

Proposal for the elective course to be offered to doctoral students of UL

**Course title:**

## **ChatGPT for Researchers**

**Summary:** This course introduces ChatGPT and similar large language models. It will include an introduction with an intuitive explanation of the training and mechanics of large language models. We will continue with use cases of ChatGPT's web-based interface, focusing on how it can assist researchers in various tasks, including providing instant access to a wide range of information, facilitating brainstorming, generating ideas, and summarizing complex concepts. We will also cover the topic of data analysis using ChatGPT. Much of the training will focus on prompt engineering, such as assisting in reviewing and editing research documents, suggesting research questions, and helping researchers understand complex methods and techniques in various disciplines. We will discuss the shortcomings of the technology, including the provision of inaccurate or outdated information and lack of understanding or contextual awareness, reflecting limitations in its training data and the lack of real-world experience or subjective perception.

The University of Ljubljana's Doctoral School will sponsor the course, and we expect enrollment from engineering, science, and humanities students. The course is not intended for computer science students or students whose curriculum already includes courses in machine learning or data science. This course has already been run in the 2023/24 academic year, when we trained about 15 dedicated students.

**Type of course:** lectures + homework assignments

**Course content:**

1. Brief introduction to logistic regression and neural networks.
2. Introduction to large language models, data embedding and generative AI.
3. ChatGPT's case studies and prompt engineering, including introduction to prompting, structured queries, persona patterns, provision of new information, question and cognitive refinement, audience persona patterns, flipped interaction, few-shots examples, chain of thought prompting, grading and explanation, game patterns, templates, and meta languages.
4. Data and document analysis with ChatGPT.
5. Deficiencies and limitations, ethical concerns.
6. Showcase of advanced usage through ChatGPT's API.

**Lecturer:** Blaž Zupan

**Semester:** Fall 2024

**Prerequisites:** no prior knowledge of large language models or computer programming is assumed. This is an introductory course intended for a general audience. Students from humanities, social sciences, natural sciences, and engineering are welcome.