

Project 1 – Sensing and Movement

Team Organization and Task Allocation Proposal

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I) Division of Assignments and Task Allocation

Each of the team members will contribute to all aspects of the project design. The divisions shown below indicate which team member is ultimately responsible for the coordination and function of that particular portion of the project. The assignments were made randomly, as each member of the team felt comfortable completing any of the assignments.

Each team member will document the work that he completes for inclusion into the post-mortem documentation. As the robot and code are integrated, testing will converge into an entire group effort, however they are listed below under the Build Robot Section. Information will be shared through email, group meetings, and face-to-face conference during the development process.

- **Build Robot – Adam Barnett**

1. **Identify Components** – Determine necessary components based on Project 1 description (sensors, number of motors, etc.)
 - *Justification:* determine the needs and scope of the project
2. **Robot Familiarization** - research Martin text and robots from previous classes for ideas and tips on building robots
 - *Justification:* provide a basis of reference from which to begin development
3. **Initial Build Robot** – ground up order (ground traversal, sensor placement, Handyboard placement, etc.)
 - *Justification:* Starting the build without the code will help to simplify construction
4. **Integrate robot with code**
 - *Justification:* The code must be integrated to begin testing
5. **Testing Cycle** – revise and repeat as necessary, photo document development and description logging for reference purposes
 - Locomotion Test
 - Sensor Reading Test
 - Structural Integrity Test
 - Field Test
 - *Justification:* The testing cycle will be crucial for the revision of our design and to ensure proper operation. A bulk of time will be spent in this stage

6. **Produce Robot Build Documentation** – Write a summary of the development process and a good technical description of the final robot
 - *Justification:* Documentation for the design is required in the final project report
- **Coding** – *Tao Zheng*
 1. **Handyboard Familiarization** - Get acquainted with the Handyboard and Interactive C
 - *Justification:* An introduction to the hardware will with plan code for the actual code design
 2. **Identify Sensors** – Identify those sensors which are necessary based on project description and initial experimentation with sensors
 - *Justification:* Knowing early on which sensor are necessary will help us plan the build of our robot and code
 3. **Initial Code Development** – create code to distinguish colors and make movement according to project description.
 - *Justification:* Writing the code without the robot will simplify the design process
 4. **Integrate code with physical robot**
 - *Justification:* The code must be integrated to begin testing
 5. **Testing Cycle** – revise and repeat as necessary, track the software in versions for historical purposes.
 - Locomotion Test
 - Sensor Reading Test
 - Structural Integrity Test
 - Field Test
 - *Justification:* The testing cycle will be crucial for the revision of our design and to ensure proper operation. A bulk of time will be spent in this stage
 6. **Produce Robot Code Documentation** – Write a summary of the code development process and a technical description of the algorithms and methodology used to make the robot function
 - *Justification:* Documentation for the design is required in the final project report
 - **Documentation** – *Chris Madole*
 1. **Team Discussion of organization and task allocation** – discuss all aspects of design and tasks
 - *Justification:* To help develop a plan of action and hold members accountable for work.

2. **Proposal** - Write-up and production of Team Organization and Task Allocation Proposal
 - *Justification:* To document the responsibilities
3. **Review Documentation** – examine projects from past classes
 - *Justification:* To identify potential pitfalls and helpful development ideas
4. **Ensure proper production of Robot Design documentation** – integrate this documentation into the final project report
 - *Justification:* To help maintain a consistent format with the other documentation
5. **Ensure proper production of the Robot Code documentation** – integrate this documentation into the final project report
 - *Justification:* To help maintain a consistent format with the other documentation
6. **Post-mortem** – Collect input from team members evaluating team organization and summarize findings for placement into final project report
 - *Justification:* Analyze the strengths and weaknesses of the team for improvement on the next project.

II) Timeline

Items listed will be completed / delivered on the day they are listed.

