

BIG DATA ANALYSIS OF PUBLIC TRANSPORTATION DATA

Submitted by:

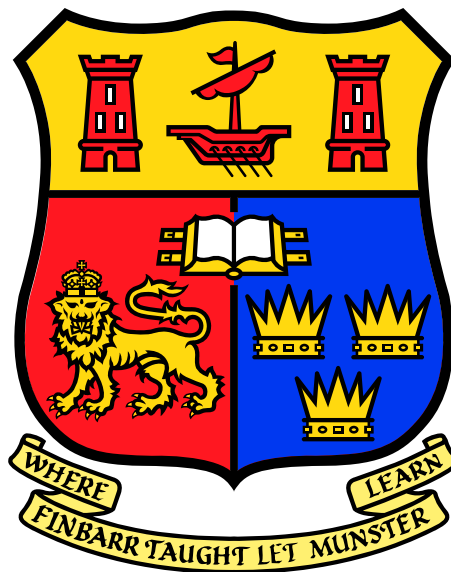
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July 31, 2020

Abstract

This document describes the uccthesi s class.

Declaration

I confirm that, except where indicated through the proper use of citations and references, this is my original work and that I have not submitted it for any other course or degree.

Signed: _____

Aausuman Deep
July 31, 2020

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Chapter 1

Introduction

This chapter explains the `uccthesis` class, the main purpose of which is to write a thesis with minimal configuration.

1.1 Thesis Structure

A typical thesis consists of *front matter*, *main matter*, and *back matter*. The front matter of a typical document consists of (1) a title page with title back page, (2) an abstract, (3) a declaration page, (4) an optional acknowledgement page, (5) an optional dedication page, and (6) a table of contents, (7) a list of tables, and (8) a list of figures. The frontmatter is inserted *automatically*. The back matter typically consists of the bibliography. Any other back matter should be typeset explicitly.

The commands `\declaration` and `\dedication` may be used to include a declaration or a dedication. However, there is no need to use these commands.

The main matter of the document starts by writing `\begin{document}`. Additional material may be added to the document's front matter by *redefining* the command `\addToFrontMatter[0]`. This may be useful if you wish to include additional lists of things to the document front matter. Any commands which are defined by this command are inserted before the first chapter. You should use the `\renewcommand` command to redefine the command `\addToFrontMatter`.

1.2 Class Options

The `uccthesis` class is built on top of the book [\[Lamport:94\]](#) class. The options `'a4paper'`, `'openright'`, `'titlepage'`, and `'fleqn'` are automatically passed to the book class by default. The `'draft'` option is only passed to the `'book'` class if you provide the option as an option of the `uccthesis` class. Using the option results in displaying the word 'Draft' on the titlepage. Table 1.1 lists the remaining document options and default values. The only allowed options to change the point size are 10pt, 11pt, and 12pt. Other options related to the point size are not supported. The options `a5paper`,

Option	Default	Description
10pt		Set point size to 10 pt
11pt		Set point size to 11 pt
12pt	on	Set point size to 12 pt
oneside	on	Enforce onesided pages
twoside		Enforce twosided pages
singlespacing	on	Set line spacing to single spacing
onehalfspacing	off	Discouraged: set line spacing to 1.5 spacing
doublespacing	off	Discouraged: set line spacing to double spacing
draft		Set draft option
Sets Degree to		
BScCS		BSc Computer Science
BScDSA		BSc Data Science and Analytics
DHIT		BA Digital Humanities and Information Technology
MScCS		MSc Computing Science
MScDSA		MSc Data Science and Analytics
MScIM		MSc Interactive Media
MScResearch		MSc Computer Science (Research)
PhD		PhD Computer Science
ManyFigures		Increase width of figure numbers in lof
ManyTables		Increase width of table numbers in lot
ManySections		Increase width of section numbers in toc
ManySubsections		Increase width of subsection numbers in toc
final	on	Set draft option off
lot	on	Include a list of tables
notlot		Do not include a list of tables
lof	on	Include a list of figures
notlof		Do not include a list of figures
*	N/A	Option is passed to book class

Table 1.1: Class options of `uccthesi` class. Most options are off by default. The word ‘on’ in the column ‘Default’ is used if and only if the option is on by default. None of the options `BScCS`, `BScDSA`, `DHIT`, `MScCS`, `MScDSA`, `MScIM`, `MScResearch`, and `PhD` is a default option. At least one of these options must be provided. Failing to provide them will result in an error.

b5paper, letterpaper, legalpaper, executivepaper, and landscape are also not supported.

