Qualcomm VisionX Object Detection Model Development

Utilizing YOLOv5 for Real-Time Object Detection

By

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Objective

- Develop an object detection model that can accurately detect, classify, and localize multiple objects within an image or video frame.

Key Requirements

01

High Precision: Minimize false positives and false negatives.

02

Real-Time Processing: Capable of processing images or video in real-time or near real-time.

03

Diverse Environments: Handle different lighting, angles, and object occlusions.

Applications

- **Real-World Scenarios**:
  - Surveillance: Enhancing security and monitoring.
  - Autonomous Driving: Ensuring safety and navigation.
  - Retail Automation: Streamlining inventory management and customer service.

Model Overview

Clone repo: YOLOv5

Key Features:

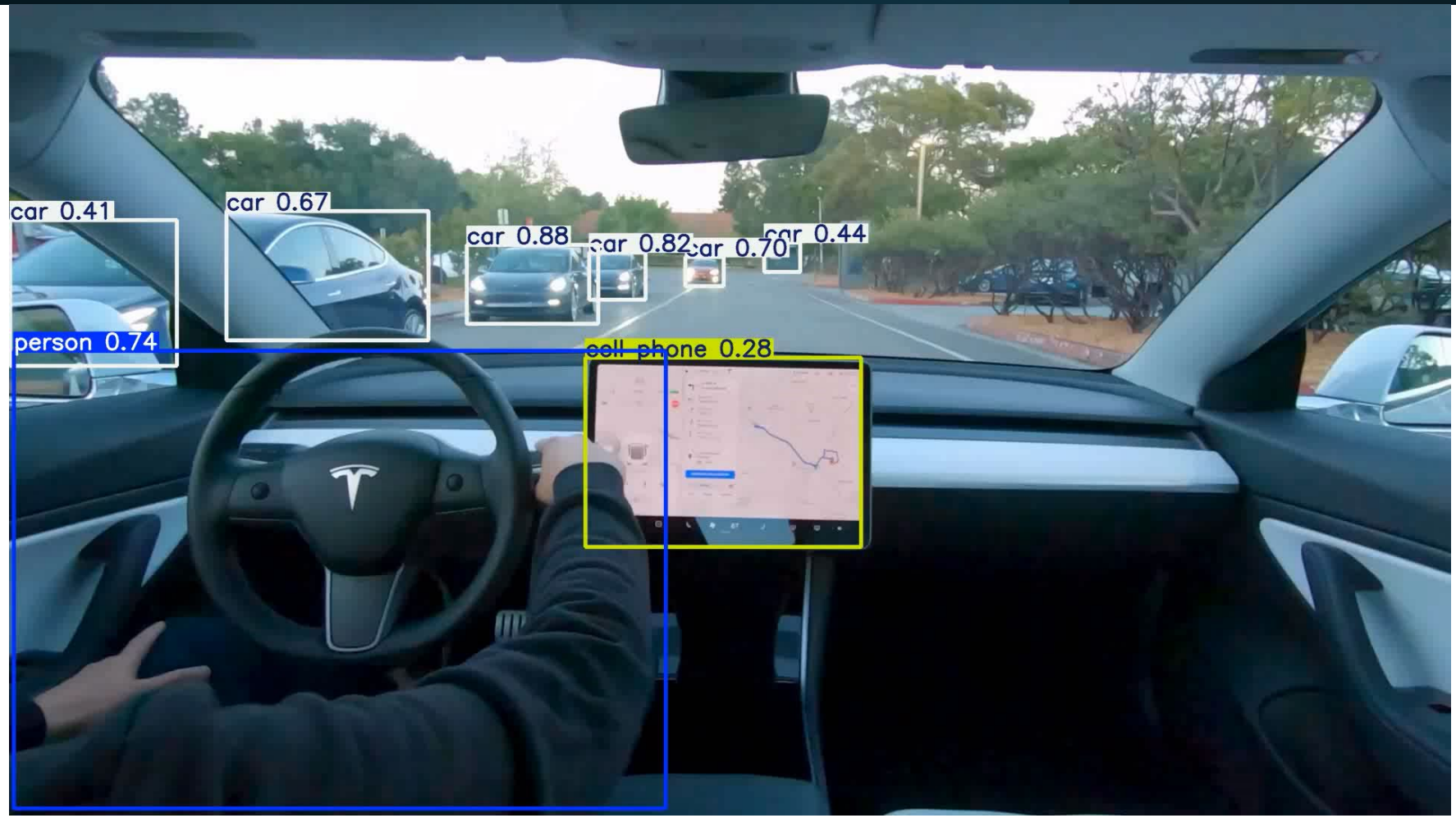
- Fast and accurate object detection.
- Capable of detecting multiple objects in a single frame.

Image Example

Object Detection Example

Video Demonstration

Real-Time Object Detection in Action

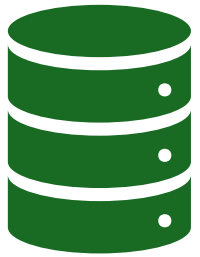


Challenges and Solutions

Challenges:

Variability in lighting and object occlusions.

Real-time processing demands.



Solutions:

Training on diverse datasets.

Optimizing model parameters for speed and accuracy.

Conclusion

Summary: The YOLOv5 repo and its model effectively meets the objectives of detecting, classifying, and localizing objects in real-time across various environments.

Future Work: Potential improvements and expansions of the model capabilities.