UNIVERSITY OF MARYLAND

ACME CORPORATION

Human Detector & Tracker in C++ which outputs location data in a robot's reference frame

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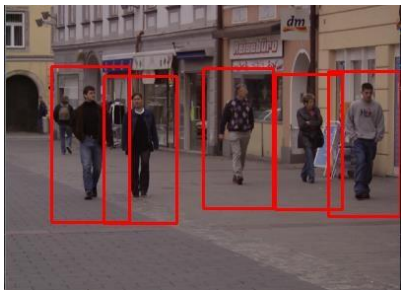
Overview

- Design a human detection and tracking module for ACME Robotics' new product.
- The human detector and tracker module will be able to track multiple humans with the help of a monocular camera directly usable in the robot's reference frame.



Design Practices

- Unit tests for each module will be performed using Google Tests.
- Developer-level documentation
- Pair Programming methods will be followed.
- Robust unit tests to cover the entire code base.
- Agile software development will be practiced.

Technical Design

- Human Detection and tracking will be performed using a YOLOv3 neural network trained on the COCO dataset.
- Homogeneous transformations will be used to output the data in the robot's reference frame.
- Pre and post processing of data will be done for clean detection using OpenCV.

Key Milestones & Deliverables

- A high-quality module to perform human detection and tracking.
- Complete documentation including class diagrams and activity diagrams.
- An up-to-date Github repository.
- Timeline:
  - Skeleton design: 10/13/2021
  - Class and Methods implementation: 10/15/2021
  - Unit testing: 10/20/2021
  - Final release of the module: 10/23/2021