Computer Vision with Embedded Machine Learning

Introduction to Object Detection

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Background	Capacitor	Diode	LED	Resistor
0.0	0.04	0.0	0.28	0.68

Background	Capacitor	Diode	LED	Resistor
0.0	0.77	0.0	0.0	0.23

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Definitions

Image Classification: Predict class of object in an image

Object Localization: Locate presence of object(s) in an image

Object Detection: Locate and classify object(s) in an image

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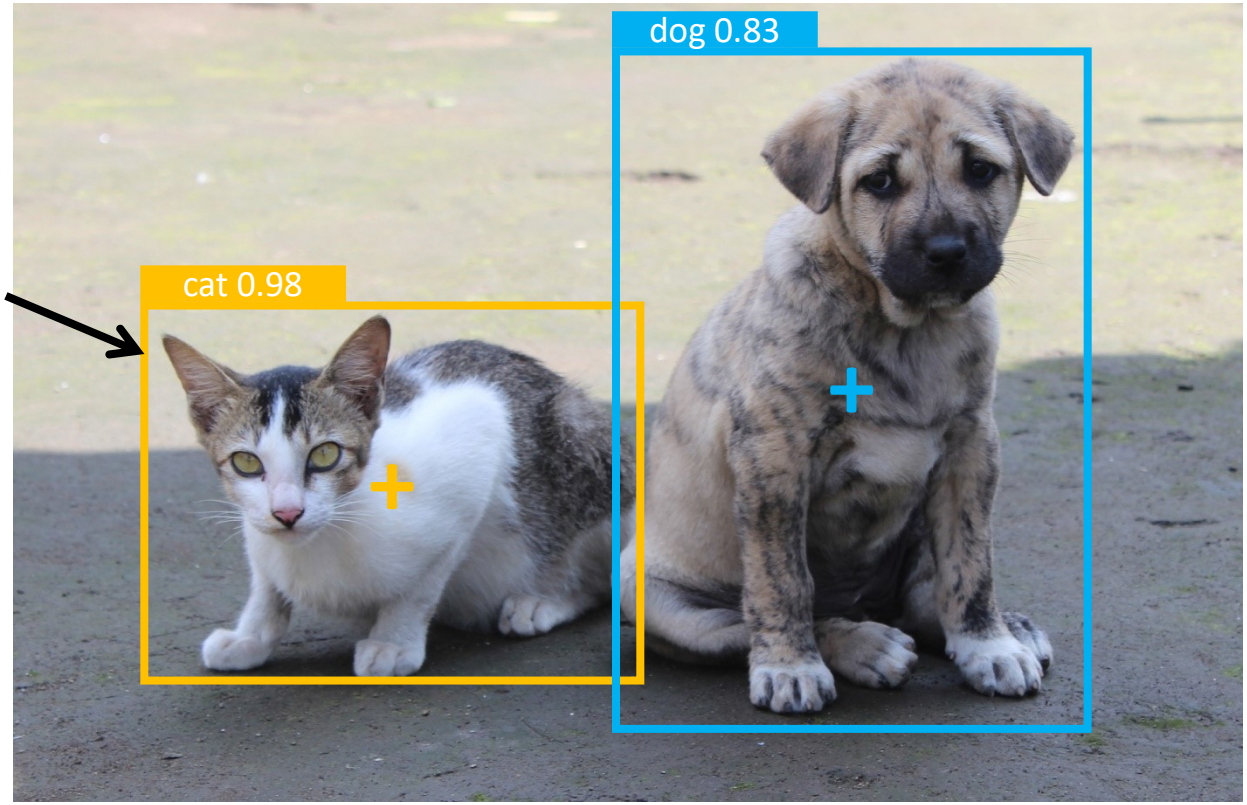
Bounding box



