

## **Group 8**

### **Team Organization and Task Allocation**

#### ***Team Organization:***

We will have a team leader. In our first meeting held on April 9th (with all group members present) we voted Josh as the interim team leader. The group will meet on or after April 16th to take a final vote. The team leader is responsible for resolving any conflicts between group members, and guiding the overall vision of the group. When a conflict does arise each disputing team member needs to enumerate the pros and cons of his/her idea as well as the repercussions (if applicable) this idea has regarding any pre-existing hardware/software. This information is presented to the team for review and arbitration. The team leader has the final say regarding conflict after gathering input from the team members. The team leader is also responsible for dynamic task allocation. The team leader is responsible for leading the team meetings and keeping the discussion focused.

Since we have a team leader we will use dynamic task allocation. In the past we have split the team into two hardware/software groups which has led to an inefficient allocation of the group members, and typically poor communication between the hardware/software groups. Instead we will try to identify the tasks that need to be completed, the dependencies between the tasks, and which group member(s) should complete the task. The dynamic task allocation will be done in stages, with checkpoints at each team meeting. In this way the team can decide (with the team leader's assistance) if the tasks are being completed and whether the task should be reallocated to a different group member.

We will implement a robot kit checkout system so that we can efficiently allocate the hardware resources to the people who need them. Basically the robot kit will be kept in a central location and we will keep track of who has what and for how long.

#### ***Background:***

Our team has been formed as a result of major group organization by Dr. Hougen.

**Neelam Chauhan** is...

**Josh Guice** is a senior majoring in CS and has worked as a software engineer at the National Severe Storms Lab for the past 5 years. Prior to that, he worked at the Bizzell Memorial Library systems office as a mainframe operator. Josh also had a lot of experience with LEGO Technics as a youth. His strengths are software design and implementation, and hardware design and construction. His weak area is in electronics.

**Troy Humphrey** is a junior majoring in CS with no professional experience. His strongest area is programming. Troy's weakest area is technical documentation.

**Mark Woehrer** was an original member of Group 7. Mark has a BS and MS in electrical engineering, focusing on control systems theory. Mark has spent about 3 years working as a design engineer programming small 8-bit embedded microprocessors. Mark has also worked with embedded linux systems. He is currently a doctoral student in CS under the direction of Dr. Hougen. Mark is most proficient with the C language, and he has a good understanding of Interactive C. In his previous group, Mark helped the group form an overall strategy for the project. His task was mainly software but he also helped with the hardware design when needed.

### ***Task Allocations:***

#### **Project Specific Tasks**

- Chassis Construction – **Team/Josh**
  - Determining the drive system and base architecture of the robot (Team) and implementing the design (Josh).
- Sensor Usage/Placement – **Mark/Neelam**
  - Determining which sensors will be used and how and where they will be mounted on the robot.
- Cube Movement – **Team**
  - Determining how cubes are to be located and transported and constructing the locomotor(s).
- Goal Discovery – **Team**
  - Deciding how to locate goal squares and acquire information regarding the relative position of the robot in relation to the square.
- World Model Construction – **Team/Neelam**
  - Deciding what type of world model to use (i.e. world or robot centric) and how it should be implemented.
- Behavioral Scripting – **Team**
  - Determining the specific steps to be performed and in which order they will be carried out (or how the robot will decide to order them) to accomplish the task set out in the project guidelines.
- Blue Bot Handling – **Troy**
  - How and when to disable the blue bonus robot and implementing the logic.
- CMUcam Exploration – **Troy**

- Researching the capabilities and limitation of the CMUcam and deciding how best to integrate this sensor into our general approach.
- Testing – **Individuals/Team**
  - Unit testing various subcomponents/tasks for proper standalone operation (Individuals) and performing integration testing of different combinations of subcomponents as well as final testing of the system as a whole (Team).

## **Administrative Tasks**

- Documentation – **Team/Josh**
  - Creating various subcomponents of documentation relating to specific task assignments (Team), and integrating document components from various team members and submitting the final copy (Josh).
- Presentation – **Team**
  - Compiling and presenting information regarding our general hardware/software approach and the successes and failures as well as lessons learned during the project.
- Robot Kit Checkout - **Mark**
  - Maintaining an inventory of robot kit components and checking them out to various team members.
- Dispute Resolution - **Josh**
  - Reviewing information prepared by disputing parties and arbitrating a decision.
- Note Taking – **Team** (rotate)
  - Attending all team meetings and recording the discussion, conclusions, and items requiring action, who is responsible for that item, and the due date.
- Agenda Preparation – **Team**
  - Preparing an outline of topics to be covered prior to team meetings to guide discussion.

As stated earlier, tasks may be reassigned dynamically at checkpoints throughout the project progression depending on various factors such as assignee performance, wishes, and general team opinion or consensus. Also, any tasks that have not yet been assigned but manifest themselves during the course of the project will be assigned as they are discovered by the team leader following the previously mentioned guidelines.