

OBJECT DETECTION WITH DEEP LEARNING AND OPENCV

Final RLMCA 351 Mini Project Review

Group No.:8

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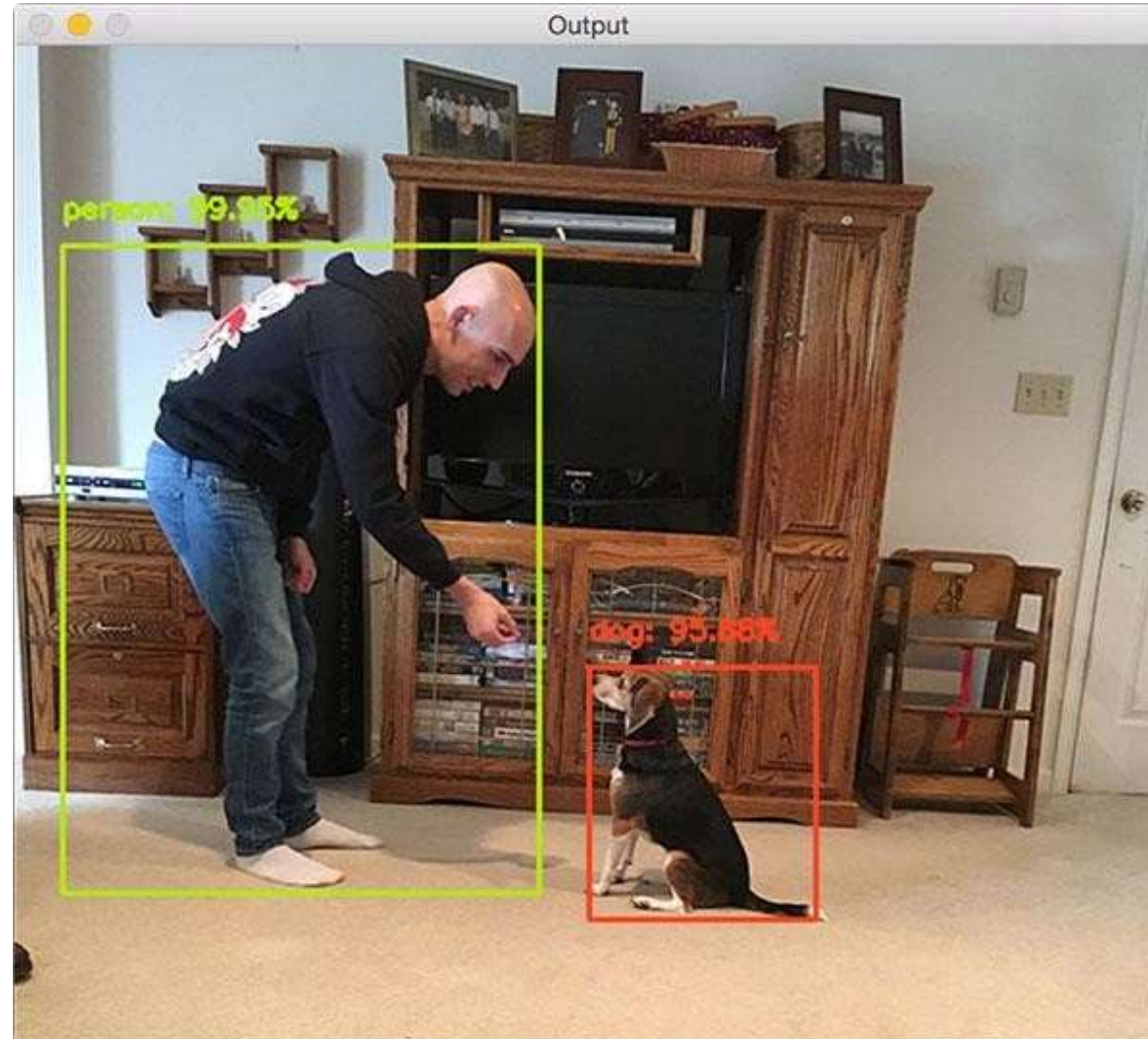
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Introduction

