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by

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any titles**

A Thesis Submitted to
The Hong Kong University of Science and Technology
in Partial Fulfillment of the Requirements for
the Degree of Doctor of Philosophy
in Name of Program

May 2023, Hong Kong

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I hereby declare that I am the sole author of the thesis.

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This is to certify that I have examined the above PhD thesis
and have found that it is complete and satisfactory in all respects,
and that any and all revisions required by
the thesis examination committee have been made.

name of your supervisor, Thesis Supervisor

name of your Department/Division/Program Office Head, Head of Department

Name of Department/Division/Program Office

10 May 2023

DEDICATION

You raise me up, so I can stand on mountains;

you raise me up, to walk on stormy seas.

I am strong when I am on your shoulders.

You raise me up, to more than I can be. — “You raise me up” lyrics by Brendan Graham.

To my mother, CHAN Siu-ngan (1958.12.21 - 2017.12.12).

找一個夢 走一條路

你像月光夜夜在祈禱我幸福 照亮我踏的每一步

我不會哭 我不會輸

我在月光守護的黑夜裡

看著自己真的像你 走你走過的路 — 《月光》易家揚 詞

致陳笑顏 (1958.12.21 - 2017.12.12), 我敬愛的媽媽

ACKNOWLEDGMENTS

Thanks your supervisor(s) and the defense committee.

Thanks everyone help in your thesis research.

Thanks everyone support you throughout the way.

Thanks your loved ones.

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ABSTRACT

Abstract text, 300 words or less

CHAPTER 1

INTRODUCTION

1.1 Style and Formatting

White A4 paper of good quality (80 to 90 gsm woodfree paper, i.e. photocopying paper) is to be used. Lines should be one-and-a-half line spaced throughout the thesis, except for abstracts, indented quotations or footnotes where single line spacing may be used. Each page should begin with a new paragraph. The IEEE style¹ is recommended for the references. Reference citations within the text should be in the form of numbers within square brackets (e.g. [1]).

All margins should be consistently 25mm (or a maximum of 30mm) in width. The same margins should be used throughout a thesis. All preliminary pages (title, approval, abstract, acknowledgement, etc.) should be numbered using lowercase Roman numerals (e.g. i, ii, iii, iv, ...) but i is not shown on the title page. On all other pages use Arabic numerals, i.e. 1, 2, 3, 4, ...

1.2 Examples

Here are some example pages with figures and tables. The content of the sample pages are extracted from the HKUST brand guidelines. Please remove all the sample content from your thesis.

1.2.1 Figure

Sample page: A page of illustrations with legends.

¹References should be in a separate section at the end of the thesis, with items referred to by numerals in square brackets, using the IEEE style as follows:

Papers : Author(s) (first initials followed by last name), title, periodical, volume, inclusive page numbers, month, year.

Books : Author(s) (first initials followed by last name), title, location, publisher, year, chapter, page numbers.



Figure 1.1: Standard University Combination Logo - English

Figure 1.1 is the English version of the HKUST standard university combination logo. A combination logo consists of logotype (e.g. texts) and logomark (e.g. image). This standard University combination logo should be used whenever possible on all English communications only, including University printed materials, presentations, websites, and University souvenirs. The standard University combination logo should be used in its entirety with no alterations or additional elements.

To make sure the standard University combination logo is always clear and legible, there is a minimum size requirement. The minimum size requirement is based on the height of the standard University combination logo.

1.2.2 Table

Sample page: A text page with a table

Table 1.1: Symbolic meaning of the HKUST emblem.

Parts	Meaning
As a whole	A scholar holding up an open book A transmission tower - representing engineering and technology - or communication and management
Top circle	Golden head of wisdom of the scholar A sun radiating gold (very traditional Chinese color)
Wave beneath the circle	The open book of knowledge An ocean representing Clear Water Bay, Hong Kong - where the University locates Upsilon Top part of Tau
Curves on both side	Arms of a scholar Sides of Psi
Bottom center	Body of the scholar Flask representing science Center part of Psi Bottom part of Tau

The emblem of HKUST is in several ways symbolic of the institution. Lyrically it visualizes the golden head of wisdom over the open book of knowledge. Between the arms holding the book can be seen as a flask representing science. Alternatively, it is a transmission tower representing engineering and technology or communication and management. We can also see a sun radiating gold, that very traditional Chinese color, over an ocean glowing with the deep blue representative of Hong Kong. Supporting these emblems are the three Greek letters upsilon, psi, and tau, that is: transliterating as UST. The emblem entwines many meanings, as does the University itself.

