LaTeX THESIS TEMPLATE: AN UNOFFICIAL VERSION

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LaTeX Thesis Template: An Unofficial Version

Abstract

Author Name

This abstract presents a dummy content block intended to simulate a real thesis abstract. It spans multiple paragraphs and includes enough text to overflow onto the second page. The purpose of this demonstration is to observe how LaTeX handles hanging indents and vertical spacing, especially in custom environments such as keywords.

Keywords: LaTeX formatting, thesis template, abstract layout, hanging indent, vertical spacing, custom environments.

Acknowledgment

I would like to express my sincere gratitude to everyone who has supported me throughout this journey.

First and foremost, I am deeply thankful to my advisor, Dr. Jane Smith, for her invaluable guidance, constructive feedback, and constant encouragement. Her mentorship has been instrumental in shaping both the direction of this research and my development as a researcher.

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Special thanks to my friends and colleagues, whose humor, advice, and moral support helped me maintain perspective during stressful times.

Lastly, I owe my deepest appreciation to my family for their unwavering belief in me. Their love and patience provided the foundation that carried me through the ups and downs of graduate life.

This work would not have been possible without all of you.

Author Name
10 October 2023

Contents

Contents (Cont.)

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List of Abbreviations

EEG	Electroencephalogram
MI	Motor Imagery
CNN	Convolutional Neural Network
H_2O	Water
DBU	1,8-Diazabicyclo [5.4.0]-7-Undecene

Chapter 1

Introduction

1.1 Motivation

This section describes the research motivation that forms the foundation of the thesis.

1.2 Contributions

This thesis makes the following key contributions:

- We introduce a novel experimental paradigm that addresses key limitations in the current research.
- We propose a novel algorithm that enhances learning performance across multiple tasks.

1.3 Outline

This thesis is organized into the following chapters:

Chapter 1 Introduction: Introduces the research motivation, key contributions, and provides an overview of the thesis structure.

Chapter 2 Background: Provides a comprehensive overview of the fundamental concepts, theoretical foundations, and prior research that form the basis of this thesis.

Chapter 3 How to Use This Template: Offers practical guidance on using the VISTEC LaTeX thesis template, along with examples demonstrating how to format and organize paragraphs, sections, equations, algorithms, tables, figures, citations, and footnotes.

Chapter 4 Investigation: Describes the investigation, expanding upon the results

and analysis from the previous study to validate the proposed approaches.

Chapter 5 Conclusion: Summarizes the major findings, discusses their implications, and suggests future research directions.

Appendix A Proofs Supporting Investigation: Presents supplementary materials, including detailed proofs, additional results, and extended discussions that support the main chapters.

Chapter 2

Background

This chapter provides a comprehensive overview of the fundamental concepts, theoretical foundations, and related work that underpin the research presented in this thesis. It serves to establish the necessary background and contextual framework for the subsequent chapters.

2.1 Fundamental Concepts

This section introduces the key concepts relevant to this study. It covers the principles, terminologies, and foundational ideas required to understand the technical contributions of the thesis.

Chapter 3

How to Use This Template

3.1 Overview

This chapter provides guidance on how to effectively use and customize the VISTEC LaTeX thesis template. It explains the general structure, key files, recommended practices, and demonstrates common LaTeX formatting examples such as inserting figures, tables, equations, algorithms, and citations.

3.2 Directory Structure

The template is organized into clearly separated folders and files to simplify management:

- `main.tex` — The main file to compile your thesis.
- `thesisinfo.tex` — Define your title, author information, advisor, and committee.
- `contents/` — Contains all chapter, appendix, and special section files.
- `figures/` — Store all figures, images, and plots used in the thesis.
- `tables/` — Store external table files if needed.
- `bibliography.bib` — Your BibTeX bibliography database.

3.3 Setting Up Document Class Options

The `VISTEC` document class supports several options to customize the thesis according to the degree type, school, and program. Proper configuration of these options ensures that the generated thesis document meets the official formatting standards.

The document class options must be specified in the `main.tex` file.

3.3.1 Required Options

Two required options must be specified when declaring the document class in `main.tex`:

- **Degree Type:**
  - `phd` — for `\degreefield{Doctor of Philosophy}`
  - `master` — for `\degreefield{Master of Engineering}`
- **School and Program:**
  - `ist` — School of Information Science and Technology (Program: Information Science and Technology)
  - `mse` — School of Molecular Science and Engineering (Program: Materials Science and Engineering)
  - `ese` — School of Energy Science and Engineering (Program: Chemical Engineering)
  - `bse` — School of Biomolecular Science and Engineering (Program: Biomolecular Science and Engineering)

If your program is not among the predefined options, you must manually specify the `\degreefield`, `\school`, and `\program` fields in `thesisinfo.tex`.

3.3.2 Optional Options

The document class also provides optional settings that control additional layout features:

- `final` — (default) Compiles the document in its final version.
- `showframe` — Displays page layout frames (e.g., margins, headers, text block areas).
- `showgrid` — Displays a background grid to help visualize element positioning.

