



Object Detection in ADAS

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Machine Learning Methods

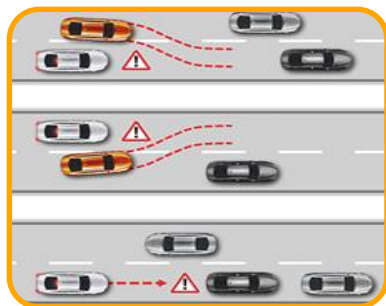
Autonomous Mobility and Safety

BU ADAS

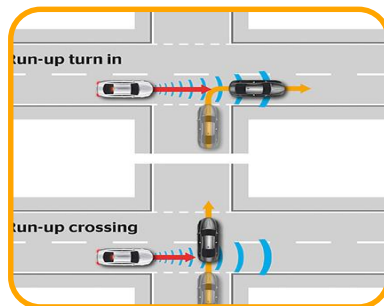
150
YEARS

Motivation

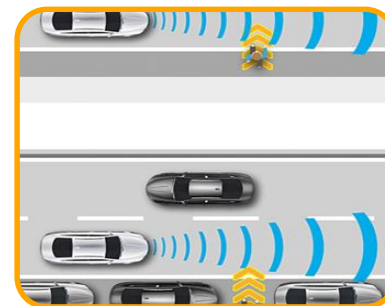
- › Solution for Emergency Brake Assist



Classic

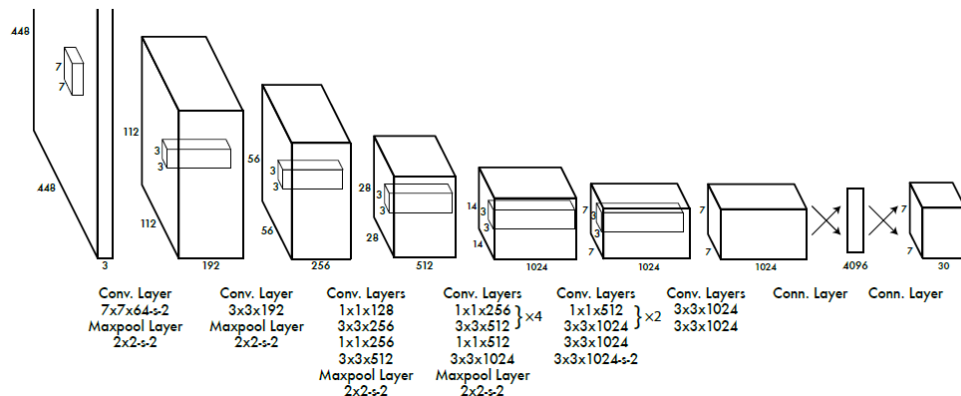


Cross Traffic



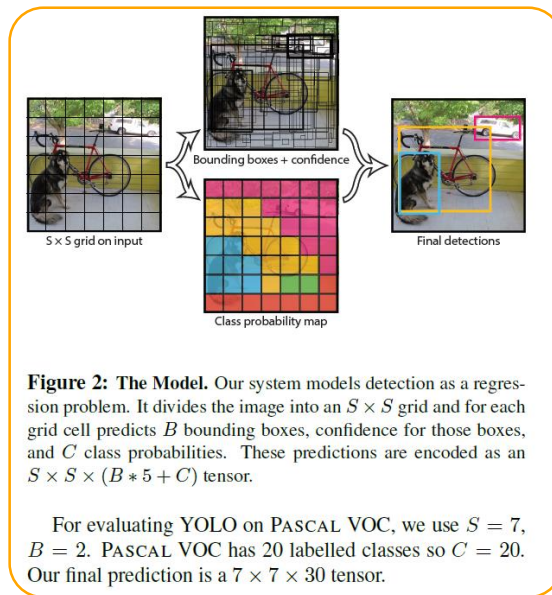
Vulnerable Road User

Real-time object detection on low-power computing devices

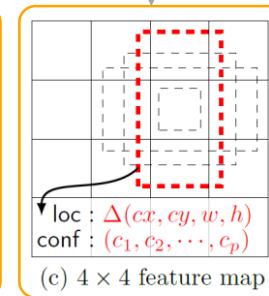
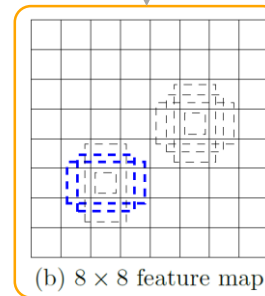
