Some rules of writing for your technical text

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This file has is some tips on writing for your dissertation.

There is plenty of instructions around the web from good sources to take a look, but I want to mention some repeat things that I have found recurrently in MsC Theses over the years. Some of them are higher level and some are details, all important. Please check those before you submit your writing to my review.

1. **Never leave spelling mistakes**. This is not acceptable, since there are many tools that can help with it. In the section that explains your acronyms, put an observation, justifying that that they are techniques named by authors with spelling errors and will be kept like that when mentioning the name of the technique for consistency.

2. **Word vs. latex**. I do not do Word in reviews. I have found over the years that this leads to 'accidents' when revising. You can choose Word for your writing though. If you write using Word please generate a pdf from it that is as much as possible a reflection of the original document. I will comment and suggest on the pdf. If you use latex, I might choose to edit small things directly, shortcutting steps. Please use overleaf if you employ latex, so we have the same set up on compiling.

3. **Use live links**. References in the text should lead to the list of references when clicking on it. URLs (including doi) should lead to the web page they refer to on clicking. Table of contents should be linked to the page of the content. Please be careful not to add wrong or untrustworthy URLs. When generating your pdf make sure the links will still be live on the pdf.

4. **References**.

    a. Adopt a pattern for references and stick to it. Ex:

    If your reference in the list of references is:

    Ashley Suh, Mustafa Hajij, Bei Wang, Carlos Scheidegger, Paul Rosen: **Persistent Homology Guided Force-Directed Graph Layouts.** IEEE Trans. Vis. Comput. Graph. 26(1): 697-707 (2020), https://doi.org/10.1109/TVCG.2019.2934802

    You might refer to it in the middle of your text as:

(Suh, Hajij, Wang,Sheidegger,Rosen 2020), or (Suh et al. 2020), or (Suh,A. et al. 2020). There are other formats , such as numbers [1],[2], etc.. , but always add the year, the doi address if available, and keep the exact same pattern throughout the text.

Ideally, if you have more than three authors you should use the 'et al.' ending to ease reading. Never use et. al in the list of references at the end of the document. In the list of references you mention all authors.

b. Add basic references when mentioning known methods and techniques or when describing a previously developed technique, so readers can gather details in case they need.
c. Add reference(s) to back up your mention of qualities or criticisms of methods, approaches, techniques or systems.
d. In the list of references at the end of your document, the reference should be complete, containing all authors in the right order, title, name of journal or proceedings volume (when applicable), issue (when applicable), pages or index and year. Do not use 'et al.' in the list of references. Write the names of all authors, and decide if you are using forenames or initials and keep the pattern.
e.

5. **Literature review**. When doing a literature review, whether it is embedded in the introduction or in a separate chapter or section, the papers or other work you mention should be mentioned in a carefully written paragraph. You should explain the goals of the paper, the techniques employed and the results they achieved, as well as any limitations that are relevant to the problem at hand.

   At the end of the literature review you explain the relationship to your work, and how your work compares to that and contributes to the state of the art (is it a case study? A new solution? A change that improves on previous results?)

   So, you should be critical of the current work related to yours and be able to contextualize your results within that review.

6. **Figures and Tables**. Figures and Tables should be numbered and referred to by number. Figure X, Table Y, etc. Do not write 'the figure below', or ' the table above' as this more often than not will lead to some confusion. All figures and tables will have captions and explanations. Captions must teel the reader what they are looking at: what the symbols and colors mean, what the numbers are about, what differs one part of the figure/table from the other, etc. By looking at the caption I know what I am looking at and can interpret to a certain extent independently. The text will also explain figures and tables, your interpretation of them, and highlight what is important that the reader does not miss. ***Very important***: Figures and tables that are 'borrowed' from other sources (papers, web sites, etc.) must have their sources declared in the caption.

7. **Beginning of Chapters**. Chapters and sub-sections begin by explaining what the content of that part is, and the reasoning behind it (why this is shown, the context and any observations as to what it intends).

8. **End of Chapters**. There is usually one or two paragraphs at the end a chapter that bridge that chapter to the next so as to make the reader aware of the flow of information from one chapter to the other. Important: when a chapter presents your own content, such as algorithms you designed or tested, data analyses, results of applying certain techniques to your particular task, and other work of yours, that bridge paragraphs should summarize your findings of the chapter, so readers can know if they understood your results correctly.

9. **Introduction**. Introduction has to contain some key elements: Context – what the document is, what area it fits, how it fits the state of the art; What problem is it trying to tackle; the goals of the Thesis; summary of the ' how' - meaning how you approached the problem; and summary of the conclusions reached. It ends with an explanation of what the next Chapters contain, one by one. If you do not have a particular chapter of literature review, that will also be in the Introduction. It describes other related work, explained them, how they approach the problem, how you considered them in your work, and how it differs from your solution. It goes before the summary of the conclusions.

10. **Language**. A technical text is a formal, written document. As such, choose words that are not colloquial. Examples: attempt instead of 'try', eliminate instead of 'get rid of', etc. Do not use contractions. Thus, for example, use cannot, does not, did not, have not, instead of can't, doesn't, didn't, haven't. "On the other hand" means <u>in opposition to</u> what was written previously. Please do not use that expression as a confirmation or as an additional piece of information. Choose 'additionally' or 'moreover' if you mean to add something that agrees or that is in addition to what is said in the previous sentence.

11. **Acronyms**. We are in a field with plenty of acronyms. You should have a list of those at the beginning of your document. The first time the acronym appears in your text you must write the whole expression of it and add the acronym

    For instance: Support Vector Machine (SVM)

    After the first mention you can use SVM every time you need to mention the technique.

12. When using references to support current state of affairs in some field, use up to date references. For instance, if you say: 'the collections of this type of data is doubling every year', that should not be backed up by a reference of 2010. Things may have changed considerably since then. Look for a recent reference that revised that claim.

13. **Methodology**: Applications, programs, systems and packages are not methods. When explaining your methodology, you are not using programs, but methods. So, in the methodology section as well as in the Abstract, you mention approaches and techniques, for instance, key-term based clustering, multidimensional projections, heat maps, tree maps, Sankey charts, statistical infographics, or classification methods, instead of Vis-kt, Vispipeline, D3, react, Tableau, Weka, TensorFlow etc.

14. **The tools**. You will mention the applications, programs, systems, packages, languages and other tools that you employed when, at the beginning of the results section, you

define the set-up for your tests, or in an implementation section. There you mention the machine your ran your tests on, if you had a server for experiments, and what tools you employed to run your methods (e.g. Vis-kt, Orange, Vispipeline, Tableau, Weka,etc.). You also mention the languages you have used to program and the packages employed for your solution.

15. **Revising your text**. Please revise your text three times before sending it over to your supervisor or other reviewers for comments. The reason for that is that once there are fewer writing issues to pay attention to, the reviewer can focus on structure and content. We want to use the reviewer's time wisely, right?