Project title

Data Visualization for Human-AI Collaboration

Contact

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Research project

Approaches that solely rely on data-driven or AI methods in data science may fall short in capturing human-centred concerns, such as transparency and reliability, social nuances, and affective expression. An increasingly recognized consensus is that humans and AI should reason and team with each other in many tasks. Data visualisation therein provides a pathway to effective human-AI collaboration. My research has developed **expressive visualization techniques** and **human-AI interfaces** to support human-centred data science at various data activities, including data wrangling, analysis, storytelling, and decision-making.

PhD in this project will explore a combination of qualitative and quantitative research methods and creative visualisation techniques to engage humans (lay users, data analysts, and experts) in interacting with the world of data. You will design and develop new human-AI interfaces to facilitate the workflow. Potential topics include:

- Creative data storytelling techniques and intelligent authoring tools to empower people in crafting compelling data narratives [1].
- Advanced data wrangling tools that streamline the pre-processing of complex datasets, such as data cleaning, transformation [2], and manipulation.
- Intelligent learning techniques for fostering visualization/AI literacy of novices.

More topics can be found in my personal webpage. If our research interests align in any of the above areas, we are likely to have a synergistic collaboration.

Applicant skills/background

Applicants are expected to have a good understanding of data visualisation and human-centred computing. The successful candidate should demonstrate skills in user experience (UX) design and front-end development (ideally full stack development).

References

[1] Xinhuan Shu, Aoyu Wu, Junxiu Tang, Benjamin Bach, Yingcai Wu, and Huamin Qu. "What makes a data-GIF understandable?." *IEEE Transactions on Visualization and Computer Graphics* (2020).

[2] Yanwei Huang, Yunfan Zhou, Ran Chen, Changhao Pan, Xinhuan Shu, Di Weng, and Yingcai Wu. "Interactive table synthesis with natural language." *IEEE Transactions on Visualization and Computer Graphics* (2023).