Thesis Guidelines

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1 Thesis Structure

Your thesis should be a complete story from start to end. Usually your thesis is focussed on a specific problem or research question. Therefore, when writing about your work it makes sense to introduce the problem to the reader, describe related work, detail your solution and its implementation, and end with some conclusions. In this section we will briefly discuss a common thesis structure that can be used as a starting point. Note that every thesis is unique and you can always deviate from this structure where it makes sense.

- Introduction: This is where you set the context of the thesis. What is it about? What is the problem you are trying to solve? Why is a solution needed? What would the benefits be?

- Related Work/Background/State of the Art: Research is an important aspect of every thesis. In this chapter you should discuss the academic work that is related to your subject. Since your thesis should not just be a reimplementation of existing work, the related work is very important since it should act as motivation for the following chapters. For instance, you might find out that the related work has certain shortcomings which you are going to address in your solution. Similarly, you might also find out about existing approaches that work well for your problem, or a part of it, which will help you justify your solution later. For some theses it also makes sense to perform a short questionnaire to drive the thesis requirements.

- Solution: In this chapter you should discuss your theoretical solution. You should not present any technical details yet but describe your solution independently from your implementation. You could, for instance, describe the idea, a model or the architecture. How will you approach your problem? How are you addressing shortcomings in related work? Is there related work that supports your approach? This chapter might also list a set of requirements that you derived from the related work. Hypothetically, if you gave this chapter to someone else they should be able to implement your solution, as you intended it, based on your description. Note that you can always describe more than what you might be able to implement within the available time.

- Implementation: Here you can discuss all the technical details of your prototype implementation. What languages, frameworks and libraries did you use? Does your solution have any specific file formats? How did you solve any obstacles? How do you use your tool and how does it solve the problems you mentioned earlier? Explain how you went from your theoretical solution to a working version.

- Evaluation/Use Case: This chapter should illustrate the benefits of your tool over the existing work. You could perform a small experiment and have some users perform a task to measure efficiency or usability. Another option is to describe how the user would use your tool in a particular scenario, highlighting the benefits as you go along. It is never a bad idea to include some screenshots or code snippets in this chapter.

- Future Work & Conclusion: You conclude the thesis with future work and conclusions. It is likely that you had additional ideas or discovered some potential improvements during your implementation phase. These can be discussed as part of future work. Imagine that someone else will continue with your topic, what would the next steps be? Conclude the thesis with a thorough discussion of your contributions. How did you solve your assigned problem? What were the steps in the process towards a solution? What does your solution offer?

2 Language and Grammar

2.1 British English

You are required to use British English for your thesis. British English has some subtle differences from American English which might require some extra attention. Table 1 shows just a few of these differences. In order to make your life easier, we highly recommend that you set your spell checker to British English (also known as UK English) which is easily doable in any popular LaTeX editors.

US English	UK English
color	colour
gray	grey
visualize	visualise
behavior	behaviour
modeling	modelling
...	...

Table 1: US vs. UK spelling

2.2 Contractions

Contractions such as "I'm", "they're", "wouldn't" or "can't" are common in spoken language and informal writing but should be avoided in academic writing. You should rather use the expanded form such as "I am", "they are", "would not" or "cannot". More examples can be found at `http://grammar.wikia.com/wiki/List_of_contractions`.

2.3 Singular They

You might have encountered the issue that it is hard to write in a gender-neutral way. Take for instance the sentence "when the user turns on his/her computer". In such cases you should use the *singular they*. This means that you should use "they", "them" or "their" even if you are only talking about a single person:

- It is activated when the user turns on *their* computer.

- Somebody left *their* umbrella in the office. Would *they* please collect it?

- The patient should be told at the outset how much *they* will be required to pay.

- But a journalist should not be forced to reveal *their* sources.

Please refer to `https://en.wikipedia.org/wiki/Singular_they` for more details.

2.4 Widows and Orphans

Avoid single lines of text at the top or bottom of a page.

2.5 Common Mistakes

- 1990s (and not: 1990's); also always use the full year (1990s instead of 90s)

- related to (and not: related with)

- another (and not: an other)

- is built (and not: is build)

- in 2005 (and not: on 2005)

- one can see (and not: you can see)

- be consistent (e.g. if you use frequently the word "metamodel" do not also use "meta-model" or "meta model")!

- put commas and periods after a reference (and not before) (e.g. this can be found in Signer's work *[99]*.)

2.6 Capitalisation

Each sentence should start with a capital letter. When referring to figures or tables, the first letter should be capitalised. For captions of figures, table or listing only the first letter of the caption should be a capitalised:

- The architecture of the system is illustrated in Figure 8

- The results of the study are shown in Table 6

More information about how to refer to figures and tables can be found in Section 4.1.

