

PEOPLE AWARE MOBILE ROBOT NAVIGATION

A Thesis
Presented to
The Academic Faculty

by

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PEOPLE AWARE MOBILE ROBOT NAVIGATION

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To myself,

Perry H. Disdainful,

the only person worthy of my company.

PREFACE

Theses have elements. Isn't that nice?

ACKNOWLEDGEMENTS

I want to thank people

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LIST OF FIGURES

SUMMARY

Why should I provide a summary? Just read the thesis.

CHAPTER I

INTRODUCTION

Introduction

CHAPTER II

MAP ANNOTATION

Map Annotation

2.1 Related Work

Related Work

2.2 Semantic Maps

Semantic Maps

2.2.1 Waypoints

2.2.2 Planar Landmarks

2.2.3 Objects

2.3 User Interface

User Interface

2.4 Pointing Gestures for Human-Robot Interaction

Pointing Gestures

CHAPTER III

NAVIGATION AMONG PEOPLE

Autonomous Robot Navigation

3.1 Related Work

Related Work

3.2 State of Autonomous Robot Navigation

State of Autonomous Robot Navigation

3.3 Finding Goal Points for Navigation

Finding Goal Points for Navigation

3.4 People Aware Navigation

People Aware Navigation

3.5 Speed Maps for Safe Navigation

Speed Maps for Safer Navigation

CHAPTER IV

MULTIMODAL PERSON TRACKING

The ability to robustly track a person is an important prerequisite for human-robot interaction. To realize any task that involves humans, the challenge is the detection and tracking of humans in the vicinity of the robot considering the robot's movements, occlusions and robot's sensing capabilities.

4.1 Related Work

Related Work

4.2 Person Detection

Person Detection

4.2.1 Leg Detection

Leg Detection

4.2.2 Torso Detection

Leg Detection

4.2.3 Lower Body Detection

Lower Body Detection

4.3 Person Tracking

Multimodal Person Tracking

4.4 Face Recognition

Face Recognition

CHAPTER V

PERSON FOLLOWING

Person Following

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Related Work

5.2 Basic Person Following

Basic Person Following

5.3 Situation Aware Person Following

Situation Aware Person Following

5.3.1 Door Passing

5.3.2 User Activity Awareness

5.3.3 Corners

5.4 Application To Telepresence Robots

Application To Telepresence Robots

CHAPTER VI

PERSON GUIDANCE

Person Guidance

6.1 Related Work

Related Work

6.2 Guide Robot

Guide Robot

6.3 Application To Blind Users

Application To Blind Users

CHAPTER VII

CONCLUSION

Conclusion

Table 1: A table, centered.

Title	Author
War And Peace	Leo Tolstoy
The Great Gatsby	F. Scott Fitzgerald

APPENDIX A

QR CODE BASED LOCATION INITIALIZATION

QR Code Based Location Initialization

APPENDIX B

ASSISTED REMOTE CONTROL

Assisted Remote Control

APPENDIX C

VIBRATION PATTERN ANALYSIS FOR HAPTIC BELTS

Vibration Pattern Analysis for Haptic Belts

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VITA

Perry H. Disdainful was born in an insignificant town whose only claim to fame is that it produced such a fine specimen of a researcher.

People Aware Mobile Robot Navigation

Akansel Cosgun

12 Pages

Directed by Professor Henrik Christensen

This is the abstract that must be turned in as hard copy to the thesis office to meet the UMI requirements. It should *not* be included when submitting your ETD. Comment out the abstract environment before submitting. It is recommended that you simply copy and paste the text you put in the summary environment into this environment. The title, your name, the page count, and your advisor's name will all be generated automatically.