ACM Generative AI Task Force Special Session: *Teaching with Generative AI: Tools You Can Use Today*

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Abstract

This special session, organized by the ACM Task Force on Generative Artificial Intelligence and Student Programming Assessment, will provide a hands-on showcase of novel tools and approaches that are relevant for teaching computing courses in the fast-changing era of generative AI. The six featured innovations will be presented by invited educators and researchers, curated by the organizers to highlight diverse approaches, targeting a range of skills including code comprehension, debugging, prompt engineering, assessment, and more. Participants will experience live demonstrations and have the opportunity to experiment on their own devices, gaining practical insights into how the innovations can be integrated into their own teaching. Attendees will leave with concrete ideas and resources to immediately enhance their courses.

CCS Concepts

• **Social and professional topics → Computing education**.

Keywords

generative AI, large language models, tools, computing education

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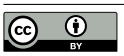
1 Overall Objective of the Session

This special session has two primary objectives: (1) to create a forum for educators and researchers to showcase novel tools and approaches they have developed for teaching computing courses in the era of generative AI; and (2) to allow all participants to engage in a hands-on activity to explore the showcased tools and learn how they can be immediately adopted in their teaching practice.



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As generative AI rapidly transforms computing education practice, instructors have been grappling with both challenges and opportunities in teaching and assessment [3, 7]. In response, new tools are being developed, evaluated, and appearing in the literature: Prompt Problems (for crafting effective natural language prompts for computational tasks) [1], Explain in Plain Language tasks (for scalable feedback of code comprehension tasks) [2], Autocompletion Quizzes (for scaffolding the use of code generation tools like GitHub Copilot) [5], BugSpotter (for automatically generating code debugging exercises) [6], and digital teaching assistants and interactive LLMs (for supporting student questions at scale) [4, 8].

The ACM Task Force on Generative Artificial Intelligence and Student Programming Assessment is working to document and guide best practices for integrating generative AI into computing curricula. Building on this effort, the proposed session will provide an interactive venue for practitioners to demonstrate novel tools and approaches, share the pedagogical problems they address, and discuss early experiences of use in classrooms. Unlike a panel or standard paper session, this format is designed to prioritize hands-on demonstrations and practical takeaways for attendees. The session aims to equip computing educators with concrete examples of how generative AI can be harnessed to enhance teaching, learning, and assessment across a range of contexts.

2 Outline of the Session

2.1 Introduction and Framing (10 minutes)

The session will begin with a brief introduction by members of the ACM Task Force on Generative Artificial Intelligence and Student Programming Assessment. We will outline the motivation for this special session, summarizing key questions and findings emerging from the task force's work on integrating generative AI tools into programming and computing education.

2.2 Tool Showcases (70 minutes)

2.2.1 Demonstrations – Invited Presenters. In this main segment, invited educators and researchers will each present short, focused demonstrations (5–7 minutes each) of their novel tools or approaches designed for teaching computing topics. Each presenter will provide:

- A brief explanation of the pedagogical problem addressed.
- A demonstration of their tool or approach in action.

- Access details so that attendees can try the tool/approach themselves.

This segment will be hands-on, and participants are encouraged to bring a laptop or device to explore the tools during demonstrations. Where appropriate, presenters will include short guided activities or example problems for attendees to experience the tool as students would. The session will have presentations from the following invited speakers:

- **Kristin Stephens-Martinez** will showcase *Brainstorming with an LLM*, a structured activity where students use iterative dialogue with an LLM to generate and refine research questions for a semester-long data science project.
- **Anastasiia Birillo** will demonstrate *ANVIL*, a system that automatically generates textual and video analogies to explain computing concepts, providing personalized materials to support student engagement and understanding.
- **Sverrir Thorgeirsson** will present an online platform for deploying custom LLM tutors for introductory CS exercises, illustrating its use in a large classroom study and how instructors can adapt it for their own courses.
- **David H. Smith IV** will introduce *Purplex*, an integrated environment that helps novices build code-comprehension and prompting skills through Explain-in-Plain-Language tasks with GenAI-powered automated grading and scaffolding.
- **Mark Liffiton** will demonstrate *CodeHelp*, an automated TA platform featuring "focused tutors" – instructor-defined AI chatbots aligned to specific learning objectives, modules, or assessment goals.
- **Stephen MacNeil** will present *Autocompletion Quiz*, a tool that converts coding tasks into step-by-step quizzes with AI-generated distractors to build expertise around AI suggestions and support students' metacognitive planning and reflection.

2.2.2 Interactive Discussions and Q&A – All Participants. After each demonstration, there will be an interactive discussion and Q&A. Attendees will have the opportunity to ask questions and share reflections on potential adoption in their own courses.

2.3 Closing and Next Steps (5 minutes)

The session will conclude with an invitation for attendees to contribute to the ongoing efforts of the ACM Task Force, including upcoming surveys and opportunities to share their own tools or teaching experiences for broader dissemination within the computing education community.

3 Expectations

The intended audience for this session is computing educators, instructors, and researchers who are interested in exploring the practical integration of generative AI tools into their teaching. This includes faculty teaching programming courses at all levels, as well as those designing educational technologies or assessments in computing.

Participants will be invited to suggest additional tools or approaches they have used, supporting broader community knowledge-sharing and informing the ongoing work of the ACM Task Force.

4 Suitability for a Special Session

This session is ideally suited for the special session format because it provides a hands-on, interactive showcase of generative AI tools that cannot be effectively presented through traditional papers, panels, or static demonstrations. Unlike a paper presentation, which focuses on reporting research findings, or a panel, which centers on discussion, this session is designed to immerse attendees directly in the use of novel tools, allowing them to explore, test, and critically engage with these tools in real time.

The format will enable six invited educators to demonstrate their tools live, giving attendees exposure to a variety of approaches and practical implementations. The session emphasizes breadth and active engagement across a range of tools and contexts. By providing opportunities for attendees to try out tools, ask targeted questions of developers, and discuss integration into their own teaching contexts, this session offers an experiential learning opportunity that could not be replicated within other standard track formats.

Acknowledgments

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