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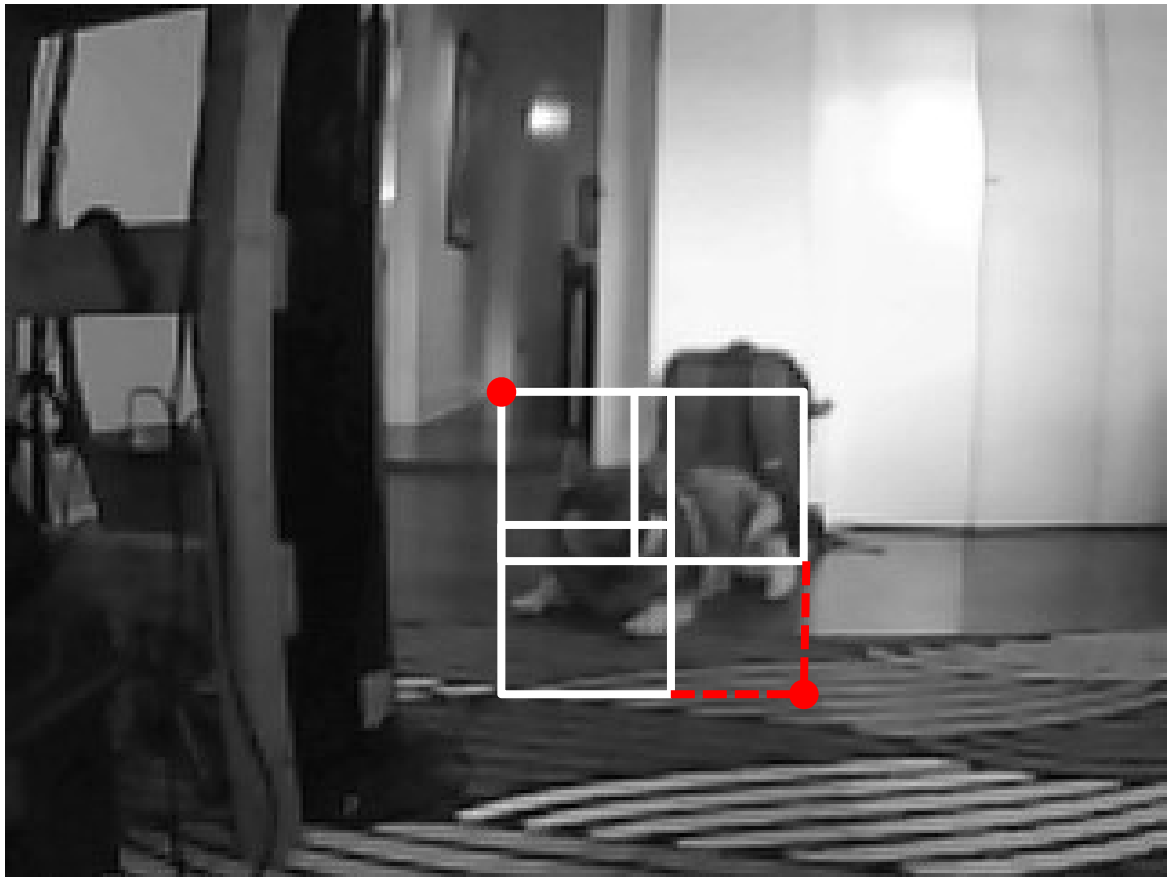

