Spring 2023 ECE 445 Team Contract

Project No. and Name:

Group 11

Cyclist Sensing and Awareness System

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Project Description:

We aim to design, build, and present a system that both recognizes cyclists and notifies pedestrians and drivers of their presence using LED lights. We utilize proximity sensors on both sides of a bike lane pointing inward to detect the presence of a cyclist. In addition to the proximity sensors, we also will utilize an induction loop on the pavement between the sensors to serve as an additional check for a cyclist. Utilizing both the proximity sensors and the induction loop, we aim to minimize misreads of pedestrians, animals, or any forms of noise that may interfere with the sensors. This system will be repeated every five to ten feet. Thus depending on the location of the cyclist, the corresponding lights on the bike lane will light up, signaling pedestrians and drivers that a cyclist is inbound.

Project Goals:

A successful project is characterized by the proper implementation of an induction loop that detects changes in its magnetic field, integration of proximity sensors to detect the presence of an object within its field of view, and a visible LED system to ping the presence of an incoming cyclist to vehicles and pedestrians. All of these components should be integrated using UART and I2C with an STM32 microcontroller.

Expectations:

- Proactive communication
    - Communicate accomplishments of the week and prospects for upcoming week on a regular basis
- Approach all meetings prepared
    - Come knowledgeable of overall progress
    - Be prepared to explain what was worked on
- Constant Feedback
    - Review work done, communicate concerns and issues on partner's work.
    - Communicate peer to peer issues whenever they persist.
- Maintain the timeline
    - Follow the timeline denoted on the Design Document as closely as possible
    - Any deviations from the timeline must be discussed early and proactively

Roles:

Only team members so all work should be relatively evenly distributed. Initial plan is to bias design and preliminary testing to an individual member with integration and in depth testing to be done as a group.

Project Meeting Times:

On top of the scheduled meeting times, meeting at least once a week in person in the lab to discuss progress and future plans is essential. Meetings on Tuesdays every week between members in preparation for the scheduled TA meetings is the initial plan, but subject to change as the semester progresses. Other than this, continuous meetings virtually via discord will be the primary method of meetings between our members.

Agenda:

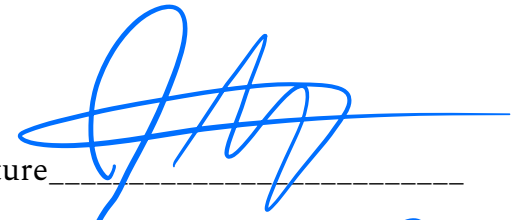
The timeline denoted in the Design Document will serve as the primary agenda for our group. Remaining on task and on time will have to be a collective effort between, peer to peer accountability will remain paramount to progressing throughout the semester. Large roadblocks and decisions (i.e. major design changes or considerations)will be discussed and dealt with by consensus between members while smaller hurdles should be addressed by the primary team member in charge (i.e. changes to individual subsystems).

Process and Penalties:

When issues occur and situations escalate, proactive and fair communication is our first and foremost important policy. Readjustments to assigned tasks can be made and considered after communication of issues. Should issues continue to persist, group members will reserve the right to reach out to TAs and instructors to seek intervention.

End of Term Agreement:

We do believe that the terms of this agreement will keep our members accountable and denote a clear course of action if issues present themselves. Additionally, we adhere to the policy of using peer assessments for final grade adjustments.

NetID: Jarroyo4 Signature 

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