Acme Robotics : Human Detection and Tracking Module

Objective:

- Mobile Robots while deployed have a tendency to get into accidents quite easily if they can't detect the moving object nearby.
- This module designed to detect and track humans will benefit the planning module to plan a dynamic path and help avoid obstacles as well

Idea:

- Our proposed design utilizes OpenCV and YOLO's pretrained deep learning model which is best in class to detect human class which will give us the output bounding box encpasulating the walking human.
- To further track the human in robot's reference frame, we are planning to use SORT/Optical Flow algorithm which uses the feature vector to detect motion between consecutive frames.

Benefits:

- The main reason we are trying to implement this approach :
- Adapting a pretrained algorithm instead of classical computer vision approach may provide faster result in real-time scenarios
- Using Optical Flow with a filter is highly suitable to track the object and can integrate well with the pipeline.

Deliverables & Milestones:

- Phase 1
  - Updated UML Diagram
  - Stub Implementation
  - Unit Tests
  - Basic Function Implementations
- Phase 2
  - Product Backlog Tasks Completion
  - Final Implementations
  - Code Coverage and Production