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Sociotechnical Artificial Intelligence: Exploring Human-AI Complementarity in Multi-Agent Team Environments

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Extended Abstract

This talk is built on a decade and a half of research into supporting collaboration in online environments, what design principles we have empirically validated, what technological advances have produced novel interventions aligned with those principles, and what questions we still need to answer. In particular, this talk highlights human-AI complementarity in AI-supported collaborative software development. While the generative capabilities of LLMs of Code have typically been used as replacements for human effort, in our work we explore how these capabilities can be positioned as a scaffold for learning rather than a crutch. Recent advances in Generative AI (GenAI) and Large Language Models (LLMs) have enhanced AI capabilities for the evaluation of multimodal student input and real-time feedback, which has provoked intensive exploration of the space of application possibilities. This technology opens up more options for adapting the specific content of reflection triggers from specific details of the students' work and discussion in context. This talk will discuss recent advances in support of collaboration using GenAI and LLMs, with a particular focus on two recent classroom studies investigating LLM-based support for reflection and learning during collaborative software development.