

Reinforcement Learning for Tracking Control in Robotics

Yudha Prawira Pane

Literature Survey

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LITERATURE SURVEY

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The implementation work in this thesis was done at DCSC's robotics lab.



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Abstract

This is an abstract.

Table of Contents

Preface	ix
Acknowledgements	xi
1 Introduction	1
1-1 Problem Definition	1
1-2 Goal of the Thesis	1
1-3 Literature Study Approach	1
1-4 Nomenclature	1
2 Reinforcement Learning Preliminaries	3
2-1 Markov Decision Process	3
2-2 Value and Policy Iteration	3
2-3 Reinforcement Learning for Continuous Space	3
2-3-1 Function Approximation	3
2-4 Actor-Critic Structure	3
3 Reinforcement Learning for Tracking Problem: A Survey	5
3-1 Dynamic Tuning via Reinforcement Learning	5
3-1-1 Case Study: PI Tuning using Reinforcement Learning	5
3-2 Nonlinear Compensation for Tracking via Reinforcement Learning	5
3-2-1 Case Study: 1-DOF Robot Gravity Compensation	5
3-3 Reinforcement Learning for Optimal Tracking Control	5
3-4 Self-Proposed Controller [tentative]	5
4 Simulation & Verification	7
4-1 Simulated Setup	7
4-2 Simulation Result and Analysis	7
4-3 Discussion	7

5 Future Work and Experiments Plan	9
5-1 Experimental Setup: UR5 Robot	9
6 Conclusion	11
A Appendix	13
A-1 Simulation Program	13
A-1-1 A MATLAB listing	13
Glossary	15
List of Acronyms	15
List of Symbols	15
Bibliography	15

List of Figures

List of Tables

Preface

According to WIKIPEDIA, a preface (pronounced “*preffus*”) is an introduction to a book written by the author of the book. In this preface I can discuss the interesting story of how this thesis came into being.

This document is a part of my Master of Science graduation thesis. The idea of doing my thesis on this subject came after a discussion with my good friends Tweedledum and Tweedledee...

Acknowledgements

I would like to thank my supervisor for his assistance during the writing of this thesis. . .

By the way, it might make sense to combine the Preface and the Acknowledgements. This is just a matter of taste, of course.

Delft, University of Technology
December 5, 2014

Yudha Prawira Pane

“In the future, airplanes will be flown by a dog and a pilot. And the dog’s job will be to make sure that if the pilot tries to touch any of the buttons, the dog bites him.”

— *Scott Adams*

Chapter 1

Introduction

Tracking problem in robotics is..

1-1 Problem Definition

1-2 Goal of the Thesis

1-3 Literature Study Approach

1-4 Nomenclature

Reinforcement Learning Preliminaries

2-1 Markov Decision Process

This chapter will cover figures and math.

2-2 Value and Policy Iteration

2-3 Reinforcement Learning for Continuous Space

2-3-1 Function Approximation

2-4 Actor-Critic Structure

Reinforcement Learning for Tracking Problem: A Survey

This is real chapter for Delft Center for Systems and Control (DCSC), ok? We will use it as a demo for the different headings you can use to structure your text.

3-1 Dynamic Tuning via Reinforcement Learning

This is the first section .

3-1-1 Case Study: PI Tuning using Reinforcement Learning

This is the subsection of the first section.

3-2 Nonlinear Compensation for Tracking via Reinforcement Learning

This is second section.

3-2-1 Case Study: 1-DOF Robot Gravity Compensation

3-3 Reinforcement Learning for Optimal Tracking Control

This is third section.

3-4 Self-Proposed Controller [tentative]

Simulation & Verification

4-1 Simulated Setup

This chapter will cover figures and math.

4-2 Simulation Result and Analysis

4-3 Discussion

Future Work and Experiments Plan

5-1 Experimental Setup: UR5 Robot

Chapter 6

Conclusion

Appendix A

Appendix

Appendices are found in the back.

A-1 Simulation Program

A-1-1 A MATLAB listing

```
1 %  
2 % Comment  
3 %  
4 n=10;  
5 for i=1:n  
6     disp('Ok');  
7 end
```

Glossary

List of Acronyms

DCSC Delft Center for Systems and Control

