Car Detection

with YOLO5 & FLASK APP

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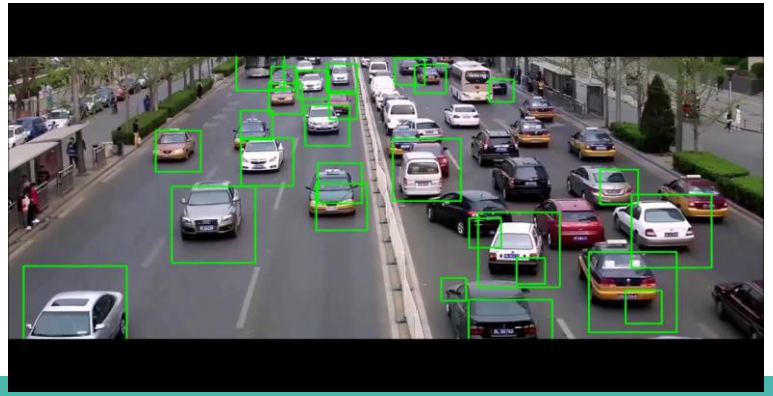
Problem Statement

Car Detection is fascinating project in Computer Vision, whether you are working in self-driving car industry, or a newbie in CV.

We want to present our experiment with YOLO5 model and build an app in Flask.



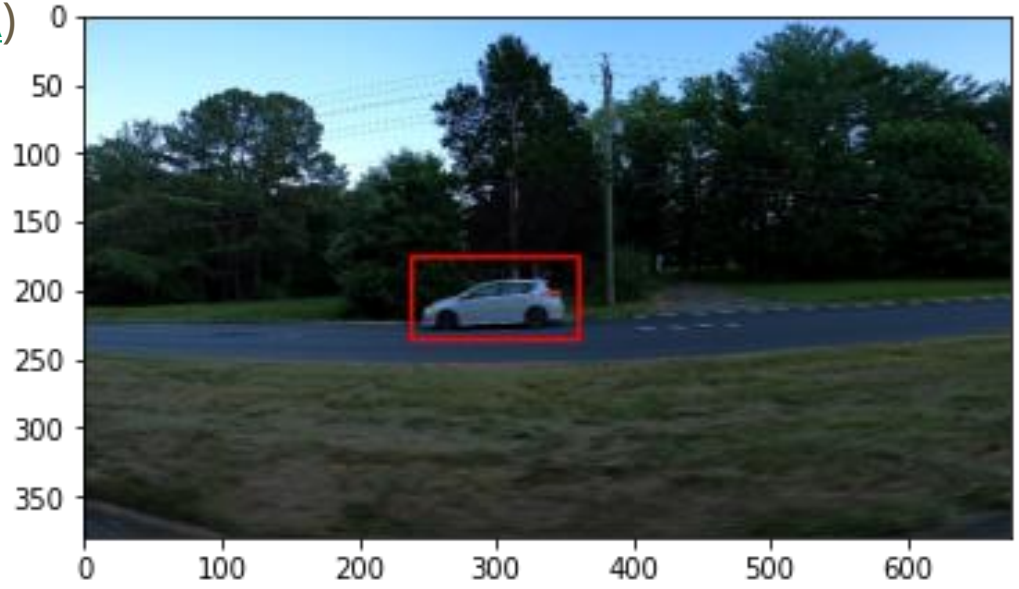
Data Source

Car Dataset :The dataset contains media of cars in all views.

Application idea in Flask: Detect a random vehicle from an image or video from dataset and web cam.

Headlines

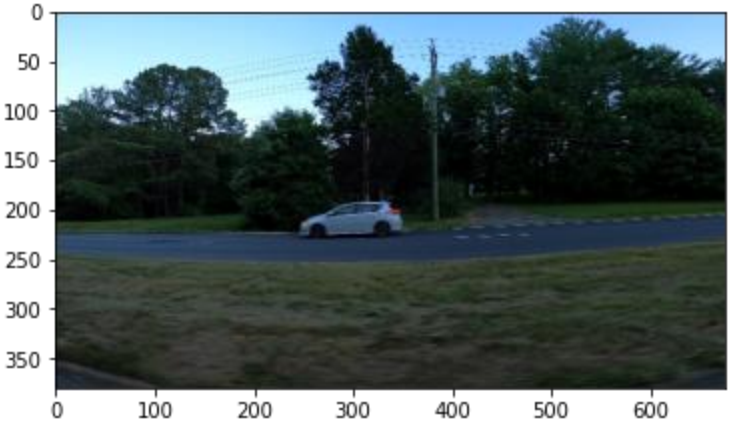
1. Exploratory Data Analysis (EDA)
2. Experiment with YOLO5
3. Experiment with FLASK APP



Key results

1. **Exploratory Data Analysis (EDA)**

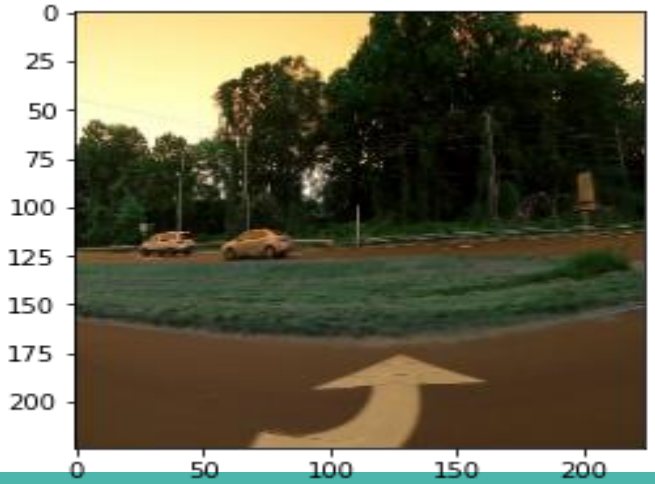
- Annotation check : with CV2 to check bounding boxes in images, we can then tag pixel-perfect precisely car position in the picture.
- this step help to avoid overfitting model. The quality of these annotations define the accuracy and reliability of our model.

