

Capstone – Test Report

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1. Introduction

1.1 Purpose of the document

This section provides a brief introduction to the testing report for the Capstone project: Borzoo's Distributed State Monitoring Algorithm.

1.2 Scope of the testing

The scope of testing on this project is mostly based on user testing due to the high number of moving parts in this algorithm. An example of such would be functions to control the drone ie: travel forward 1 meter. Checking this programmatically is impossible because while the code could be correct and valid, the drone must still be observed.

2. Module Testing

2.1 Application Initialization

Purpose

Verify that the program has all the required files correctly formatted and installed correctly.

Sample Files

1) “firstSanity” folder files: automaton.json, automaton.my, conjunct_mapping.my, initial_state.json, and numPeers – Test cases that have proven to work

2) Missing files (none of the above included)

Test Cases

Application start up containing sanity check files

Application start up missing initialization files

2.2 Network Connectivity

Purpose

Network connective is absolutely vital to the system functioning correctly.

Sample Files

Multiple devices are connected to the same network and are on the **same subnet**.

Test Case

Network connectivity.

2.3 Cube Activity

Purpose

Ensure the activity in the application operates correctly.

Sample Files

N/A

Test Case

Rotate the device to be standing vertical and ensure the object on screen changes colour.

2.4 NFC Activity

Purpose

Ensure the activity recognizes the NFC tag when tapped to the device.

Sample Files

NFC tag with the UUID registered on the device.

Test Case

Tap the NFC tag to the device and an toast notification appears informing the user that it was accepted.

2.5 Vision Activity

Purpose

The vision activity is one of the processes that manipulate the device state in the algorithm.

Sample Files

Any object in the real world that is round for the camera to inspect.

Test Case

Use the device camera to look for round objects such as a watch face.

3. Module Tests

3.1 Summary of performed tests

Table 1 - Performed Tests

Test No.	Test Case	Initial State	Input	Expected Output	Test Result	Test Conclusion
1	Application Initialization	Device loaded with sanity test files.	N/A	Application loads without error.	Behaved as expected.	Pass
2	Application Initialization	Device is missing required config files	N/A	Application immediately crashes	Behaved as expected (crashing) but reason for crashing changes sometimes.	Pass
3	Network Connectivity	Devices are connected to the same network and are part of the same subnet	N/A	Each device recognizes the other devices on the network	Behaved as expected	Pass

4	Cube Activity	Device is held in any angle other than being 180°	Device is rotated 180°	Rectangle on screen turns green	Behaved as expected	Pass
5	NFC Activity	Device has activity running with no NFC tag near it.	NFC tag is read by the device	Device notifies the user that the NFC tag was accepted	Behaved as expected	Pass
6	Vision Activity	Device has activity running with no round object by the camera.	Hold a round object like a watch face to the camera	Device recognizes the round object and reports to the user.	Behaved as expected	Pass

4. Performance Testing

4.1 Automated Testing

Due to the size of the project and time allotted we were unable to take advantage of any automated test suites.

5. Usability Testing

Usability testing is performed to determine how effective user interaction takes place on the application. Due to the nature of the project being a more research-based implementation of an academic paper any sort of design and usability were not taken into consideration. When the paper has a more concrete final version released the team can sit down and design a proper user interface for the project.

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