General Fallback Plan

Our team will use a general fallback plan for corrective ideas to any uncompleted milestones. The fallback action for each individual task is listed below. The general fallback plan is as follows.

- Identify the reason for failure of given objective
 - If the failure is a result of some unforeseen difficulty the team will discuss the problem and consult relevant resource before developing the solution to the problem. Such resources may include:
 - The Murphy textbook
 - The Martin textbook
 - Manual for Interactive C
 - Documentation of projects from past classes
 - Discussion with other groups encountering similar problems
 - Class Teaching Assistant and Instructor
 - If the failure is due to insufficient effort put towards completion of a task, a meeting will be set-up to discuss the reason for incompleteness with the end goal to return the schedule to its original pace. Reasons for incompleteness are as follows:
 - One individual was unfairly overburdened with work. In this case the workload will be redistributed to include other team members to help complete the given tasks before the next milestone.
 - One individual has not devoted any or enough time to complete a fairly distributed workload. In this case the group members will try to determine the cause and encourage their group member to work harder. If the problem becomes severely debilitating to the groups' ability to function, the class instructor will be consulted.

Wednesday, Jan 28

- All
 - Discuss the division of work and the task to be completed
 - Compose a timeline for completion of decided tasks
 - *Fallback Plan:* No fallback plan for this day

Sunday, Feb 1

- Build
 - Identify Components
 - Robot Familiarization
 - Begin Robot Build
 - *Fallback Plan: Schedule the time and the personnel of the build task missed for completion before the next milestone*

- **Code**
 - Familiarize with Handyboard and Interactive C
 - Identify necessary sensors.
 - *Fallback Plan: Outline what specific functional requirements should be completed by the next milestone and schedule*
- **Documentation**
 - Task Allocation Proposal Finished
 - Review documentation of past projects
 - *Fallback Plan: Ensure that proper communication exists between all group members that is sufficient to allow successful documentation*

Wednesday, Feb 4

- **Build**
 - Finish Initial Build
 - Integrate robot and code
 - *Fallback Plan: Schedule the time and the personnel of the build task missed for completion before the next milestone*
- **Code**
 - Finish Initial Code
 - Integrate robot and code
 - *Fallback Plan: Outline what specific functional are not properly configured and make preparations for the given function to be completed by the next milestone and schedule*
- **Documentation**
 - Document development process, Mr. Madole will assist as needed
 - *Fallback Plan: Ensure that proper communication exists between all group members that is sufficient to allow successful documentation*

Sunday, Feb 8

- **Build**
 - Finish testing cycle
 - *Fallback Plan: Schedule the time, personnel and specific task to be completed before the next milestone*
- **Code**
 - Finish testing cycle
 - *Fallback Plan: Schedule the time, personnel and specific task to be completed before the next milestone*
- **Documentation**
 - Continue to document development process, compile all materials produced thus far; Mr. Madole will assist as needed.
 - Deliver outline of presentation

- *Fallback Plan: Ensure that proper communication exists between all group members that is sufficient to allow successful documentation*

Wed, Feb 11 (last meeting before demo)

- **Build**
 - Finish Build documentation (Robot Design)
 - *Fallback Plan: Schedule time to meet with documenter for help compiling this documentation*
- **Code**
 - Finish Code documentation (Robot Code)
 - *Fallback Plan: Schedule time to meet with documenter for help compiling this documentation*
- **Documentation**
 - Compile all materials produced thus far, have final document complete except:
 - Prepare for post-mortem discussion
 - Rough draft of presentation
 - *Fallback Plan: Build and code group members will assist with completion of the documentation*

Wed, Feb 15 (post mortem)

- **Build**
 - No Deliverables
 - *Fallback Plan: None*
- **Code**
 - No Deliverables
 - *Fallback Plan: None*
- **Documentation**
 - Conduct post-mortem discussion
 - Final compilation of documentation except summary of post-mortem discussion
 - Mock delivery of presentation
 - *Fallback Plan: Determine all tasks remaining and distribute accordingly.*