University of Maryland

ENPM808X

Project Proposal

Human Detector and Tracker

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Proposal Details

Overview

In this project, we will be working on ***Human Detector and Tracker***. To achieve this, we plan to use the pre-trained model Yolo-V5 (as suggested in the lecture). We will freeze the last layer of the Yolo neural network so that it only detects humans present in the camera image. To achieve this goal, we will implement four classes, in which the master class will be **Human-Detector**. We will import a pre-trained neural network Yolo-V5. All the image manipulation (resize, grayscale) would be handled by image class which will be using **OpenCV**.

Scope

We are doing this to deliver the required module to Acme Robotics who needs it so that its robots can avoid human obstacles in its path as well as track the people in its surrounding and to know the location of humans with respect to the robot.

Quad Chart:

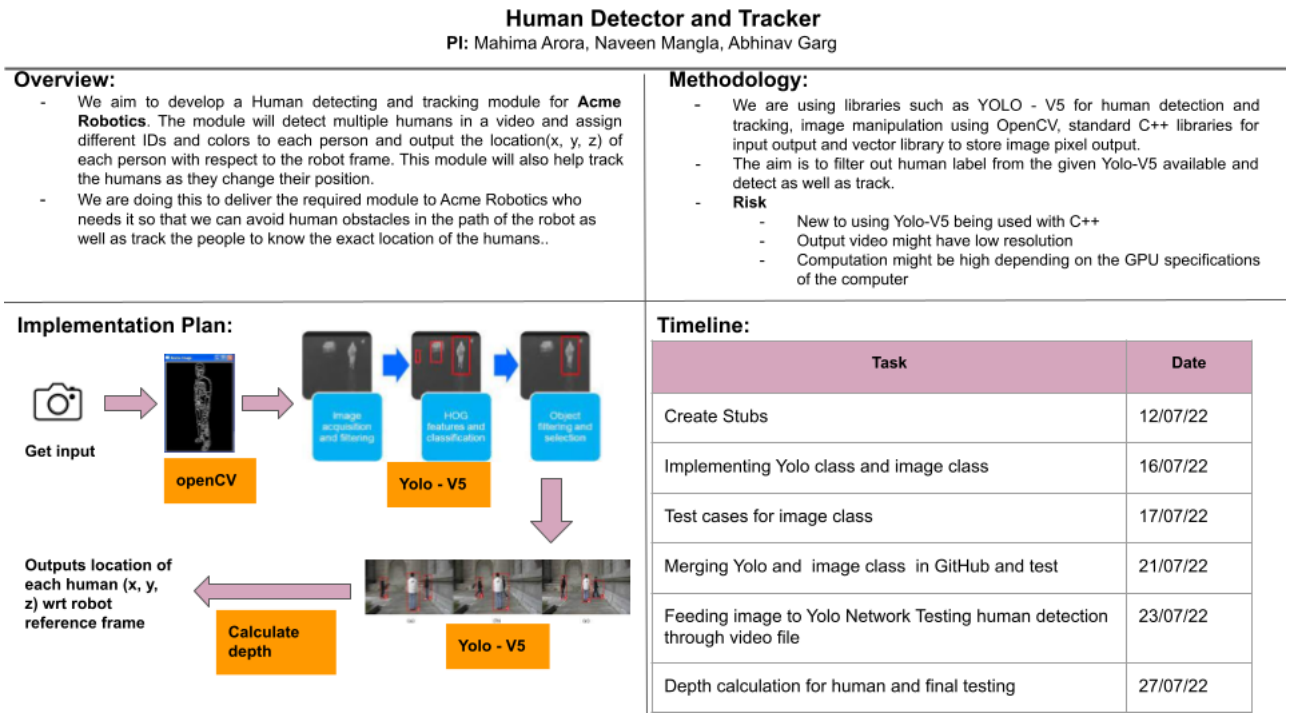

Figure 1: Quad Chart

Methodology

Our program will consist of three classes, listed as:

Image: This class will incorporate all the image related functions, such as *reading*, *resizing*, *visualising* and other modification.

Human Detector: This is the linking class for the other two classes, This class will take Image and Yolo as input and merge both of them to get desired human detection. The transformation will take place in this class as well.

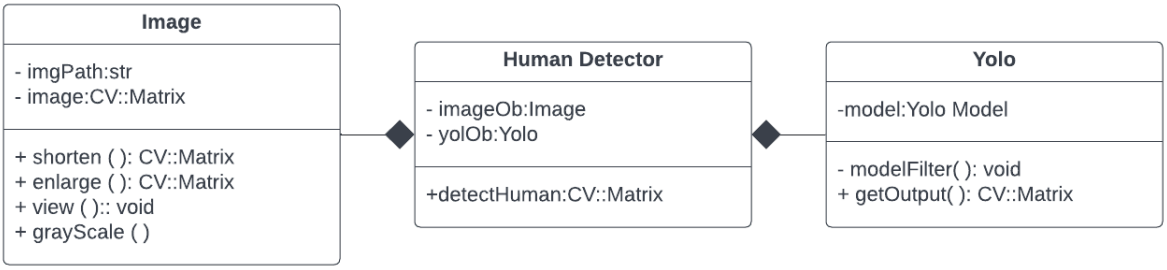

Figure 2: Class Diagram

Yolo: This class will take care of all the Yolo-V5 related functions, such as *calling model,filtering for human detector* and *giving detected output.*

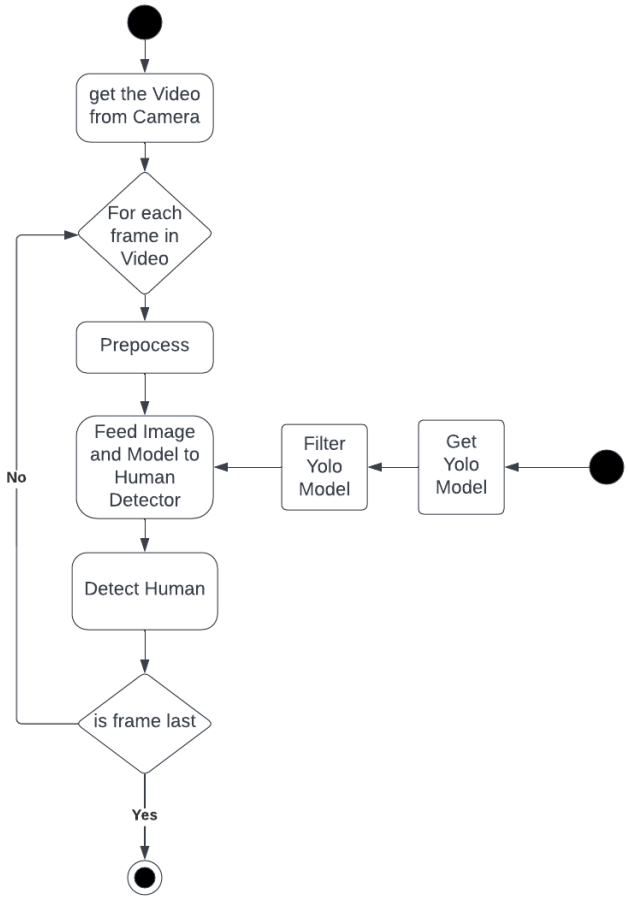

Figure 3: Activity Diagram

Click here for video