Title of project placed here

Name of author placed here

School of Computing Science
Sir Alwyn Williams Building
University of Glasgow
G12 8QQ

A dissertation presented in part fulfilment of the requirements of the Degree of Master of Science at The University of Glasgow

Date of submission placed here

Abstract

abstract goes here

Education Use Consent

I hereby give my permission for this project to be shown to other University of Glasgow students and to be distributed in an electronic format. **Please note that you are under no obligation to sign this declaration, but doing so would help future students.**

Name: _____ Signature: _____

Acknowledgements

acknowledgements go here sdfsdf

Contents

Chapter 1

Introduction

1.1 Context

1.2 Problem Objectives

1.3 Problem Statement

1.4 Application/ Motivation

1.5 Outline of the dissertation

Chapter 2

Background Literature Survey

Divide into hardware and software/implementation technology Do I need to discuss things I haven't used Existing/similar applications

2.1 Papers? - if required

2.2 ROS

2.3 Turtlebot

2.4 Cameras

2.4.1 RGB-D

2.4.2 Stereo

2.5 SLAM

2.5.1 RtabMap

2.5.2 Others

2.6 Frontier Exploration

2.7 Object Detection

2.7.1 Feature Detection

2.7.2 Tensorflow

2.7.3 Haar Cascades

2.7.4 Google Vision API

2.7.5 3D Detection

Chapter 3

Requirements

Chapter 4

System Design

Chapter 5

System Implementation

5.1 Mapping

5.1.1 Transforming data

5.1.2 Calibration

5.2 Frontier Exploration

5.3 Object Detection and Recognition

5.3.1 Blob Detection

5.3.2 Detecting Clusters - different methods

5.3.3 Creating Boxes

5.3.4 Tracking Boxes

5.3.5 Positioning Boxes in Map/Loop Closure

5.3.6 Recognising Objects

5.3.7 Publishing to Rviz/Rtabmap

5.4 The whole package - how to utilise

Chapter 6

Evaluation

6.1 Testing

Chapter 7

Conclusion

7.0.1 Future work

Appendix A

First appendix

A.1 Section of first appendix

Appendix B

Second appendix

Bibliography

[1] C. Baier and J.-P. Katoen. *Principles of Model Checking*. MIT Press, 2008.