A LaTex Thesis Template

By Queen's Department of ECE

A thesis submitted to the Graduate Program in Department of Electrical and Computer Engineering in conformity with the requirements for the Degree of Master of Applied Science

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Abstract

In this works we describe a novel Thesis Template, to be used by students in Electrical & Computer Engineering at Queen's University. This section entails the abstract of the document.

Acknowledgments

I would like to acknowledge my parents and friends. This thesis, a manifestation of the many sleepless nights, would not have been possible without their support. This section highlights your acknowledgment of individuals whom you believe deserve recognition for their contribution towards making your achievement possible.

Statement Of Originality

The following works is my own and I hereby certify the intellectual content of this thesis is the product of my own work. All references and contributions of other individuals has been cited and sourced appropriately, as defined by the IEEE Citation Reference manual.

[This section is your statement of originality. The requirement differs for MASc and PhD, therefore it is recommended your discuss this section with your supervisor]

Contents

List of Tables

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Listings

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Chapter 1

Introduction

1.1 Introduction

- What will this thesis demonstrate?

1.2 Motivation

- What is the motivation to research this subject?
- What impact will your research have on the industry or the world?

The goal of this thesis is to demonstrate a novel methodology, a new generation of technology or an innovative system.

1.3 Problem Statement

- Existing Technology
- Limitations of existing technology

1.4 Thesis Contributions

The main contributions of this thesis are as follows:

- We propose a novel methodology for solving a complex problem.
- We have greatly innovated on existing methodologies by using a new technique of our own conception
- We have formulated a new technique which we hope will be the inception of a new generation of technology

1.5 Thesis Outline

The remainder of this thesis is organized as follows: **Chapter 2, Background:** Background

Chapter 3, Methods: Methodology

Chapter 4, Results: Experimental Results

Chapter 5, Future Work And Conclusions: Conclusion

Chapter 2

Background

2.1 Background

- Broad description of subject
- Some relevant history
- Current implementations in industry
- New & Related Research on the subject

Citations can be included in your manuscript by referencing them. For example, if I wanted to cite XKCD for a comic (as I have in figure B.1), I would just do [1].

2.1.1 Glossaries of Terms and Acronyms

Latex allows you to add words and acronyms to a glossary which is found in *2_Glossaries/Glossary*. This feature benefits the reader, for when you use strong diction in your lexicon, the reader can click the hyperlink and see the definition to thus better understand your prose.

The glossary also allows you to keep track of acronyms and symbols. In the case of acronyms, LaTex defines the acronym on first use (such as Laugh Out Loud (LOL!)), then use the acronym afterwards (LOL!). Everything is hyperlinked to the glossary page of your thesis, and if you want, you can reset the glossary at any point to make the full definition of an acronym appear again using \glsresetall (Laugh Out Loud (LOL!)). Symbols are not very interesting, but work like this: Υ. Note the definition is not printed alongside the symbol.

Glossaries, Bibliography or Index not showing up? Did you compile them? They are not automatic. You have to manually click 'Bibliography', 'Glossary', and 'index'under the TeXstudio *Tools* drop-down menu.

Chapter 3

Methodology

3.1 Your Proposed Method

- How does you research work?

3.2 Examples of things

3.2.1 Tables

The following is an example of a table:

Table 3.1: Test Table

Things	Other Things	Last Thing
X		
	X	
		X

The following is an example of a flow diagram:

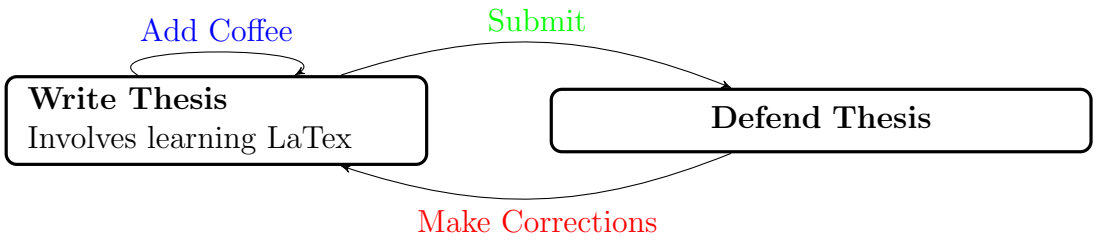

Figure 3.1: A sample flow diagram

NOTE! The syntax for figures is:

\begin{figure}[placement specifier]

... figure contents ...