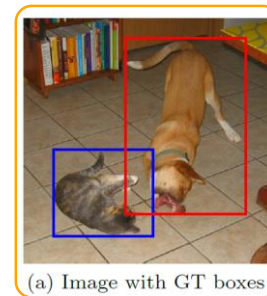
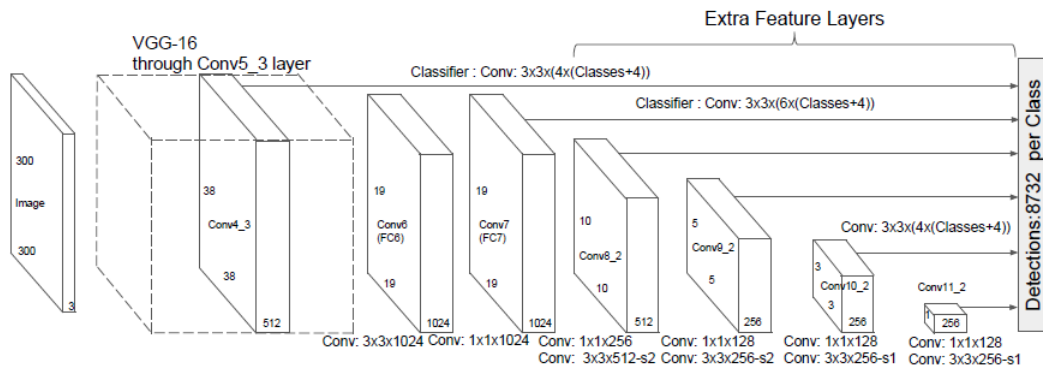


You Only Look Once: Unified, Real-Time Object Detection

Írta: J Redmon · 2015 · Időzetek száma: 14400 — Our unified architecture is extremely fast. Our base YOLO model processes images in **real-time** at 45 frames per second. A smaller



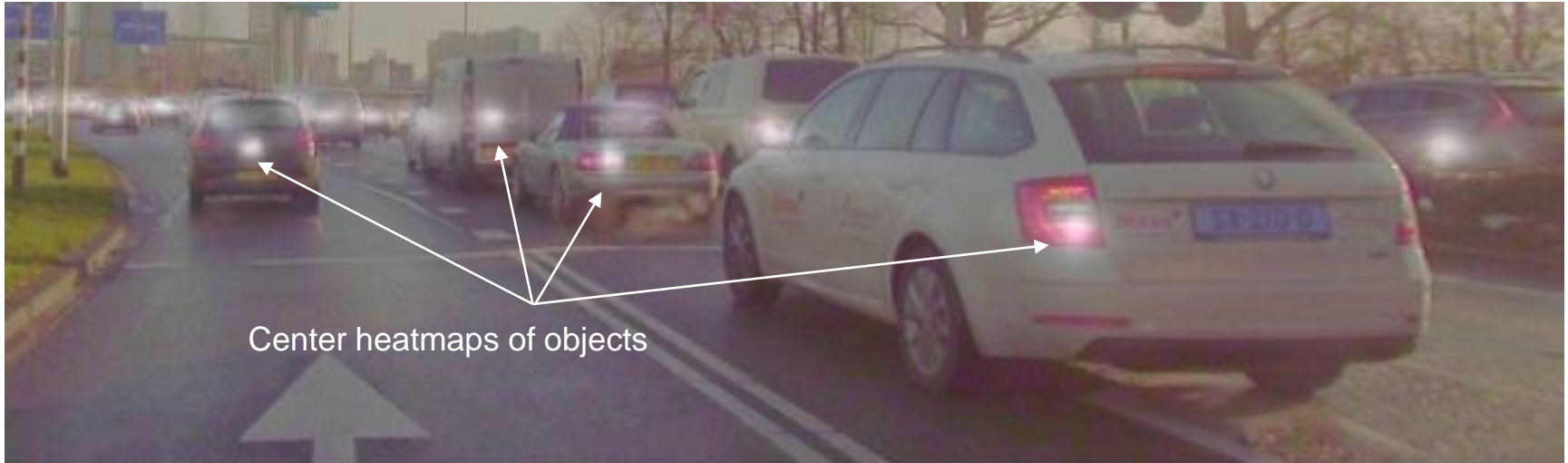
Real-time object detection on low-power computing devices (2)



SSD: Single Shot MultiBox Detector

Írta: W Liu · 2015 · Idézetek száma: 13872 — Title: SSD: Single Shot MultiBox Detector ...
Abstract: We present a method for **detecting objects** in images using a single deep neural

