MULTIMEDIA UNIVERSITY THESIS TEMPLATE

LIM LIAN TZE

MASTER OF SCIENCE
(INFORMATION TECHNOLOGY)

MULTIMEDIA UNIVERSITY

APRIL 2016

MULTIMEDIA UNIVERSITY THESIS TEMPLATE

BY

LIM LIAN TZE

B.Sc. (Hons), University of Warwick, United Kingdom

M.Sc., Universiti Sains Malaysia, Malaysia

THESIS SUBMITTED IN FULFILMENT OF THE

REQUIREMENT FOR THE DEGREE OF

MASTER OF SCIENCE (INFORMATION TECHNOLOGY)

(by Research)

in the

Faculty of Information Technology

MULTIMEDIA UNIVERSITY
MALAYSIA

April 2016

DECLARATION

I hereby declare that the work has been done by myself and no portion of the work contained in this Thesis has been submitted in support of any application for any other degree or qualification on this or any other university or institution of learning.

_____

Lim Lian Tze

ACKNOWLEDGEMENTS

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Thanks guys. I owe you many.

To my parents, my husband, and my daughter.

ABSTRACT

mmuthesis is a LaTeX class for authoring theses that fulfil formatting specifications required by Multimedi University (MMU), Malaysia. The thesis preparation guide can be accessed at `http://research.mmu.edu.my/ips/node/188`.

A sample `thesis.tex` is included in the package, which I recommend you modify for your own thesis write-up. (You can rename it, but I'll stick with the file name 'thesis.tex' throughout this guide.)

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PREFACE

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

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CHAPTER 1

HOW TO USE THE TEMPLATE

1.1 Author Information

You need to provide some author information in the preamble. Example lines from thesis.tex:

```
\author{Lim Lian Tze}
\title{My Ground-breaking Research}
\submissionyear{2012}
\submissionmonth{May}
\faculty{Faculty of Information Technology}
\degree{Doctor of Philosophy)}
\qualification{B.Sc.~(Hons), Multimedia University, Malaysia\\
M.Sc., Universiti Sains Malaysia, Malaysia}
```

These information are needed to generate the preliminary pages.

1.2 Preliminary Pages

Once in the main document body, \frontmatter sets up the, well, front matter. This include setting the page numbers to lower-case Roman numerals.

mmuthesis can generate the cover page, title page, copyright page and declaration page with the following lines (included in thesis.tex):

```
\makecoverandtitlepage
\copyrightpage
\declarationpage
```

1.3 Acknowledgements and Dedication

These are provided using `\acknowledgements` and `\dedication`:

```
\acknowledgements{I would like to thank my parents, my family, my
    supervisor...}
\dedication{To my parents, my husband, and my daughter.}
```

1.4 Abstract

Write your abstract in a separate file (sample-abstract.tex in this example), and include it in thesis.tex like this:

```
\abstractfromfile{sample-abstract}
```

1.5 Table of contents, List of figures and tables

These are auto-generated by the following lines (included in thesis.tex):

```
{\clearpage\SingleSpacing
\tableofcontents\clearpage
\listoftables\clearpage
\listoffigures\clearpage}
```

1.6 Preface

Write your preface in a separate file (sample-preface.tex in this example), and include it in thesis.tex like this:

```
\prefacefromfile{sample-preface}
```

1.7 Main Chapters

I highly recommend that each chapter be written in a separate file. For example, chap-intro.tex has the contents

```
%!TEX ROOT=thesis.tex

\chapter{Introduction}

This is the introduction chapter.


\section{Problem Background}

We study the...
```

And chap-litreview.tex:

```
%!TEX ROOT=thesis.tex

\chapter{Literature Review}

We review the state of the art in...


\section{Early Approach}

Researchers first attempted to...
```

In thesis.tex, these chapter files are included with the following lines:

```
\mainmatter               % signal start of main chapters

\include{chap-intro}      % no .tex extension!

\include{chap-litreview}

\include{...}
```

The *%!TEX ROOT=thesis.tex* indicates to TeXworks (and also TeXshop on the Mac) that chap-xxx.tex are 'sub-files' of thesis.tex. This means if you hit Ctrl + T when you are editing chap-xxx.tex, thesis.tex will get compiled instead. Neat eh?

1.8 Appendices

Again, I recommend keeping each appendix chapter in its own file e.g. app-umldiagram.tex:

```
%!TEX ROOT=thesis.tex
\chapter{UML Diagrams}
...
```

And in thesis.tex:

```
\appendix   % signal start of appendices
\include{app-umldiagram}
\include{...}
```

1.9 Citations and Bibliography

mmuthesis uses the apacite package to format citations and bibliography in the APA style. Note that mmuthesis modifies the bibliography list by adding a numeric label to each entry, in line with MMU's requirements.

