ACME ROBOTICS - HUMAN DETECTOR AND TRACKER

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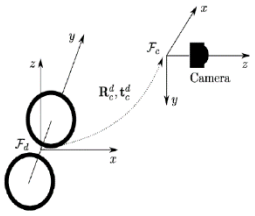
OVERVIEW:

Project proposal to ACME Robotics for a "Human Detection and Tracking" module add-on API to the existing perception stack of their 4-wheeled in-office delivery bot "Tubby".

The proposed module detects humans in Tubby's field of view and tracks their movement in the robot's reference frame.

METHODOLOGY:



- Detect humans through input feed from the camera installed on top of the robot and track them.

- Output (x,y,z) coordinates of the detected human in the robot's reference frame from the camera's reference frame from the image frame using two transformations.

TASKS:

Phase 0: Project proposal with literature review, plan, and initial design along with basic repository set up with code template and configuration files. (12 Oct 2022)

Phase 1: Algorithm development, class implementation, unit testing. (Due 19 Oct 2022)

Phase 2: Review and cross-check requirements, verify builds and coverage, and update developer-level documentation. (Due 26 Oct 2022)

FINAL DELIVERABLES:

- A module in C++ to detect and track humans using feed from a monocular camera.

- Overview of proposed work including timeline, risks, and UML diagrams.

- GitHub repository with README.

- Continuous integration and code coverage with TravisCI and Coveralls.

- Memory leaks check and profiling using Valgrind.

- Developer-level documentation.