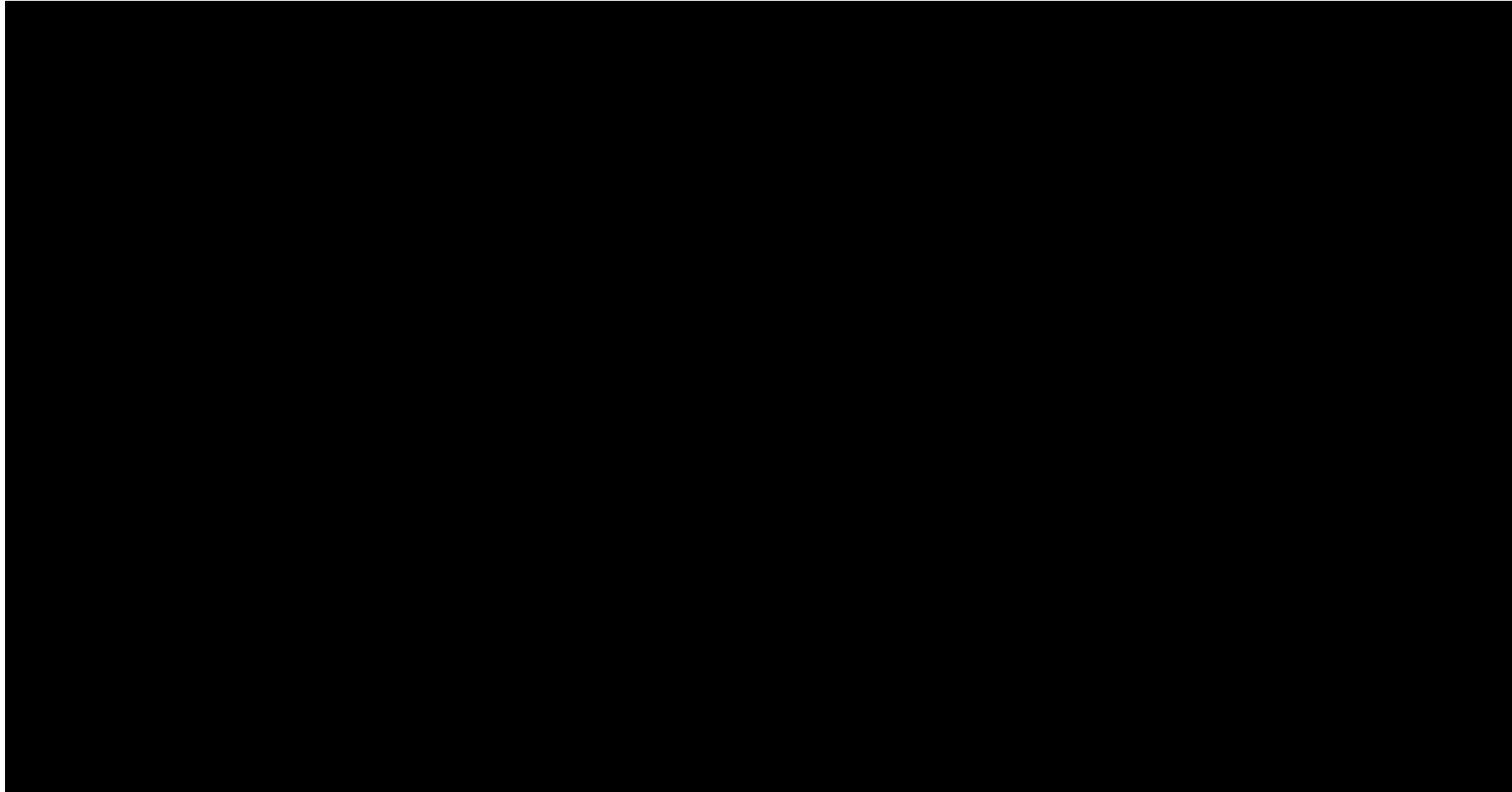
- Object detection is a computer technology related to computer vision and image processing.
- It deals with detecting instances of semantic objects of a certain class.
- Certain class such as humans, building, car in digital images and videos.
- It is mainly used in computer vision tasks such as image annotation, activity recognition ,face detection, face recognition, video object co-segmentation.
- It is also used in tracking objects.
- Object detection can not only tell us what is in an image but also where the object is.

Objective

- The purpose of this system is to detect objects from images using deep learning and opencv
- The objective of object detection is to detect all instances of a object from known class.
- Class such as people, cars or faces in an image.
- Each detection of the image is reported with some form of pose information.
- As simple as the location of the object, a location and scale or the extent of the object defined in terms of a bounding box.



