**Sprint 3 - Agility Design Document**

**December 3, 2020**

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# Executive Summary

## Project Overview

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

## Purpose and Scope of this Specification

This specification is meant to document Sprint 3 - Agility. The intended audience is Professor Eckert and the other students in CS104-03 Intro to Problem Solving.

In scope

This document addresses requirements related to Sprint 3 - Agility:

* Gantt Chart
* Requirements Table
* Requirements Sign-Off Table
* Algorithm
* Flowchart
* Block Code
* Sensor Data Diagram
* Test Table
* Staffing Plan
* System Design Document
* Robot Video (committed to GitHub repository)
* GitHub Repository

Out of Scope

The following items are out of scope:

* Everything relating to Sprint 1 – Endurance
* Everything relating to Sprint 2 – Accuracy

# Product/Service Description

## Product Context

This product is an independent and self-contained project.

## User Characteristics

Users will be Joe Colonna, John Costa, and Nicole Czerepak – students at Monmouth University. They have limited experience and technical expertise. Project will be graded by Professor Eckert. He has many years of experience and much technical knowledge.

## Assumptions

* Sphero EDU will be usable.
* The robot is in the possession of Nicole Czerepak.

## Constraints

* Must use Sphero EDU block code.
* Must test code on the robot.
* The room used for the tests has been scaled down due to lack of space.

## Dependencies

* Sphero EDU
* The robot

# Requirements

## Functional Requirements

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **#** | **Requirement** | **Comments** | **Priority** | **Date Reviewed** | **SME Reviewed/ Approved** |
| AG1 | Robot encounters and avoids 3 objects. | Must do. | 1 | 11/29/20 | We do not have a SME (Systems Management Expert) besides Professor Eckert. |
| AG2 | Robot goes over a ramp. | Must do. | 1 | 11/29/20 |  |
| AG3 | Robot collides with pins. | Must do. Goal is to knock down as many pins as possible. | 1 | 11/29/20 |  |

## Security

### Protection

No protections needed for this school project.

### Authorization and Authentication

No authorization or authentication needed for this school project.

## Portability

Portability is not a requirement for this school project.

# Requirements Confirmation/Stakeholder Sign-Off

|  |  |  |
| --- | --- | --- |
| **Meeting Date** | **Attendees (name & role)** | **Comments** |
| 11/29/20 | Nicole Czerepak (coder/tester/robot owner)  Joe Colonna (algorithms/tables)  John Costa (GitHub/editor/SDD) | None |

# System Design

## Algorithm

[Insert algorithm here]

## System Flow

[Insert flowchart here]

## Software

The software used to develop and deploy this application is Sphero EDU. The code will be programmed using its block code program. The robot will be connected to Sphero, and then the code will be executed. Pictured below is the completed block code and sensor data.

[Insert pic of block code and sensor data here]

## Hardware

Besides a computer, the only hardware required is the robot that goes along with Sphero EDU.

## Test Plan

[Insert test plan table here]

## Task List/Gantt Chart

[Insert Gantt Chart here]

## Staffing Plan

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Role** | **Responsibility** | **Reports To** |
| Joseph Colonna | Algorithm  Tables | Writes the algorithm and most tables | Each other |
| John Costa | GitHub Manager  Editor  System Design Documentation | Manages collaborative GitHub account, edits all materials, writes System Design Document | Each other |
| Nicole Czerepak | Coder  Tester  Robot Owner | Writes block code, owner of the robot, tests code on robot and documents results, records sensor data graph | Each other |