Project Deliverable G: **Prototype II and Customer Feedback**

GNG 1103 – Engineering Design

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Group ~ A7

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Why are we doing this test?

In the last prototype, we made a physical prototype to test if the design is possible to implement and to test possible placements on Bowie. This prototype is to test the code and the circuit design. It is essential to our design that these two aspects work together because otherwise, the prototype would not be implementable. The general objective of this prototype is to do a comprehensive test and measure the performance of both the code and the circuit aspects.

Test Objectives Description

What are the specific test objectives?
The test objectives for prototype two is to test the circuits functionality, and workability. These tests will be performed according to the Gantt schedule.

What exactly is being learned or communicated with the prototype?
With prototype two, our group is trying to communicate the functional aspect of the project. We want to demonstrate the workability of the prototype and its performance.

What are the possible types of results?
There are two possible types of results. Either the code designed works exactly as planned, or that there needs to be some alterations made to the existing code to improve the performance of the design project.

How will these results be used to make decisions or select concepts?
If for instance the code designed does not meet the design criteria then, as a group we will decide on the alterations needed in order for it to meet the specifications.

What are the criteria for success or failure?
Our test will be considered a success if the code and the circuit work simultaneously as planned. It will be considered a failure if only one of the parts or neither part works as planned, for example, the code works but the circuit does not or vice versa.

What is going on and how is it being done?

Describe the prototype type and the reason for selecting this type of prototype.

The prototype is a comprehensive physical prototype type. By choosing a comprehensive physical prototype, our purpose is to ensure that the majority of the components of the design, which are the circuit and the code, are compatible with each other so the design can actually function as a whole.

Describe the testing process in enough detail to allow someone to else to build and test the prototype instead of you.
The testing will comprise of a checklist of objectives that will be completed in order: Building the Arduino circuit and writing the code using templates from the Arduino library. Test the code and observe and record the results.

What information is measured?

The speed of the design will be measured, so how fast it orients, its ability to measure the distance will also be measured.

What is being observed and how is it being recorded?

The radar screen and the sensors will be observed. They will be recorded by video and by the computer itself. The computer will record the outputs of the program and they can then be analyzed.

What materials are required and what is the approximate cost?

To measure the origination speed, a stopwatch will be used as well as a camera footage of the design.

What work (eg test software or construction or modelling work or research) needs to be done?

Construction of the circuit on the Arduino board and the coding must be done.

When is it happening?

How long will the test take and what are the dependencies (ie what needs to happen before the testing can occur?)

The test will be performed until the desired result is achieved. This test will depend on the code set out and the limitations set by the physical design. In order to perform the test, the code needs to be fully function and the physical design needs to be complete.

What are the results required (ie what depends on the results of this test in the project plan)?

The results of the prototype are required in order to see if the design criteria is met. The circuit and the code must function simultaneously to show that the prototype works.

Testing the Rotation speed:

Trial Run	**Rotation Time (s)**
1 (30 degrees)	**0.807**
2 (30 degrees)	**21.94**
3 (30 degrees)	**20.57**

Testing the Distance:

Trial Run	**Distance (s)**
1	
2	
3	