

ALGEBRAIC STRUCTURES IN PROOF
ASSISTANT SYSTEMS

ALGEBRAIC STRUCTURES IN PROOF ASSISTANT SYSTEMS

BY

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A REPORT

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FOR THE DEGREE OF

MASTERS OF SCIENCE

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Abstract

Abstract here (no more than 300 words)

Your Dedication
Optional second line

Acknowledgements

Acknowledgements go here.

Contents

Abstract	iii
Acknowledgements	v
Notation, Definitions, and Abbreviations	ix
Declaration of Academic Achievement	x
1 Introduction	1
2 Your Chapter Title	2
2.1 Referencing	2
2.2 Figures	2
2.3 Tables	3
2.4 Equations	3
3 Conclusion	5
A Your Appendix	6
B Long Tables	7

List of Figures

2.1	Single Figure Environment Listed Title	3
2.2	A Multi-Figure Environment	4

List of Tables

2.1	A sample table	3
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Notation, Definitions, and Abbreviations

Notation

$A \leq B$ A is less than or equal to B

Definitions

Challenge With respect to video games, a challenge is a set of goals presented to the player that they are tasks with completing; challenges can test a variety of player skills, including accuracy, logical reasoning, and creative problem solving

Abbreviations

AI Artificial intelligence

Declaration of Academic Achievement

The student will declare his/her research contribution and, as appropriate, those of colleagues or other contributors to the contents of the thesis.

Chapter 1

Introduction

Every thesis needs an introductory chapter

While you're here, you need to go into `definitions.tex` to set all the information needed for the front matter (e.g. title, author) and page header/footer.

You will also find the School of Graduate Studies' preparation guide (August 2021) for theses and reports. I would give it a quick read so you know what's expected.

Chapter 2

Your Chapter Title

This is a sample chapter

If you need to use quotes, type it “like this”.

2.1 Referencing

These are some sample references to GAMYGDALA (Popescu et al., 2014) from the `references.bib` file and state effects of cognition (Hudlicka, 2002) from the `references_another.bib` file. These references are not in the same `.bib` file.

2.2 Figures

This is a single image figure (Figure 2.1):

This is a multi-image figure with a top (Figure 2.2a) and bottom (Figure 2.2b) aligned subfigures:



Figure 2.1: This is a single figure environment

2.3 Tables

Here is a sample table (Table 2.1):

A	\longleftrightarrow	B
C	\longleftrightarrow	D

Table 2.1: A sample table

2.3.1 Long Tables

A sample long table is shown in Appendix B.

2.4 Equations

Here is a sample equation (Equation 2.4.1):

$$y = mx + b \tag{2.4.1}$$



(a) Figure 1



(b) Figure 2

Figure 2.2: A Multi-Figure Environment

Chapter 3

Conclusion

Every thesis also needs a concluding chapter

Appendix A

Your Appendix

Your appendix goes here.

Appendix B

Long Tables

This appendix demonstrates the use of a long table that spans multiple pages.

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A	B	C	D

Bibliography

Eva Hudlicka. 2002. This time with feeling: Integrated model of trait and state effects on cognition and behavior. *Applied Artificial Intelligence* 16, 7-8 (2002), 611–641.

Adrian Popescu, Joost Broekens, and Maarten van Someren. 2014. GAMYGDALA: An emotion engine for games. *IEEE Transactions on Affective Computing* 5, 1 (2014), 32–44.