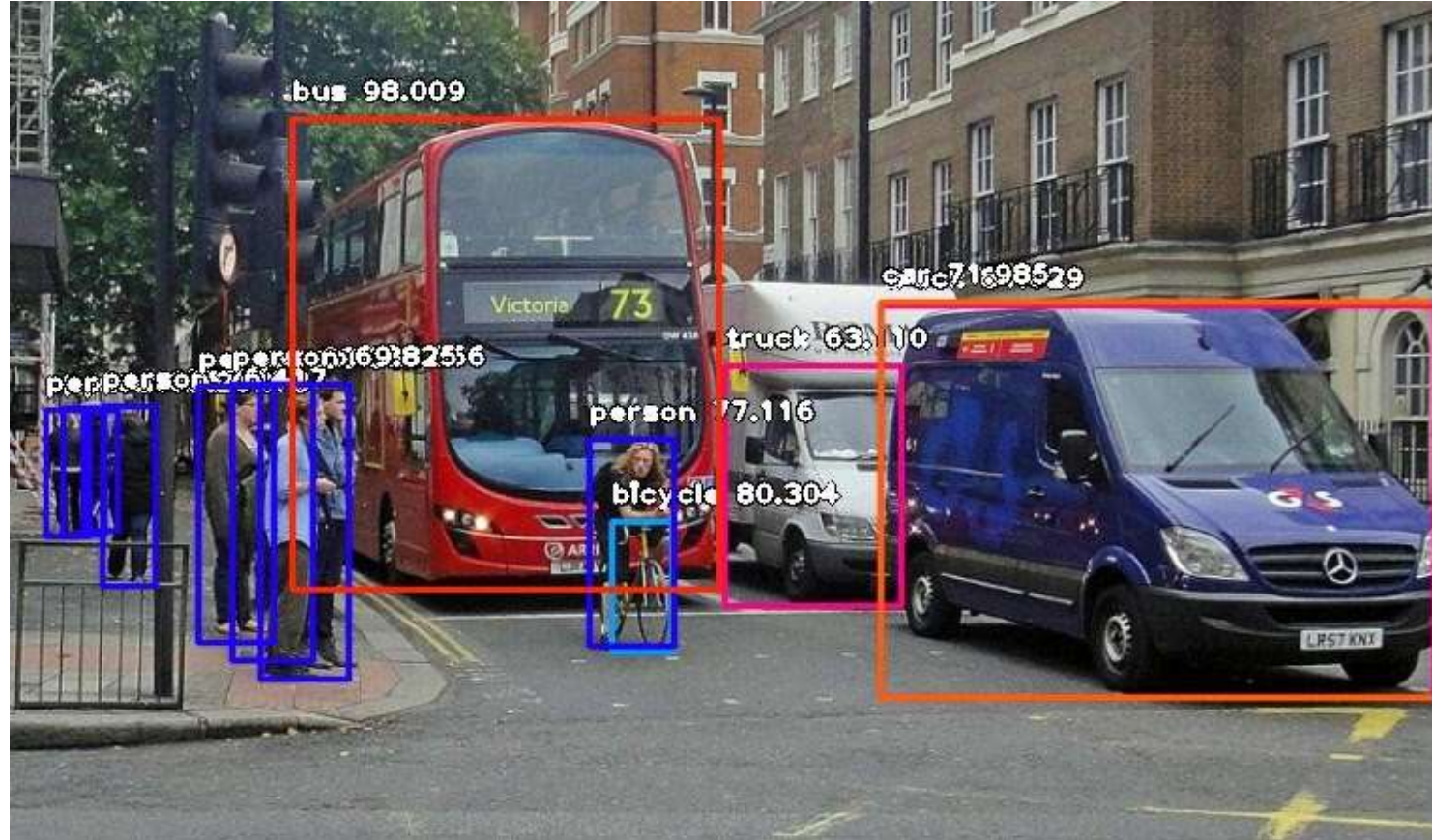
REALTIME OBJECT DETECTION WITH DEEP LEARNING AND OPENCV



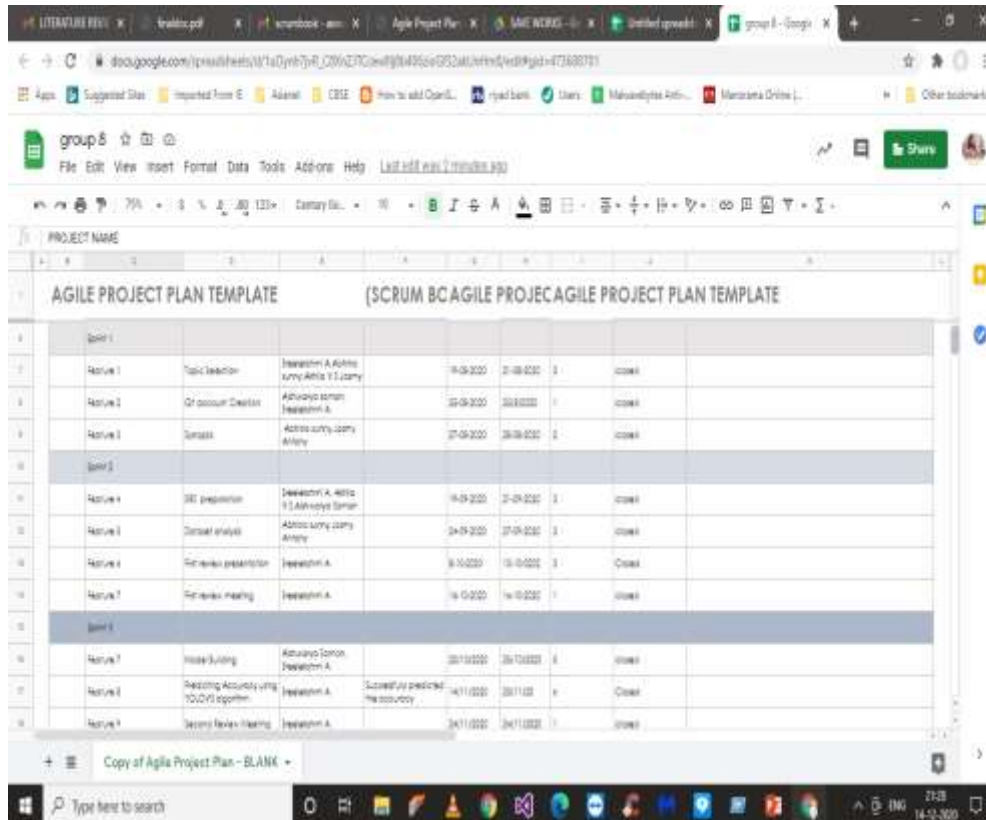
Literature Review

- Application of deep learning in object detection , Author: xinyi Zhou, wei Gong, Datasets used ImageNet, coco, pascalvoc , methodology used R-CNN, SPP-net, Fast R-CNN.
- Network :R-CNN,SPP-Net, Fast R-CNN mean Average Precision: 0.66, 0.631, 0.669.
- Thermal object detection in difficult weather condition using YOLO, Author: Mate Kristo, Miran pobar Technique: YOLO object detector.
- Dataset: KAIST, TERRAVIC,CVC_IR mean average precision:0.63, 0.96, 0.62
- Object Tracking Camera , Author: Priyanka pacharne, sanket kotkar, Methodology explained Image acquisition, Background subtraction, Filtering.