Please note that a table of contents, a list of tables, and a list of figures are included *by default*. Including a list of tables and list of figures can be turned off with the options ‘nolot’ and ‘nolof’.

1.3 Styles

The following style files are automatically loaded by the class: amsthm, amsmath, babel, beramono, biblatex, booktabs, calc, chngpage, fancyhdr, fontenc, fourier, graphicx, inputenc, microtype, minitoc, pgfplots, setspace, textcase, tikz, url, and xcolor,

1.4 Bibliography Style

The bibliography style is hardcoded with biblatex [**biblatex**], which is automatically loaded so you can distinguish between *parenthetical citations*: [**biblatex**], and *textual citations*:**biblatex**. The former kind of citations may be obtained with the command \parencite. The latter citations may be obtained with the command \textcite. You can force an uppercase letter in a “Von” part by capitalising the first letter of these commands: \Parencite and \Textcite. For example, with the parenthetical version this gives you ‘LAF’ as opposed to ‘LAF’. More details may be found in LAF. Any attempt to redefine the bibliography style is ignored. *Note that the biblatex package only lets you put the \bibliography command in the document preamble.*

Since the bibliography depends on biblatex, users should refrain from using the \cite command.

The biblatex package uses biber as the back-end. When citations have changed or the bibliography has changed, they should run the biber command (not bibtex) on the base name of they main thesis source file.

1.5 Implementation Details

The implementation is relatively simple. The code for the titlepage is borrowed from arclassica [**arclassica**] A few macros are from arclassica [**arclassica**] and classicthesis [**classicthesis**]. The code to typeset the abstract is from the book [Lamport:94] class. The code for the pagestyle for twosided documents is based on the fancyhdr manual [**fancyhdr**].

The author of the thesis is defined with the \author command. The name of the supervisor is defined with the \supervisor command. The name of the second reader is defined with the \secondreader command.

Chapter 2

Example

Figure 2.1 depicts a minimal example of how to use the `uccthesis` class.
The following demonstrates how to include an external picture.

```
The following
demonstrates how to include an external picture.
\begin{figure}[hbt]
\hrule
\vspace{0.5em}
\centering
\includegraphics[width=0.95\textwidth]{Figures/jpgpic.jpg}
\vspace{0.5em}
\hrule
\caption{\label{fig:including@@picture}Including an external picture.}
\vspace{0.5em}
\hrule
The result is depicted in Figure~\ref{fig:including@@picture}
```

The result is depicted in Figure 2.2

```
% Thesis for MSc Computing Science with default style.
%\documentclass[MScCS]{uccthesis}
% The following uses all default options.
% \documentclass[MScDSA,lof,lot,12pt,oneside,singlespacing,final]{uccthesis}
% Other examples:
% \documentclass[MScCS,nolof,nolot,11pt,twoside,singlespacing,draft]{uccthesis}
% \documentclass[MScIM,12pt]{uccthesis}
% \documentclass[BSc,12pt]{uccthesis}

\addbibresource{mybib.bib} % bibliography must be defined in preamble

\title{How I got my MSc}
\author{Student's Name}
\supervisor{Supervisor's Name}
\secondreader{Second Reader's Name}
\date{\today} % Student should define the actual date

\abstract{Abstracts should be short.}
\dedication{This thesis is dedicated to mum.}
%\acknowledgement{Your acknowledgement here.}

\renewcommand\addToFrontMatter[0]{%
}

\begin{document}
  \chapter{Introduction}
  \ldots
  \chapter{Notation}
  \ldots
  \chapter{Conclusions}
  \ldots
  % start backmatter
  \backmatter
  % Print the bibliography
  \printbibliography
\end{document}
```

Figure 2.1: Using the uccthesis class.



Figure 2.2: Including an external picture.

Chapter 3

Bugs and Requests for Features

Bugs and requests for features may be reported by email to dongen@cs.ucc.ie. When reporting bugs, please describe the bug as well as providing a *minimal* example.