TEST REPORT

SOFTWARE ENGINEERING AND PROJECT

UNIVERSITY OF ADELAIDE

Prospector Sea Floor Mapping System (PG04)

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Date	Version	Reason for Change	Author
19th Oct 2016	0.1	Created a initial template	Zeqi Fu
20th Oct 2016	0.2	Added section 2	Zeqi Fu
28th Oct 2016	0.3	Added Regression Test and rearranged format	Lili Wu
28th Oct 2016	0.4	Format and content fix	Zeqi Fu

Table 1: History

1   Introduction

1.1   Purpose

The purpose of this document is recording the test processing. All our test cases designed are based on specification. Software testing is the assurance of software quality. Our test process includes unit test, system test and regression test. In every test case, we designed execution steps which are consistent with the specification, expected results, actual results, and related function numbers.

2   Test items

2.1   Unit Test

TODO

2.2   System Test

Execution steps	Expected results	Actual results	Related functions
1.Put robot in start position; 2.Connect PC to robot; 3.Start robot moving forward.	1.There's an estimate of the SeaTank's current position shown on PC screen; 2.The robot doesn't go to any No-Go-Zone.	PASS	FRC001 FRC004
1.Turn the robot to autonomous mode; 2.Make the robot go forward a certain direction, exceeding the faultline.	The robot changes direction by a significant margin inside the faultline.	PASS	FRC002
1.Turn the robot to autonomous mode; 2.Make the robot go forward an obstacle.	The robot changes direction by an appropriate distance to the obstacle.	PASS	FRC003
1.Put robot in start position; 2.Connect PC to robot; 3.Manually make the robot move forward.	The robot moves forward.	PASS	FRC005
1.Specify a point in survey-area coordinate; 2.Make the robot move to the point.	The robot moves to the specified point avoiding any obstacle automatically.	The robot didn't move.	FRC006
1.Instruct the robot to begin the mapping operation; 2.Make the robot move to the point.	The robot moves to the specified point avoiding any obstacle automatically.	The robot didn't move.	FRC007
1.Make the robot move forward a certain direction.	1.The map data is output; 2.The estimated direction is informed at the same time.	PASS	FRC008
1.Provide the current map data model to the GUI	The update of display finishes in one second.	PASS	FRC009

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execution steps	expected results	actual results	related functions
1.Turn the robot to Move-to-point mode; 2.Make the robot reach the specified position.	The time consumed is within 20 minutes.	PASS	FRC010
1.Make the robot keep moving	1.The map is created appropriately. 2.The XML format file is created appropriately.	PASS	FRC011 FRC012 FRC013
1.Make the robot move towards an obstacle; 2.Make the robot move towards a faultline; 3.Make the robot move towards a boundary.	1.The map location error is no more than 10cm. 2.The map is created correctly.	The robot stopped when encountered an obstacle instead of turning around.	FRC014 FRC015
1.Make the robot keep moving and make sure the colour sensor detecting different colours.	The map created based on depths are correct.	PASS	FRC016
1.Make the robot keep moving.	The position estimate is corrected automatically.	The robot corrected the angle too much, it was turning around continuously rather than moving forward.	FRE001
1.Make the robot keep moving; 2.Manually input the position data.	The robot accepts the inputs.	PASS	FRE002
1.Make the robot move from the start position to a specified position.	The mapping operation compeltes within 10 minutes.	NA	FRE004
1.Make the robot move toward a boundary.	The robot avoids keeping moving ahead.	NA	FRE005

Table 3: Continue System Test

2.3 Regression Test

execution steps	expected results	actual results	related functions
1.Specify a point in survey-area coordinate; 2.Make the robot move to the point.	The robot moves to the specified point avoiding any obstacle automatically.	PASS	FRC006
1.Instruct the robot to begin the mapping operation; 2.Make the robot move to the point.	The robot moves to the specified point avoiding any obstacle automatically.	PASS	FRC007
1.Make the robot move towards an obstacle; 2.Make the robot move towards a faultline; 3.Make the robot move towards a boundary.	1.The map location error is no more than 10cm. 2.The map is created correctly.	PASS	FRC014 FRC015
1.Make the robot keep moving.	The position estimate is corrected automatically.	PASS	FRE001

Table 4: Regression Test

3 Glossary

GUI Graphical User Interface

LeJOS The Lego Java Operating System

RMI Remote Method Invocation

SFM Sea Floor Mapping

SRS Software Requirements Specification

4   References

[1] Software Project Management Plan

[2] Software Requirements Specification

[3] Software Design Document

[4] Buschmann, F, Henney, K and Schmidt, DC 2007. *Pattern-Oriented Software Architecture: On Patterns and Pattern Languages*, Volume 5. Wiley and sons, West Sussex, England.

[5] Hürsch WL and Lopes CV 1995. *Separation of Concerns*. Northeastern University, Boston, USA. Technical report NU-CCS-95-03.

[6] LEGO Education, no date. *EV3 Large Servo Motor*. Available online 1/10/2016 <https://education.lego.com/en-us/products/ev3-large-servo-motor/45502>

[7] LEGO Education, no date. *EV3 Medium Servo Motor*. Available online 1/10/2016 <https://shop.lego.com/en-US/EV3-Medium-Servo-Motor-45503>

[8] LEGO Education, no date. *EV3 Ultrasonic Sensor*. Available online 1/10/2016 <https://shop.lego.com/en-US/EV3-Ultrasonic-Sensor-45504>

[9] LEGO Education, no date. *EV3 Color Sensor*. Available online 1/10/2016 <https://education.lego.com/en-us/products/ev3-color-sensor/45506>

[10] LEGO Education, no date. *EV3 Gyro Sensor*. Available online 1/10/2016 <https://education.lego.com/en-us/products/ev3-gyro-sensor-/45505>