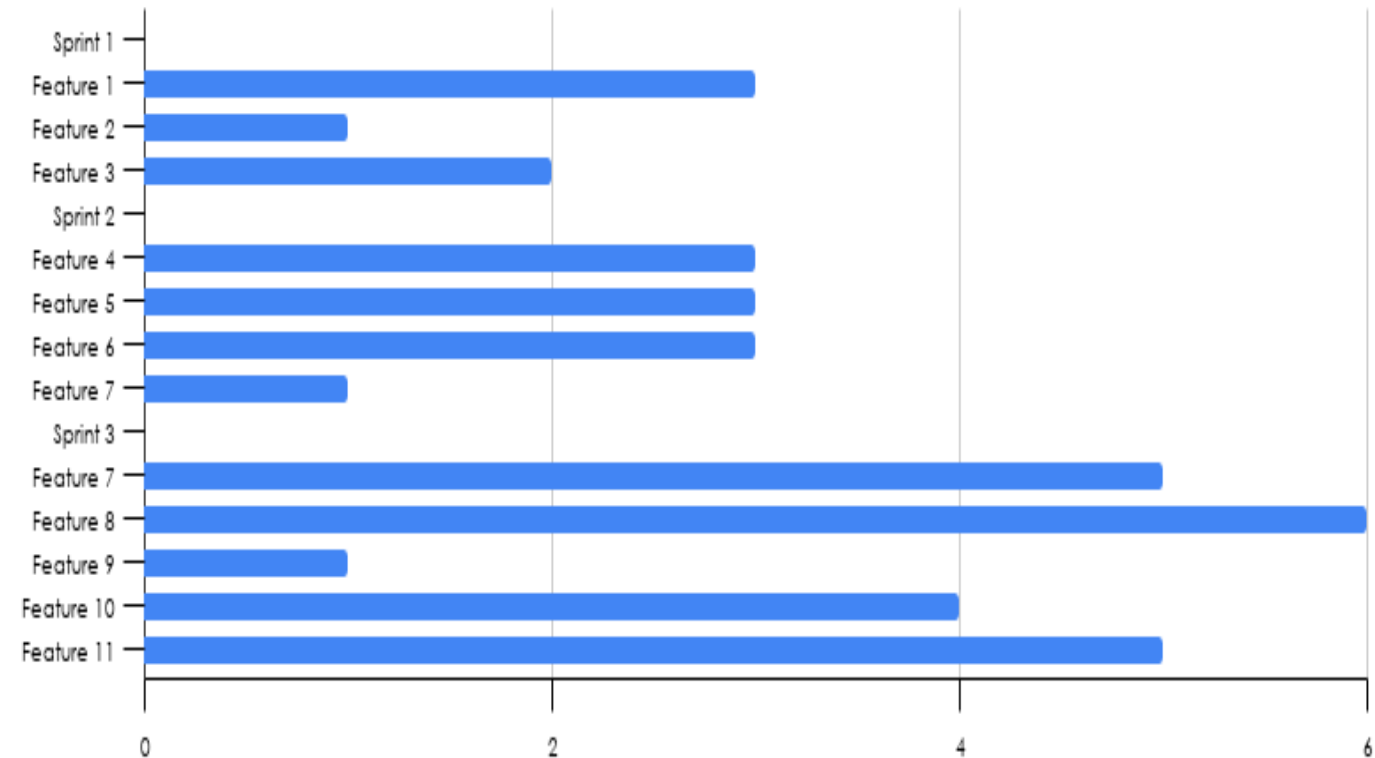
RESULT IN LITERATURE REVIEW PAPER



Timeline

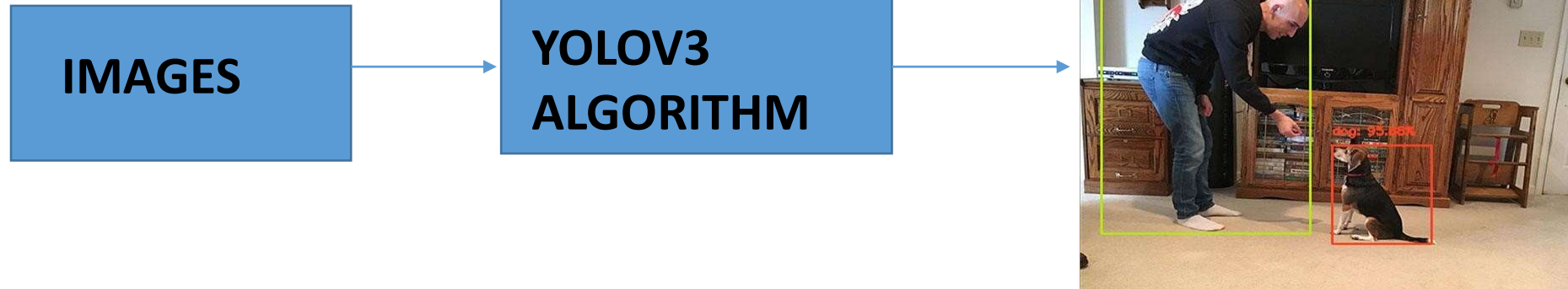


AGILE PROJECT PLAN TEMPLATE (SCRUM BCAGILE PROJECAGILE PROJECT PLAN TEMPLATE)						
Sprint	Task	Assignee	Start Date	End Date	Status	Priority
Sprint 1	Task 1	Assignee A	01-01-2020	01-01-2020	In Progress	High
Sprint 1	Task 2	Assignee B	01-01-2020	01-01-2020	Completed	Medium
Sprint 1	Task 3	Assignee C	01-01-2020	01-01-2020	Not Started	Low
Sprint 2	Task 4	Assignee A	01-01-2020	01-01-2020	In Progress	High
Sprint 2	Task 5	Assignee B	01-01-2020	01-01-2020	Completed	Medium
Sprint 2	Task 6	Assignee C	01-01-2020	01-01-2020	Not Started	Low
Sprint 3	Task 7	Assignee A	01-01-2020	01-01-2020	In Progress	High
Sprint 3	Task 8	Assignee B	01-01-2020	01-01-2020	Completed	Medium
Sprint 3	Task 9	Assignee C	01-01-2020	01-01-2020	Not Started	Low



