Trajectory planning with real time vision-based obstacle detection

by

Xuemeng Li

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The following individuals certify that they have read, and recommend to the Faculty of Graduate and Postdoctoral Studies for acceptance, the thesis entitled:

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Examining Committee:

Maryam Kamgarpour, Electrical and Computer Engineering, UBC
Supervisor

Mahdi Yousefi, Avestec Technologies Inc.
Supervisory Committee Member

Abstract

Autonomous aerial vehicles are broadly used to assist human in dangerous or complex monitoring tasks, such as inspection of hard to reach high voltage power lines and oil pipes, monitoring and distinguishing wildfire, or improving precision farming. An autonomous navigation system can support the drones or robots to move towards the goal without any external control. A fully functional autonomous system requires an integration on a wide range of algorithms, including trajectory planning algorithms, object detection with image processing and robust control algorithms for path following.

In this project, implementation and evaluation of the effectiveness of trajectory planning Rapid-exploring random tree (RRT) algorithm with object detected from the depth information collected from Intel Real Sense camera has been described. The location and size of the targets would be determined with image processing. And the trajectory planning algorithm RRT will plan the path in real time that ensure the safety of reaching the desired target domain.

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Short	Long
CIHR	Canadian Institutes of Health Research
MSFHR	Michael Smith Foundation for Health Research
NCI	National Cancer Institute
PMCOA	PubMed Central Open Access
WGS	whole genome sequencing

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I would like to thank the supervision of Dr. Maryam Kamgarpour and Dr. Mahdi Yousefi.

Chapter 1

Introduction

Here is the introduction to this thesis. I will do several things. It is heavily based on previous seminal work on penguins (Meyer-Rochow and Gal, 2003).

Chapter 2

First Chapter of Research

Here is a research chapter. Look a graph in Figure **??**.

Also check out the associated data in Table **??**.

Chapter 3

Conclusions

I did several things and will now discuss why they are good.

Bibliography

Meyer-Rochow, V. B. and Gal, J. (2003). Pressures produced when penguins pooh—calculations on avian defaecation. *Polar Biology*, 27(1):56–58.