CenterNet: detect objects as points

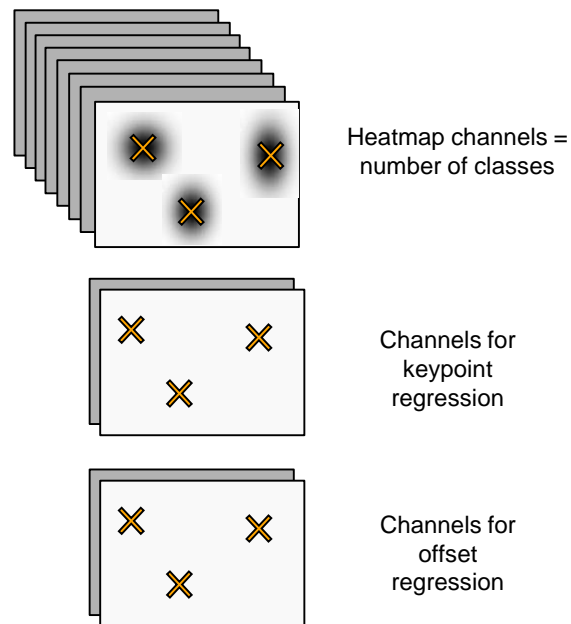


Objects as Points

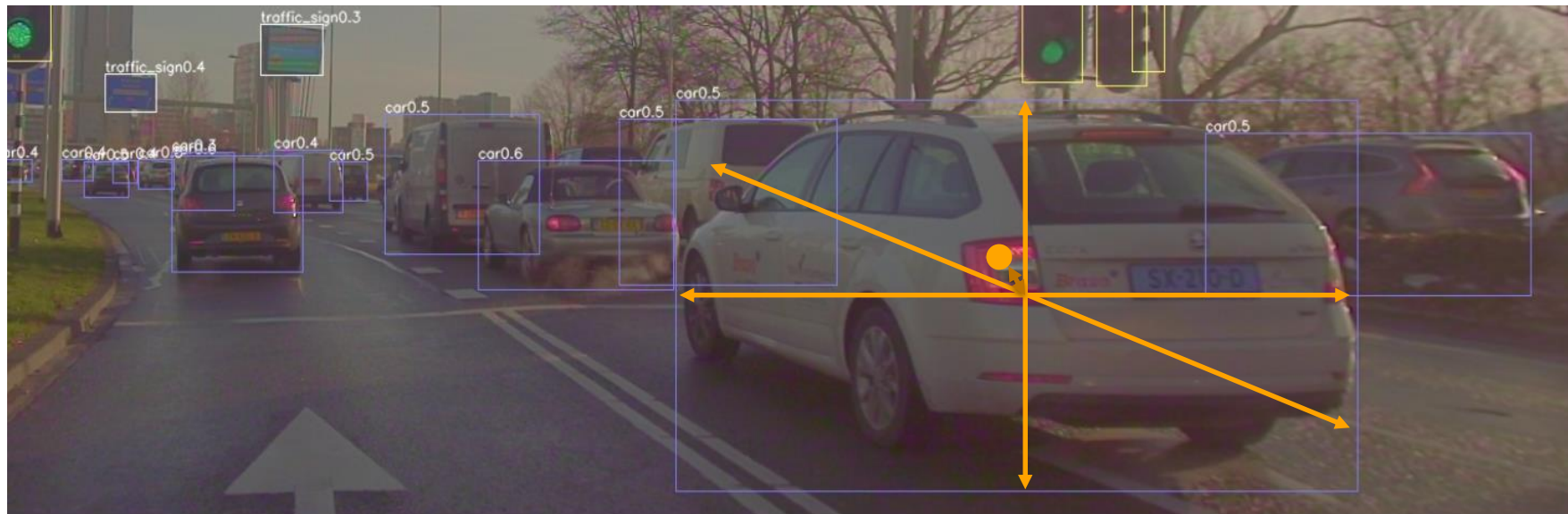
Írta: X Zhou · 2019 · Idézetek száma: 543 — In this **paper**, we take a different approach. ... Our center point based approach, **CenterNet**, is end-to-end differentiable, simpler, faster, and ...