CHAPTER 2

GUIDELINES ON THESIS PREPARATION

Here is a version of the guidelines on thesis preparation with minor edits. Please refer to the original document [1] for the most update and accurate information about thesis preparation, especially about the thesis submission protocol.

2.1 Introduction

The guidelines in this document seek to ensure that theses are presented in a form suitable for library cataloging, preserving and access by users. The thesis will take its place in the library as a product of original thinking, research, and writing; its form must be comparable to other published works.

These guidelines cover the general rules of format and appearance. For content requirements, students should consult their Thesis Supervision Committee (TSC).

It is the student's responsibility to follow the requirements presented here. Thesis copies that do not meet these requirements will not be accepted.

Because of changes in requirements over time, students should not use existing library or departmental copies of theses as examples of current proper format.

2.2 Originality

2.2.1 MPhil thesis

An MPhil thesis shall consist of the student's own account of his/her investigations; be either a record of original work or an ordered, critical and thorough exposition of existing

knowledge; be an integrated whole, presenting a coherent argument; give a critical assessment of the relevant literature, describe the method of research and its findings, and discuss those findings; and include a full bibliography.

2.2.2 PhD thesis

A PhD thesis shall consist of the student's own account of his/her investigations; make original, distinct contribution(s) to our knowledge of the subject and afford evidence or originality by the discovery of new facts and/or by the exercise of independent critical power; be an integrated whole with a coherent argument; give a critical assessment of the relevant literature, describe the method of research and its findings, and discuss those findings, particularly with regard to how these findings appear to the candidate to have advanced the study of the subject; include a full bibliography; and be of a standard to merit publication in whole, in part or in a revised form (for example, as a monograph or as a number of articles in learned journals).

2.3 Components

2.3.1 Order

A thesis should contain a Title page (containing thesis title, full name of the candidate, degree for which the thesis is submitted, name of the University, i.e. The Hong Kong University of Science and Technology, month and year of submission), Authorization page, Signature page, Acknowledgments, Table of contents, Lists of figures and tables, Abstract, Thesis body, Bibliography, Appendices and other addenda, if any.

2.3.2 Authorization page

On this page, students authorize the University to lend or reproduce the thesis. The copyright of the thesis as a literary work vests in its author (the student). The authorization gives HKUST Library a non-exclusive right to make it available for scholarly research.

2.3.3 Signature page

This page provides signatures of the thesis supervisor(s) and Department Head confirming that the thesis is satisfactory.

2.3.4 Acknowledgments

The student is required to declare, in this section, the extent to which assistance has been given by his/her faculty and staff, fellow students, external bodies or others in the collection of materials and data, the design and construction of apparatus, the performance of experiments, the analysis of data, and the preparation of the thesis (including editorial help). In addition, it is appropriate to recognize the supervision and advice given by the thesis supervisor(s) and members of TSC.

2.3.5 Abstract

Every copy of the thesis must have an English abstract, being a concise summary of the thesis, in 300 words or less.

2.3.6 Bibliography

The list of sources and references used should be presented in a standard format appropriate to the discipline; formatting should be consistent throughout.

2.3.7 Sample pages

Sample of both MPhil [2] and PhD [3] theses are provided, with specific instructions for formatting page content (centering, spacing, etc.).

2.4 Language, Style and Format

2.4.1 Language

Theses should be written in English.

Students in the School of Humanities and Social Science who are pursuing research work in the areas of Chinese Studies, and who can demonstrate a need to use Chinese to write their theses should seek prior approval from the School via their thesis supervisor and the divisional head. If approval is granted, students are also required to produce a translation of the title page, authorization page, signature page, table of contents and the abstract in English.

