Reflections on Integrating Generative AI Tools in CS Capstone: Fall 2024

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While many of us have gained experience in addressing if and how to use generative AI tools in our academic activities, some might find the following thoughts helpful, taken from my ongoing experiments of using generative AI tools in my Computer Science Capstone course.

My goal has been to help students explore these tools in a structured way, understanding their potential and limitations while teaching students critical thinking and ethical usage. Along the way, several valuable rules of thumb have emerged, which I hope you find helpful if you consider similar experiments in your courses.

Key Takeaways and Rules of Thumb

1. **Prefer Dialogue Over Written or Scripted Submissions:** Generative AI tools often excel at producing polished text, which can sometimes mask a lack of deep engagement with the material. I've found focusing on dialogue—both in-class discussions and individual conversations with students—more effective when assessing their understanding of concepts. This format encourages critical thinking and allows me to gauge their grasp of the material beyond what AI might generate for them.

2. **Expect Perfection in Written Submissions:** When students do submit written work, I now hold them to a higher standard for spelling, grammar, sentence structure, and narrative flow. Since AI tools can assist in polishing their writing, there's little reason for errors to persist in their final submissions. This shift has also taught students the importance of refining their work, a valuable skill in any professional setting.

3. **Require Iterative Drafts for Written Assignments:** One of the best uses of AI tools in writing is generating and refining drafts. I've made it a requirement that students submit drafts alongside their final work, documenting their process and showing how their ideas have evolved. This approach encourages thoughtful iteration and gives insight into how they use AI to improve their writing.

4. **Expect verified Citations:** AI tools often produce plausible but incorrect citations. I now require students to verify submission citations. This ensures academic integrity and reinforces the habit of cross-checking sources, a skill crucial for educational and professional research.

5. **Revamp Assignments Where AI Use Is Logical:** It makes sense to embrace AI tools rather than sideline them for specific assignments. For instance, writing literature summaries or reflecting on research topics are tasks AI tools handle well. Instead of asking students to produce these from scratch, I now focus on having them evaluate the AI-generated content. For example, "How well did the AI summarize this article? What did it miss or misrepresent?" This approach shifts the focus from the product to the process and helps students critically assess the technology.