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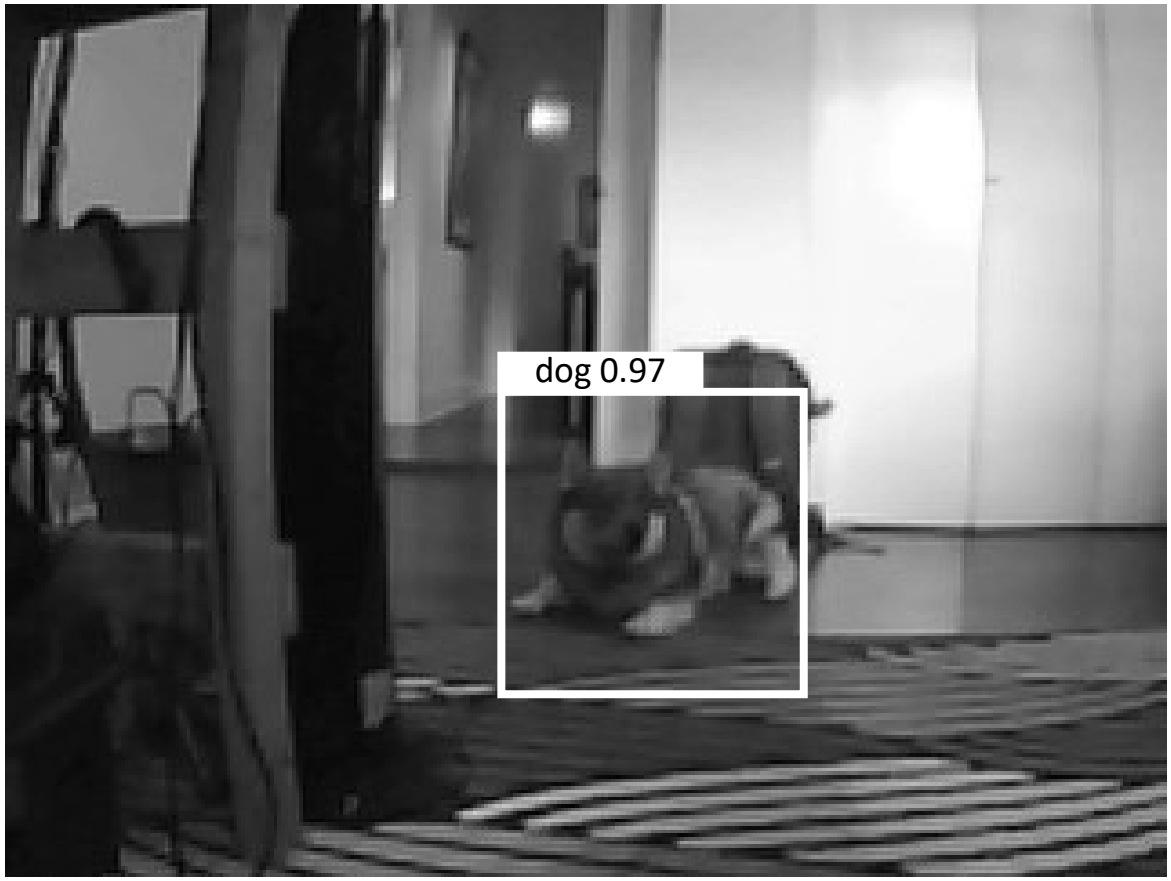

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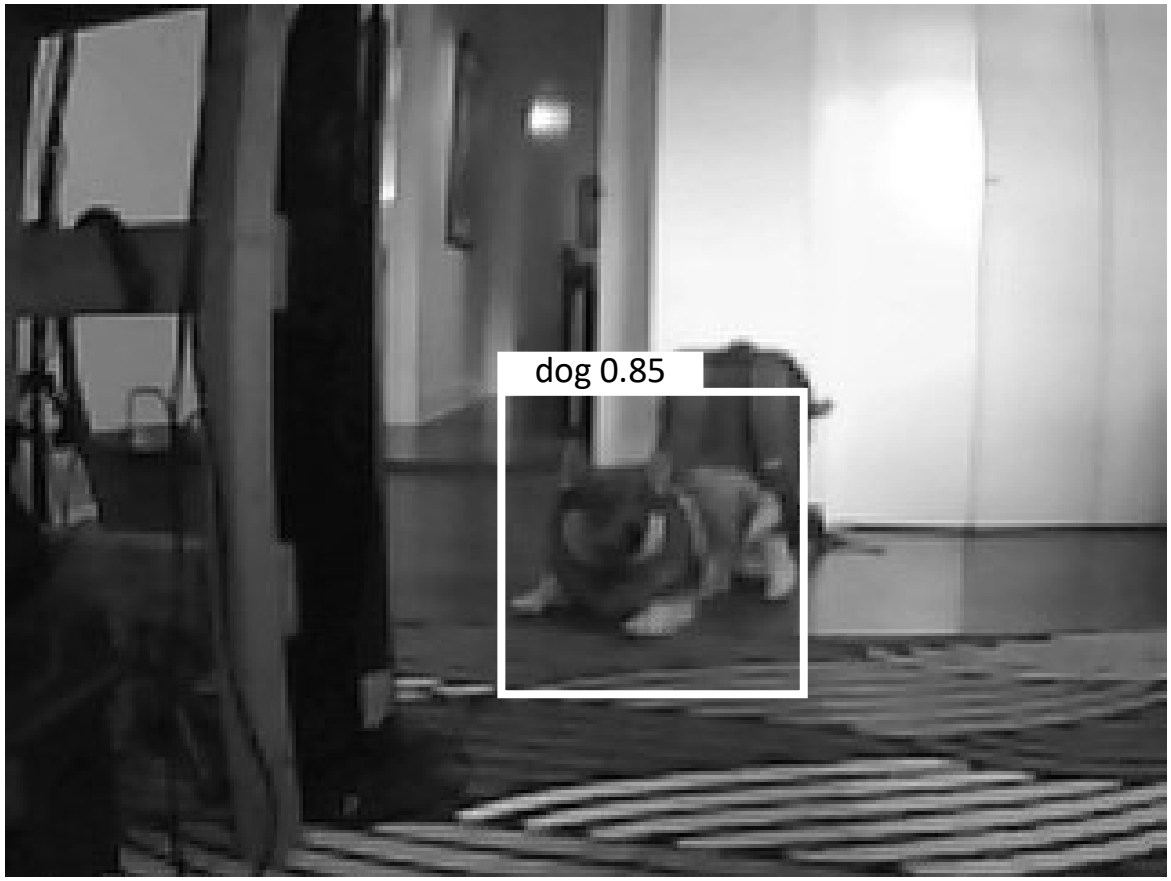