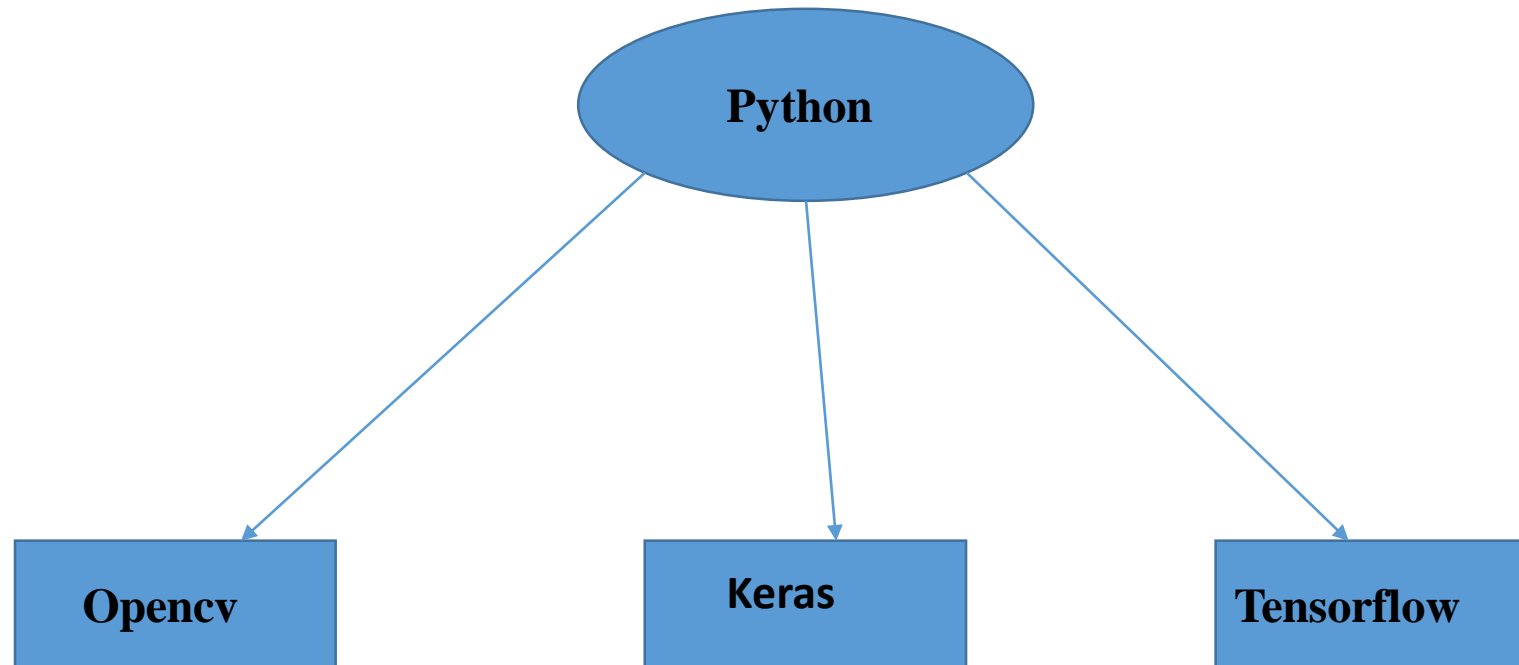
Proposed System

- We run the project used an existing system
- In this we use YOLOv3 algorithm for object detection
- Libraries used are opencv , keras ,tensorflow.



Technology

- Python is the main code base in which the project runs.
- Opencv is a python library which help real time object detection and resolve computer vision issues.
- Keras is a neural network library written in python and capable of running on top of tensorflow.
- TensorFlow is an open-source software library for dataflow and differentiable programming across a range of task.
- YOLOv3 is the latest variant of a popular object detection algorithm YOLO- you only look once.
- It is a super fast and nearly as accurate as single shot MultiBox.

