Ahmedabad
University

CSE 541 - Computer Vision

Weekly Report 26_03_2023

Team: - Pixel Pioneers

Group Member Details

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Tasks Performed in the week

Our previous YOLOv4 model was not trained with sufficient data and that's why were not able to get an accurate object detection so to overcome this problem we trained our model with total of 800 image out which 640 (80%) images were used as Training dataset and 160 (20%) images are used as Testing dataset.

We are using the Dataset called BDD100k, its actual Images taken from the car dashcam which includes occlusion and other test cases for which we wanted to train our object detection model so that for our future work it can provide results with maximum accuracy even in worst conditions such as bad weather.

Since we are using BDD100k dataset the labels provided by the dataset were not in YOLO format which is basically txt file in which the objects from the image are addressed using its classnames's index, x-coordinate, y-coordinate, width and height of the bounding box, since we did not have the data in YOLO format we invested our most of the time for this week in labeling the data.

We used the heartexlabs/labelImg repository from github to label the images from BDD100k dataset, it basically provide a python GUI which has features such as adding bounding box to the objects found in image manually and assigning them the classes accordingly.

We have a total of 15 classes, out of which some of them are default classes provided by this software and since our main project is not object classification and we are focusing on object detection for DeepSort using YOLOv4 we are just using these classes as references.

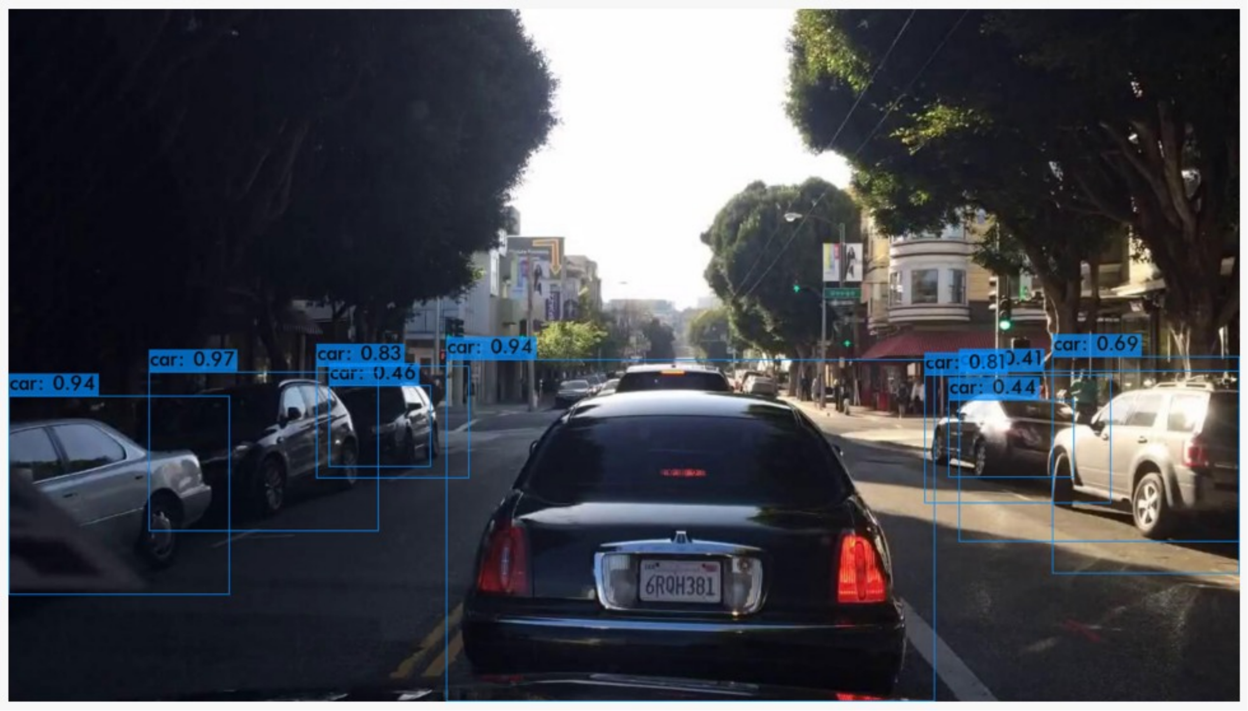
The classes that we are using are: ["dog", "person", "cat", "tv", "car", "meatballs", "marinara sauce", "tomato soup", "chicken noodle soup", "french onion soup", "chicken breast", "ribs" , "pulled pork", "hamburger", "cavity", "traffic light", "two wheeler", "cycle"]

