

# Lab class: Autonomous robotics

## Report guidelines

Institut für Neuroinformatik

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### 1 Overview

The reports are meant to capture what you have achieved and learned during the lab class. We will use them to probe whether you have understood the problems as well as your approaches to solving them, both on a conceptual and on a detailed mechanistic level. For each of the three reports that you have to hand in, we expect a well-structured text of high quality. This includes weaving descriptions about the two subproblems of each report into a single coherent text.

### 2 Structure and scope

Here, we give you an exemplary structure which you can use for writing your report. The structure is similar to that of a scientific publication. You are free to deviate from this structure, but the points mentioned here (as well as those from the theoretical questions of each problem) must be contained in your final report.

**Introduction** Explains the problem that is being solved and the context in which it arises.

Explains the approach you used to solve the problem. This is a description on an abstract, conceptual level, without going into technical details.

**Methods** Explains how the solution was technically implemented. Here, this should be a run-through of the relevant details of your program code, where you explain what the code does. Use this section to show

us that you understand the code. Proceed through the code chunk by chunk and explain the relevant parts in just as much detail as is necessary. This is a delicate balancing act and requires that you understand which parts of the code are trivial and which are vital in solving the given problem. Not describing vital parts of the code here will lead to a deduction of points.

**Results** Use this section to show us that your code works and solves the problem. Make sure to include plots whenever it is helpful and describe what the plots show. Describe your observations of experiments and explain them.

**Discussion** Use this section to answer theoretical questions that are not covered in other sections and ask for more conceptual thinking.

**(Feedback)** How much of a challenge was the problem for you? What was the most challenging part? How challenging was the writing? Writing two or three sentences is enough here. (This section is not part of scientific publications but helpful for us. It will not be graded, but much appreciated!)

Each problem description will have a list of theoretical questions. Think of these questions as hints to what you should write about in your report. Make sure that your report addresses all of the questions. If you do not address all questions, we will deduct points. Each question will fit well into one of the sections of the report. Do not simply write answers to each question but address the questions in the section that fits best and weave it into a coherent text. This means that you will have to think about where and how to answer the question *before writing the answers*.

For structuring the text, here are a couple of things you should look out for; we will use similar criteria for grading your text:

- Did you divide the report into appropriate sections, for example, the ones suggested above? Could a different structure help the reader understand your text better?
- Within sections, is the text structured in meaningful paragraphs or is it a single block of text?
- Do paragraphs have themes or are they an aggregation of incoherent sentences?
- Do paragraphs deal with a certain level of abstraction or does the text jump between levels of abstraction?

### 3 Format

**Quality** The quality of text and its format should be that of a Bachelor or Master thesis. This means clear, precise, full sentences (no bullet points) and no colloquial language. Strive for as clear a text as possible.

Ask yourself:

- Are sentences concise and to the point or do they consist of a lot of meaningless fill text? Can I remove words without losing information?
- Are the sentences overly long? Are there sentences you can split into several shorter, more concise ones?
- Does the text use colloquial language?
- Does the text state facts and results or does it use judgemental language and opinions?
- Does the text use the correct technical terms and does it use them in the appropriate places?
- Does the text introduce technical terms (and variable names) before using them?

**Figures** Figures almost always help the reader to better understand what you mean. Adding a figure also helps your writing process because it gives you something to refer to. Unless you are including photos or screenshots, *always* choose vector graphics over bitmap images; they are much clearer. In graphs and plots, it is crucial to *always* label axes and include units if applicable. If you do not, we will deduct points. Make sure that you reference figures in your text and that you place a caption below each figure that describes it. You may copy figures from other sources only if you properly cite the source. However, keep in mind that figures you have prepared yourself can be created in just the way you need them to bring across your point. We thus suggest that you create your figures yourself.

Ask yourself:

- Could the text use additional figures to bring across a point?
- Where the text is using a figure, does it help the reader's understanding?
- Were the figures created by myself or are they copied from somewhere?

- Do I need to cite any source for the figure?
- Do all my figures have labeled axes, units, captions, and are they referenced in the text?

**Length** There is no minimum or maximum page limit. Just write as much as you feel necessary; by striving for a clear explanation, you will naturally arrive at an appropriate length of text. One page will probably not be enough space to address all questions while twenty pages will likely not be concise enough.

**Language** You may write the report either in German or in English. We suggest you write the reports in English to get the practice. If you are not sure, you could write the first report in English and decide whether you would like to continue in English for later reports.

**Formatting** You do not have to adhere to any formatting rules (no particular font, font size, or margins). Choose something that is clear and readable both in printed form and on screen. We suggest a serif font in size 12pt. Please include page numbers and large enough margins for us to write in.

**Software** You may use whichever word processor (e.g., Word, LibreOffice, Pages, Google Docs) or typesetting program (e.g., L<sup>A</sup>T<sub>E</sub>X) is most comfortable for you. We suggest using L<sup>A</sup>T<sub>E</sub>X, for which we provide a template. It is the de-facto standard for scientific publications and facilitates working on elaborate documents (e.g., Master's theses). If you have never worked with L<sup>A</sup>T<sub>E</sub>X before, the transition from something like Word may be hard, but it pays off over the long run. There is a lot of documentation<sup>1</sup> on the web to get started.

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<sup>1</sup>For example, <http://en.wikibooks.org/wiki/LaTeX>