

Object Detection and Localization

Halil Eralp Koaş

January 14, 2020

1 Object Detection

1.1 Motivation

1.2 Literature in Static Object Detection

1.3 Literature in Video Object Detection

2 Detector Features

2.1 Backbone Networks

2.2 Scanning Methods

2.3 Multi-scale Handling

2.4 Loss Functions

2.5 Bells-And-Whistles

3 Static Detector Types

3.1 Two-Stage Detectors

3.1.1 Faster R-CNN

3.1.2 Mask R-CNN

3.2 One-Stage Detectors

3.2.1 You Only Look Once: Unified, Real-Time Object Detection

3.2.2 YOLO9000: Better, Faster, Stronger

3.2.3 YOLOv3: An Incremental Improvement

3.2.4 SSD: Single Shot MultiBox Detector

3.2.5 DSSD: Deconvolutional Single Shot Detector

3.2.6 CornerNet: Detecting Objects as Paired Keypoints

3.2.7 RetinaNet

3.2.8 FPN

3.2.9 EfficientDet: Scalable and Efficient Object Detection

3.2.10 FreeAnchor: Learning to Match Anchors for Visual Object Detection

4 Datasets and Metrics

5 Performance Comparison₂

5.1 Accuracy and Real-Time Applicable

5.2 On COCO

5.3 In Video

5.3.1 MOT17Det

5.4 Quantitative Analysis

5.4.1 Based on Size

5.4.2 Based on Location on Image