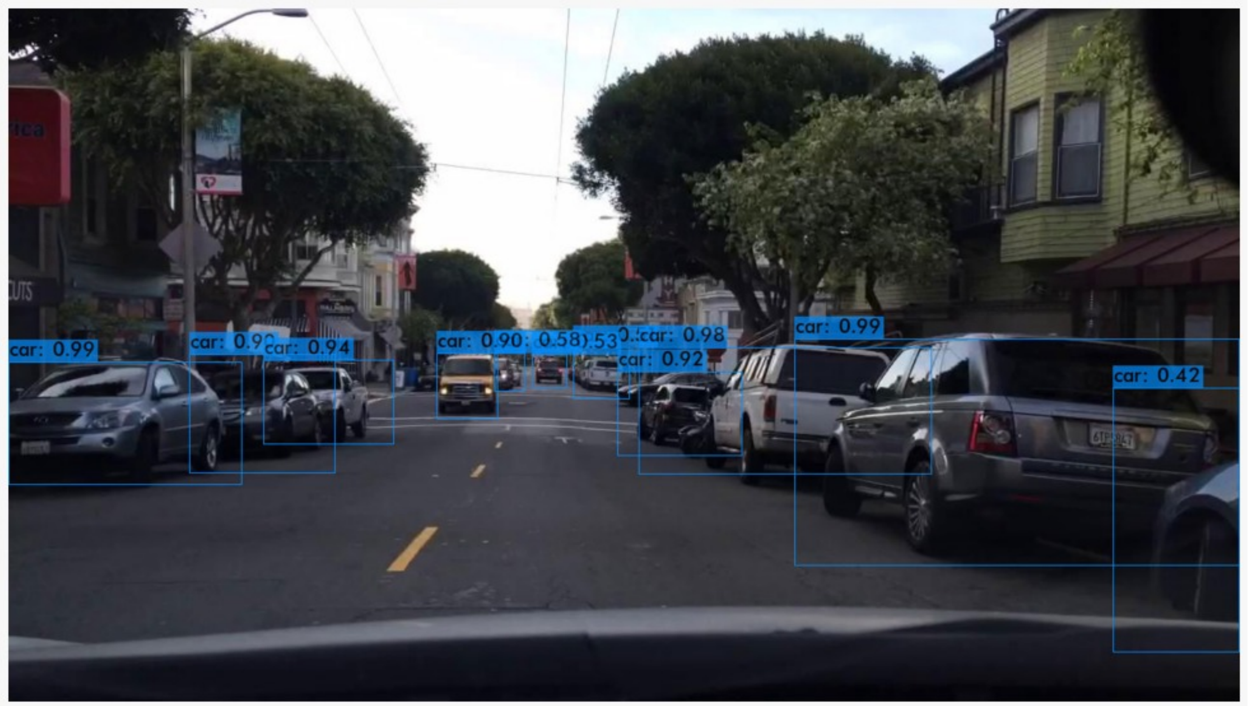
Out of this classes the only important classes are "car", "traffic light", "two wheeler", and "cycle" for our project and all the other classes were default classes from the github repo.

