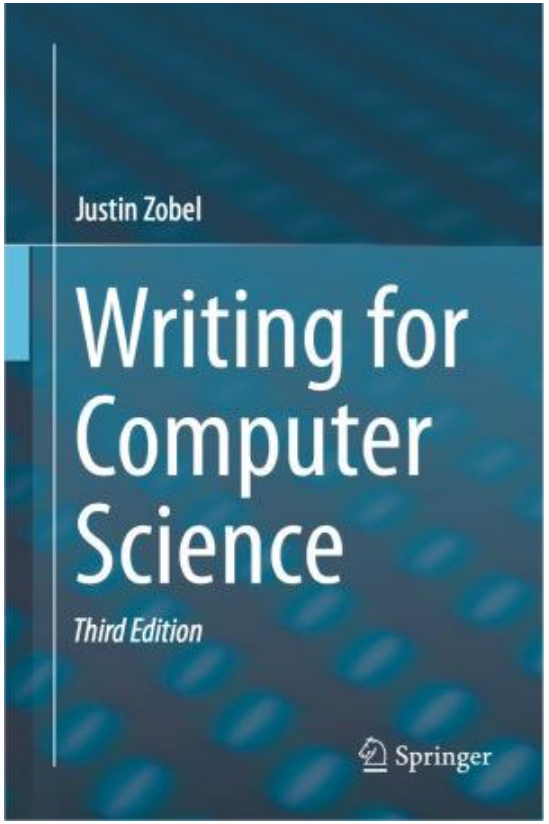
Writing and Defending a Thesis

Overview

- Technical writing is unique and is not the same as writing general prose.
  - This week we will learn best practices as well as tips & tricks for becoming a good technical writer
- We will also learn about Latex - one of the most popular type setting tools
- Finally, we will discuss the format of a typical research thesis and how to navigate the thesis defense process.

Technical Writing

- Technical writing is very different then general writing
- The Zobel book provides chapters on:
  - Good style
  - Punctuation
  - Mathematics
  - Algorithms
  - Figures &Tables



Technical Writing: Tips & Tricks

1. Tense: Use past tense in general
   - Use present tense to discuss related work
   - Use future tense when discussing future work

2. Examples: Use them as much as possible!

3. Parallel structure: Use to explain complementary concepts

Which is better?

- In SIMD, the same instructions are applied simultaneously to multiple data sets, whereas in MIMD different data sets are processed with different instructions.
- In SIMD, multiple data sets are processed simultaneously by the same instructions, whereas in MIMD multiple data sets are processed simultaneously by different instructions.

Which is better?

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- In SIMD, multiple data sets are processed simultaneously by the same instructions, whereas in MIMD multiple data sets are processed simultaneously by different instructions.

Which is better?

- A static model is appropriate because each item is written once and read often.

- A static model is appropriate because each item is only written once but is read often.

Which is better?

- A static model is appropriate because each item is written once and read often.
- A static model is appropriate because each item is only written once but is read often.
- Why? Less ambiguous!

Which is better?

- The analysis estimates the resource costs of software.
- The analysis derives information about software.

Which is better?

- The analysis estimates the resource costs of software.
- The analysis derives information about software.
- Why? “Information” in the second sentence is too vague

Latex

Why use Latex?

- Many documents have very specific formatting guidelines – font size, margins, spacing, etc.
  - e.g., Ontario Tech Thesis Formatting Guidelines - https://shared.ontariotechu.ca/shared/faculty/grad/assets/Publications/Thesis-Publications/thesis-checklist-and-formatting-guidelines.pdf


