Institute of Human-Centred Computing
Technische Universität Graz

Chatbot for discussing data analytics

Master thesis

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Studies: Information and Computer Engineering, Software Engineering and Management, Computer Science, Computer Science Teach Education, Computational Social Systems

International: Contact with research groups in Australia, German, Korea, UK – international visit possible (other groups as well, these would be most direct).

Data and data visualisations are everywhere: In TUGraz Online and many similar systems, students see analytics about their academic performance (learning analytics dashboards). Fitness trackers track and visualise users' training success (quantified self) and many health applications track medical data. Newspapers regularly publish data visualisations alongside written text and images. Businesses regularly operate based on tracking key numbers related to their operations. There is a particular skill to visualising data in an understandable manner – that's on the side of those who visualise the data. In parallel, viewers of data visualisations need to understand basics of data visualisation, of the domain (learning, fitness training, medicine, etc.) and need to be able to interpret data in relation to their own actions (is there a need for action, and if so which?).

Generative AI cannot do this for us, but can guide the process.

This master thesis consists of

- Defining a domain of analytics
- Developing an LLM-based agent that implements different guidance strategies to lead a discussion regarding a data visualisation.
- Evaluate your agent in a user experiment. Depending on the effort that goes into implementation, an exploratory user study (fewer participants, no control group) or an experimental user study (more participants, control group that uses a publicly available genAI) is appropriate.

Required skills or interest in acquiring these:

- Web-based programming, experimental research design, basics of generative AI and natural language processing, Human-Computer Interaction methods and design principles.

Interested? Contact viktoria.pammer-schindler@tugraz.at