Project 1 Proposal

Submitted to
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Submitted By
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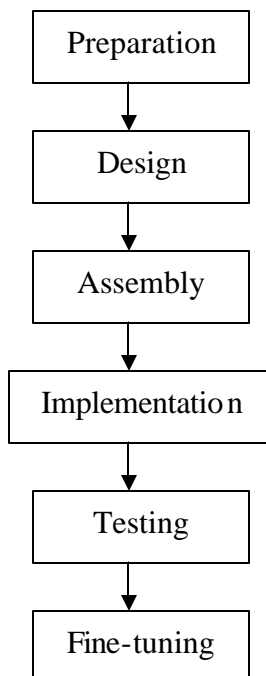# Team Organization and Task Allocation Proposal

1. Team Organization

Our team is group 3 and consists of three members namely Pooja Mohan, Ben Carpenter and Karthik Gururaja Rao. Ben's major is computer engineering and both Pooja and Karthik are Computer Science majors.

2. Team rules

It was decided by a majority that there would be no team leader and the tasks would be allotted in a democratic way. Also, every team member will have an equal say in every task performed. If there is a conflict at the any point the decision will be taken based on majority votes.

3. Task Description

The tasks were divided into six steps. They are preparation, design, assembly, implementation, testing and fine-tuning. The organizational chart of the different steps is shown below.

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┌─────────────────┐
│   Preparation   │
└─────────────────┘
         │
         ▼
┌─────────────────┐
│     Design      │
└─────────────────┘
         │
         ▼
┌─────────────────┐
│    Assembly     │
└─────────────────┘
         │
         ▼
┌─────────────────┐
│ Implementation  │
└─────────────────┘
         │
         ▼
┌─────────────────┐
│     Testing     │
└─────────────────┘
         │
         ▼
┌─────────────────┐
│   Fine-tuning   │
└─────────────────┘
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i.   Preparation

The preparation involves two subtasks. First subtask is for all the team members to be familiar with Interactive C and the handy board functions. For this, all the team members are supposed to read and do research on the two topics with material from both the class webpage and outside resources.

The second subtask involves coming up with different designs for the robot. Each member has to have one or more design idea.

ii.   Design

This task involves picking each team member's design or designs and discussing the pros and cons of each design. The most appropriate and efficient robot design will then be chosen. In case of any conflict, the decision will be based on majority voting.

iii. Assembly

The assembly involves building the hardware component of the robot design. The robot will be built by using LEGO building blocks.

iv.   Implementation

This task includes code design, implementation and documentation. The robot code will be written in Interactive C and proper documentation will be provided in each step.

v.   Testing

The testing phase involves testing different functionalities of the robot. This includes testing if the robot recognizes the colors and perform tasks based on the color recognition.

vi.   Fine-tuning

This task includes making sure that the robot performs all the functions required and making minor changes to make the robot more efficient.

4. **Task Allocation**

The tasks were allocated based on each team member's experience and comfort level. The preparation task is going to be performed by all team members. The design will also involve all the team members. It was decided that Pooja would assemble the robot owing to her past LEGO experience. Karthik will study the camera functions and take care of camera control. He was chosen for this task because of his previous experience with cameras. Ben will study the motor control and implement it. The robot code will be split into three modules, which includes forward, turn and stop. Since all members in the team have past coding experience it was decided that Pooja would implement the forward module, turn module by Ben and Stop module by Karthik. Karthik will also do the code documentation. He was chosen for this task because of his past technical writing skills. Since Ben's wanted to test the robot for the required functionality, he will perform the testing phase. Lastly Pooja will perform the fine-tuning phase.

Timeline with Milestones and Fallback Plan

After the tasks were described and allotted, each task was given a timeline and a fallback plan.

The different tasks and their timelines are given in the below table.

Jan 30 – Feb 1	Preparation
Feb 2	Decide on design
Feb 3 – Feb 5	Assemble robot with LEGO
Feb 6	Camera control / recognize color
Feb 7	Motor Control
Feb 8	Implement Forward Module
Feb 9	Implement Turn and stop module
Feb 10	Testing of robot code
Feb 11	Testing of robot movement
Feb 12	Fine-tuning of robot movement
Feb 13	Demo of project 1

If the robot design is not decided by February 2nd then, the group is going to go with a general robot design that has four wheels and the body of a robot car. If Pooja is not able to complete the hardware installation of the robot then, the Ben and Karthik will help out with the assembly in order to finish it by February 3rd. If the camera control and color recognition is not completed by Karthik by February 6th Ben will take over both camera and motor control and Karthik will start working on the stop module. If both camera and motor control are not completed by Feb 8th the group will take the help of the TA or the professor to complete the task. If the implementation of

the robot code is not accomplished by February 10th, then the testing will be done only for one day and the code implementation will be given one more extra day. If robot testing requires more than one day then, there will be no fine-tuning performed on the robot. At any stage if there are any conflicts between team members, the decision will be taken based on majority vote or it will be based on the opinion of the TA or the professor. If any team member fails to perform the required task at each stage due to any valid reasons, then he or she will be required to perform more tasks in the next project to make up for the work not done in this project.