*Rough Terrain Robot*

*Final Project Report*

*EE449—Computer Interfacing*

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1. ***Project Performance***

The Rough Terrain Robot’s overall goal is to autonomously navigate its way through a specific obstacle course designed to comply to all SAC competition regulations. Subsequent goals consist of robot assembly, local navigation, global navigation, system integration and debugging, and the robot completing the course reliably. The overall goal was never met mainly because I think this was slightly too short of a time period to work on this project from scratch with no previous type of documentation. Moving forward, background information regarding sensors and navigation would be crucial for completing this project on a limited timeline. The overall goal for this project is for the robot to be completely autonomous. That calls for obstacle and wall sensors to be placed essentially at every side of the robot for it to function by itself. With that being said, previous information regarding this project is necessary due to the short timeline. All in all, this project was not successful at the time of termination. Moving forward, information gathered towards the end of project closeout is a big push towards making this project successful in the future.

1. ***Administrative Performance***

The administrative aspect of the rough terrain robot project essentially are embedded within the SAC competition rules and to choose a specific chassis. Administration provided two separate chassis that teams are able to choose from both of which could be used to complete the project. Along with that, all components, hardware, etc. were easily accessible within the electrical engineering department. Moving forward, specific sensors used to locate obstacles may have to be ordered from an outside source. All in all, administration is basically always available to provide any help needed and is there to gather resources or any other information to help stay on the concrete timeline.

1. ***Organizational Structure***

Teams and individuals are given a set amount of lab (class) time to complete their project. A weekly notebook recollection was recorded and updated weekly containing pertinent information about the rough terrain robot. This project requires crucial organization skills and tactics that a project manager would see and use in a real life job situation outside of the classroom. Weekly updates provide the information to teams and the supervisor about the overall progress of the project, the tasks completed, the tasks for the future, and any changes to be made.

1. ***Team Performance***

The Rough Terrain Robot was only worked on by myself thus making this an individual performance. Although, the Rough Terrain Robot was a competition at the SAC Conference in previous years so an effort of numerous team members may be useful to achieve the best overall result. I do think that this project can be completed individually but maybe with a little more documentation rather than starting off from scratch. The implementation of sensors to detect obstacles and walls from all sides of the robot is rather difficult to complete in the short first half of the semester. Other than that, this project can definitely be done individually given some different time restraints.

1. ***Techniques of Project Management***

The main project management techniques that were used throughout the duration of the rough terrain robot project consist of a work breakdown structure, a gantt chart, and a pert chart. A work breakdown structure is a deliverable-orientated summary of a project into smaller components, it manages different parts of the project in an organized manner. A gantt chart essentially illustrates your work breakdown structure from start to finish and outlines key dates and deadlines that you wish to achieve. The gantt chart consists of a set of deliverables and milestones that must be hit; the gantt chart is definitely subject to change as the timeline (pert chart) continues. All of these techniques are used to help a team manage their time in a timely fashion so that they can complete goals and not run out of time. The pert chart outlines what parts of the project are interchangeable and what parts are dependent on one another. For example, you may need to complete one task before even thinking of another or you may have information gathered in early parts of the project that are essential at a future date. The techniques described above are essential to the completion of a project. When a team is more organized, a team is more successful. These techniques help monitor time and help a team pay attention to dates and deadlines so that work can be completed over a steady and concise period of time.

1. ***Benefits to the Organization & the Customer***

All in all, this project is definitely good for this course and even for outside applications. This project calls for the implementation of both hardware and software and helps one tend to a timeline to capture the project management section of this course. This project can also be used to compete in the IEEE SAC competition which provides students the opportunity to take knowledge and apply it to a real atmosphere and see if their work is better than others. This also has applications to become some sort of toy similar to that of a hovercraft. This robot, if completed, has the ability to move around obstacles autonomously and could perhaps have an attached camera to take videos or be used against another bot. Even though I was unable to complete this project, the completed rough terrain robot is definitely a good way to take knowledge learned in previous courses to a real world level and can challenge students to follow schedules and put their skills to the test.