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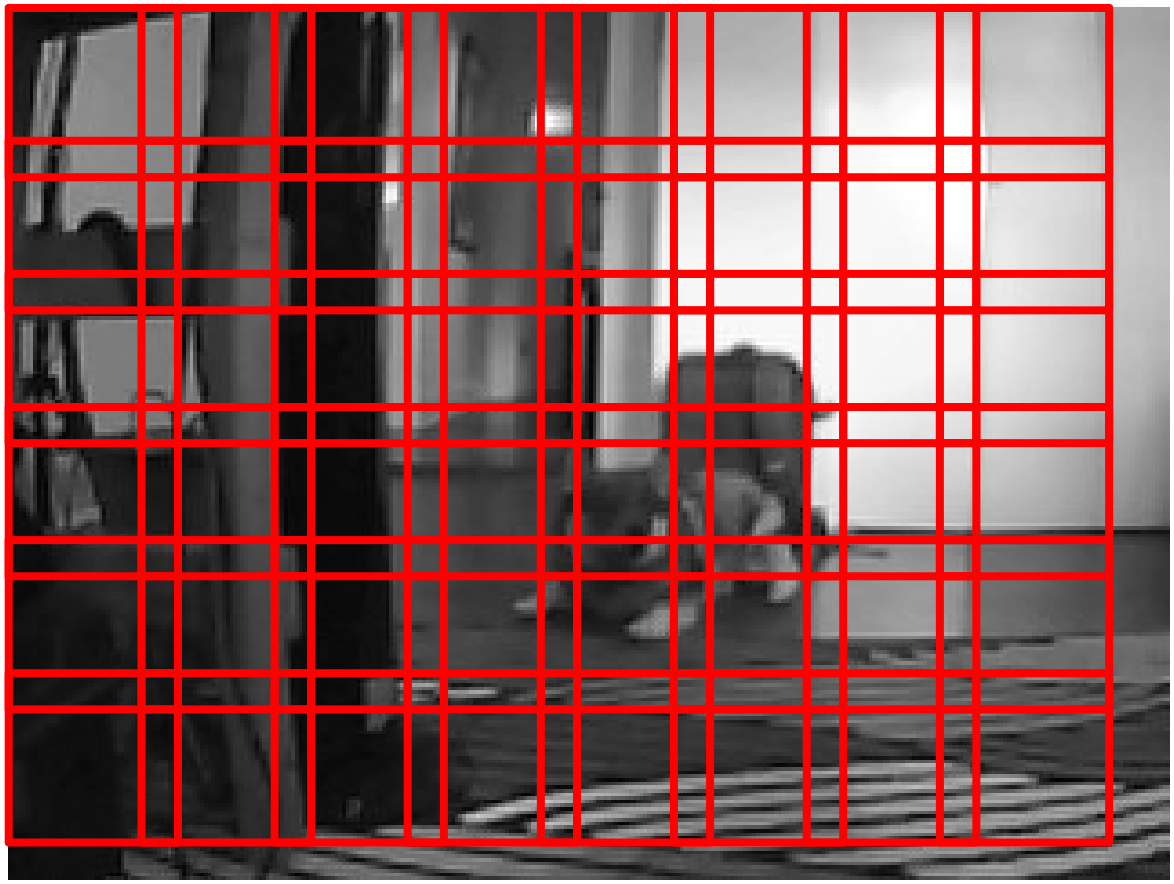

