Team 19 Enhanced Prototype

Laboratory # 7: Enhanced Prototype

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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
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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:

4

168   We expect team 20 to come to the test with code that initiates correct
169   movement when the w-a-s-d keys are pressed and stops movement when the key is
170   released.
171
172   Date and time:
173   We met with our partner group on Friday, April 5 at 1:30 pm
174
175   Participants:
176   Team 19: Laura, David, Jireh, Steven, Catherine
177   Team 20: Tyler, Archit, Ray
178
179   Results:
180   The GUI was completely functional. The robot moved forward when the "w" key was
181   pressed and stopped moving when the "w" key was released. Likewise, it moved
182   backward on "s", right on "d", and left on "a", and stopped moving when each key
183   was released. This test was successful.

184   ## Integration Test 2: Sensors and Additional Features
185   The purpose of this test is to read and display sensor data. The GUI should be
186   able to display the values for each of the sensors – values for light, sound, and
187   ultrasonic, and true/false for touch. The last value retrieved should be displayed
188   and should be updated when each is refreshed.
189   Two additional features should be implemented as well. 1) When the touch
190   sensor is touched, the robot should make a beeping sound. 2) When a sound above a
191   certain level is detected, the robot should move, until the sound stops.
192
193   Milestones:
194   • Display sensor data on GUI
195   • Make sound when touch sensor touched
196   • Move when sound detected
197
198   What we expect from team 20:
199   We expect team 20 to have space on the GUI for displaying the values of all
200   the sensors and buttons that refresh each of the sensor values.
201
202   Date and Time:
203   We met with our partner group on Sunday, April 7 at 1:30 pm
204
205   Participants:
206   Team 19: Laura, David, Jireh, Steven, Catherine
207   Team 20: Tyler, Archit, Ray
208
209   Results:
210   This test was successful. Each of the sensors was correctly read and the
211   values displayed on the GUI when the refresh button was pressed. The robot moves
212   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

258   1. implemented, tested, and working
259   isNumeric
260   1. implemented, tested, and working
261   decodeMoveStraight
262   1. implemented, tested, and working
263   decodeTurn
264   1. implemented, tested, and working
265   decodeMoveArc
266   1. implemented, tested, and working
267   decodeStop
268   1. implemented, tested, and working
269   decodeSetSpeed
270   5. implementation not started
271   decodeReadSensor
272   4. implementation not complete