Project Deliverable F: **Prototype I and Customer Feedback**

GNG 1103 – Engineering Design

Due Date: October 21

Group ~ A7

Laiba Khan (300015672)
Aria Yin (8705886)
Martin Matov (300071043)
Michelle Tang (300010861)
Bahar Deniz (300052720)

Why are we doing this test?

This test will be done to ensure that the design is possible to implement and to give us and Erin a better sense of what the prototype will look like. Since making a radar sensor for Bowie will be difficult, it is important to have an idea of what we are making. We are not sure of the placement of the radar sensor yet on Bowie so the first prototype needs to be a small and portable device that can ideally fit anywhere on Bowie. The general objective of this prototype is communication and learning about the design of the sensor. We want to make sure that Erin is satisfied with the prototype and to create a physical prototype that fits all of the requirements.

Test Objectives Description

What are the specific test objectives?

This involves testing the general operations, e.g. movability of the design, the physical appearance, the functionality, and physical size and placement of the prototype.

What exactly is being learned or communicated with the prototype?

We want to communicate to the client that this project does not only have the ability to be functionally productive but also possesses a visually pleasing aspect. According to our client Erin, it is important that the robot Bowie is smoothly integrated into society, meaning that it needs to be welcoming and friendly looking to the children and elderlies. Through this prototype, Erin will be able to witness the visually pleasing side of the project.

What are the possible types of results?

The first prototype is not a functional prototype but rather a visual one. The result we try to obtain from this prototype is if any flaws are associated with the design. If that is the case then this gives the group the chance to improve on the model and meet the outlined criteria. The result can also determine if the design chosen is in fact possible to achieve.

How will these results be used to make decisions or select concepts?

A positive result would determine that the project is on the right track and that we should continue with the design set out. However if there is a negative result, for e.g. flaw in the rotating motor or echolocation sensors, then the group will come together wholeheartedly and reconsider some of the design criteria chosen.

What are the criteria for success or failure?

Our test could be considered a success if the visual aspect of the design along with a few functional aspects displayed pleases the customer. Failure would occur in the case were the client is unable to understand the prototype and delivers negative feedback.

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 of the focused physical type for reason that this prototype will only focus on certain attributes that are important at the moment. These attributes are focused on the overall practicality of the component. This will help generate further questioning about the design and overall validity of the concept.

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. Construct the prototype from cardboard, paper and string to the exact measurements of the Arduino board, the arm, the ir sensor, and the wires attaching all the pieces together. The first test will be of possible locationing of the components. Test different possible locations of the board and arm and record observations that include pictures. Then record the amount of space that is taken up by the components.

What information is measured?

The information that is being measured is the success of various checklist objectives that have been created. For the first prototype these objectives would be things such as the size of the component, the location on Bowie, the maneuverability. In essence the prototype would be measured on the overall practicality.

What is being observed and how is it being recorded?

Observations being made should be again as stated previously focused on the validity of the concept. That means observations such as the amount of space it takes up, the amount of weight it adds to Bowie, and the feasibility of the locationing of the addition. These observations will be recorded in detailed qualitative observations alongside photographic evidence to back them up.

What materials are required and what is the approximate cost?

Household and recycled materials, such as cardboard, wires, and glue are needed to create the first prototype. Since these are materials that we already have or can pick up for free, there is no cost to build the first prototype.

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

Basic modelling based on Bowie's specifications and of components required such as arduino board and sensors must be completed and recorded.

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 testing will take one day at most. The dependencies are creating design, gathering the materials for the first prototype, and building the first prototype before the actual testing can occur.

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. Meaning that the appearance of the design as well as the funcuality pass the test. This will then determine the undertake of construction for the remaining prototypes, and help choose the essential materials needed for purchase.