These options are useful during the drafting and formatting stages but should be disabled for the final submission. They are set in the document class declaration line in `main.tex`.

3.3.3 Example Usage

The document class options are configured in the preamble of the `main.tex` file. Example configurations include:

- `\documentclass[phd, ist]{VISTEC}`
  Ph.D. thesis, IST School (Information Science and Technology Program)
- `\documentclass[master, mse]{VISTEC}`
  Master's thesis, MSE School (Materials Science and Engineering Program)
- `\documentclass[phd, ese, showframe]{VISTEC}`
  Ph.D. thesis, ESE School (Chemical Engineering Program) with layout frames displayed

3.4 Editing Thesis Metadata

Edit `thesisinfo.tex` to set your thesis title, author name, student ID, academic year, advisor, committee members, and program information. These metadata fields automatically populate the title page, approval page, and other formal sections.

3.5 Adding Content to Chapters

Each main chapter (e.g., Introduction, Background, Investigation, Conclusion) should be placed under `contents/` and included using `\include{}` in `main.tex`. You can create additional chapter files following the provided structure, and organize sections, figures, tables, algorithms, and citations inside them.

3.6 How to Use LaTeX

If you are new to LaTeX, it is recommended to start with basic tutorials to understand fundamental concepts such as document structure, commands, environments, and referencing. A good starting point is the Overleaf online guide available at:

`https://www.overleaf.com/learn`

The Overleaf Learn platform provides comprehensive, beginner-friendly resources

covering topics from basic document setup to advanced formatting and bibliography management. Familiarity with these concepts will significantly improve your ability to customize and work efficiently with this thesis template.

3.7 Compiling the Thesis

Use `pdfLaTeX` as the compiler. A typical compilation sequence includes:

- First, run `pdflatex main.tex` to generate auxiliary files.
- Then, run `bibtex main` to generate the bibliography.
- Finally, run `pdflatex main.tex` twice to resolve cross-references.

Alternatively, tools like `latexmk` or IDEs such as Overleaf, TeXShop, and VS Code with LaTeX Workshop can automate this process.

3.8 Basic Formatting Examples

This section illustrates basic LaTeX formatting examples for headings, equations, algorithms, tables, figures, citations, and footnotes.

3.8.1 Subheadings

This subparagraph provides an example of text placed under a subsection heading. It serves to introduce and briefly describe the specific content or focus of the subsection.

3.8.1.1 Second-Level Subheading

This is a subsubparagraph under the second-level subheading. It is typically used for listing or elaborating fine-grained points.

1) This is the first item in the enumerated list.
2) This is the second item in the enumerated list.
3) This is the third item in the enumerated list.

3.8.2 Equations

The following is an example of formatting mathematical equations. As

illustrated in Equation 3.1, the *Rényi entropy* is defined as:

$$H_\alpha(X) = \frac{1}{1-\alpha} \log \left(\sum_{x \in \mathcal{X}} P[X = x]^\alpha \right). \tag{3.1}$$

3.8.3 Algorithms

Algorithms can be presented using the `algorithmic` package, as shown in Algorithm 3.1.

Algorithm 3.1 An example algorithm with a caption.

Require: $n \geq 0$
Ensure: $y = x^n$
1: $y \leftarrow 1$
2: $X \leftarrow x$
3: $N \leftarrow n$
4: **while** $N \neq 0$ **do**
5: $\quad X \leftarrow X \times X$
6: $\quad N \leftarrow \frac{N}{2}$ ▷ example comment
7: **end while**

3.8.4 Tables

LaTeX table generators, such as TablesGenerator.com, can help you easily create well-formatted tables. See Table 3.1 for an example.

Table 3.1 Classification performance. An asterisk (*) indicates statistically significant results ($p < 0.05$).

Comparison Model	**Subject-independent**	
	Accuracy ± SD	**F1-score ± SD**
FBCSP-SVM	64.96 ± 12.70	65.25 ± 15.14
Deep Convnet	68.33 ± 15.33	70.20 ± 15.18
EEGNet-8,2	68.84 ± 13.87	70.39 ± 14.30
Spectral-Spatial CNN	68.27 ± 13.56	65.86 ± 17.37
MIN2Net	**72.03 ± 14.04***	**72.62 ± 14.14***

3.8.5 Figures

Figures can be included using the `graphicx` package. Example shown in

Figure 3.1 and Figure 3.2.