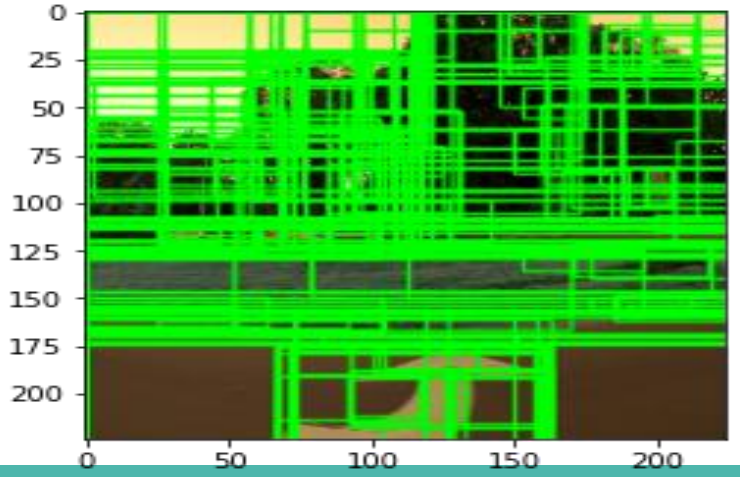


Key results

1. **Exploratory Data Analysis (EDA)**

- Selective Search for Object Recognization: seeks to merge together the superpixels to find regions of an image that *could* contain an object.
- By using Selective Search, we can more efficiently examine regions of an image that *likely* contain an object and then pass those regions on to a SVM, CNN, YOLO,etc. for final classification. But it is not end-to-end object detection.

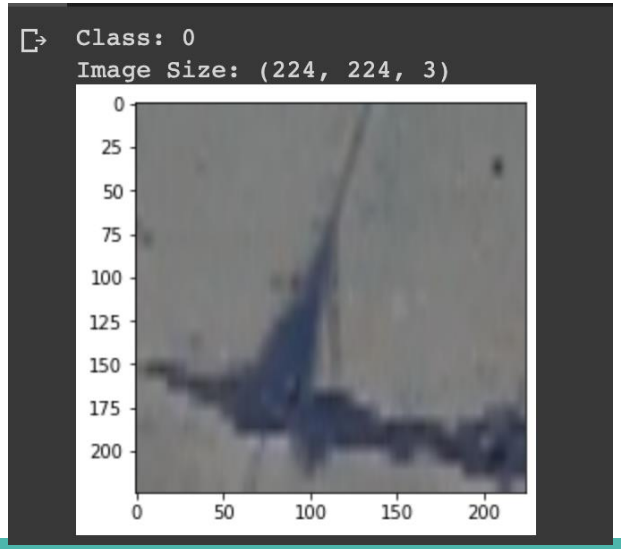


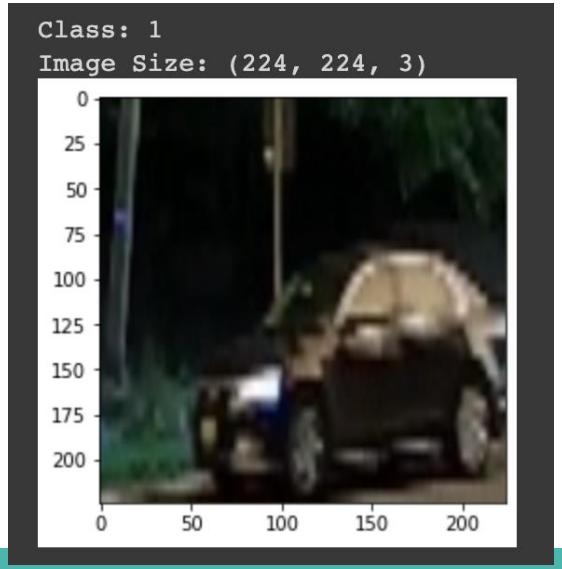


Key results

1. **Exploratory Data Analysis (EDA)**

- Selective Search crop the image with IOU >0.5: we calculate IOU, use Selective Search to crop image that could contain an object with its IOU >0.5.
- Then we call random list of images to check, the result will return Class of Image (Class = 1: Car) and the object location in the picture.





Key results

2. Experiment with YOLO5: YOLO5 is highly effective model to detect objects with high accuracy return.

Key results

3. Experiment with FLASK: Use YoloV5

- To get all bboxxes of train dataset into XML file (annotation_dir), we use the tool :https://www.makesense.ai/. You can also try https://github.com/tzutalin/labelImg

Key results

3.. Experiment with FLASK

We save the model file and deploy on Flask App

You can clone the files and give it a try!

THANK YOU!!!


Radiator Springs
DRIVE IN GALLERY
Main Characters
ROUTE
66
RADIATOR SPRINGS
WELCOME