

Writing a Report

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This is a short guide on how to write a report. It is primarily intended for the students of the class of Seminars on Artificial Intelligence and Robotics (Sem-AI&RO), who are asked to write a report on one or two scientific papers handed out by the teacher in connection with one of the seminars. Nevertheless it can be of general use, as it contains a general introduction to writing reports. It illustrates the structure of a report and provides a rather detailed guide to producing well structured and effective documents. This guide has been written taking more than inspiration from several guides posted on the web sites of universities around the world, in particular: University of Canberra, Leicester, and Toronto [1, 2, 3].

1 What is a report

A report is written for a specific purpose. A particular problem or issue is described and analyzed in detail. The information is presented in a structured format; it is organized in sections and paragraphs so that it is easy to locate information, and the flow of the presentation is easy to follow. A good quality report presents and analyses facts and evidence that are relevant to a given problem or issue. Be sure to mention and reference all your sources. The style should be formal, clear, and concise. A well-written report shows your ability to find, evaluate and analyze relevant information, structure and present it in a logical order, make appropriate conclusions, and finally make appropriate recommendations when required.

A report is different from an essay (see, for example [1]). In a report, it is vital that the information is clear and easy to find. For that reason, reports can make use of things not normally found in essays, such as:

- itemizations (like this one);
- headings and subheadings;
- tables, graphs and diagrams.

2 Structure of a report

Most reports will contain the following sections, in this order:

1. Letter of transmittal
2. Title page
3. Table of contents (a list of figures, a glossary, if needed)*
4. Abstract, or Executive Summary*
5. Introduction
6. Body (one or more sections)
7. Conclusions
8. Recommendations*
9. Acknowledgments*
10. Bibliography
11. Appendices*

A star decorates the sections that are not mandatory and that certainly will not appear in the report prepared for the class of Sem-AI&RO.

1. Letter of transmittal

Mandatory. This is a formal business letter (in the case of Sem-AI&RO an email message carrying the report as an attachment) to the person (or organization) that commissioned the report announcing its completion and delivery.

2. Title page

Mandatory. This is the cover of the report, which presents the key details in a professional layout. Include: the name of the report, the person/organization that commissioned it, your name and the date. Example:

<p style="text-align: center;">Report on the paper “Our best behaviour” by Hector Levesque</p> <p style="text-align: center;">Mario Rossi</p> <p style="text-align: center;">2 May 2015</p>
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and, possibly at the bottom of the page:

<p>A report submitted in fulfillment of the requirements for the Class of Seminars of Artificial Intelligence and Robotics of the Master of Science in Artificial Intelligence and Robotics of Sapienza University of Roma.</p>

3. Table of contents

Not mandatory, it is useful if the report is longer than, say, 10 pages, and is very structured into sections and subsections. Not required in the reports for Sem-AI&RO. The numbering system used in reports follows a simple pattern. Each main section (i.e., from the Introduction to the Conclusions) has a number (1, 2, 3, ...), and each sub-section within the main sections has a sub-number (1.1, 1.2, 1.3, ...). It is advisable not to over-structure the report: two levels are acceptable, a third level (1.1.1, 1.1.2, ...) should be a seldom reached maximum.

4. Abstract, or Executive Summary

Not mandatory, it is useful if the report is longer than, say, 10 pages. Not required in the reports for Sem-AI&RO. While your Sem-AI&RO teachers will certainly read your whole report (in order to mark it and give you feedback), in general reports may have different types of readers. Some of them do not want to read the entire document, but only the parts relevant to them, so the summary, abstract, or executive summary presents the entire report in brief - generally on no more than one page.

5. Introduction

Mandatory. The introduction should explain why the report is relevant or important. Explain:

- Who commissioned the report and why - what context/problem triggered the report;
- The purpose of the report, and its scope (what it does and does not cover);
- The types of sources used (i.e. texts, surveys, observation, interviews).

In the case of Sem-AI&RO the purpose is to analyze a paper (or two) related to one of the lectures of the class. The main source is the assigned paper, additional source may be other books/articles used to check/confront/expand ideas rising from reading the assigned paper. The papers referenced in the assigned paper are not to be considered all sources for your report, neither you should put them in the reference list of your report, unless you have used them directly. In the introduction you first summarize the main ideas emerging from the assigned paper, then you describe how the body of the report is organized, thus anticipating some of your comments/considerations on the paper being reported about. The introduction, in particular in the absence of an abstract and/or executive summary, should be sufficient to have an idea of everything that is in the report. Hence, a superficial

reader can stop there; at the same time, the introduction should be sufficiently intriguing to motivate the reader to go on reading the rest of the report.