48 x 100 ms =
4.8 seconds!
(~0.208 fps)

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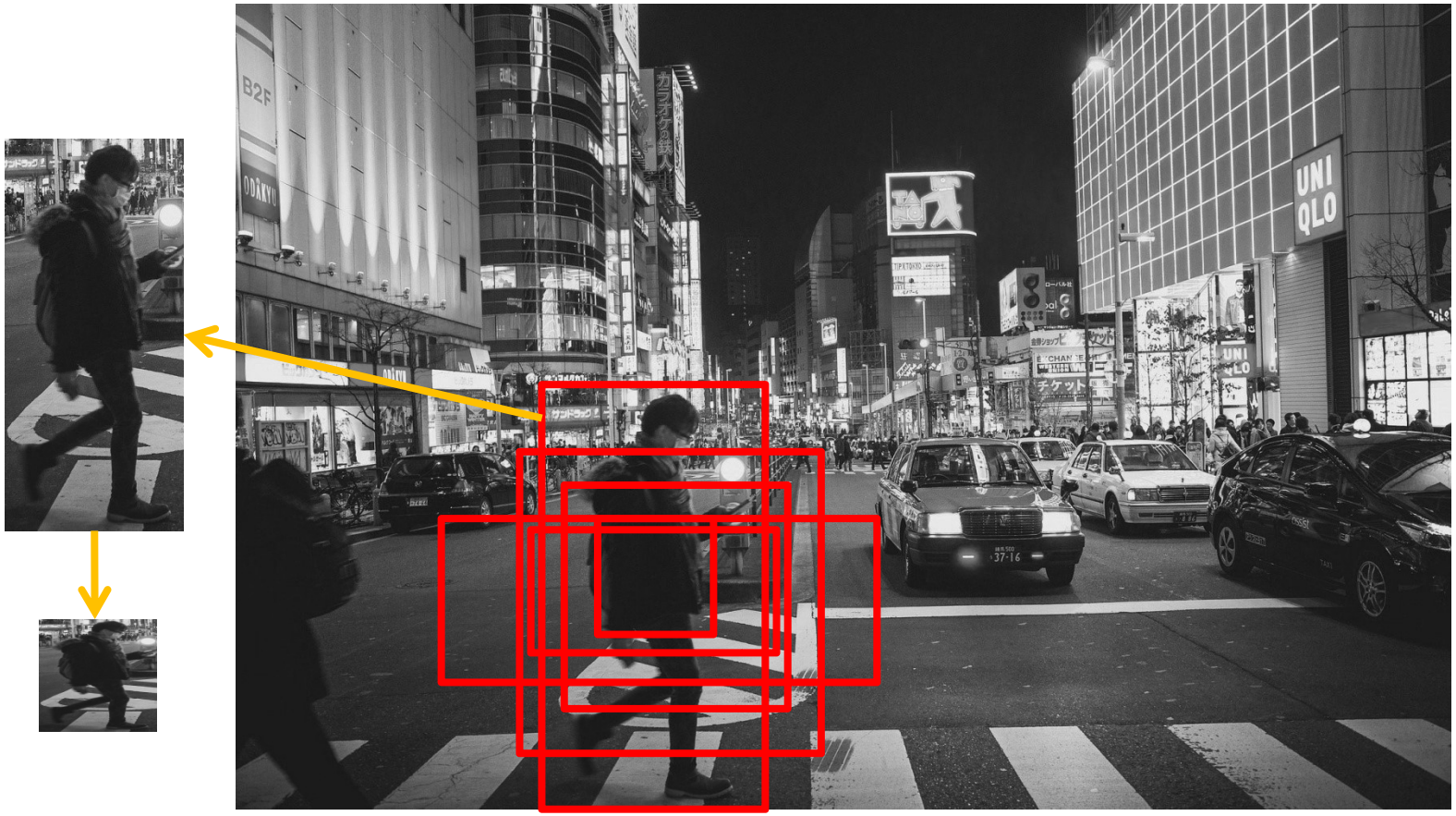

