Oral Exams in CS-Education: Pros and Cons in the Age of AI-Assisted Programming

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ABSTRACT

As AI coding tools proliferate through the computer science community, oral exams present a compelling way to assess the skills of students. Unfortunately, oral exams also present some difficulties, particularly for large class sizes.

Tools based on Large Language Models (LLMs), like ChatGPT and GitHub Copilot, show how programming can be done in part using natural language interactions. A vision of the future is coming into focus in which communication skills are increasingly important for computer science undergraduates. Oral exams are a natural way to build and assess students' communication skills. Further, AI-based tools challenge traditional assessment methods such as homework assignments and digital exams. When students can simply ask an AI tool to complete and/or debug their assignments, oral exams provide a way to ensure that students' responses are their own.

Although some research in CS oral exams exist [1, 2, 4–6], two problems that most educators perceive when considering oral exams are (1) planning the timing and logistics and (2) evaluating students responses in an ethical and unbiased way [3]. Traditional exams can be done in parallel, but oral exams are typically structured as one-on-one conversations between the educator and each student. Such setups do not easily scale in the context of growing enrollments. Evaluating oral exams is also challenging due to the potential for educator bias, since oral exams generally cannot be done anonymously. Finally, it is not trivial to produce and enforce a rubric during a live oral exam conversation.

This lighting talk will present pros and cons of oral exams based on past research and experiences. We consider what research projects are necessary to make oral exams effective and attractive to CS educators. The intended audience is those teaching or administering computer science topics (especially programming) for students from high-school through college.

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