EECS 149/249 Project Charter
Quadcopter Partner

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[1] PROJECT OVERVIEW

The purpose of this project is to design a quadcopter that can follow a person around whilst avoiding obstacles, such as walls or physical barriers.

[2] PROJECT APPROACH

While the project involves a quadcopter, we will not actually be building it, and thus most of the hardware aspects come from interfacing with all the required sensors. As a result, the bulk remainder of the project is software-related. We will therefore be using the Agile approach to incrementally accomplish software-related features.

Each team member will contribute 5 hours per week for 7 weeks. Moreover, we will be meeting twice a week for quick updates and next steps.

[3] PROJECT OBJECTIVES

- Have the quadcopter move in 3 dimensions
- Have the quadcopter hover when while no motion is required
- Have the quadcopter detect [LEDs held by] a person and navigate towards him/her, all the while avoiding obstacles
- Have the quadcopter turn corners to follow [LEDs held by] a person

[4] MAJOR DELIVERABLES

- Schedule along with time estimate
- Prioritized list of features
- Final product & demo
- Final report which covers model, design, and analysis
- Final website that summarizes what we have accomplished in semester

[5] CONSTRAINTS

While we all have experience in various fields, none of us have dealt with quadcopters before, so we are currently limited by our skill level. Consequently, time may be a constraint given the sophisticated learning curve. Additionally, we may be limited by both our budget and our resources given the relatively high cost of the hardware supplies (including the quadcopter).

[6] RISK AND FEASIBILITY

Many of our risks parallel our constraints: some worries include not completing the project on time, possibly due to the limitation of our resources. After all, since we are purchasing an external quadcopter, we are depending on a third party to supply the mechanical aspects. Ideally, we will properly assign roles to people's strengths and set reasonable milestones so that time is not a concern, and we will properly test any purchases well before we begin incorporating them into our implementation. Note that overextending ourselves on an exciting project is also a concern, so we will focus on limiting the scope to a manageable amount and add features if time allows.