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CS-499

5-1 Journal

The two trends that I have chosen are Quantum Computing and Generative AI.

1. **What is the significance of each trend?**  
     
   Quantum computing has the potential to revolutionize computing by leveraging quantum mechanics to perform calculations exponentially faster than classical computers. Generative AI has demonstrated remarkable capabilities in generating human-quality text, images, and other creative content
2. **How will each trend change the field of computer science?**Quantum computing could fundamentally change the way algorithms are designed and implemented. New programming languages and frameworks may be developed to harness the power of quantum computers.  
   Generative AI is driving advancements in natural language processing, computer vision, and machine learning. New techniques and architectures are being developed to improve the quality and diversity of generated content.
3. **How will each trend change the experience of consumers, workers, or citizens?**Quantum computers could lead to advancements in artificial intelligence, machine learning, and data analysis, improving services in various industries. The development of quantum computers may also pose challenges to existing encryption methods, requiring new security measures.  
   Generative AI has the potential to automate tasks, improve productivity, and create new forms of entertainment and art. There are also concerns about the potential for misuse, such as deepfakes and misinformation.
4. **How will each trend fit in with your career interests or aspirations?**I am interested in exploring how quantum algorithms can be applied to solve complex problems in fields such as optimization and machine learning. Generative AI aligns with my interests in natural language processing and machine learning. I am keen to explore how these technologies can be applied to develop innovative applications and solve real-world problems.
5. **Which course outcomes have you achieved so far, and which ones remain?  
     
   Outcomes I have achieved so far:**Design, develop, and deliver professional-quality oral, written, and visual communications that are coherent, technically sound, and appropriately adapted to specific audiences and contexts

Design and evaluate computing solutions that solve a given problem using algorithmic principles and computer science practices and standards appropriate to its solution, while managing the trade-offs involved in design choices

Demonstrate an ability to use well-founded and innovative techniques, skills, and tools in computing practices for the purpose of implementing computer solutions that deliver value and accomplish industry- specific goals  
  
**Outcomes still remaining:**Employ strategies for building collaborative environments that enable diverse audiences to support organizational decision making in the field of computer science  
  
Develop a security mindset that anticipates adversarial exploits in software architecture and designs to expose potential vulnerabilities, mitigate design flaws, and ensure privacy and enhanced security of data and resources