6. Body

Mandatory. The body of a report will be made up of several sections, each with its own purpose. The body is where you will place:

- The literature review (if applicable);
- The research methodology – what you did and why, and any problems or limitations;
- The findings – state the facts clearly, including graphs/charts where needed;
- The discussion – which is your interpretation and explanation of the findings.

In the case of the report for the class Sem-AI&RO the body should contain first a summary of the paper then an analysis, where the following questions should be answered:

- Has the author formulated/solved a problem/issue?
- Is it clearly defined?
- Is it a theoretical/experimental/application problem?
- Are its significance, scope, and relevance clearly established?
- Could the problem have been better approached from another point of view?
- Has the author evaluated the relevant literature? Does the author include literature she or he does not agree with?
- Is the paper technically sound? Are the conclusions valid?
- How does the author present his/her argument?
- Does this article contribute to our understanding of the problem under study, is it useful for you and how? What are its strengths and limitations?

7. Conclusions

Mandatory. In the conclusions, you should recapitulate your main findings and key points of discussion. Make sure that you do not add information that is not already in the body. Be brief and to the point.

8. Recommendations

Not mandatory. Not required in the reports for Sem-AI&RO. After reporting, you may want to make recommendations about what should now be done. Recommendations should logically follow from issues identified in the findings, discussion and conclusions. They should be realistic, and achievable.

9. Acknowledgments

Not mandatory. This section consists of a sentence or two where you may acknowledge the assistance of particular organizations or individuals who provided information, advice or help.

10. Reference list

Mandatory. Your list of references should include all published sources referred to in your report. Adopt a style, be coherent, and - for each entry in the list - be complete.

11. Appendices

Not Mandatory. Not required in the reports for Sem-AI&RO. Notice that report appendices are attached after the reference list. They include data too big to be placed in the body of your report. Each appendix has a number (i.e., Appendix 1) and a title, so the reader can see what it contains. Include it in the table of contents. In the body of your paper, you can then refer to this data without it interrupting the flow of the report.

3 Writing a report

Having organized your material into sections you start writing. Be direct and precise, avoid smoky or baroque expressions, and make your points clearly and concisely. Sections and paragraphs should have a clear structure and be linked logically. The following suggestions on how to organize the writing phases may be useful:

- ★ Logical analysis of the subject matter;
- ★ Preparation of the outline;
- ★ Preparation of the rough draft;
- ★ Re-writing and polishing the rough draft;
- ★ Then the review phase starts:
 - First: review of the rough material;
 - Second: review of the organization;
 - Third: review of the language:
 - Spelling,
 - Grammar,
 - Sentence structure;
- ★ Preparation of the bibliography;
- ★ Writing the final draft.

4 Presentation of a report

Presentation and style are important in reports.

- ★ Be professional.
- ★ Check that you have used formal writing structures and not colloquial forms.
- ★ Language should be formal, but simple and clear. Remember, the main aim of a report is clear communication.
- ★ Use consistent formatting – make sure you choose a clear system of font size, formatting and numbering for your headings and stick to it throughout the report.
- ★ Avoid endnotes, they generally are not used in technical and scientific papers; keep footnotes to a minimum.
- ★ You may experiment writing your report using L^AT_EX, that does all these things for you; it is good exercise in view of the preparation of your Master Thesis.
- ★ You must *give credit* to peers, sources and all material that belongs to others in order to avoid *plagiarism*. Be careful, put a reference to the source for all the material you put in your report: text, figures, tables, etc. Do not copy sentences, in case you really need to quote them, do it explicitly putting them in quotes (“ ... ”).
- ★ Quality of your English: Good grammar and punctuation is important. Most editors have spell checkers incorporated. Use them; use the aids available on line (e.g., see [4,5]), remember that they cannot find all the mistakes and cannot consistently check the “s” for the plurals or the singular third persons of verbs. Ask somebody to proofread your document.

Acknowledgments

Most of the material presented in this report has been adapted from guides and similar documents I found in the Internet, in particular on the web sites of some universities.

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References

- [1] <http://www.canberra.edu.au/studyskills/writing/reports>
- [2] <http://www2.le.ac.uk/offices/ld/resources/writing/writing-resources/reports>
- [3] <http://www.writing.utoronto.ca/advice/specific-types-of-writing/296-writing-in-the-sciences>
- [4] http://www2.actden.com/writ_den/tips/sentence/index.htm
- [5] http://www.speakspeak.com/html/d10_english_grammar.htm