Again, be consistent when referring to specific terms (e.g. if you use "Focus View", keep writing it like this and do not also use "focus View" nor "focus view")

2.7 Commas

Commas are used for punctuation and to indicate a brief pause in a sentence. A few examples where you always should use commas are:

- In the last few decades, a lot of research has been done . . .

- A lot of work has been done on this topic, for example, . . .

Please refer to `http://www.grammarbook.com/punctuation/commas.asp` for general rules.

3   LaTeX

We highly recommend writing your thesis in LaTeX. LaTeX is a markup language for text documents where the focus is put on the content and thr styling and layout is mostly handled automatically. Using LaTeX will give you tremendous benefits in terms of layout and referencing compared to other common tools such as Microsoft Word. Even if you have never used LaTeX before you should consider to use it as it is relatively easy to use. A good introduction to LaTeX can be found at `https://tobi.oetiker.ch/lshort/lshort.pdf`.

3.1   Editors

Although you can write LaTeX documents with any simple text editor as Notepad, we highly recommend you to use an editor with more advanced features such as integrated build tools, syntax highlighting and auto-completion. Table 2 provides a list of some of the commonly used LaTeX editors. Note that only a selection of editors are mentioned and you are of course free to use any other tool.

Editor	Windows	Mac OSX	URL
MiKTeX	✓		`http://miktex.org/`
TeXstudio	✓	✓	`http://www.texstudio.org/`
TEXnicCenter	✓		`http://www.texniccenter.org/`
TeXShop		✓	`https://tug.org/mactex/`
Sublime Text	✓	✓	`https://www.sublimetext.com/` (+ LaTeXTools package)

Table 2: Popular LaTeX editors

3.2   Thesis Template

3.3   Tips and Tricks

to highlight parts of text use `\emph{}` and avoid quotes or bold

to highlight text which is displayed on a schema, use `\texttt{}`

use a triple dash `---` for the character —

be careful of words containing dashes (such as wi-fi, or) which could get cut at the end of a line. Use to avoid that (e.g. `\mbox{wi-fi}`)

when quoting some text: use double quotes together with `\emph{}`

3.3.1   Quotes

When using LaTeX you might notice that quotes are not always rendered nicely (if you use the wrong characters) and, for instance, the left quote might be facing in the wrong direction. In order to address this issue, the template includes the two macros `\squote{}` and `\dquote{}`. Note that *squote* stands for *single quote*

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while *dquote* stands for *double quote*. Table 3 shows the difference between using regular quotes and the macros.

	LaTeX Code	Result
✗	`"ipsum lorem"`	"ipsum lorem"
✗	`'ipsum lorem'`	'ipsum lorem'
✓	`\dquote{ipsum lorem}`	"ipsum lorem"
✓	`\squote{ipsum lorem}`	'ipsum lorem'

Table 3: Using quotes in LaTeX

4 References

4.1 Internal References

For referencing elements in your own document (e.g. sections or figures) you should use the `\ref{}` command in conjunction with the `\label{}` command. With `\label{}` you can "tag" certain locations in your text so that you can refer to them with the tag you defined. It is good practice to give your tags a prefix that shows the type of the element that you are tagging, for instance "sec:introduction" for a chapter and "fig:architecture" for a figure.

Once the label has been defined, you can simply refer to it using the `\ref{}` command. For instance "as shown in Figure~\ref{fig:architecture}". The tilde forces a space between the word "Figure" and the number that will be inserted but prevents the two from being separated, for instance by a line wrap. Note that you should also use a tilde ($\sim$) instead of a normal space after any full stop that does not mark the end of a sentence (e.g. "... e.g.~as shown in ...)" or "... i.e.~we must ..."). Furthermore, you should use a tilde between words that should not be separated on different lines (e.g. "we have interviewed 500~users").

You should always mention the type of element you are referring to and they should always have a capital letter, for instance "Chapter 2", "Section 3.3" or "Figure 4". Note that you should always refer to figures in your document at least once, preferably before the image is shown. See `https://en.wikibooks.org/wiki/LaTeX/Labels_and_Cross-referencing` for more details on the `\ref{}` and `\label{}` commands. This link also includes a list of commonly used label prefixes.

4.2 URLs as Footnotes

In general, when you want to clarify a specific concept with a URL, you should use footnotes instead of references in the back. For instance " *We used the Microsoft Kinect SDK*[1] *for tracking users.*". In order to do so, you can use the `\footnote{\url{...}}` commands. Note that there should be no space between the word and the footnote number in the text (e.g. "Kinect SDK\footnote{\url{...}}").