2.4.2 Pagination

All pages, starting with the Title page should be numbered. All page numbers should be centered, at the bottom of each page.

Page numbers of materials preceding the body of the text should be in small Roman numerals. Page numbers of the text, beginning with the first page of the first chapter and continuing through the bibliography, including any pages with tables, maps, figures, photographs, etc., and any subsequent appendices, should be in Arabic numerals.¹

Start a new page after each chapter or section but not after a sub-section.

2.4.3 Format

A conventional font, size 12-point, 10 to 12 characters per inch must be used. One-and-a-half line spacing should be used throughout the thesis, except for abstracts, indented quotations or footnotes where single line spacing may be used.

All margins—top, bottom, sides—should be consistently 25mm (or no more than 30mm) in width. The same margin should be used throughout a thesis. Exceptionally, margins of a different size may be used when the nature of the thesis requires it.

¹That means the Title page will be page i; the first page of the first chapter will be page 1.

2.4.4 Footnotes

Footnotes may be placed at the bottom of the page, at the end of each chapter or after the end of the thesis body. Like references, footnotes should be presented in a standard format appropriate to the discipline. Both the position and format of footnotes should be consistent throughout the thesis.

2.4.5 Appendices

The format of each appended item should be consistent with the nature of that item, whether text, diagram, figure, etc., and should follow the guidelines for that item as listed here.

2.4.6 Figures, Tables and Illustrations

Figures, tables, graphs, etc., should be positioned according to the scientific publication conventions of the discipline, e.g., interspersed in text or collected at the end of chapters. Charts, graphs, maps, and tables that are larger than a standard page should be provided as appendices.

2.4.7 Photographs/Images

High contrast photos should be used because they reproduce well. Photographs with a glossy finish and those with dark backgrounds should be avoided. Images should be dense enough to provide 300 ppi for printing and 72 dpi for viewing.

2.4.8 Additional Materials

Raw files, datasets, media files, and high resolution photographs/images of any format can be included. ²

²Students should get approval from their Department Head before deviating from any of the above requirements concerning paper size, font, margins, etc.

2.5 Creating PDF files

Theses must be submitted in PDF format. Providing a properly generated PDF file ensures the manuscript can be read using different platforms (Windows, Mac, etc.), that it displays as intended, and that it can be readily indexed.

Before submitting the PDF file, please use the the HKUST E-thesis PDF Preflight application to ensure all fonts should be embedded; image resolution should be dense enough to provide 300 ppi for printing and 72 dpi for viewing; the final thesis should be submitted as a single PDF file and PDF files should NOT be encrypted, as text cannot be extracted from encrypted PDFs for full text indexing or storage. Encrypted PDF files will NOT be accepted.

2.6 Thesis Submission Protocol

The final thesis must be free from typographical, grammatical and other errors when submitted to the Thesis Submission System. In particular, the thesis supervisor and the Department Head/program director should not sign off on the final thesis that is not, to the best of their knowledge, free of errors.

For examination purpose, sufficient hard or electronic thesis copies are to be submitted to the Department at least four weeks before the thesis examination. The number of copies required will depend on the number of examiners.

Students should submit the draft thesis to the iThenticate platform for originality check. The draft thesis together with the iThenticate report should be submitted to the Department no less than four weeks before the thesis examination.

On successful completion of the thesis examination, and after any required corrections, students must submit a copy of the final thesis (either hard/electronic) to their Department, which will arrange for the appropriate signatures of approval to be obtained. For final theses which have been graded “Passed subject to minor corrections” or “Passed subject to major corrections” , students are required to submit the thesis for originality check via iThenticate. The iThenticate report should be handed in to the thesis supervisor(s), and the

Thesis Examination Committee if applicable, for review and endorsement via their Department. The Department will then return the signed Signature Page to the candidate. The candidate will upload and submit the Signature Page and the Authorization Page as a PDF file and the final thesis as another PDF file to the University's Thesis Submission System. The candidate does not need to replace the two unsigned pages in the thesis PDF with the scanned signature pages. The final thesis will be forwarded to the thesis supervisor(s) for approval via the Thesis Submission System.

