April 14, 2013

Team 19 Enhanced Prototype

**Laboratory # 7: Enhanced Prototype**

**Morgan, Laura**

**Miaw, Jireh**

**Hauser, Steven**

**Dworak, Catherine**

**Bertoglio, David**

***Work Product***

**Goals, milestones, and documentation of testing of enhanced prototype including date, time, goals, participants, and results of each test.**

***Document Revision Information***

**4/5/2013 – Document created, results of first test added**

**4/14/2013 – Results of second test added**

**Approval Sheet**

**All group members whose names are listed below approve of the document and contributed fairly.**

**Morgan, Laura**

**Miaw, Jireh**

**Hauser, Steven**

**Dworak, Catherine**

**Bertoglio, David**

**Pledge**

**On my honor, as a student, I have neither given nor received unauthorized aid on this assignment.**

**We pledge that we followed the required procedure for testing.**

**Morgan, Laura**

**Miaw, Jireh**

**Hauser, Steven**

**Dworak, Catherine**

**Bertoglio, David**

Contents

Prototype Goals 4

Test Schedule 4

Integration Test 1: Advanced Motion 4

Integration Test 2: Sensors and Additional Features 5

Implementation Status 6

Summary of Implementation 6

Breakdown by design 6

# Prototype Goals

The goal for this prototype is to enhance the end-to-end prototype to include more advanced functionality – including a functional debugging interface, sensor data, an intuitive GUI and controls, and special features.

Goals:

* Perform basic movements using advanced interface and controls
* Read and display sensor data on GUI
* Create debugging GUI
* Implement special features

# Test Schedule

Write code: Monday, March 25 – Friday, April 5

Meet with partner team to discuss testing schedule: Friday, March 29 at 1:30 pm

Team meeting: Sunday, March 31 at 1:30 pm

Team meeting: Friday, April 5 at 1:30 pm

Meet with partner team: Friday, April 5 at 3:00 pm

Perform Integration test 1: Friday, April 5 at 3:00 pm

Team meeting: Sunday, April 7 at 1:30 pm

Meet with partner team: Sunday, April 7 at 3:00 pm

Perform Integration test 2: Sunday, April 7 at 3:00 pm

Document test results: Sunday, April 14

# Integration Test 1: Advanced Motion

The purpose of this test is to enhance the GUI to make it more intuitive for the user. Originally the user would press the w-a-s-d keys to initiate movement and would have to press the c key to stop movement. This test focused on allowing the user to initiate movement on w-a-s-d keypress and stop when the key is released. This mimics the motion users already know using the arrow keys, making it very intuitive.

Our group did not have to change or add any code for this test – the only changes were made in the GUI by team 20.

Milestones:

* Move forward on keypress
* Move backward on keypress
* Turn on keypress
* Stop on key release

What we expect from team 20:

We expect team 20 to come to the test with code that initiates correct movement when the w-a-s-d keys are pressed and stops movement when the key is released.

Date and time:

We met with our partner group on Friday, April 5 at 1:30 pm

Participants:

Team 19: Laura, David, Jireh, Steven, Catherine

Team 20: Tyler, Archit, Ray

Results:

The GUI was completely functional. The robot moved forward when the “w” key was pressed and stopped moving when the “w” key was released. Likewise, it moved backward on “s”, right on “d”, and left on “a”, and stopped moving when each key was released. This test was successful.

# Integration Test 2: Sensors and Additional Features

The purpose of this test is to read and display sensor data. The GUI should be able to display the values for each of the sensors – values for light, sound, and ultrasonic, and true/false for touch. The last value retrieved should be displayed and should be updated when each is refreshed.

Two additional features should be implemented as well. 1) When the touch sensor is touched, the robot should make a beeping sound. 2) When a sound above a certain level is detected, the robot should move, until the sound stops.

Milestones:

* Display sensor data on GUI
* Make sound when touch sensor touched
* Move when sound detected

What we expect from team 20:

We expect team 20 to have space on the GUI for displaying the values of all the sensors and buttons that refresh each of the sensor values.

Date and Time:

We met with our partner group on Sunday, April 7 at 1:30 pm

Participants:

Team 19: Laura, David, Jireh, Steven, Catherine

Team 20: Tyler, Archit, Ray

Results:

This test was successful. Each of the sensors was correctly read and the values displayed on the GUI when the refresh button was pressed. The robot moves when it detects loud sounds, and beeps when the touch sensor is pressed.

# Implementation Status

## Summary of Implementation

Almost all of the functions and classes for the on-board software are implemented. A few of them are partially implemented, and what is implemented is tested and working. The robot can perform all required motion. The function for reading sensor data is partially implemented and the function for setting speed has not been started. These should be finished by the post-lab.

## Breakdown by design

Activator:

Main

implementation not complete, but what is complete is tested and working

createConnection

1. implemented, tested, and working

sendMessage

1. implemented, tested, and working

Driver:

implementCommand

implementation not complete, but what is complete is tested and working

moveStraight

1. implemented, tested, and working

moveArc

1. implemented, tested, and working

turn

1. implemented, tested, and working

stop

1. implemented, tested, and working

setSpeed

5. implementation not started

readSensor

3. implemented, compiled, not tested

noOp

1. implemented, tested, and working

MessageHandler:

decodeMessage

1. implemented, tested, and working

createACK

1. implemented, tested, and working

encodeMessage

2. implemented, tested, not working

verifyChecksum

1. implemented, tested, and working

getChecksum

1. implemented, tested, and working

isNumeric

1. implemented, tested, and working

decodeMoveStraight

1. implemented, tested, and working

decodeTurn

1. implemented, tested, and working

decodeMoveArc

1. implemented, tested, and working

decodeStop

1. implemented, tested, and working

decodeSetSpeed

5. implementation not started

decodeReadSensor

4. implementation not complete