

Question

Mapping

Architecture

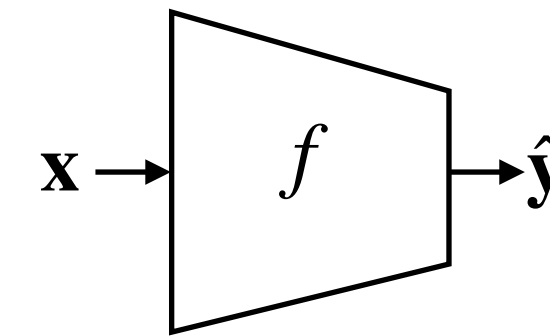
Functional form

Classification

Is object class c present in the image?



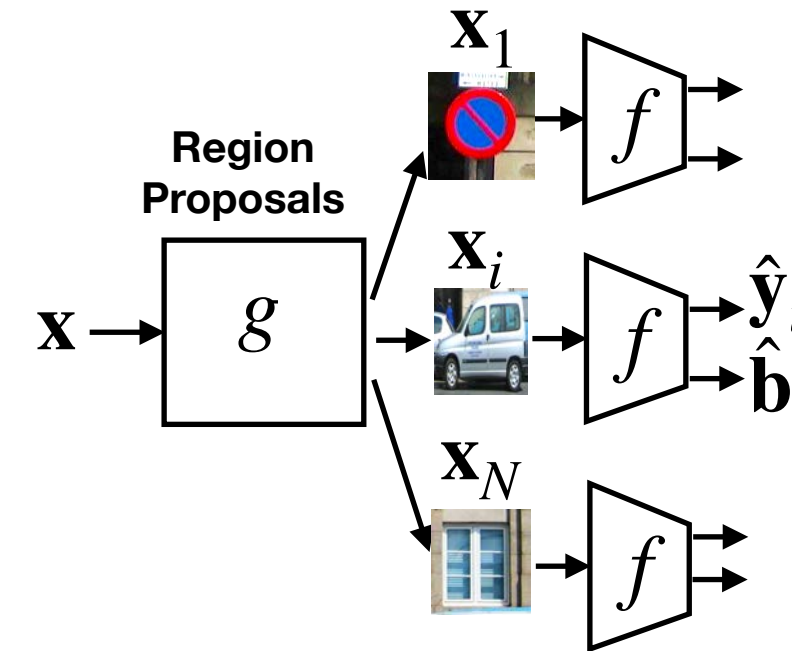
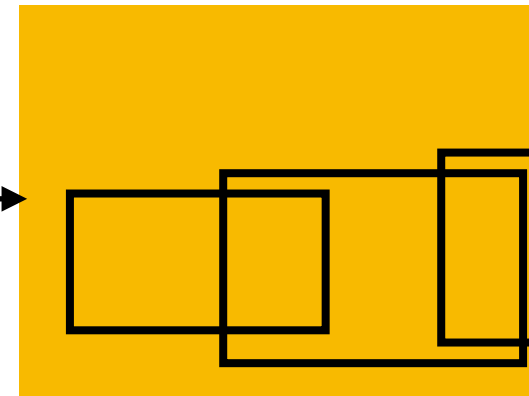
Car
Building
Road



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

Detection

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

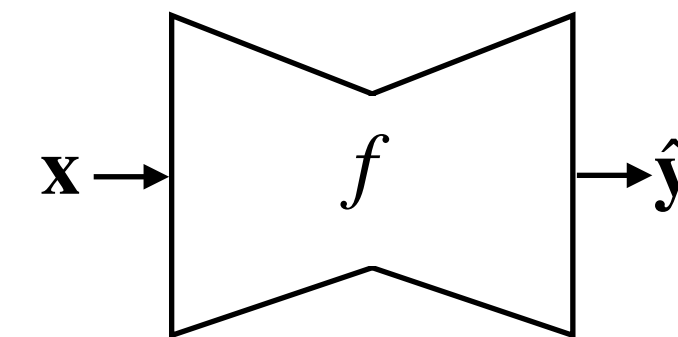


$$\{\mathbf{x}_i\}_{i=1}^N = g(\mathbf{x})$$

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

Segmentation

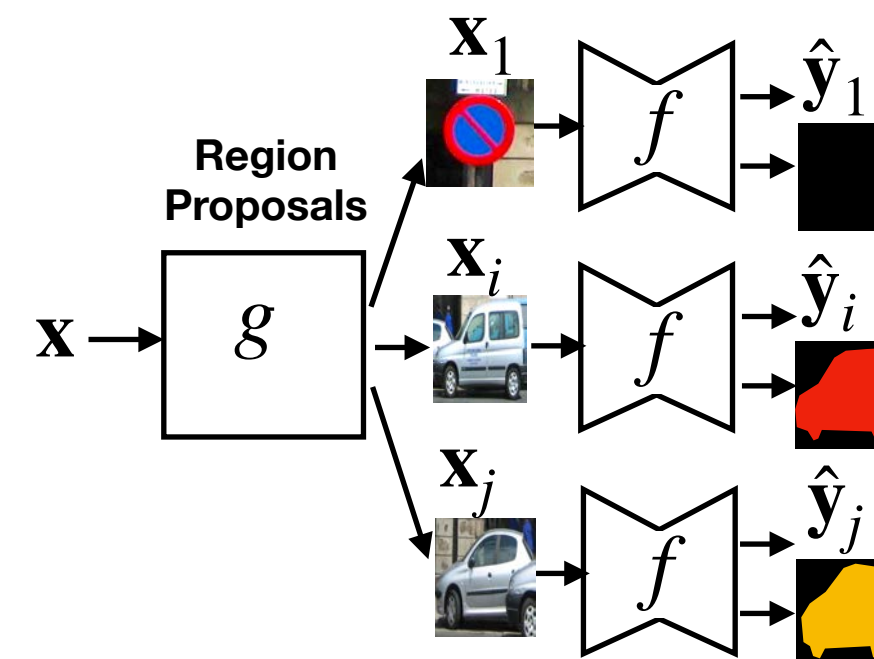
Is object class c present in the pixel $[n, m]$?



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

Instance-segmentation

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



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

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