

# REALTIME MULTIPLE OBJECT DETECTION

Anju Babu    Asst.Prof. Hussain Ahmed

MCA, Semester III  
Department of Computer Applications  
Government Engineering College, Thrissur

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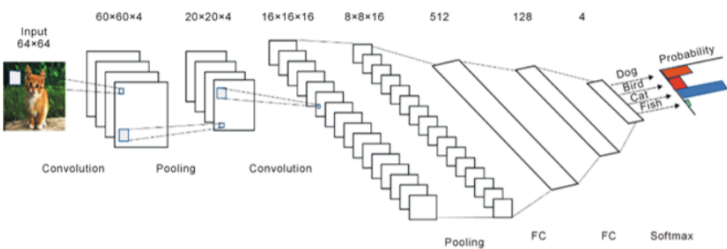
# Introduction

- It is an image based object detection model.
- Goal is to replicate this intelligence using a computer
- Using python and Tensorflow along with other libraries.
- Our model is effective in detecting objects from live camera data.

- Computer vision is a subset of machine learning.
- Traditional vision systems involve a human telling a machine what should be there.
- That deals with making computers or machines understand human actions, behaviors, and languages similarly to humans
- Computer vision is difficult because hardware limits it.

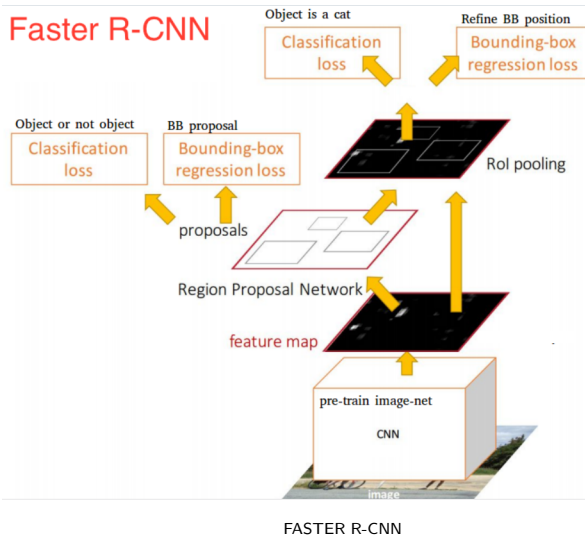
# Proposed System

- Enables to achieve greater accuracy in tasks.
- Applications using this approach often require less expert analysis and fine-tuning.
- Deep Learning also provides superior flexibility .



CNN ARCHITECTURE

# Design contin...



- Using pre-trained Faster-RCNN and InceptionResNetV2 feature extractor to identify objects in images and webcam.
- InceptionResNet was trained on ImageNet and fine-tuned with FasterRCNN on OpenImages V4 dataset(For detecting from realtime capured image).
- InceptionResNetV2 was trained on ImageNet and fine-tuned with FasterRCNN on coco2017 dataset(For live cam).

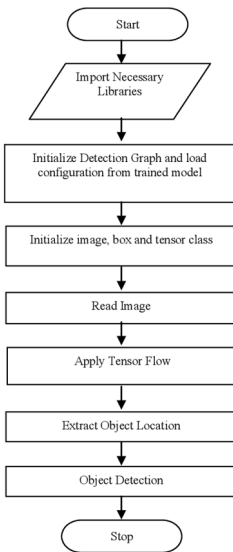


- MODULE 1
  - Detect object in the frame
- MODULE 2
  - Classification of the objects
- MODULE 3
  - Detecting objects with its accuracy

# Module Description

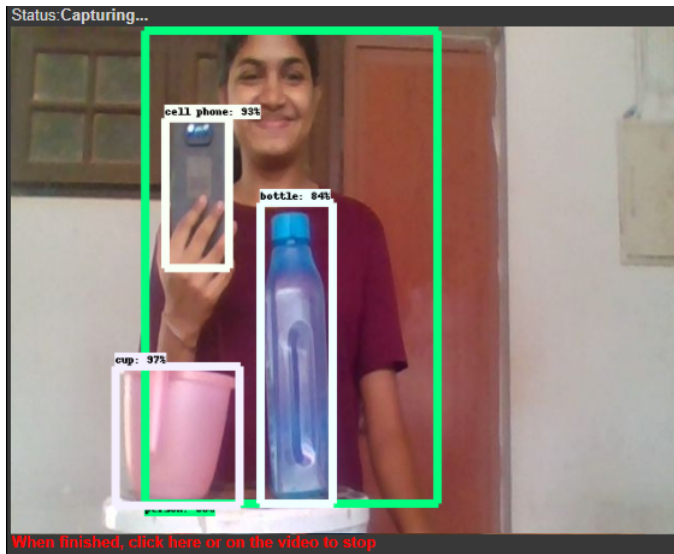
- MODULE 1
  - CNN Algorithm is used to generate a large set of bounding boxes spanning the full image.
- MODULE 2
  - Visual features are extracted for each boxes. They are evaluated and it is determined whether and which objects are present in the boxes based on visual features.
- MODULE 3
  - In the final post-processing step overlapping boxes are combined into a single bounding box.

# Flow Diagram



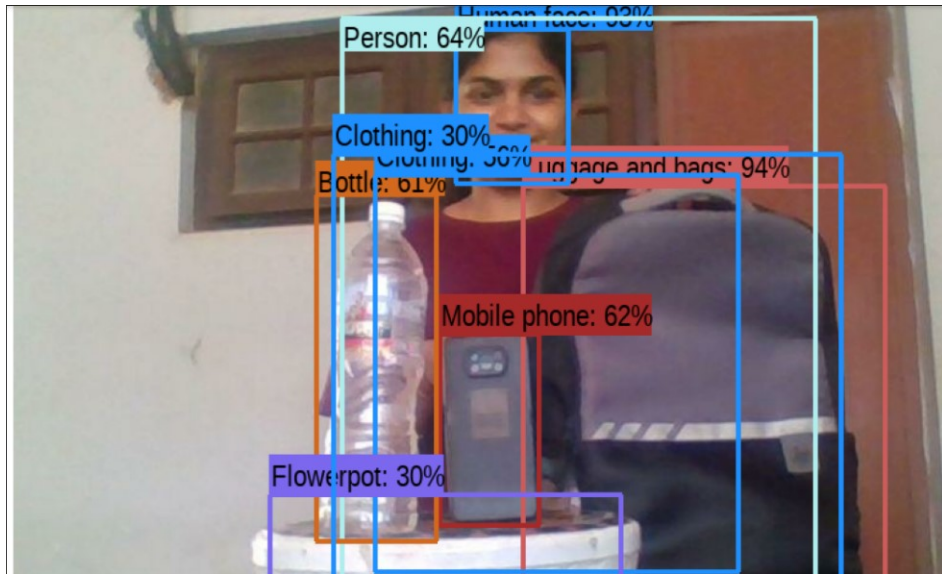
Flowchart

# Results



Sample output

# Results



- Hardware Requirements Object detection has been used in many applications.
- In our model, it can perform at a great accuracy using minimal hardware utilization using inceptions multi-layered CNN.

- Real-Time Object Detection using TensorFlow(IJCRT) 1Rinkesh U Patel, 2Meet S Patel, 3Dev A Thakkar, 4Bhumika Bhatt  
[https://ijcrt.org/papers/IJCRT\\_192261.pdf](https://ijcrt.org/papers/IJCRT_192261.pdf)
- Real-Time Object Detection using TensorFlow(IRJET) Priyal Jawale, Hitiksha Patel Chaudhary2, Nivedita Rajput3

# THANKS...

THANK YOU