OntarioTech Graduate & Postdoctoral Studies

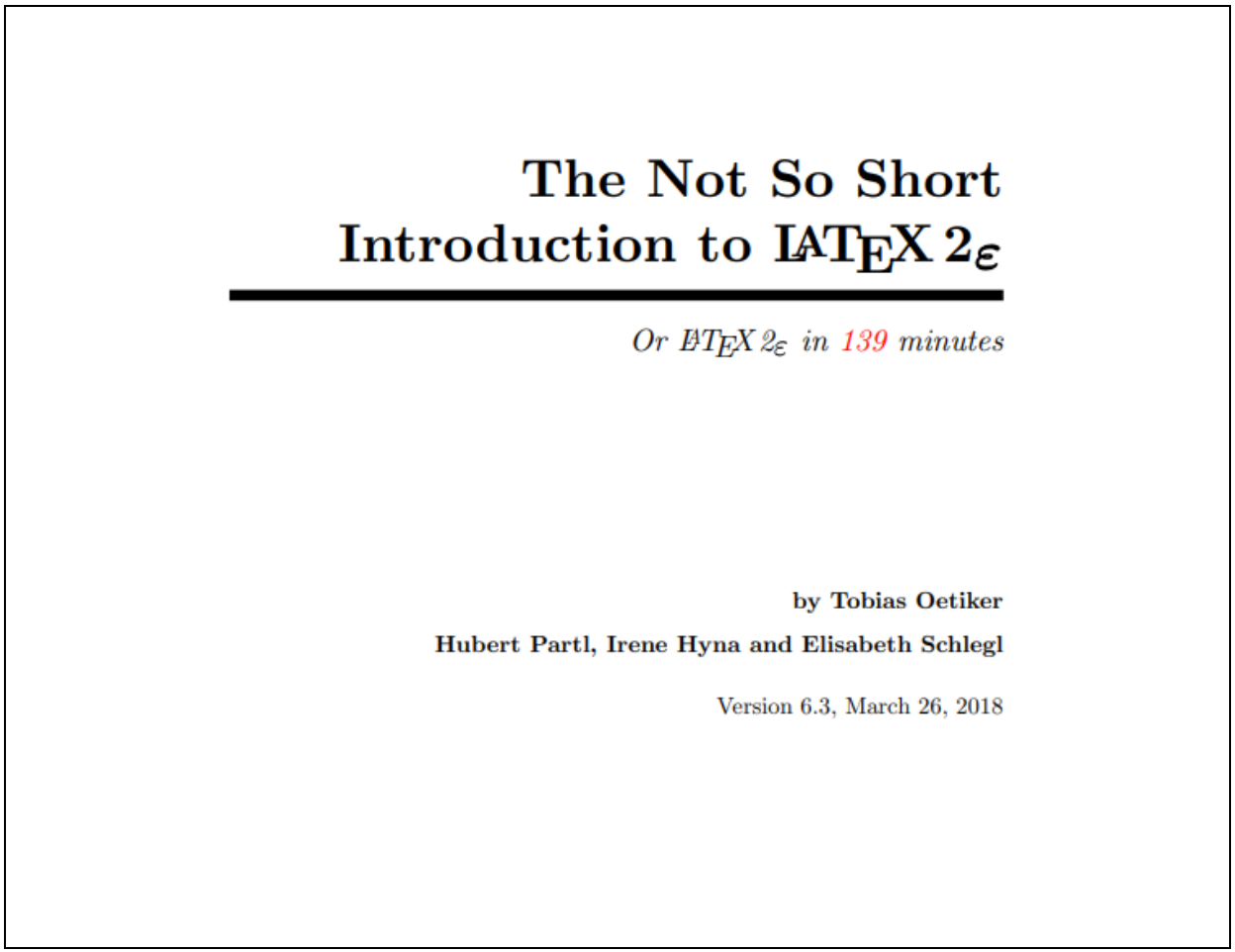
CHECKLIST #1: THESIS CHECKLIST AND FORMATTING GUIDELINES

Latex

Why use Latex?

- If a Latex style file or a template exists for a particular document format, then you only need to worry about content!
- An (unofficial) Ontario Tech Latex Thesis Template is available on GitHub – https://github.com/sqrlab/ontariotech-thesis-template

Getting Started with Latex



The Not So Short Introduction to LaTeX 2ε

Or LaTeX 2ε in 139 minutes

by Tobias Oetiker

Hubert Partl, Irene Hyna and Elisabeth Schlegl

Version 6.3, March 26, 2018

Thesis Document

Preamble

Chapters

- Introduction
- Background
- <Topic Specific Chapters>
- Summary & Conclusions

Bibliography

Appendices (if needed)

Thesis Document

Preamble

- Abstract – not too long!
- Statement of Co-Authorship (if applicable)
- Acknowledgements
- Statement of Originality
- List of Tables
- List of Figures
- Glossary of Terms (if applicable)

Thesis Document

- The introduction is one of the most important chapters of your thesis and is typically the first chapter read by your examining committee
- Sections include:
  - Motivation
  - Problem
  - Thesis Statement and Scope of Research
  - Contributions
  - Organization of Thesis

Thesis Document

- The background chapter provides the relevant research from the literature that is necessary to understand your research work.
- In addition to background research some theses also include related work in this chapter. However, related work can also be place in later chapters.

Thesis Document

- There are typically 3-4 topic-specific chapters – this is where you explain all of the research YOU conducted
- The content of these chapters can vary but in Computer Science the general structure is often:
  - Chapter 3: Framework/approach
  - Chapter 4: Detailed approach/implementation
  - Chapter 5: Evaluation

Thesis Document

- The summary & conclusions chapter is also very important!
  - Summary – a summary of your overall research (i.e., the content of the previous chapters)
  - Contributions – what did you contribute to the field?
  - Limitations – useful in demonstrating that you understand not only what you have done but also what you have not done
  - Future Work – possible extensions and future avenues of research based on your thesis
  - Conclusions – what can be concluded from your work

Thesis Document

- The appendices – What goes here?
  - Typically tables, data, source code, text that is not critical to understanding your work but may be of interest to some readers or to those extending your research

Thesis Timeline

- Ontario Tech Masters Thesis Timeline:
  - https://shared.ontariotechu.ca/shared/faculty/grad/assets/Publications/Thesis-Publications/Timeline%20-%20Masters%20Thesis.pdf
- Ontario Tech PhD Thesis Timeline:
  - https://shared.ontariotechu.ca/shared/faculty/grad/assets/Publications/Thesis-Publications/Timeline%20-%20PhD%20Thesis.pdf

Writing and Defending a Thesis

Summary

- We reviewed the process of writing and defending a thesis