

A title that immediately tells even a non-expert reader what the report is about and catches his/her interest

GROUPXXXX

Author One Author Two Author Three Author Four
BIRTHDATE1 BIRTHDATE2 BIRTHDATE3 BIRTHDATE4



Abstract

The abstract should state the problem and why it is important. It should describe what you have contributed / accomplished and what implications / impact this has. The abstract should be self contained. Someone that has not read the report should be able to understand it. It should be enough to know the general area of the report, in this case computer science, to understand it. It should not promise more than it delivers. That is, if you promise to cure cancer you cannot finish by saying *and this is why we should cure cancer*. It should not contain abbreviations and bibliographic references. It should be short. Remember that it is not a summary of the report. Think of it more as an ad for the report where the aim is to raise interest and make someone read all of it. This abstract is too long or at least bordering on it.

TOTAL LENGTH LIMIT: 12 pages
TOTAL SIZE LIMIT: 9 MB

1 Introduction (1–2 pages)

The introduction should start by explaining what the problem is and why it is important. If one solved the problem you address, what is possible that is not possible today? What can I (as a reader) get out of it? You must not copy the text from the abstract. You should start at a helicopter level so that your grandmother can understand at least the gist of the field you work in and why this might be useful.

If this was a scientific paper the introduction is the most important section in the entire paper, at least in the review process where the fate of the paper gets decided. Papers with great results are rejected on regular basis because the introduction did not manage to convince the reader, i.e., a reviewer or editor, that the result were useful. If you you have some time over to polish your formulation this is where you should spend you time. Depending on how you structure the introduction it is typically about 10–25% of the total paper.

After your have motivated why you do what you do you should provide the reader with information about your specific results and give the reader a hint at how you got there. You cannot go into great details here since the reader does not have enough knowledge but an expert should be able to tell what you did rather precisely and a non-expert should understand at least in a sketchy way how you approached the problem. It is a strength, almost a necessity, to reference the key results that your work rests on. Very few scientific papers make huge new discoveries, disconnected from all other results. It is more about incremental contributions where researchers document their small steps towards a bigger goal. By sharing their new knowledge, the field as a whole progresses. Do not hide references that are close to what you did. Use them to show how well you know the field.

If you are unable to reference any other work you will have to spend a huge amount of effort to convince the reader that there is in fact no relevant work and that you were not simply too lazy to look for it. The more well researched an area is the more focused and close to your work the references will be. When the area is not so well researched you will have to widen your scope and refer to the closest work to your work even if it may be far. Again, the aim is to make sure that the reader is convinced that you know the field and hence that you are a reliable source of new information.

In this report template we will make use of a separate section (see Section /refsec:relwork) for describing the related work in detail. Some people prefer to describe the related work in detail here. We use a separate section here as the related work in one of the more important parts of the project in the AI course.

1.1 Contribution

In a scientific paper this may not be an actual section but here we want you to practice to make this concrete. You cannot leave it up to the reader to guess why what you have done is important and what you have contributed and what is novel. This should be spelled out in clear text here and repeated at least twice more in the report. Once where the actual contribution is made and once at the end of the paper. If the reader puts down the report not knowing what you accomplished you have failed miserably.

1.2 Outline

Provide a outline of the organization of the report. This should not just be a list. The following is an example of a bad outline. "In Section 2 we describe the related work in the field, in Section 3 we describe the method and then in Section 4 we present the experiments and the result and in Section 5 we summarize our work and provide and outlook to future work". This is a pointless outline. It does not tell an experienced reader anything as it is almost like saying 1 comes after 2 and then follows there. It is too generic. It should rather be text that flows well and gives the reader a very quick overview of the paper and explains where what is and why.

2 Related work (1–3 pages)

This section should show that you know the field well. If you were writing a paper for a conference you would want to make sure that you reference anyone that might review your paper. Do not make use of mass references such "In [2,3,4,5] informed search methods are presented". You should explain what each paper is about (1-2 sentences) and how what you did relates to it. Give credit to the people that introduced an idea and not just the person that used it last. You want to make sure that you cover both historical references (who introduced the idea) and current references (latest results in a certain area). Make it interesting to read. It is not just a list of references. Make sure to make it clear what parts of the related work you make use of, was inspired by, build on, or improve upon. Here you have a golden opportunity to make your contribution crystal clear with respect to previous work.

