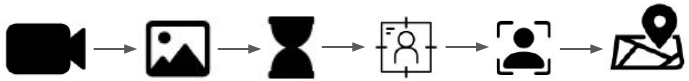
ACME Robotics Human Tracker

Shail Shah | Jay Prajapati | Anukriti Singh

Overview

- Design and implementation of perception module for ACME Robotics involving human detection and tracking.
- Image acquisition will be rendered using a monocular video camera which would feed the image stream for human detection and tracking.
- In addition to real-time tracking, it will also exhibit coordinates of detected humans with reference to the Robot's Frame.



Software Development Practices

- Software Process : Agile Iterative Process (AIP)
- Software Implementation : Test-Driven Development (TDD)
- Programming Language : C++14
- Unit Testing Approach : Google Test Framework
- Code Review : Google C++ Style Guide, Cpplint & Cppcheck
- Code Testing : Travis CI
- Code Coverage : COVERALLS

Deliverables

- Expected Deadline : 2 Weeks (After the proposal)
- Project Outputs : Human detection and tracking package for a moving robot (Released in two phases).
- Open source Third-Party libraries will be used for the image processing and human detection process.
- Software Integration, Usage and Implementation documentation for ACME Robotics with an audio-visual presentation or a video.

Software Implementation Plan

- Real-time image acquisition from video stream using monocular video camera.
- Preprocessing the acquired image using appropriate filters.
- Human detection and frame assignment using the YOLO algorithm.
- Unique ID assignment to humans present in frame.
- Continuous tracking algorithm implementation.
- Relative Position mapping with reference to Robot's frame.