# Human Detection and Tracking

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## Objective

To Detect Humans, Provide a 3D location of the human/humans present in the frame wrt robot coordinates and track the humans throughout the video sequence in real-time.

Performance goals are to detect humans accurately in every frame and have perfect associations between the humans by using a tracking module and being able to perform this in real-time with only a small tolerance when the frames are nonconductive for detection and tracking.

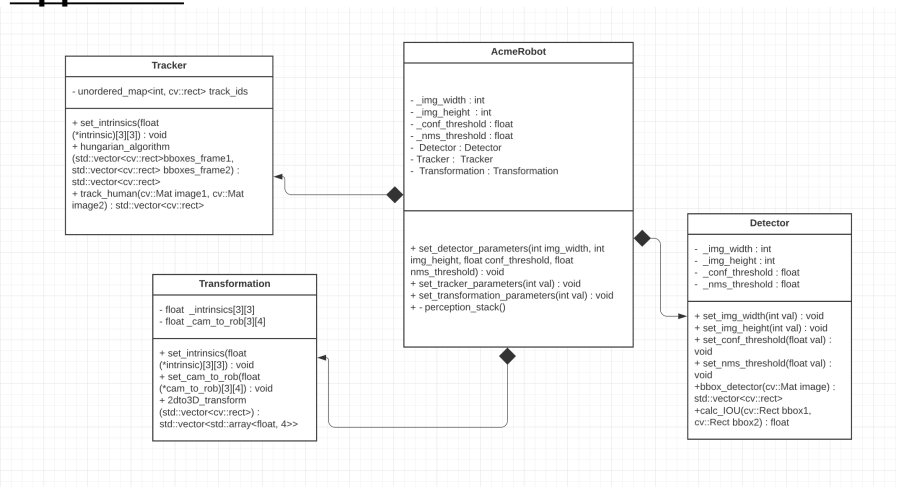
## Assumptions

We assume that the robot has enough capability of hardware to run a deep learning model, the camera intrinsics are ideal and there are very few people in the frame.

Approach:

1. We use a Deep Learning Model YOLO which is Pretrained on COCO Dataset to detect humans.
2. Implement Hungarian Algorithm to make associations between humans in corresponding frames.
3. Use intrinsic and extrinsic matrices to provide 3d coordinates of humans wrt robot frame.

## Approach




## Key Milestones

- Sprint Planning and Agile Documents 10/13
- Detection Module 10/15
- Tracking Module 10/18
- Transformation Module 10/19
- Initial Implementation 10/20
- Iteration for improvement/developing modules 10/23
- Prototype validation 10/24
- Understanding limitations and improvements 10/27