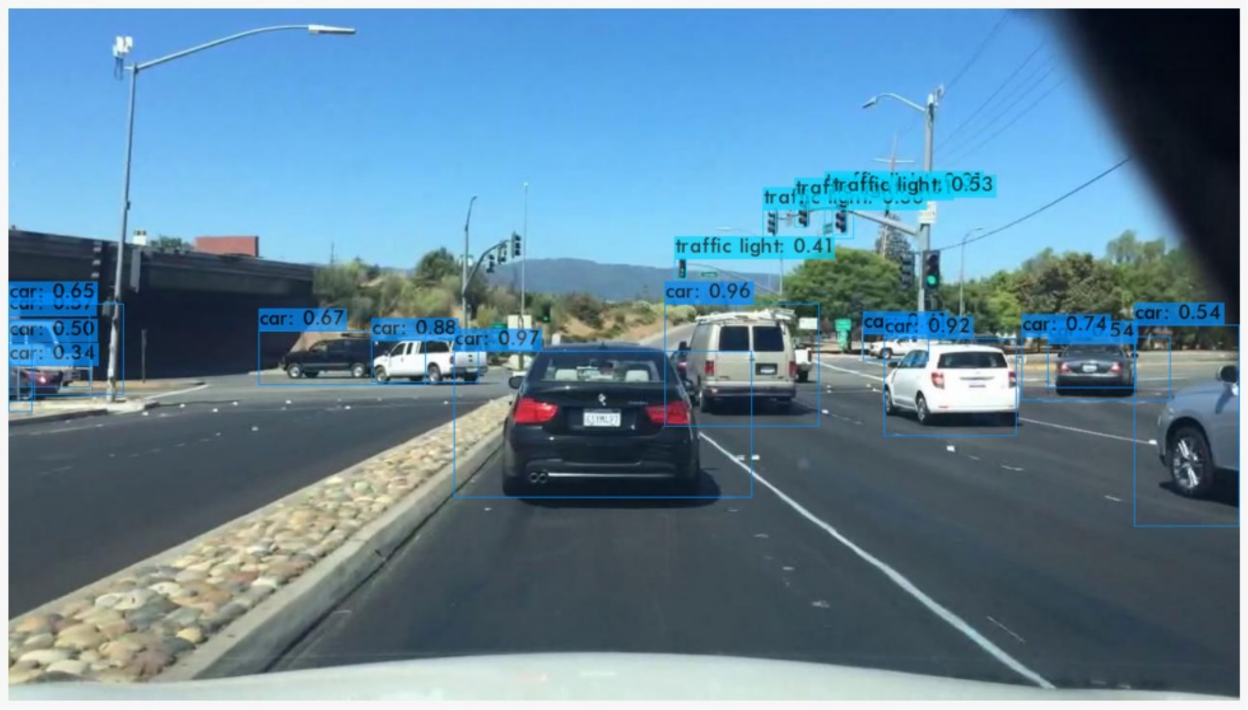
Outcomes of the Tasks Performed

Here are the outcomes of the tasks that we performed,

Here are some the output images on which the object detection was performed using YOLOv4 which was trained by us.







Output of object detection using YOLOv4 on the video file link:

https://drive.google.com/file/d/1-3pLObyNeIbfobjZTIKRBffzo1FMBMjk/view?usp=sharing

Tasks to be performed in the upcoming week.

- For the next week we are planning to implement the Kalman filter and the Hungarian algorithm by using the output of object detection (YOLOv4) model.

References

1. T. (2023, February 2). *TRAIN A CUSTOM YOLOv4 OBJECT DETECTOR (Using Google Colab)*. Medium. https://medium.com/analytics-vidhya/train-a-custom-yolov4-object-detector-using-google-colab-61a659d4868
2. *Home*. (n.d.).GitHub. Retrieved March 28, 2023, from https://github.com/heartexlabs/labelImg.git
3. (*Real-Time YOLOv4 Object Detection on Webcam in Google Colab | Images and Video*, 2020)