

HUMAN DETECTION AND TRACKING USING YOLOv5

Development by Koundinya Vinnakotta, Madhu N Chittibabu, Sharmitha Ganesan

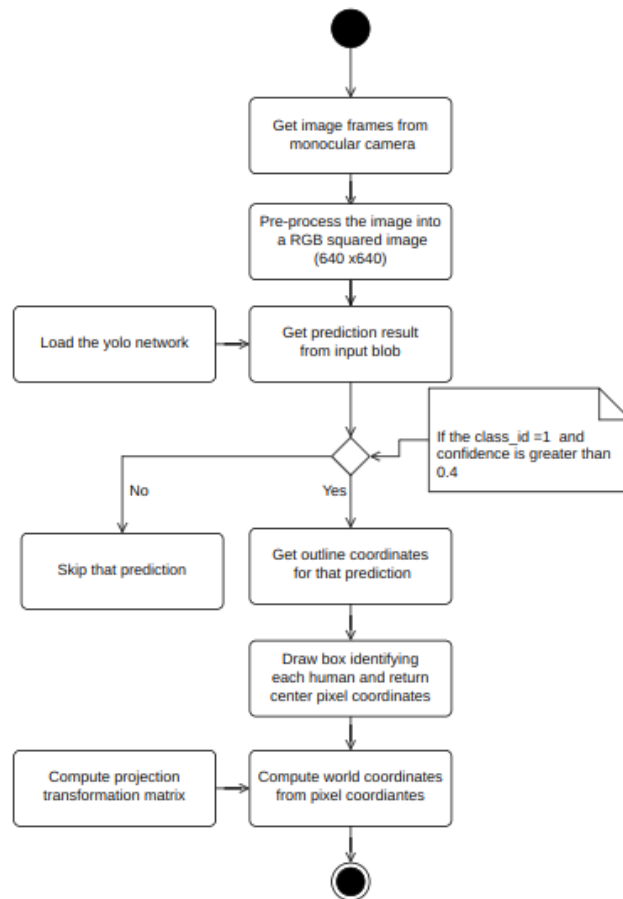
OBJECTIVES

- Develop a human detector and tracker model.
- Implement the model with the best C++ coding and documentation practices.

APPROACH

- Using YOLOv5 (a fast convolutional neural network), the prediction weights for the input camera frames are computed.
- If that frame has weights with class ID as 1 (1 is for humans in YOLOv5) and has high confidence (recommended is greater than 0.4), then get the outline.
- Draw a box identifier for all humans in any given frame.
- The pixel coordinates are projected in robot's frame to get world coordinates.

UML ACTIVITY DIAGRAM



TIMELINE

TASK	DATE
SPRINT 1	
Process input frames in correspondence to the YOLOv5 model	10/15/22
Computing the prediction weights for the processed frames with the YOLOv5 weights from the pre-trained model.	10/16/22
Modify the predicted weights to get output of Class ID : 1 i.e. Humans	10/17/22
Complete developer level documentation for sprint 1	10/18/22
SPRINT 2	
Get pixel co-ordinates and draw bounding boxes to identify humans	10/20/22
Apply non-maximum suppression and get one box per human.	10/22/22
Transform the pixel co-ordinates to robot's frame.	10/23/22
Complete developer level documentation for the whole project	10/25/22