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Test Report

MINA - IT2D

VERSION 1.2

DIYALO

Version Control

Version	Date	Change log	Editor
1.0	14-06-2023	Created base outlines for chapters 1, 2 and 3	Jadyn Jacques
1.1	23-06-2023	Updated Chapters 2 and 3, and created Chapter 4	Jadyn Jacques
1.2	08-07-2023	Updated Chapter 3 with identification references	Jadyn Jacques

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Chapter 1: Introduction

Purpose

The purpose of this test report is to provide a comprehensive overview of the testing process and results conducted throughout the entirety of the MINA Project. This report aims to present the findings, observations, and recommendations derived from the testing activities, enabling stakeholders to make informed decisions and take necessary actions for further improvement.

Audience

This document is intended for the clients – members of Diyalo Organisation and National Innovation Centre, Nepal, and stakeholders from NHL Stenden Hogeschool – Rene Laan and Bert Meijerink.

Terms and Abbreviations

- **Passed:** The result of the test came out without any errors and the result confirmed the expected.
- **Failed:** The test failed the expected outcome. This could be due to wrong output expectations, false input, or insufficient functionality.
- **Unit testing:** A way of testing a unit - the smallest piece of code that can be logically isolated in a system.
- **Semantic testing:** A type of software testing in which the validity of the data inputted, is tested.
- **Use-Case testing:** A type of black box testing that helps in identifying test cases that cover the entire system transaction-by-transaction from start to finish. It is a description of how a specific user uses the system.
- **Black box Testing:** A form of testing that is performed with no knowledge of a system's internals.

Chapter 2: Management Summary

Project Assignment

Diyalo organization has teamed up with the National Innovation Centre, Nepal, to support enthusiastic innovators, generate entrepreneurs, commercialize local products, and help Nepal to become economically prosperous. Together, they have created a robot that is built with a highly modular software framework. The robot is an autonomous data driven service robot which has already implemented several functionalities. The project team IT2D has been given the task to find a solution for this robot to navigate in a human-present environment, thus enabling it to be socially aware.

The project aims to improve a non-cognitive service robot to move autonomously using motion tracking. The success of the project will be measured by the ability of the robot to navigate a defined space without human intervention and avoiding collision, based on the programmed motion tracking.

Recommendations for future developers

The recommendations provided in this chapter are based on a comprehensive understanding of the project's objectives, insights gained from user requirements, and the expertise of the IT2D team. By following these recommendations, developers can contribute to the continuous improvement of the robot's navigation abilities, fostering its integration into human-centric environments effectively.

- **Understanding User Requirements:** Gain a thorough understanding of the user requirements and expectations for the robot's navigation capabilities in a human-present environment. Engage in discussions with potential users, stakeholders, and domain experts to identify their specific needs and challenges.

- **Human-Robot Interaction:** Focus on developing intuitive and natural human-robot interaction mechanisms that allow the robot to interact and communicate effectively with humans in its environment. This includes understanding and responding to human gestures, and other social cues to create a socially aware and user-friendly robot.

- **Safety Considerations:** Prioritize safety in the development process by implementing fail-safe mechanisms and emergency stop functionalities to ensure the well-being of humans interacting with the robot. Conduct rigorous testing and risk assessments to identify and mitigate any potential safety hazards.