Here are some useful variants of the \cite command; see the apacite manual for full list.

- \cite{Lim:2009}   → (Lim, 2009)
- \citeNP{Lim:2009}   → Lim, 2009 (no parenthesis)
- \cite<see>[p.~7]{Lim:2009} → (see Lim, 2009, p. 7)
- \citeauthor{Lim:2009}   → Lim
- \citeyear{Lim:2009}   → (2009)

In thesis.tex, these lines will print the bibliography list:

```
\backmatter        % signal start of back matter
\bibliography{bibfile} % bibliography file name without .bib
    extension
```

1.10   Glossary

You can maintain a consistent glossary and acronym list using the glossaries package. It also supports acronym expansion on first mention!

First, define your acronyms and terms in a separate file e.g. myacronyms.tex:

```
% \newglossaryentry{label}{name={term},description={explanation}}
\newglossaryentry{lexicon}{
name={lexicon},
description={The vocabulary of a language, including its words and
    expressions. More formally, it is a language's inventory of lexemes}
}


% \newacronym[description={explanation}]{label}{abbrv}{full form}
\newacronym
[description={single word or words that are grouped in a language's
    lexicon}]
{LI}{LI}{lexical item}


\newacronym[description={The application of computational linguistics
    principles to problems}]
{NLP}{NLP}{Natural Language Processing}


% when the plural form is irregular, specify firstplural and plural
\newacronym
[firstplural={parts of speech}, plural={POS},
description={linguistic category of lexical items}]
{POS}{POS}{part of speech}
```

Loading the glossary and acronym list, and later printing the list in `thesis.tex`:

```
% Must be loaded BEFORE \begin{document}!
\loadglsentries{myacronyms}
\begin{document}
...
\bibliography{bibfile}
% Glossaries is placed AFTER the bibliography
% (only entries that are actually used in the text will be listed)
\printglossaries
...
```

To mention them in the text (i.e. `chap-xxx.tex` etc):

```
Let's talk about \acp{LI} and \acp{POS} in \ac{NLP}. I mention
    again \acp{LI}. We will also talk about \glsplural{lexicon}.
```

1.11 End Notes

MMU thesis guidelines seem to require end notes rather than footnotes. In any case, even if you prefer footnotes, use `\footnote`; if you prefer endnotes, use `\endnote`.

While foot/end notes are not encouraged in scientific and engineering disciplines, if you do have any, the following line in `thesis.tex` will list them out:

```
\theendnotes
```

1.12 Index

If you want to include an index for your thesis (it's optional), use `\index{keyword}` to insert index markers in your `chap-xxx.tex` or `app-xxx.tex` files. Then in your `thesis.tex`, after the Glossary and Notes:

```
{\SingleSpacing\printindex}
```

1.13 Publication List

Make sure you have included your own publications in your `.bib` file. To list your publications at the end of your `thesis.tex`, with journal articles and conference proceedings categorised separately:

```
\ownpubs  % REQUIRED LINE
\nocitejour{Lim:2010,Lim:etal:2011}  % list your journal articles
\nociteconf{Lim:2009}          % list your conference proceedings
\bibliographyjour{bibfile}   % bibliography file name without
    extension
\bibliographyconf{bibfile}   % bibliography file name without
    extension
```

CHAPTER 2

INTRODUCTION, BACKGROUND STORY, MOTIVATIONS

2.1 First Test and I need a really long title, please do oblige me won't you? Just a few more words and yes we're there

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetuer id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

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Nulla malesuada porttitor diam. Donec felis erat, congue non, volutpat at, tincidunt tristique, libero. Vivamus viverra fermentum felis. Donec nonummy pellentesque ante. Phasellus adipiscing semper elit. Proin fermentum massa ac quam. Sed diam turpis, molestie vitae, placerat a, molestie nec, leo. Maecenas lacinia. Nam ip-

sum ligula, eleifend at, accumsan nec, suscipit a, ipsum. Morbi blandit ligula feugiat magna. Nunc eleifend consequat lorem. Sed lacinia nulla vitae enim. Pellentesque tincidunt purus vel magna. Integer non enim. Praesent euismod nunc eu purus. Donec bibendum quam in tellus. Nullam cursus pulvinar lectus. Donec et mi. Nam vulputate metus eu enim. Vestibulum pellentesque felis eu massa.

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Figure 2.1: First figure. OK?

2.1.1 Second Test

There are studies on factors blah blah (Audibert, 2004) and[1] they are really amazing[2](Budanitsky & Hirst, 2006).

2.1.1 (a)   This works?

