

# Brief guideline and tips for writing a scientific paper

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## Abstract

The abstract should give the reader a clear picture of what the paper is about. It should state the purpose of the study and mention what the results are. The purpose of the abstract is that readers can determine if the paper covers things of interest for the reader. Instead of an abstract, business papers often include an executive summary. A good abstract is more like a summary than just an outlook of what will come.

## 1 Introduction

The introduction is important to set the stage of the work. This section should provide necessary background information, state the problem discussed in the paper, and describes the goal of the paper. The introduction typically outlines what research has been performed previously in this area, and what are the open questions. This section is usually more general than discussions in the main body of the paper. A short outline of the structure of the paper can be included when the paper is long and the author feels that some guidance is appropriate. Also, this section can include an outline of results so that the reader is prepared for the more detailed discussions in the main body of the text. A useful phrase to keep in mind is, "Here we show ...".

## 2 The main body of the text

### 2.1 The structure and style of text

The main body of the paper should be structured well to discuss all the issues that the author wants to communicate. It is generally a good idea to guide the reader with appropriate paragraphs, headings, and subheadings to structure the text.

In a scientific paper we often want to separate methods and results from discussions. Also, in the method section you have to make sure to include all details necessary that another person could repeat the work. Scientific work has to be reproducible.

Try to keep sentences short. Each paragraph should contain a single thought. Just think about a single message you want to convey within the paragraph and then concentrate on this thought. A nice guide to writing styles is given by Williams (2008).

## **2.2 Figures and tables**

The text can include figures and tables. These elements should have captions attached to it which include enough detail to understand the figure without extensive reference to the text. Remember that axis and different lines in figures should be labeled clearly.

## **2.3 References**

It is very important to cite relevant work or sources used in the paper. This includes references to arguments that have been put forward in the literature, facts on which arguments in the paper are based, as well as links to further relevant information. Try to use reliable references. Citations often show how well the author is familiar and with the field and how mature his approaches are.

There are different citation styles in use such as using numbers in the text or footnotes. Some frequently used styles for Computer Science are described in "Computer Science Style Guide Suggestions" (2008). In this paper you should follow the APA citation style (2008).

## **3 Conclusion and outlook**

While the main body of the text is likely to include some discussions, it is often a good idea to draw some more general conclusions and to provide some outlook for further work at the end of the paper. The conclusion can include how the work relates to other work. Computer science papers have sometimes a separate section to discuss the relation to other work. It is also good to point out which questions were not covered in this research or where specific assumptions have been made that further research might want to relax or address.

Communication is highly valued in science and industry, and good written communication skills can be crucial to advance in your field. There are many good texts and tutorials for scientific writing. Practicing such skills is highly recommended.

## **References**

APA style (2008). Retrieved November 4, 2008, from <http://apastyle.apa.org/>.  
Computer Science Style Guide Suggestions (2009). Retrieved March 17, 2009, from <http://libguides.library.dal.ca/content.php?pid=860&sid=11818>

Williams, Joseph. M. (2008). *Style: Lessons in clarity and grace*. Pearson Longman, New York, NY.