\end{figure}

See the wikibook on latex figures to see all the possibilities:
https://en.wikibooks.org/wiki/LaTeX/Floats,_Figures_and_Captions

NOTE! There is an easier way to make diagrams than by coding them (as is demonstrated by the flow diagram below). See this website: https://www.draw.io/ will help you create an diagram easily. All you need to do is insert it in as a .jpg file (see the example insertion of a figure in B.1 (Appendix B)).

3.2.2 Equations

The following is an example of an equation:

Equation 3.1 This is a set of equations

$$\sqrt{\text{success}} = \text{effort} * \left(\frac{\text{time} + \text{coffee}}{\text{time}}\right) \tag{3.1.1}$$

$$\sqrt{\text{hydration}} = \text{water} - \left(\frac{\text{coffee}}{3}\right) \tag{3.1.2}$$

Equation Set 3.1 describes proper caffeine and hydration for successful thesis writting. Equation 3.1.1 demonstrates that the root of success is effort, enhanced by coffee intake and time. As such, coffee is an academic performance enhancing drug. Please abuse diligently and responsibly by consuming three cups of water per cup of coffee as shown in Equation 3.1.2. This mitigates caffeine migraines as shown in Equation 3.1.3.

$$\text{Result} = \begin{cases} \text{hydration} \leq 0 & \text{Bad!} \\ 1 \leq \text{hydration} \leq 6 & \text{Good!} \\ \text{hydration} > 6 & \text{Overhydration, purge imminent.} \end{cases} \tag{3.1.3}$$

The point of all this is to illustrate that equation sets (such as Equation Set 3.1) end up in the List of Equations, while basic equations (such as Equation 3.1.3) do not.

NOTE! For equations sets to work properly, don't forget to initialize the counter!! See the top of Methodology.tex for the three commands to apply at the top of each chapter.

Chapter 4

Experimental Results

4.1 Experimental Results

- Describe the experimental setup (ie. Hardware)
- Describe your experiments
- Describe your results

The following is an example code listing:

Listing 4.1: Test Plot Code

```
import numpy as np
import matplotlib
import matplotlib.pyplot as plt

matplotlib.rc('font', family='serif')
matplotlib.rc('font', serif='Computer Modern Roman')
matplotlib.rc('text', usetex=True)
matplotlib.rc('ps', usedistiller='xpdf')

fig = plt.figure()
ax = fig.add_subplot(111)
ax.plot(10*np.random.randn(100), 10*np.random.randn(100), 'o')

plt.savefig('testPlot.png', bbox_inches='tight')
plt.show()
```

Chapter 5

Conclusion

5.1 Future Work

- How do you hope to continue work on this topic?
- Are there possible extensions?
- What are some improvements that could be made?

5.2 Conclusion

- Restate the problem. State the novel solution.
- Summarize what has been accomplished
- Summarize any limitations
- What worked really well and has a big impact?

Bibliography

[1] "xkcd: Thesis defense," https://xkcd.com/1403/, (Accessed on 10/20/2017).

[2] "Big bang - warm kitty, soft kitty (sheldon's lullaby sick song) instrumental version lyrics — metrolyrics," http://www.metrolyrics.com/warm-kitty-soft-kitty-sheldons-lullaby-sick-song-instrumental-version-lyrics-big-bang.html?ModPagespeed=noscript, (Accessed on 10/20/2017).

[3] M. Shaw, "Writing good software engineering research papers," in *Software Engineering, 2003. Proceedings. 25th International Conference on.* IEEE, 2003, pp. 726–736.

[4] B. Paltridge, "Thesis and dissertation writing: an examination of published advice and actual practice," *English for Specific Purposes*, vol. 21, no. 2, pp. 125–143, 2002.

[5] U. Eco, *How to write a thesis.* MIT Press, 2015.

Appendix A

Supporting Data

Appendix sections are where you can place large figures, data tables, and spinets of code. Use appendices to your benefit to keep the body of your thesis concise!

The lyrics found below are for your enjoyment, but also serve an important role in demonstrating latex syntax for formating text and in-text citations.

A.1 Lyrics to Soft Kitty

Soft kitty, warm kitty

Little ball of fur

Happy kitty, sleepy kitty

Purr, purr, purr

This has been brought to you by Sheldon Cooper [2]

Appendix B

Satirical Support

This section provides some comic relief. In addition, it serves as an example of how to insert an image into your thesis with proper caption, label and citation.

B.1 Advice from XKCD:

Figure B.1: You must prepare to defend your thesis [1]