

Team 19 End-to-End Prototype Document

Laboratory #6 : End-to-End Prototype

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Work Product

This document describes the goals and schedule for the end-to-end prototype. This prototype will be focused on establishing a connection between the base station and the robot, and enabling simple robot movements.

Document Revision Information

Mar 22, 2013 – Goals and Schedule Created
Mar 24, 2013 – Schedule Updated
Mar 29, 2013 – Results Documented

Approval Sheet

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

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Hauser, Steven

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Pledge

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

Morgan, Laura

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Prototype Goals

The purpose of this prototype is to show the user that the major components of the robot system will function. This prototype is focused on basic movements of the robot - moving straight and small turns. This prototype does not yet include sensor reading or the debugger. The main risk of this prototype is integration with our partner group. Our success for this prototype is dependent not only on our effort, but the effort of Group 20.

Our part of the prototype is to control the movement of the robot, while group 20 is responsible for the GUI and sending the movement commands to the robot.

Goals:

- Establish connection
- Move forward set distance
- Move backward set distance
- Turn set number of degrees

Integration Test

Preparation

Team 19 prepared code to control the movement of the robot. This includes writing methods for creating connection, encoding message, decoding message, moving forward, moving backward, turning, and stopping.

Milestones

- Establish connection between base station and robot
- Send message from robot to base station
- Receive message on robot from base station
- Send message from robot
- Receive on base station
- Move robot forward set distance
- Move robot backward set distance
- Turn robot right/left set number of degrees

Test Schedule

Individual teams write required code: Monday, March 18 – Friday, March 29

Group meetings:

- Friday, March 22 at 1:30 pm
- Sunday, March 24 at 1:30 pm
- Friday, March 29 at 1:30 pm

Meet with partner team: Friday, March 29 at 2:30 pm

Perform Integration test (Teams 19 and 20): Friday, March 29 at 2:30 pm

Document test results: Friday, March 29

Initially, the test was scheduled to be performed on Sunday, March 24, but our partner team was not yet prepared for the test, so the schedule was updated to a

170 give both teams more time to finish their code for the tests. All dates and times in
171 the updates schedule were met.

172 **What we expect from group 20**

173 We expect team 20 to have a simple, functioning GUI. There should be 4 buttons
174 simulating the w-a-s-d keys on the keyboard. When these buttons are clicked with
175 the mouse, messages should be sent initiating the correct pre-set movement of the
176 robot.

177 **Realization**

178 Date and Time:

179 We met with our partner group on Friday, March 29 from 2:30-4pm

180

181 Participants:

182 Team 19: Laura, David, Jireh, Catherine

183 Team 20: Tyler, Archit

184 **Results**

185 The connection between the robot and base station was successfully created.
186 A message could be sent from the base station and received by the robot, but
187 acknowledgements cannot yet be sent from the robot.

188 Instead of having buttons on the interface, team 20 implemented key presses
189 on the keyboard for initiating movement. When “w” was pressed the robot moved
190 forward until “c” was pressed. When “s” was pressed, the robot moved backward
191 until “c” was pressed. When “a” and “d” were pressed, the robot turned left/right
192 90%.

193 With the exception of sending acknowledgments from the robot, all of the
194 intended functionally worked.