It does! Let's talk about lexical items (LIs) and parts of speech in Natural Language Processing (NLP). I mention again LIs. We will also talk about lexicons.

Figure 2.2: Second figure. Now I need a long caption to test out how things look in the List of Figures. Is this long enough yet? Is it? Is it?

2.2 Yeah

Fusce mauris. Vestibulum luctus nibh at lectus. Sed bibendum, nulla a faucibus semper, leo velit ultricies tellus, ac venenatis arcu wisi vel nisl. Vestibulum diam. Aliquam pellentesque, augue quis sagittis posuere, turpis lacus congue quam, in hendrerit risus eros eget felis. Maecenas eget erat in sapien mattis porttitor. Vestibulum porttitor. Nulla facilisi. Sed a turpis eu lacus commodo facilisis. Morbi fringilla, wisi in dignissim interdum, justo lectus sagittis dui, et vehicula libero dui cursus dui. Mauris tempor ligula sed lacus. Duis cursus enim ut augue. Cras ac magna. Cras nulla. Nulla egestas. Curabitur a leo. Quisque egestas wisi eget nunc. Nam feugiat lacus vel est. Curabitur consectetuer.

Suspendisse vel felis. Ut lorem lorem, interdum eu, tincidunt sit amet, laoreet vitae, arcu. Aenean faucibus pede eu ante. Praesent enim elit, rutrum at, molestie non, nonummy vel, nisl. Ut lectus eros, malesuada sit amet, fermentum eu, sodales cursus, magna. Donec eu purus. Quisque vehicula, urna sed ultricies auctor, pede lorem egestas dui, et convallis elit erat sed nulla. Donec luctus. Curabitur et nunc. Aliquam dolor odio, commodo pretium, ultricies non, pharetra in, velit. Integer arcu est, nonummy in, fermentum faucibus, egestas vel, odio.

Table 2.1: This is a table

Hey	How's it	Going?
Fine!	Just great.	See ya!
Fine!	Just great.	See ya!

CHAPTER 3

DUMMY CHAPTER

Hello!!

I need to write a quotation.

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetuer id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

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nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullam-
corper vestibulum turpis. Pellentesque cursus luctus mauris.

Test 3

Figure 3.1: Let's see. What have we got here?

Algorithm 1   Euclid's algorithm

1: **procedure** EUCLID(a, b)   ▷ The g.c.d. of a and b
2:      $r \leftarrow a \bmod b$
3:      **while** $r \neq 0$ **do**   ▷ We have the answer if r is 0
4:          $a \leftarrow b$
5:          $b \leftarrow r$
6:          $r \leftarrow a \bmod b$
7:      **end while**
8:      **return** b ▷ The gcd is b
9: **end procedure**

APPENDIX A

MANUALS, TECHNICAL SPECIFICATIONS, DOCUMENTATIONS, EXAMPLE SCENARIOS

APPENDIX B

TRY

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Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

REFERENCES

[1] Audibert, L. (2004). Word sense disambiguation criteria: a systematic study. In *20th international conference on computational linguistics (coling 2004)* (pp. 910–916). Geneva, Switzerland: COLING.

[2] Budanitsky, A., & Hirst, G. (2006). Evaluating WordNet-based measures of lexical semantic relatedness. *Computational Linguistics*, *32*(1), 13–47.

GLOSSARY

LI single word or words that are grouped in a language's lexicon.

lexicon The vocabulary of a language, including its words and expressions. More formally, it is a language's inventory of lexemes.

NLP The application of computational linguistics principles to problems.

POS linguistic category of lexical items.

NOTES

1. This is a footnote, or rather an endnote. Note that footnotes/endnotes are not encouraged in scientific and engineering disciplines.

2. don't you agree?

INDEX

PUBLICATION LIST

Journal Articles

[1]   Lim, L. T., Ranaivo-Malançon, B., & Tang, E. K. (2011a). Low cost construction of a multilingual lexicon from bilingual lists. *Polibits*, *43*, 45–51. Retrieved from `http://polibits.gelbukh.com/2011_43/43-06.htm`

[2]   Lim, L. T., Ranaivo-Malançon, B., & Tang, E. K. (2011b). Symbiosis between a multilingual lexicon and translation example banks. *Procedia: Social and Behavioral Sciences*, *27*, 61–69. doi: 10.1016/j.sbspro.2011.10.583

Conference Proceedings

[1]   Lim, L. T. (2009). Multilingual lexicons for machine translation. In S. John (Ed.), *Proceedings of the 11th International Conference on Information Integration and Web-based Applications & Services (iiWAS2009) Master and Doctoral Colloquium (MDC)* (pp. 732–736). Kuala Lumpur, Malaysia.