Chapter 3: Evaluation of test objectives

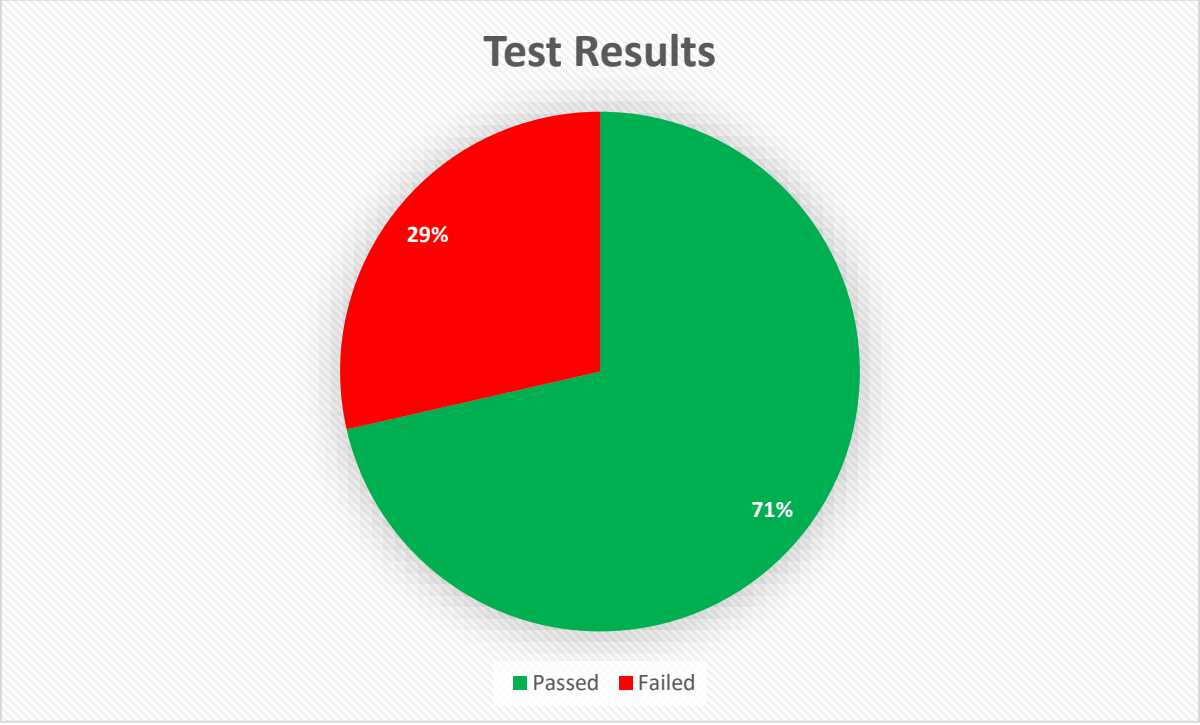
This chapter will describe the evaluation of all tests, including the defects, the severity of each test and the status of each test.

Status Of Test Goals

The goals and the test cases that were assessed here, can be referred to from the Test Cases Document. The following diagram and the table below state the outcome of the tests that have been conducted at the end of the project.

Test results

Result	Number of Tests	Percentage
Passed	5	71%
Failed	2	29%
Total	7	100%



Semantic Tests

Test	ID	Status	Remarks
Semantic Test: Tracking ST – 01	**ST–01**	**Passed**	**The robot has difficulties centering the human in the video feed.**
Semantic Test: Tracking ST – 02	**ST–02**	**Failed**	
Semantic Test: Tracking ST – 03	**ST–03**	**Passed**	
Semantic Test: Tracking ST – 04	**ST–04**	**Failed**	

Use-Case Tests

Test	ID	Status	Remarks
Use-Case Test 1: Detect Human	**UT-01**	**Passed**	**No additional remarks**
Use-Case Test 2: Select Human to Detect	**UT-02**	**Passed**	
Use-Case Test 3: Follow	**UT-03**	**Passed**	

Identification of Findings

The results achieved in ST – 02 and ST – 04 are bugs yet to be fixed. These issues can be referred to using the links as follows:

1. ST – 02: https://gitlab.com/nhlstendenIT/project-6.2/diyalo/mina-autonomous-service-data-driven-robot/-/issues/62
2. ST – 04: https://gitlab.com/nhlstendenIT/project-6.2/diyalo/mina-autonomous-service-data-driven-robot/-/issues/63

Chapter 4: Conclusion

The evaluation of the test objectives reveals a mixed outcome in terms of the overall test results. Out of the 7 tests conducted, 5 tests passed, accounting for 71% of the total tests. However, 2 tests failed, representing a 29% failure rate.

The semantic tests showcased a varied performance, with two tests passing and two tests failing. The system faced difficulties centering the human in the video feed during the tests, indicating room for improvement in tracking accuracy.

In the use-case tests, all the tests passed without any issues, validating the system's capability to perform well in real-world scenarios.

Overall, while the majority of the tests passed, the failed tests and the identified issues highlight areas that require further attention and refinement. These findings will serve as valuable insights for future development and improvement of the project.