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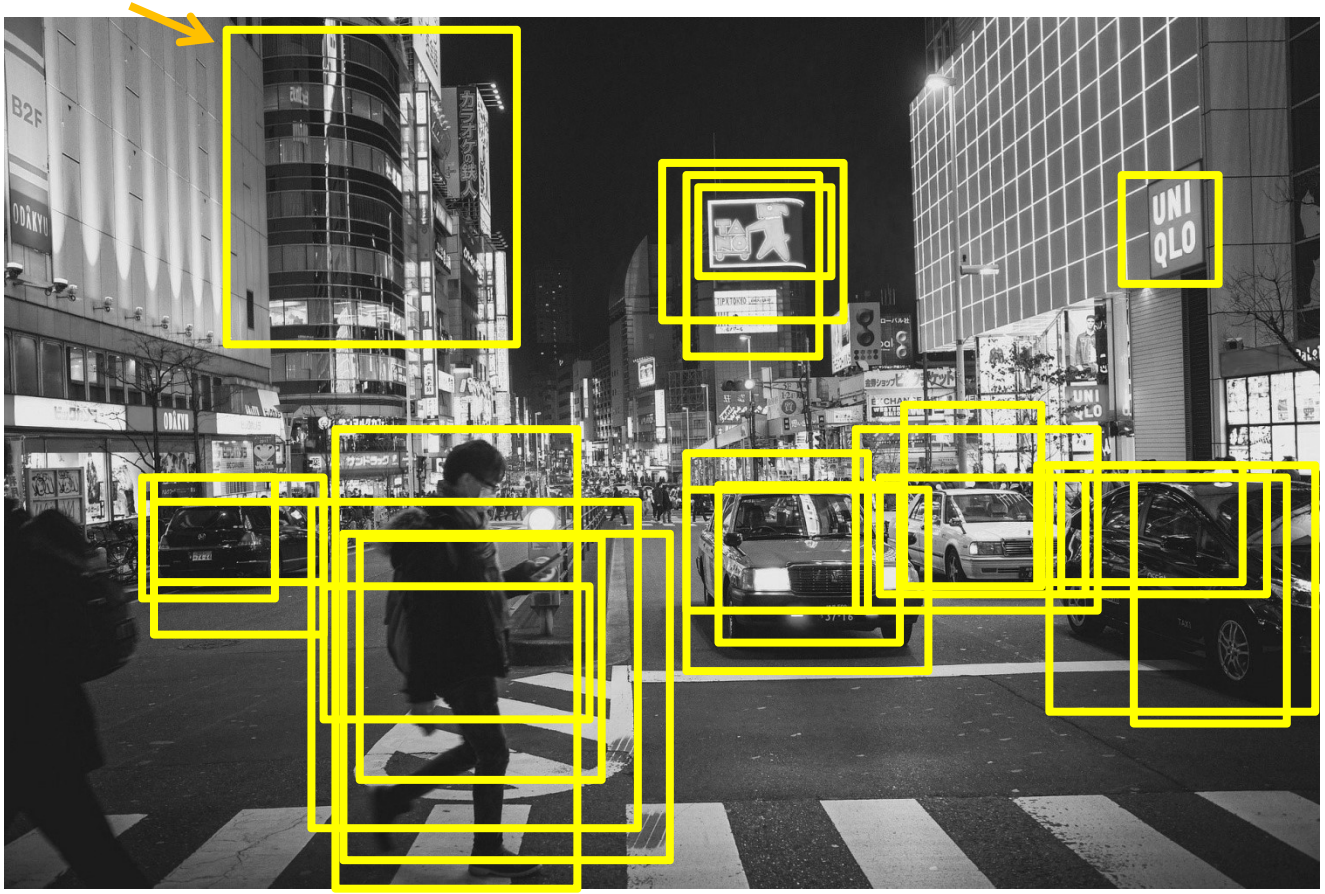
Region of Interest (ROI)