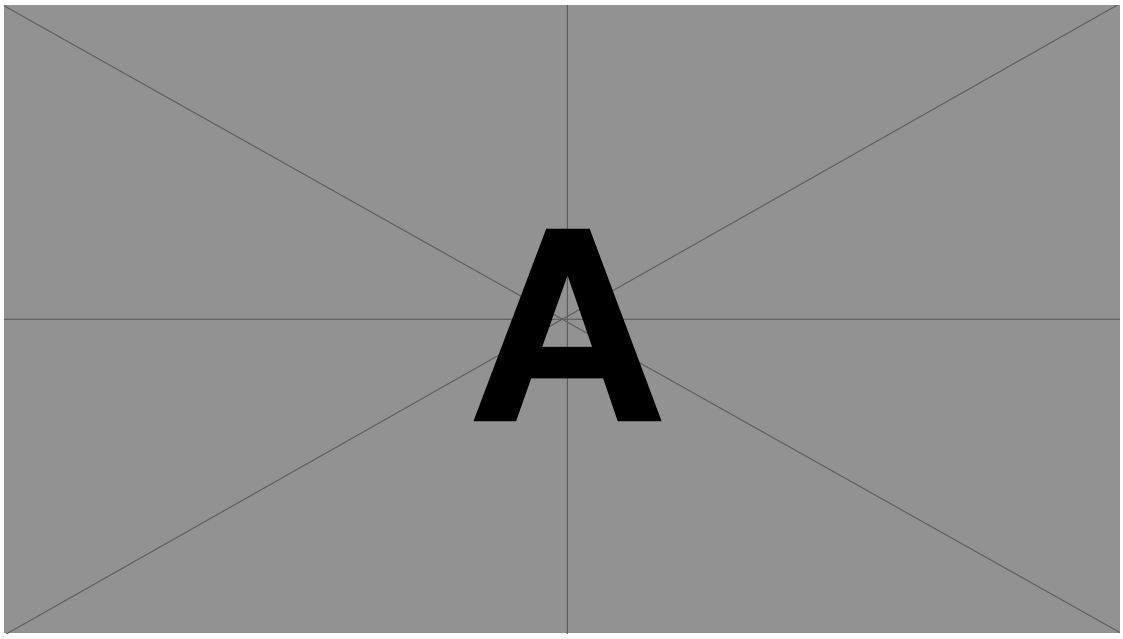

Figure 3.1 Example figure with long caption. This figure demonstrates how to include a standard image (e.g., PDF, PNG, JPG) into your document. Long captions should be aligned properly.

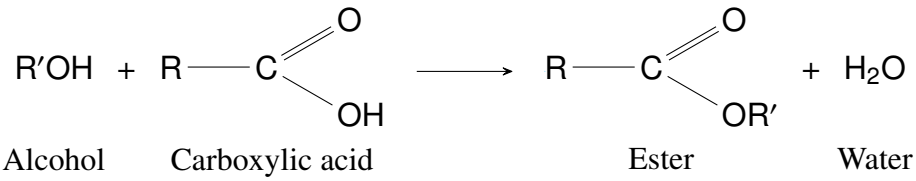

Figure 3.2 An esterification reaction illustrated using the `chemfig` package.

3.8.6 Citations

To cite references, use `\cite{}`, such as [1], or multiple sources like [2–4]. Ensure that the corresponding BibTeX entries are added to the `bibliography.bib` file before citing. Below is an example BibTeX entry:

```
@ARTICLE{dummy2022example,
  author  = {Doe, John and Smith, Jane and Roe, Richard},
  journal = {Journal of Example Studies},
  title   = {A Dummy Title for Demonstration Purposes},
  year    = {2022},
```

```
  volume  = {42},
  number  = {1},
  pages   = {1--10}
}
```

3.8.7 Footnotes

You can insert a footnote marker using `\footnotemark`[1] and define the text later with `\footnotetext{Example footnote.}`

[1] Example footnote.

Chapter 4

Investigation

4.1 Overview of the Investigation

This section provides an overview of the investigation conducted in this study, including the research methodology, experimental setup, and analysis approach used to validate the proposed methods.

Chapter 5

Conclusion

This chapter concludes the thesis by summarizing the key findings, discussing their implications, and outlining potential future directions for research in the field.

References

1. Author O, Author T, and Author F. A Placeholder Title for Demonstration Purposes. **Journal of Placeholder Research** 2022;99(9):100–10.
2. Author A and Author B. **A Dummy Book Title for Example Use**. Fictional Press, 1979.
3. Author F, Author B, and Baz A. Simulated Study on EEG Activity in Hypothetical Conditions. **Journal of Experimental Interfaces** 2020;55(8):8888–99.
4. Author O, Author B, and Author G. Sample Article on Deep Learning for EEG. **Journal of Artificial Neuroscience** 2017;12(4):321–40.

Appendix A

Proofs Supporting Investigation

A.1 Proof of Lemma

This section presents the detailed proof of the lemma introduced in Chapter 4. The proof follows standard mathematical derivation steps and verifies the correctness of the stated result.

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	Author O, Author B, and Author G. Sample Article on Deep Learning for EEG. **Journal of Artificial Neuroscience** 2017;12(4):321–40.
	Author R, Author O, and Author B. **A Sample Conference Paper on Face Recognition**. In: Proceedings of the International Conference on Vision Research. 2015:101–10.