Objects as points

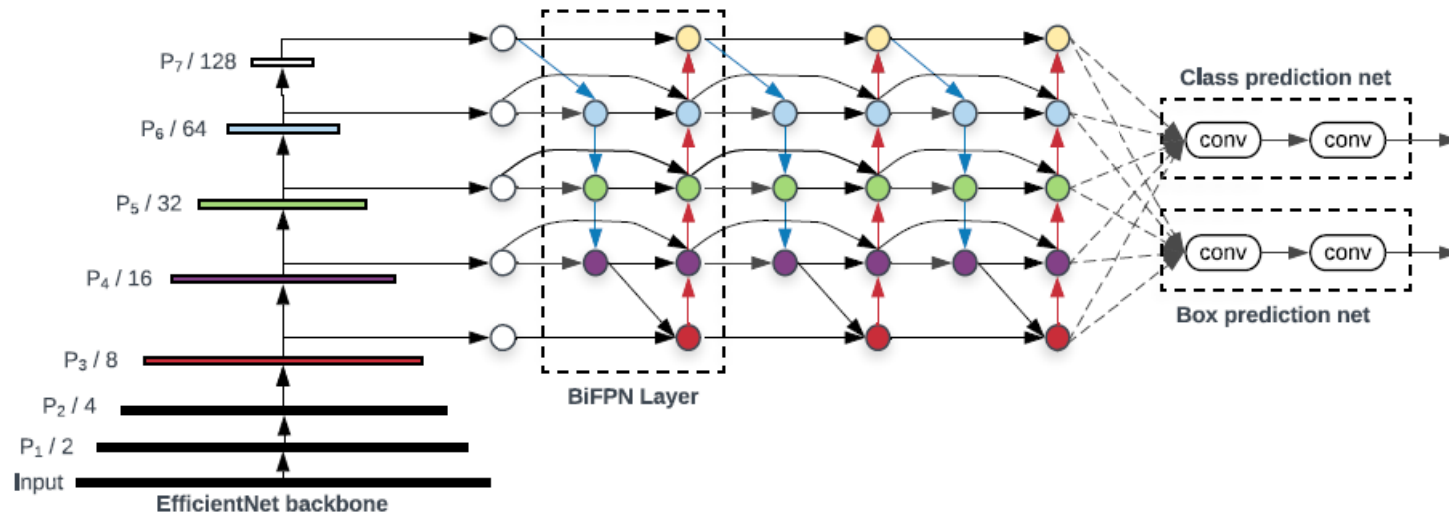
- › CenterNet detector head:
 - › Heatmap prediction for each object center (one heatmap per class)
 - › Keypoint offset regression
 - › Center offset regression



Objects as points



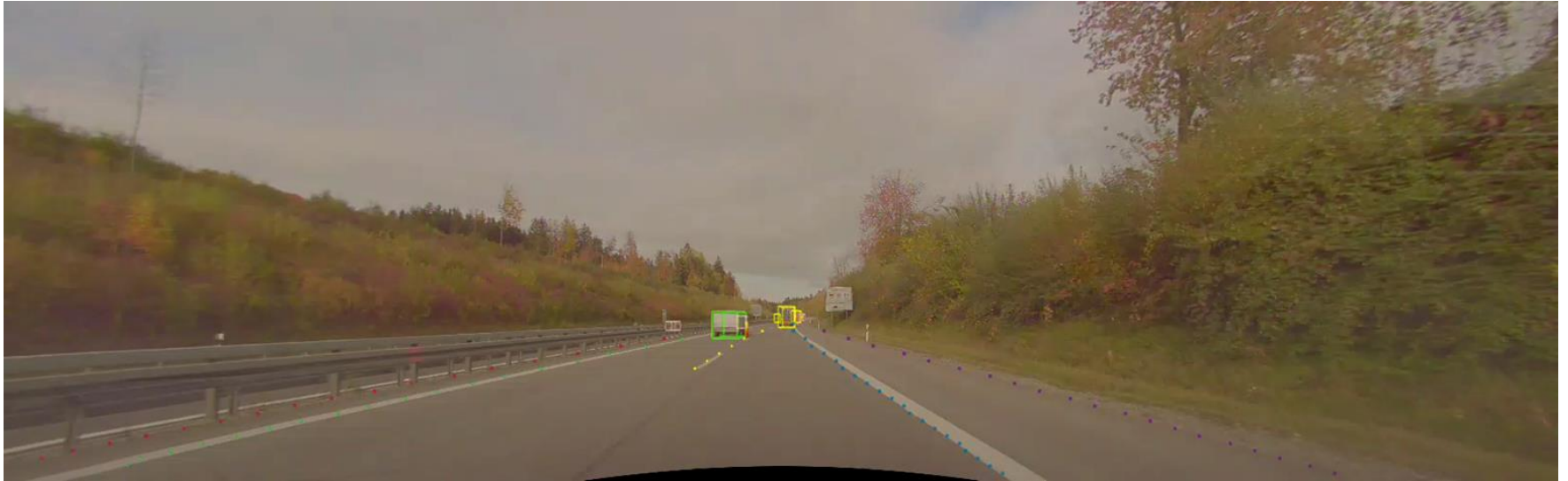
EfficientDet



EfficientDet: Scalable and Efficient Object Detection

Írta: M Tan · 2019 · Idézetek száma: 408 — Model efficiency has become increasingly important in computer vision. In this [paper](#), we systematically study neural network architecture design ...

What can be detected as points?



Feedback / Comment / Idea

#ml21-deep-learning-sig