

Recent Developments in Computer Science

Visualization for Social and Ecological Good

Instructor: Dr.-Ing. Lena Cibulski, Chair of Visual Analytics, www.cibulski.eu

Course Description

The goal of this course is to explore recent advances in visualization research and applications, with an emphasis on social and ecological questions. Living in the information age, data visualizations are present in our personal and professional lives, from infographics in digital newspapers over pandemic dashboards to machine monitoring in a factory. The field of data visualization is dedicated to computational, visual, and interactive methods that help people perceive and reason about patterns in large and complex data. In this way, it helps answer analysis questions in a variety of fields like engineering or life sciences. Data visualization as a craft is nourished by many disciplines and skills including cognition, statistics, creativity, scientific rigor, analytical and critical thinking. Through hands-on projects and lecture sessions, we will dive deeper into some of these interesting facets. While the teacher is german-speaking, the course will be held in English.

Prerequisites

Prior courses and experience in visualization, interaction, visual computing, or computer graphics are very helpful but not enforced. A general interest in data visualization increases your chances of having fun in this course.

Learning Outcome

Students will gain an overview of fundamental principles of data visualization. They will get in touch with the appropriateness of visualizations and might thus view some of the data visualizations they encounter in their everyday life in a different light. Through projects and lecture contents, they will learn how visual analysis can be used to gain insights from data, providing them with practical experience in approaching data-related questions with visualizations. At the end of this course, students will be able to

- identify and describe fundamental concepts of data visualization.
- critically judge a visualization's appropriateness regarding data, users, and tasks.
- understand a given analysis problem and implement a tool to address it.
- present their work to an academic audience and discuss their contributions.
- organize, formulate, and reflect on their methodology.

Course Mechanics

The course centers around programming projects that can be worked on by one to three students. The projects focus on the design and implementation of interactive visualization tools to explore data related to social and ecological questions. Students are responsible for characterizing the analysis problem at hand, surveying existing solutions, developing alternative approaches, choosing a suitable design, and reflecting on the results. The project work will be spiced up with inspirational lecture sessions on fundamental concepts

and hot topics in visualization research. Regular assignments will guide the project execution. Their completion contributes to the project report, which — together with the final presentation — concludes the course.

Recent information can be found on Stud.IP: https://studip.uni-rostock.de/dispatch.php/course/details?sem_id=2c3bfc5ffbafbcfa229683d641703307&again=yes