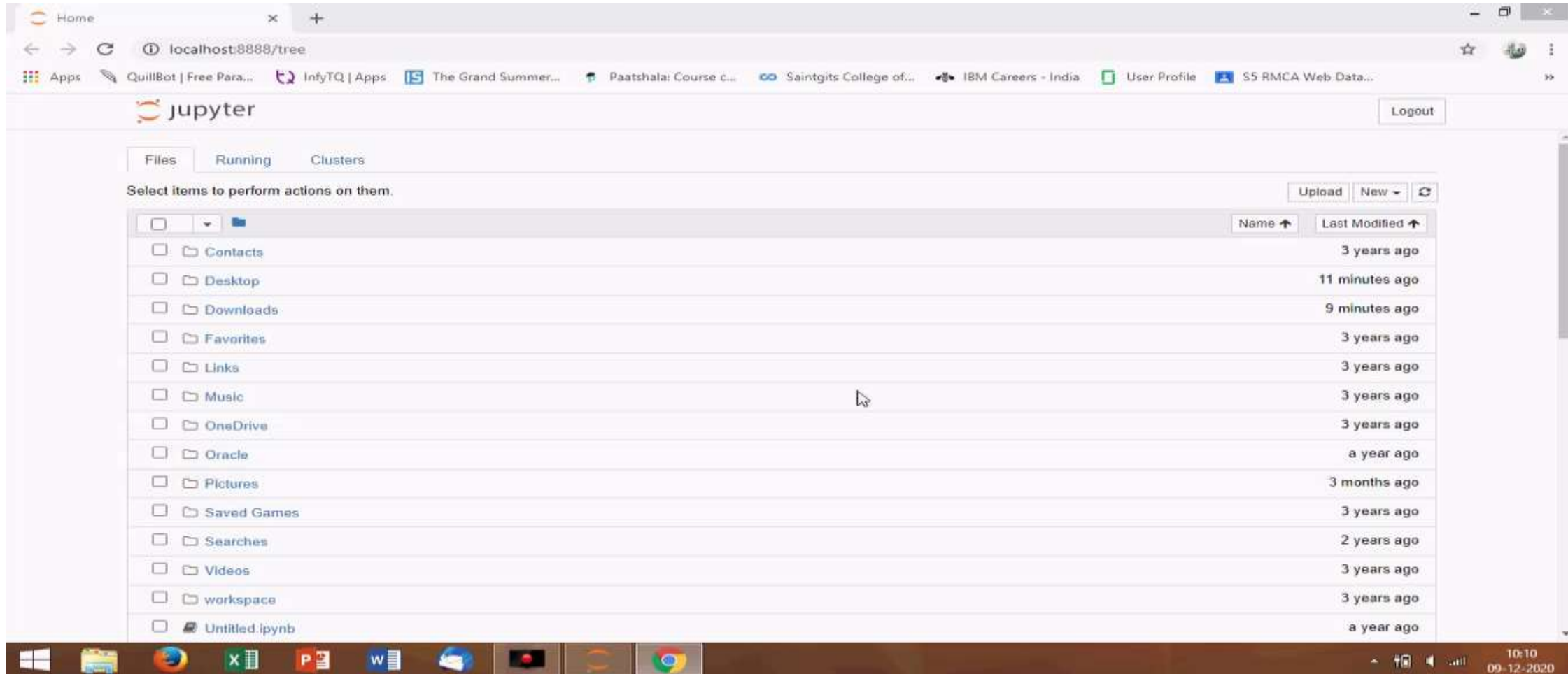


Dataset

- Dataset used is COCO dataset
- COCO stands for common objects in context.
- Images in a coco dataset are taken from everyday scenes thus attaching “context” to the object captured in the scenes.
- In coco dataset multiple objects can be found in the image and each should be labelled as different object and segmented properly
- It provides the labelling and segmentation of the objects in the images.
- Advantage of the labelled and segmented images to create a better performing object detection model.

Experiments and Results

- 100% of the project is completed.



Conclusion

- We are able to detect object more precisely.
- Then identify the object individually with the extent of the object defined in terms of a bounding box and predict the accuracy up to 98%.
- It can be applied in the area of surveillance system, face recognition , fault detection.
- It also provide experimental result on YOLO method for object detection.

Thank You