The Best Title in the World

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Abstract

This paper provides a template for writing a Project Report in TDT13, Advanced Text Analytics and Language Understanding. The document itself conforms to its own specifications and is thus an example of what your manuscript should look like. The template does not form a compulsory style that you are obliged to use, but rather provides a common starting point for all students. For a given report, tuning of the template may still be required, depending on the nature of the report and the author's writing style. Such tuning might involve moving a section to a subsection or vice versa, or removing or adding sections and subsections.

Note that the template contains a lot of examples of how to write different parts of the report as well as how to cite authors and how to use LaTeX and BibTeX. Some of those examples might only be clear if you actually look at the LaTeX source itself.

The abstract is your sales pitch which encourages people to read your work, but unlike sales it should be realistic with respect to the contributions of the work. It should include:

- what the research topic is,
- the research approach(es) applied, and
- contributions.

The abstract should not exceed 200 words. Do not include lists, tables or figures. Avoid abbreviations and references.

1 Introduction

Each section should start with an introduction before its subsections begin. Sections with just one subsection should be avoided. Think carefully about section titles as each title should convey the meaning of the contents of the section.

In all sections it is important to write clearly and concisely. Avoid repetitions and if needed refer back to the original discussion or presentation. Each new section, subsection or paragraph should provide the reader with new information and be written in your own words. Avoid direct quotes. If you use direct quotes, unless the quote itself is very significant, you are conveying to the reader that you are unable to express this discussion or fact yourself. Such direct quotes also break the flow of the language (yours to someone else's).

Manuscripts must be in single-column format. **Type single-spaced.** You may prepare your PDF files using any word processor, but templates are only provided for LaTeX and Microsoft Word. For the production of the electronic manuscript you must use Adobe's Portable Document Format (PDF). PDF files are usually produced from LaTeX using the *pdflatex* command. If your version of LaTeX produces Postscript files, you can convert these into PDF using *ps2pdf* or *dvipdf*. On Windows, you can also use Adobe Distiller to generate PDF, or the print to or save to PDF functions.

For reasons of uniformity, Adobe's **Times Roman** font should be used, with 11pt for the text, 12pt for section titles, and 15pt for the title of the report. If Times Roman is unavailable, use **Computer Modern Roman** (LaTeX2e's default). Note that the latter is about 10% less dense than Adobe's Times Roman font.

Please make sure that your PDF file includes all the necessary fonts (especially tree diagrams, symbols, and fonts for non-Latin characters). When you print or create the PDF file, there is usually an option in your printer setup to include none, all or just non-standard fonts. Please make sure that you select the option of including ALL the fonts.

The section 'Introduction' should give the background and motivation for the work, that is, it should state where your project is situated in the field and what the key driving forces motivating this research are. However, keep that text brief, as it will be further extended in Section 3, presenting the state-of-the-art. Your goal/objective should be possible to describe in a single sentence. In the text after it you can expand on this sentence to clarify what is meant by the short goal description. The goal of your work is what you are trying to achieve. Potentially, how well the goal has been met is a theme that you should return to towards the end of the report (so in Section 7 and possibly in Section 6 as well).

The introduction can also briefly describe what methodology you will apply to reach the goal and the reasons for this choice of research methodology. It can furthermore provide a brief summary of the main contributions of the work, and should provide the reader with an overview of what is coming in the next sections. You want to say more than what is explicit in the section names, if possible, but still keep the description short and to the point.

2 Background

The background's depth and breadth depend on the depth needed to understand your project. It is not a place to just write about everything you know that is vaguely connected to your project. The theory is here to help the readers that do not know the theoretical basis of your work, so that they can gain sufficient understanding to understand your contributions. In particular, the theory section provides an opportunity to introduce terminology that can later be used without disturbing the text with a definition.

When introducing techniques or results, always reference the source. Be careful to reference the original contributor of a technique and not just someone who happens to use the technique.[1] For results relevant to your work, you would want to look particularly at newer results so that you have referenced the most up-to-date work in your area. If you do not have the source handy when writing, mark in the text that a reference is needed and add it later. Web pages are not reliable sources — they might be there one day and removed the next; and thus should be avoided, if possible. A verbal discussion is not a source and should normally not be referenced. The bulk of citations in the report will appear in Section 3. However, you will often need to introduce some terminology and key citations already in this section. You can cite a paper in the following manner (and several other versions, see the `natbib` package documentation):

add reference

- when referring to authors:
  Authorson and Bobsen (2010) stated something rather nice.
- to cite indirectly:
  Papers should be written nicely (Authorson and Bobsen, 2010) *or*
  In Authorson and Bobsen (2010), a less detailed template was presented.
- To just cite the authors:
  Authorson and Bobsen wrote a nice paper. Or just the year: 2010.
- You can even cite specific pages: Authorson and Bobsen (2010, p. 3).

