Aim and Scope

Professionals educated in Computer Science (CS) or in any other field are specialists. But not only that! We also have a role in society, and this raises many questions beyond the purely scientific and technical aspects of the field.

- We have to communicate about many details: specify goals, problems and assumptions as clearly as possible, explain methods and solutions to others, read or listen and try to understand the main points, ask clear questions, etc. Without technical communication, even the best ideas would never reach the point where they change reality and make a difference. Here we cannot possibly address all aspects of technical communication, but we will focus on **scientific writing**. Briefly: **What makes a good report?** Here the focus is not on training the written English (except that language errors may be pointed out in passing), but on **proper scientific argumentation** within our field.
- While **technical questions** are of the type **"What can we do, and how?"**, we are also faced with **ethical questions** of the type **"What should we do, and why?"** Surely, everyone has intuitive feelings about ethics. But ethical questions become more tricky if the issues are not on the surface, or if they are more complex, or if they involve a dilemma.
- We will also combine these two themes and learn about **publication ethics**: What is allowed in technical and scientific reports and what is not, and for what reasons?

Why is it important for specialists to care about the context of a technology? As an example (exaggerated, to make the point), imagine car traffic without any regulations. It would cause accidents all the time, while the technology itself is exactly the same as in car traffic with regulations ...

In the ethics part we will study some questions like these: What are specific ethical issues in CS? (We limit attention to ethical questions related to the study programme contents.) On which basis can we approach them systematically? Are there even formal criteria for right conduct? Once more, this is about **analysis and argumentation**, not about uttering some quick opinions or commonplace statements like "don't be evil" or '"every technology can also be misused".

At the same time this is also intended to be a substantial CS course. We will develop these generic skills and awareness with the help of examples, such as influential CS articles and other recent material, and ideally your own thesis proposals. You will have to survey CS topics in written form, thereby discussing disciplinary knowledge connected with the needs of society.

Introductory Toy Example

In an annual report of a company you read: "We have increased the average productivity in both of our divisions by 50 %". Would you be impressed?

Now suppose that the company has three types of employees: exactly one third has productivity 2, 4, and 12 (whatever that means). The people with productivity 2 were in division A, the others were in division B. The average in A and B was 2 and 8, respectively. If the company simply moves all people with productivity 4 from B to A, then the averages increase to 3 and 12, respectively.

There is a lot to say about this (made-up) example:

- The quoted statement is formally correct!
- But as the possible explanation shows, there may be *nothing* behind it, except a trivial administrative change.
- If this explanation is the truth and one learns it afterwards, one feels somehow deceived.
- Although the sentence is not a lie, it is highly misleading. (In this example, it may suggest some great innovation.)

- The trap is not very obvious.
- One should always read critically: What could a statement actually mean? How is it substantiated? Would it be possible to check what is claimed?
- From the author's side: A summarizing statistics should be accompanied by background information and raw data.
- One is wondering about possible motives of such a misleading statement. Whatever it is, it does not feel right.

Although this example refers to a business report rather than a scientific text, it illustrates some points relevant also for scientific writing.

Motivation of the Summary Exercise

One of the exercises is to write a summary about a CS topic. This exercise is not an end in itself. Why is summarizing important? Why this exercise?

- Every scientific work builds on the state of the art. To put new results in context, it is necessary to survey and summarize the relevant domain first.
- In particular, in parts of your master's thesis you will have to summarize existing knowledge.
- Since by far not all details can be given, one must be able to extract the main points and explain them in a self-contained way, and to omit the right things.
- Summaries can be hierarchical, ranging from short and high-level to more detailed and directed to experts. One must also be able to explain things on different levels and to different audiences with different prior knowledge.
- Last but not least, this is an opportunity to train writing skills in general, and to focus on the challenges of good writing, without being forced to solve problems like in a hand-in exercise or lab report.