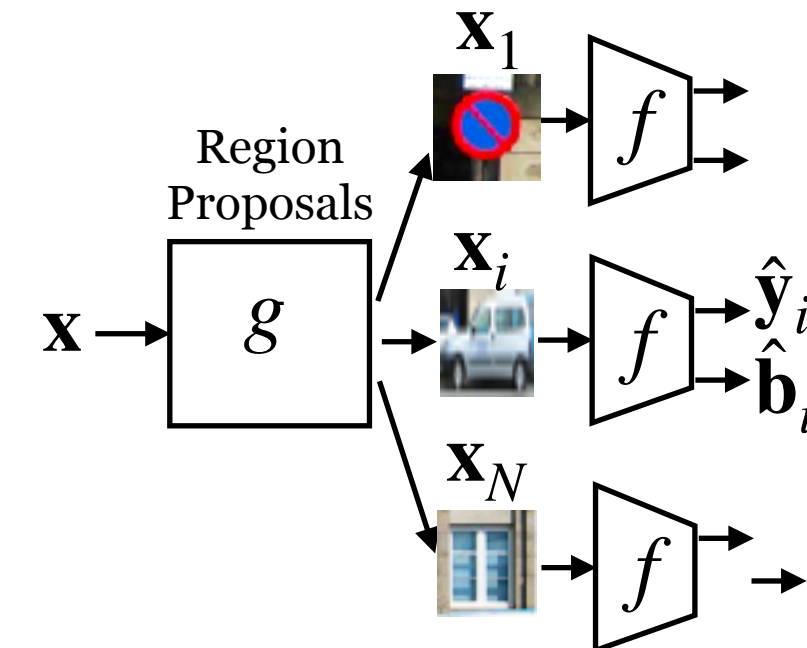
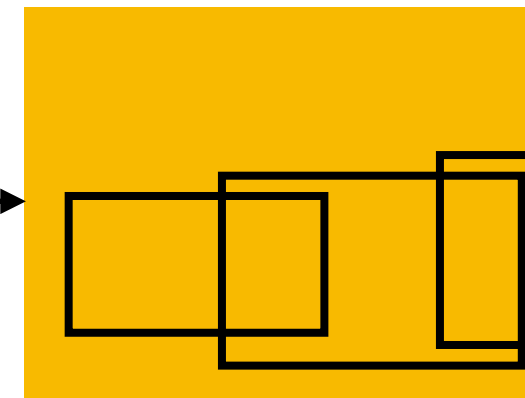
Car  
Building  
Road



$$\hat{y} = f(\mathbf{x})$$

Detection

What is the location of all the instances of class  $c$ ?

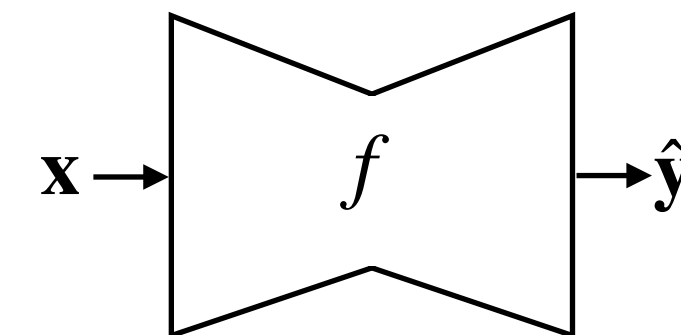


$$\{\mathbf{x}_i\}_{i=1}^N = g(\mathbf{x})$$

$$(\hat{y}_i, \hat{\mathbf{b}}_i) = f(\mathbf{x}_i)$$

Segmentation

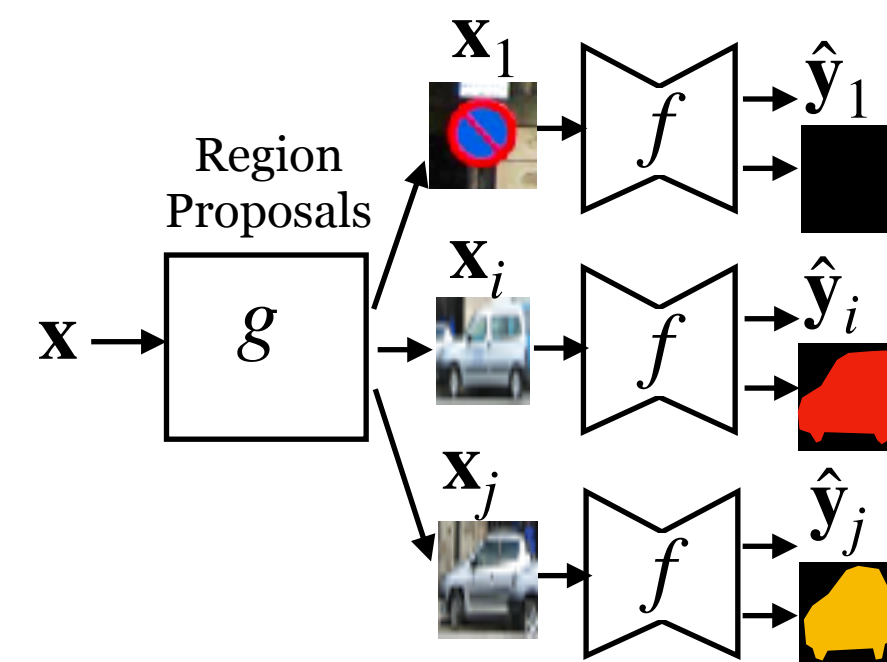
Is object class  $c$  present in the pixel  $[n, m]$ ?



$$\hat{y}[n, m] = f(\mathbf{x})$$

Instance segmentation

Is instance  $i$  of object class  $c$  present in the pixel  $[n, m]$ ?



$$\{\mathbf{x}_i\}_{i=1}^N = g(\mathbf{x})$$

$$(\hat{y}_i, \hat{s}_i[n, m]) = f(\mathbf{x}_i)$$