2.7 Copyright

According to the University's Intellectual Property Policy, students shall own the copyright in respect of their written coursework, theses, papers and publications themselves as a whole as literary works.

2.8 Thesis Binding

Students may wish to keep personal copies of their thesis. They may arrange for such copies on their own and at their own expense. Service from MTPC of the University is one option (details below). Students may explore other binderies for the binding service. In any case, the binding of the thesis must correspond with the University regulations.

BIBLIOGRAPHY

- [1] HKUST, “Guidelines on thesis preparation,” in *Handbook for Research Postgraduate Studies*, 2023. [Online]. Available: <https://fytgs.hkust.edu.hk/academics/Academic-Regulations-and-Requirements/Handbook-for-Research-Postgraduate-Studies/guidelines-thesis-preparation>
- [2] —, “Thesis sample page (MPhil),” in *Handbook for Research Postgraduate Studies*, 2023. [Online]. Available: https://fytgs.hkust.edu.hk/sites/default/files/imce/thesis_sample_page_mphil.pdf
- [3] —, “Thesis sample page (PhD),” in *Handbook for Research Postgraduate Studies*, 2023. [Online]. Available: https://fytgs.hkust.edu.hk/sites/default/files/imce/thesis_sample_page_phd.pdf

APPENDIX A

TIPS ON HKUST THESIS PREPARATION

A.1 Sideway page

Here is an example to have a page turned side way in the PDF. It is useful for having wide figures and tables in the thesis.

Table A.1: Pearson’s ρ correlation of participated metrics with the WMT 2016 official average direct assessment human judgments on newstest 10k hybrid super-sampled systems at system level. Correlations of metrics not significantly outperformed by any other for that language pair are highlighted in bold.

Metric	into-English								out-of-English							
	cs	de	fi	lv	ru	tr	zh	avg.	cs	de	fi	lv	ru	tr	zh	avg.
Blend	.963	.969	.956	.976	.957	.981	.890	.956	–	–	–	–	.950	–	–	–
BEER	.966	.952	.954	.974	.930	.969	.897	.949	.963	.829	.975	.923	.942	.968	.906	.929
UHH_TSKM	.990	.929	.918	.986	.908	.982	.896	.944	–	–	–	–	–	–	–	–
CDER	.983	.922	.925	.981	.916	.970	.898	.942	.958	.803	.962	.911	.922	.948	.975	.926
TreeAggreg	.977	.913	.975	.983	.912	.983	.854	.942	.942	.765	.963	.915	.919	.971	.933	.915
chrF++	.935	.957	.924	.970	.938	.957	.876	.937	.966	.835	.977	.944	.942	.975	.968	.944
chrF	.933	.960	.935	.965	.946	.941	.855	.934	.968	.845	.979	.945	.947	.980	.969	.947
NIST	.994	.917	.928	.957	.904	.969	.831	.929	.954	.761	.957	.914	.917	.976	.968	.921
TER	.983	.899	.950	.967	.905	.951	.837	.927	.951	.790	.959	.888	.930	.958	.965	.920
BLEU	.964	.914	.906	.974	.907	.969	.852	.927	.945	.793	.919	.839	.893	.916	.969	.896
MEANT-dvw.cos.wmax.n2.m.r8. α 1.0, β 0.1	.921	.942	.939	.967	.955	.931	.836	.927	–	.844	–	–	–	–	.944	–
CharacTER	.963	.965	.944	.927	.948	.946	.740	.919	.973	.893	.970	.892	.929	.961	.914	.933
WER	.981	.889	.946	.965	.900	.922	.828	.919	.949	.797	.959	.884	.931	.947	.951	.917
PER	.967	.920	.892	.958	.904	.898	.866	.915	.960	.680	.939	.817	.876	.955	.893	.874
MEANT-dvw.cos.wmax.n2.m.r8. α 1.0, β 0.0	.896	.928	.931	.960	.952	.895	.799	.909	.968	.753	.970	.947	.955	.980	.931	.929
AutoDA	.440	.951	.922	.970	.902	.914	.734	.833	.967	.602	.879	.731	.850	.586	.968	.797