Team Contract

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Expected Meeting Times:

Meet once a week – Friday afternoons 4pm

The project focuses on a table with dynamically changing topography. It is expected that there will be some form of program for end-users to access that allows them to raise and lower sections of the table as they desire. It is expected that Connor will work on the programming portion of the project, ensuring that users can manipulate the table geometry with ease through some application. Quinton and Luke will be working on the mechanical side of the project, working on the table itself and the motor functionality.

For our senior design project, our team has decided to create a table that will allow for its topography to be modified by a user to meet a desired state. The idea was to allow people to create a sort of “map” for them to use for different tabletop games, and the dynamic nature of the table allows for endless possibilities. From a Computer Science perspective, this project focuses on the integration of software and hardware. While the actual program itself shouldn’t need to be too advanced, the main difficulty is handling the inputs/outputs of the code. Throughout the curriculum of CS, I’ve worked on many projects designed to perform different tasks or challenge myself logically, however, there hasn’t been much opportunity to combine two different fields of study like this. The goal of this project is to challenge us in a way that we haven’t had a chance to in our individual majors.

My curriculum in CS has most notably prepared me to be flexible in what I’m using to write code. I’ve had the opportunity to work with a plethora of different languages, and I’m hoping to use this flexibility moving forward when we begin work on the project. More specifically, classes like Python Programming (CS 2021), Engineering Design Thinking II (ENED 1120), and Programming Languages (CS 4003) have all contributed to developing skills in learning new languages. Both Luke and Quintons’ curriculum have given them extensive skills in CAD and machine design. Engineering Design Graphics gave them the CAD skills necessary to create accurate and functional 3D models for the project. Their Machine Design class taught them how to analyze the mechanical properties of a system to ensure its proper function. Also, the Engineering Design Thinking courses provide a basis for project management and the design process.

Our coop experiences have prepared us well for the difficulties this project presents. Personally, my coop experience has been entirely focused on integration software. I’ve worked entirely with CADTalk, who’s selling product is a tool for integrating bills of material from CAD software to ERP databases. Throughout my years working here, I’ve realized that integration is an enormous part of software development, and when I was considering senior project ideas, it is the main reason I wanted to split a project between CS and ME. I’ve been given a lot of freedom when creating software here, improving my skills in coding architecture and planning, along with improving my “googling” skills. In his coop rotations, Quinton has had multiple experiences in leading and planning projects, creating material and. Parts lists, and using 3-D design software to prototype and design products. Luke has worked in research and design and is experienced with the design process and in addition to fabrication experiences.

We are excited as a team at the opportunities that this project creates. We frequently play games where a visual representation of what is taking place in the game is difficult to create. Through the nature of this table, we would theoretically be able to dynamically create any terrain/map that we desire, and this would greatly enhance our experience of these game sessions. Aside from the end result, we are excited to work with areas we aren’t too familiar with. For me, I get the opportunity to learn more about mechanical systems, and for Quinton and Luke, they get to work on connecting these systems they are more familiar with to software to bring their systems to life. All in all, both the creation and use of the table are driving our motivation and excitement towards the completion of this project.

Approaching the project moving forward, we are staying focused on the end goal of the table. In the end, we expect an application to be created for a user to control the table with. We need a grid of cubes that are controlled to move up and down by a series of motors. These motors will be given an input of height and cube, allowing the entire table to be elevated as desired. Once we know mechanically how the system will be designed, we will be able to work in conjunction on both the code and construction of the table. Once we have a table that can be topographically modified, we will know we are done, and the speed of this system along with a clean/easy to use application will dictate the quality of our work.