4.3 Citations

LaTeX makes it relatively easy to manage your references thanks to BibTeX. BibTeX allows you to put your references in a separate file with all the necessary metadata. You then just have to reference the entries in your text via the `\cite{}` command and LaTeX will automatically add a numbered marker and will add it to the reference list at the back of your document (note that you should use numbers as markers which can be defined via `\bibliographystyle{}` command). For most papers and books you will find the BibTeX code on ACM, IEEE or Google Scholar or DBLP. Note that you should carefully check whether the information is correct when you copy information from any of these online resources (e.g. by checking the conference website). Furthemore,

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[1] `https://dev.windows.com/en-us/kinect`

some modifications might necessary to make the entries compliant with our requirements. It is important that all your entries have a consistent format and therefore we provide a sample entry with the fields that you should fill in for the different type of entries (fill in all of those fields but do not add additional ones).

```
@Book{Signer2008 ,
 author    = {Signer , Beat},
 title     = {{Fundamental Concepts for Interactive Paper and
              Cross−Media Information Spaces}},
 publisher = {Books on Demand GmbH},
 year      = {2008},
 month     = {May}
}

// author: make sure to escape special characters in name
// title: user double brackets and manual capitalisation of tile
// booktile: always use the full year in the short name
   (e.g. CHI 2015 instead of CHI '15)
// pages: use a double dash between page numbers
// address: do not mention state (for locations in the US)
@InProceedings{Jones2005 ,
 author =    {Jones , William and Phuwanartnurak , Ammy and Gill ,
              Rajdeep and Bruce , Harry},
 title =     {{Don't Take My Folders Away!: Organizing Personal
              Information to Get Things Done}},
 booktitle = {{Proceedings of CHI 2005, ACM Conference on Human
              Factors in Computing Systems}},
 pages =     {1505−−1508},
 address =   {Portland , USA},
 year =      {2005},
 month =     {April}
}

@Article{Whittaker2001 ,
 author =    {Whittaker , Steve and Hirschberg , Julia},
 title =     {{The Character , Value , and Management of Personal
              Paper Archives}},
 journal =   {ACM Transactions on Computer−Human Interaction},
 pages =     {150−−170},
 volume =    {8},
 number =    {2}
 year =      {2001},
 month =     {June}
}
```

Some requirements:

- When referencing multiple papers at the same time, use \cite{Roels2013, Signer2007, Trullemans2014} instead of \cite{Roels2013}\cite{Signer2007}\cite{Trullemans2014}. This makes your reference look like [1,2,3] instead of [1][2][3].

- Leave a single space between the name and the reference, but make sure you use a non-breaking space (tilde) to make sure the name and reference are not split because of line wraps. For instance, "The authors of MindXpres~\cite{Roels2014} state that ...".

- Every word in the title should be capitalised (except words like "and", "in" or "of").

- Use the full names of journals and not their abbreviations.

- Be consistent with how you define conference papers in your BibTeX file.

For more information on BibTeX see `https://en.wikibooks.org/wiki/LaTeX/Bibliography_Management#BibTeX`.

5 Plagiarism

As defined by the Merriam-Webster dictionary[2] plagiarism can mean any of the following:

- to use the words or ideas of another person as if they were your own words or idea

- to steal and pass off (the ideas or words of another) as one's own: use (another's production) without crediting the source

- to commit literary theft: present as new and original an idea or product derived from an existing source

Of course you are encouraged to build upon the work of others, but the key idea is that it should always be clear what you did and what was done by others. Therefore it is extremely important to explicitly mention the source of any external resources that you include or discuss in your thesis.

- You should not literally copy large parts of text from another source. For instance in your related work section you should describe the work in your own words and include a reference to the original papers that you described.

- However, sometimes it makes sense to literally quote small parts of text, for instance for definitions or interesting statements that the authors have made. In that case make it clear that you copied the text literally, for instance by surrounding the text in quotes and making it italic. Of course a reference to the source is also required.

- The same applies to resources such as figures, tables or lists. If it makes sense to include them literally in your text, make sure it is very clear where you got them from. This can be done, for instance, by referencing the source in the resource's caption.

- You can always make modifications to existing resources, but the same rules apply. Make it very clear that you based yourself on existing work, mention the source of the original material and make sure the reader can see what is part of the original work and what you modified or added.

Note that your document will be checked by a smart plagiarism detector[3] when you hand in. Suspicious parts will be reviewed and deliberate theft will be detected and sanctioned.

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[2]http://www.merriam-webster.com/dictionary/plagiarize
[3]http://turnitin.com/