You should obviously always cite your teacher's work (Benyon et al., 2013), even if it is completely irrelevant (Das and Gambäck, 2013) or very old (Alshawi et al., 1991). Digging up an even older book can also appear impressive (Diderichsen, 1957). (Or? ;-)

2.1 Introducing Figures

Remember that when you borrow figures you should always credit the original author — such as Figure 1 (adapted from Authorson and Bobsen, 2010), as well as state that you have permission to reprint it (e.g.,

[1] But always make sure that you have read the work you are citing — if not, cite someone who has!

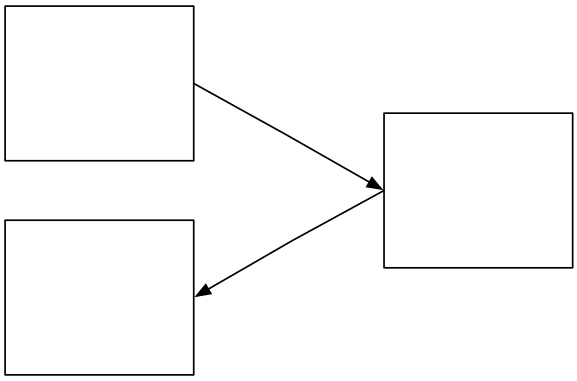

Figure 1: Boxes and arrows are nice (adapted from Authorson and Bobsen, 2010, with permission)

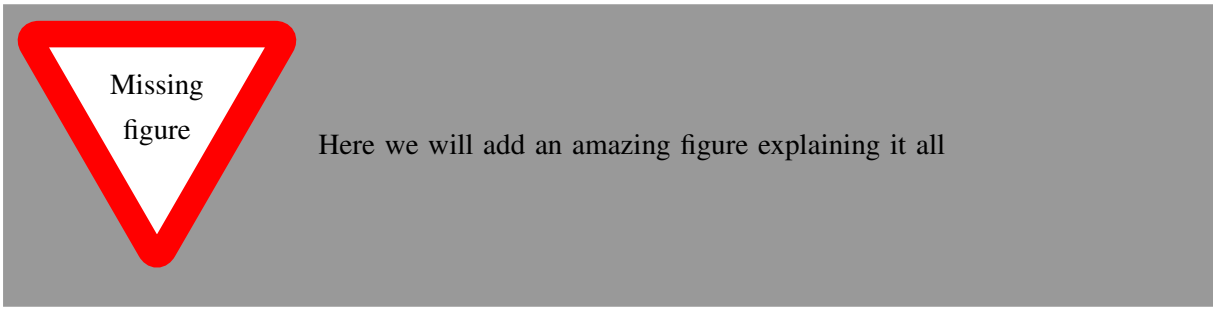

Figure 2: A missing figure

if it is published under a Creative Commons License, or if you have gained explicit permission from the author).

Do not just put the figure in and leave it to the reader to try to understand what the figure is. The figure should be included to convey a message and you need to help the reader to understand the message intended by explaining the figure in the text. Hence **all** figures and tables should always be referenced in the text. There will often be specific parts of a figure or table that you want the reader to pay special attention to (and that you discuss in more detail in the text). It is helpful if you mark those parts clearly (e.g., by circling them, pointing them out with arrows, using different colours and fonts, etc.)

It is good practice to add a note about a missing figure in the text, such as the completely amazing stuff that will appear in Figure 2.

Narrow graphics together with the single-column format may lead to large empty spaces. If you have multiple graphics with related content, it may be preferable to combine them in one graphic. You can identify the sub-graphics with sub-captions below the sub-graphics numbered (a), (b), (c) etc., and using 9pt text. The LaTeX packages wrapfig, subfig, subtable and/or subcaption may be useful.

2.2 Introducing Tables in the Report

As you can see from Table 1, tables are nice. However, again, you need to discuss the contents of the table in the text. You do not need to describe every entry, but draw the reader's attention to what is important in the table, e.g., that 94.99 is an amazing F_1-score for the English-Gujarati language pair (and that probably something fishy happened there).

There is always some more stuff that you will need to add at some later point. Be sure to at least make a note about it somewhere.

Table 1: Example table (F_1-scores)

Langs	Source	Lang1	Lang2	Univ	NE	Mixed	Undef
EN-HI	FB+TW	54.22	22.00	19.70	4.00	0.05	0.03
	FB	75.61	4.17	18.00	2.19	0.02	0.01
	TW	22.24	48.48	22.42	6.71	0.08	0.07
	Vyas	54.67	45.27	0.06	-	-	-
	FIRE	45.57	39.87	14.52	-	0.04	-
EN-BN	TW	55.00	23.60	19.04	2.36	-	-
	FIRE	32.47	67.53	-	-	-	-
EN-GU	FIRE	5.01	**94.99**	-	-	-	-
DU-TR	Nguyen	41.50	36.98	21.52	-	-	-
EN-ES	EMNLP	54.79	23.50	19.35	2.08	0.04	0.24
EN-ZH		69.50	13.95	5.88	10.60	0.07	-
EN-NE		31.14	41.56	24.41	2.73	0.08	0.08
AR-AR		66.32	13.65	7.29	11.83	0.01	0.90

3 Related Work

What other research has been conducted in this area and how is it related to your work? This section is thus where your literature review will be presented. It is important when presenting the review that you give an overview of the motivating elements of the work going on in your field and how these relate to your work, rather than a list of contributors and what they have done. This means that you need to extract the key important factors for your work and discuss how others have addressed each of these factors and what the advantages/disadvantages are with such approaches (objectively speaking or in the words of the authors themselves — save your own views until the Discussion section). As you mention other authors, you should reference their work. Note that the reference list reflects the literature you have read *and* have cited. This will only be a subset of the literature that you have read.