Region Proposal



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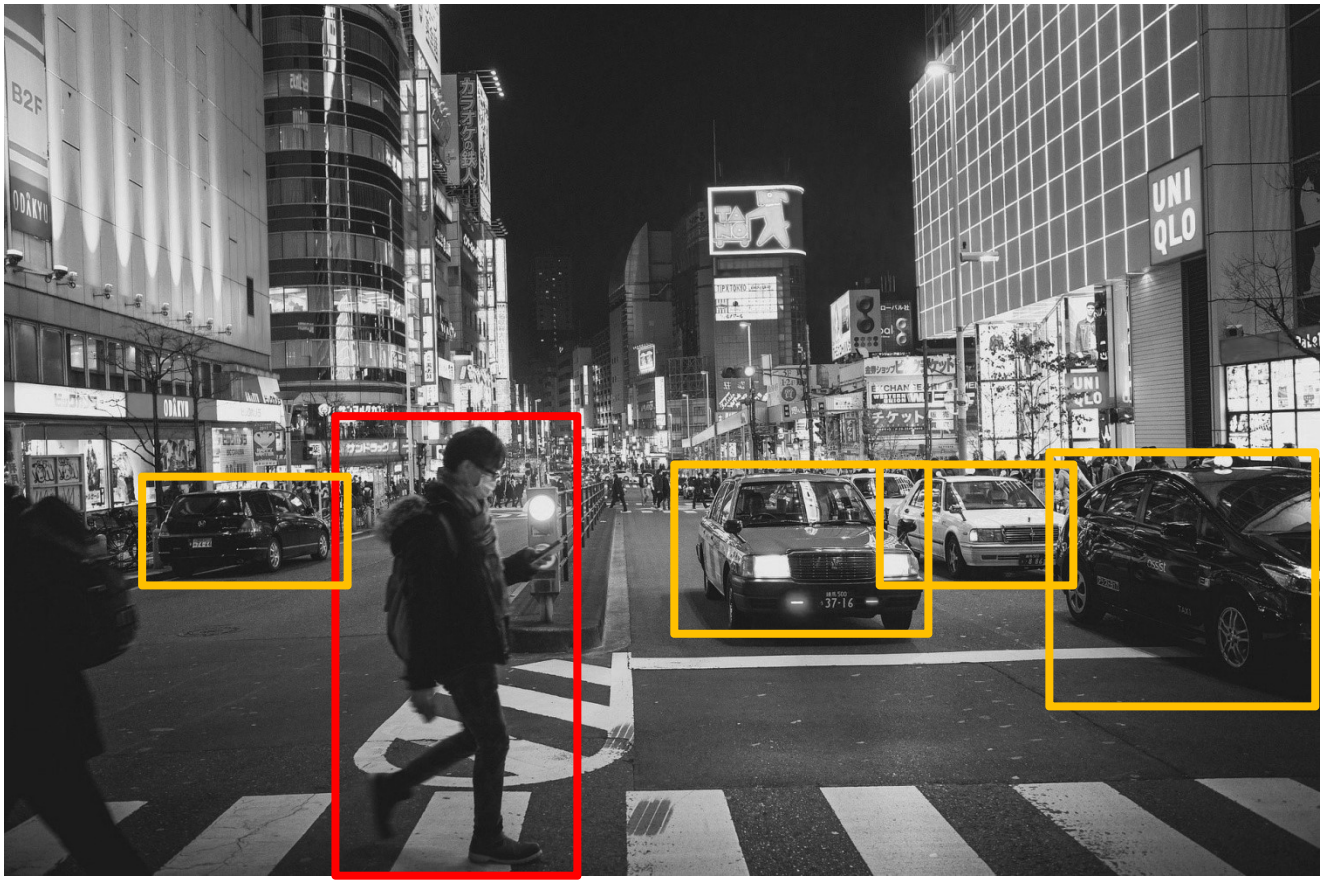

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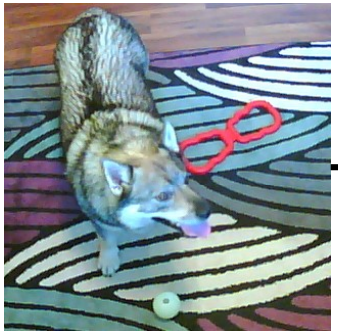
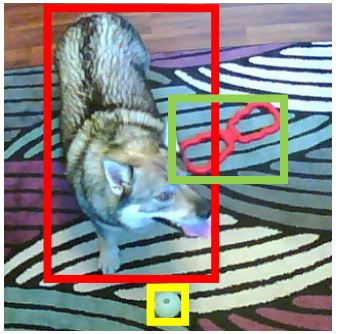


Object Detection Model

- **Object 1**
  - Class: dog (0.92)
  - Bounding box
    - (x_1, y_1)
    - (w_1, h_1)
- **Object 2**
  - Class: toy (0.85)
  - Bounding box
    - (x_2, y_2)
    - (w_2, h_2)
- **Object 3**
  - Class: ball (0.77)
  - Bounding box
    - (x_3, y_3)
    - (w_3, h_3)



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