**Sprint 3 – Agility Design Document**

**November 30, 2022**

## ***Project Overview***

The robot will run the obstacle course. The course will start in a square. Then the  
robot will encounter 3 objects that it must avoid. Next, the robot will go over a ramp..  
Finally, the robot will knock over as many pins as possible. Points will be added for each obstacle the robot completes, for each obstacle avoided and, for each pin the robot topples.

## ***Purpose and Scope of this Specification***

The purpose of the project is to successfully complete the agility test.

**In scope**

* Agility Test

**Out of Scope**

* Endurance Test
* Accuracy Test

# Product/Service Description

## ***Product Context***

This project is one part of three tests which will test the robot in three different categories; endurance, accuracy, and agility.

## ***User Characteristics***

* Student
* Faculty Member

## ***Assumptions***

The robot being used is the Sphero+.

## ***Constraints***

Describe any items that will constrain the design options, including

* Can only use assigned block coding
* Set track
* Only one type of robot

## ***Dependencies***

* Objects in its path
* Speed of the robot

# Requirements

## ***Functional Requirements***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Req#** | **Requirement** | **Comments** | **Priority** | **Date Rvwd** | **SME Reviewed / Approved** |
| AGIL\_01 | Avoid 3 obstacles |  | 1 | 11/30/22 | Jason |
| AGIL\_02 | Go over the ramp |  | 1 | 11/30/22 | Jason |
| AGIL\_03 | Knock over the pins |  | 1 | 11/30/22 | Jason |
| AGIL \_04 | Start in the square |  | 1 | 11/30/22 | Jason |

## ***Security***

### **Protection**

* Encryption
* Activity logging

### **Authorization and Authentication**

Specify the Authorization and Authentication factors.

## ***Portability***

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Feature** | **Description** | **IOS** | **Android** | **Chrome OS** | **Fire OS** | **Windows** | **macOS** |
| **System Requirements** | The minimum operating system, browser, or required hardware for each platform. | **OS Requirements:** **iOS 12.5.6+**  **Additional Requirements:** **Bluetooth 4.0+** | **OS Requirements:** **Android 8+**  **Additional Requirements:** **Bluetooth 4.0+** | **OS Requirements:** **Android 8+**  **Additional Requirements:** **4GB memory** **Bluetooth 4.0+** | **OS Requirements:** **Fire OS 7+**  **Additional Requirements:** **Bluetooth 4.0+** | **OS Requirements:** **Windows 10 2004(20H1)+** **Windows 11**  **Additional Requirements:** **64-bit** **4GB memory** **Bluetooth 4.0+** | **OS Requirements:** **macOS 10.15+**  **Additional Requirements:** **Bluetooth 4.0+** |

# Requirements Confirmation/Stakeholder sign-off

|  |  |  |
| --- | --- | --- |
| **Meeting Date** | **Attendees (name and role)** | **Comments** |
| 11/30/22 | Jason, Nicholas, Michael | Teammates worked together well |

# System Design

## ***Algorithm***

https://docs.google.com/document/d/11Jh2fDFZeSiAOD6Nq4RIgpVd5-nhrxyJjAKkowTEAps/edit?usp=sharing

## ***System Flow***

[Flowchart 3 Agility.drawio - diagrams.net](https://app.diagrams.net/)

## ***Software***

Robot block coding (JavaScript)

## ***Hardware***

The physical robot (Sphero+)

## ***Test Plan***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Reason for Test Case** | **Test Date** | **Expected Output** | **Observed Output** | **Staff Name** | **Pass/Fail** |
| Avoid Obstacles | 11/30/22 | Go around each bottle | Went too far ahead | Michael | Fail |
| Avoid Obstacles | 11/30/22 | Go around each bottle | Successfully avoided each obstacle | Michael | Pass |
| Ramp | 11/30/22 | Jump the ramp | Went up the ramp | Michael | Pass |
| Knock the pins | 11/30/22 | Go in straight line and knock down the pins | After the jumping the ramp, the robot went off course | Michael | Fail |
| Knock the pins | 11/30/22 | Go in straight line and knock down the pins | Reset the aim and robot went into straight line towards the pins | Michael | Pass |

## ***Task List/Gantt Chart***

[sprint3.xlsx](https://live365monmouth-my.sharepoint.com/:x:/g/personal/s1339198_monmouth_edu/EdqAQ2kV7IpAiebE7pqoxSUBiZ7ozVvIMmORqJyABARWcw?e=gNsdzX)

## ***Staffing Plan***

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Role | Responsibility | Reports To |
| Michael Cozzolino | Manager | Overviews project | Nicholas Stevens |
| Nicholas Stevens | Programmer | Creates and designs the code | Michael Cozzolino |
| Jason Galvao | Documenter | Edit and update documents | Michael Cozzolino |