A good way to find relevant work is by checking what others are referencing, e.g., in papers you have already found or in previous studies carried out at NTNU, such as (Berg and Gopinathan, 2017). However, when doing that, do not fall into one of the common traps, such as re-iterating someone's false quote or faulty analysis of a previous paper (check the original source!), or to get stuck inside a local research cluster (a group of researchers that mainly refer to the ones using the same type of approaches or similar ideas).

Note that a reference needs to be complete: you should always give the full name of a conference or journal, always include page numbers, always say where a book or thesis was published and where a conference took place. Gather the full set of references together under the heading **References**; place the section before any Appendices, unless they contain references. Arrange the references alphabetically by first author, rather than by order of occurrence in the text.

4 Architecture

Here you will present the architecture or model that you have chosen and which is implemented in your work. Note that putting algorithms in your report is not always desirable, so in certain cases those might be placed in the appendix. Code is normally to be avoided in the report itself, but may be included in an appendix or submitted as additional documents. **(The actual code should also be submitted together with the report, either as a zip-file or as a link to a GitHub repository or similar.)**

Here, or in a separate section (or possibly in the Background section or in the Experimental Setup), you should also discuss the data that you use in your experiments.

Clearly, a figure showing the architecture is a must, such as Figure 3.

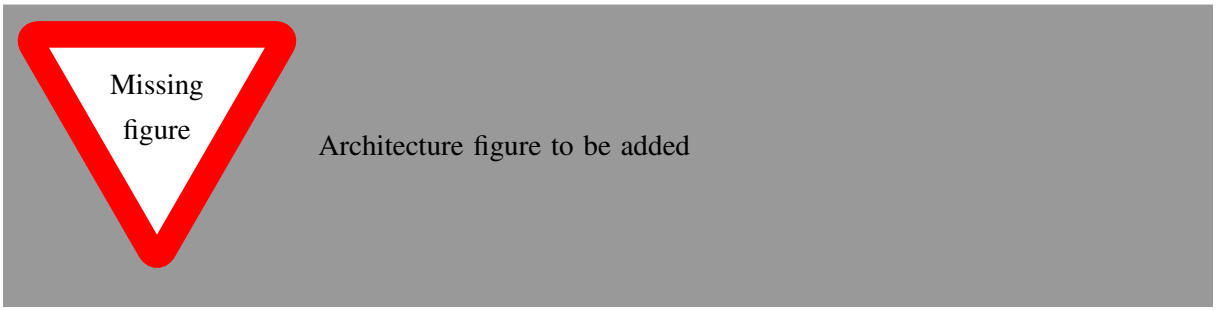

Figure 3: The missing architecture

5 Experiments and Results

Trying and failing is a major part of research. However, to have a chance of success you need a plan driving the experimental research. So first decide what experiments or series of experiments you plan — and describe them in this section.

5.1 Experimental Setup

The experimental setup should include all data — parameters, etc. — that would allow a person to repeat your experiments.

5.2 Experimental Results

Results should be clearly displayed and should provide a suitable representation of your results for the points you wish to make. Graphs should be labeled in a legible font. If more than one result is displayed in the same graph, then these should be clearly marked. Please choose carefully rather than presenting every result. Too much information is hard to read and often hides the key information you wish to present. Make use of statistical methods when presenting results, where possible to strengthen the results. Further, the format of the presentation of results should be chosen based on what issues in the results you wish to highlight. You may wish to present a subset in the experimental section and provide additional results in an appendix. If there are specific points related to one experiment that you want to discuss in more detail, it could be reasonable to do that already in this section; however, save the main overall discussion for Section 6.

6 Evaluation and Discussion

It is important to include a discussion, which describes what you have learned so far, the merits of the work as well as its limitations. It can be a separate section or it can appear together with the results or be part of the conclusion). When evaluating your results, avoid drawing grand conclusions, beyond those that your results can in fact support. Further, although you may have designed your experiments to answer certain questions, the results may raise other questions in the eyes of the reader. It is important that you study the graphs/tables to look for unusual features/entries, and discuss these as well as the main findings. In particular, carry out an error analysis: What went wrong and why?

7 Conclusion and Future Work

What are the main contributions? How significant are they? Discuss the contributions in terms of the initial goal formulated in the Introduction.

Also consider how you think the work could be extended or improved, or what you could have done differently.

References

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