If this was a survey paper this section would be the main result of the paper. In this course, this section is also one of the most important sections. We expect that you will spend a significant part of the time in the project on the research that allows you to write this section and the introduction. Make sure that this shows. You can reference the book if you want but that

is insufficient to pass the assignment. It is scientific papers that you have found that we want you to describe here. Typically you will start by reading a few papers and then look at papers that they refer to and so on. Remember that it is not OK to reference a paper that you have not read. Just because paper X claims that that paper Y showed fact Z does not mean that you can refer to paper Y as showing Z, you should read at least the relevant parts of Y. Do not read the papers in great detail to start with. Start by getting an overview to determine if it is of interest. If it is, read it again more carefully. This process will result in a lot of papers. Not all of these should be referenced in this section. This section lists work that is related to your work and it is not an account for all of what you read.

Another quite common structure is to have the related work section at the end of the paper. After you have presented your method, experiments and results you are in a very good position to explain in detail what you have contributed with respect to related work. In the AI course the related work section is a major part of the work and we therefore keep it in the beginning.

3 My method (1–4) pages

You will describe your method / approach / theory in detail in this section. In a real paper you would pick a section title that is more descriptive than the above. Depending on the work you have done this might be split into several sections. Make use of references that describe core elements of your method so that you do not have to describe everything. There is no room for that. Key results from other sources should be summarized to make the paper self contained enough for someone in your field to be able to read it without having to read ten other papers before they can understand your paper.

Make use of examples to explain things before you go into the gory details. Make good use of figures. Do not introduce mathematical symbols unless you make use of them. If you present something complicated you may want to explain it in several iterations where you start with an easy to understand, possibly somewhat simplified explanation and then go into details. A reader that is only looking for a method to use may not be interested in all the details but rather enough to understand how to use it and what limitations there are. Such a reader may not be a domain expert and he/she is likely to skip to the experiments at some point in this section because it gets too complicated to understand. Your presentation should make this possible.

Do not be patronizing and avoid statements like "obvious algebraic manipulations yield...". It is often better to aim too low when it comes to your

expectations of what the reader knows than too high. It is much easier to skip one of your steps than to come up with that step yourself as a reader.

3.1 Implementation (0–2 pages)

The description of your method should be provided at a level of abstract where implementation details are avoided as much as possible. For conveying general knowledge it is typically uninteresting to know that you implemented your system in C++ or .NET and that you make use of package so and so. However to assess your results it may be important to know in more details how you did in detail. This section, if present, provides the implementation details. Limit the description to what is important. What editor you used to edit your source code is useless information in almost all cases. What language you used to implement your system is in many cases not interesting either but it might be interesting to know that you used a kd-tree to make access to certain data more efficient.

Exactly what you put here varies from case to case. Instructions for how to run your system would not end up here unless it is related to the problem you deal with. Remember that it is not a software manual or a user guide.

4 Experimental results (1–4 pages)

In a theoretical paper this paper may not be here but rather be replaced by a section where you provide a proof or similar for your theory. In this project your task is to create a system for automatic text generation so an experimental evaluation is to be expected. Make experiments that backs up the claims you make. If you have improved / modified some other method, compare your new method with the old. If possible include other methods in the comparison.

When writing a paper in a well researched area you would be expected to compare your result to all or a significant fraction of related results and show why your method / contribution is worth publication.

4.1 Experimental setup

Make sure to provide your experimental setup carefully. You want someone else to be able to replicate what you did.

4.2 Experiment ...

Here comes the experiments...

A paper where everything works flawless according to the experiments is typically looked upon with scepticism. Nothing is perfect! If you get perfect results it often means that your tests were not challenging enough. As a reader I want to know what the limitations are so push it to the limit or at least provide solid arguments for where such limits might be.

Make use of the most effective means to present the results. Sometimes this is a set of curves, sometimes it is a table. Make sure to make it possible to assess what parts of your results are significant and which could be the result of chance or noise for example.

It is essential to provide an analysis of your results. It is not the reader, but you, that should interpret the results. Do not assume that the reader is an expert so even result that to you seem obvious may be worth to point out. When you write a longer report, your thesis for example, the warning lights should go off when you end up with figures without any texts on several pages. In this case you have probably not provided enough analysis.

All figures that you have in the report must be referenced in the text. Provide captions that allows a reader to browse your paper and get the gist of your results. Summarize your findings at the end of each experiment if long.

If you have statement / hypotheses that you cannot really back up with the results put these at the end. Here you can speculate a bit and be less formal.

5 Summary and Conclusions (0.5–1 page)

Summarize what you have done and make sure that you highlight your contributions. You should not introduce new results in the summary. Results should be introduced in the main sections above. Here you can speculate on how these results could be extended, what would happen in other settings or how the method could be used other domains and how to continue with the research in the future. In this section you can put statements that one cannot understand unless you have read the paper which is not possible in the abstract for example. You do not need to be as formal in this section.