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11/30/2024

CS499

5-1 Journal: Computer Science Trends and Artifact Update

**1. What is the significance of each trend?**

*Trend 1: Artificial Intelligence (AI) and Machine Learning (ML)*  
AI and ML continue to represent the potential to transform a variety of sectors and industries by providing a mechanism for applying computing solutions to tasks that are not conducive to traditional computing approaches (Goodfellow *et al.,* 2016). AI/ML techniques are already being applied to many applications, including healthcare, autonomous vehicles and predictive analytics. As these technologies become more sophisticated and effective, this trend is likely to continue or accelerate.

*Trend 2: Augmented Reality (AR)*  
Augmented Reality, on the other hand, overlays digital information onto the real world, enhancing physical environments with data and images. The significance of AR is its ability to blend the digital and physical worlds seamlessly, making it useful for applications that require contextual information in real-time, like navigation, maintenance, and retail. This trend represents a potential new vector for humans to leverage computing solutions that will likely only expand as the supporting technologies improve.

**2. How will each trend change the field of computer science?**

AI/ML will continue to push the boundaries of computer science by driving the development of more sophisticated algorithms, data processing techniques, and ethical frameworks for AI deployment (Fernandez, 2019). As these technologies advance, they offer the potential to augment the ability of computer scientists to perform some tasks, especially in areas that require processing vast amounts of data, identifying complex patterns, and making predictions.

AR will encourage new developments in areas such as computer vision, sensor integration, and real-time data processing. The technology relies heavily on spatial mapping and object recognition, which will likely take advantage of advances in AI/ML and computer vision to enable seamless and value-added AR experiences (Matthews, 2018).

**3. How will each trend change the experience of consumers, workers, or citizens?**

AI /ML offers the potential to automate repetitive tasks, potentially shifting human roles toward more strategic and creative functions. For consumers, it may allow for hyper-personalized services by leveraging the tremendous amount of data collection intrinsic in modern commerce and social media to tailor applications to individuals’ precise preferences.

AR may provide new vectors for consumers to engage with computing applications, including traditional media, social media, and ecommerce. For workers, AR may enable interactive training with real-time instruction, assistance, and demonstration.

**4. How will each trend fit in with your career interests or aspirations?**

AI/ML will likely feature heavily in my career in data analytics. The ability to quickly examine large datasets for a variety of possible events or trends is of very high interest in my field, especially as a mechanism for tipping human analysts to potentially noteworthy or anomalous data.

AR is less likely to align directly with my career trajectory, but still represents a potential to augment human analysts for training purposes or to facilitate basic or repetitive tasks. However, the demands AR creates for real-time data processing may have some overlap with my career aspirations.

**5. Which course outcomes have you achieved so far, and which ones remain?**

At this point, I have achieved several of the course outcomes, especially:

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

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

With my remaining enhancement and written assignments, I will continue to support these outcomes as well as fully achieve the following outcomes:

Employ strategies for building collaborative environments that enable diverse audiences to support organizational decision making in the field of computer science

Design, develop, and deliver professional-quality oral, written, and visual communications that are coherent, technically sound, and appropriately adapted to specific audiences and contexts

**Part Two:**

* Software design and engineering
  + I have implemented enhancements for this artifact. Additional updates based on feedback have been completed.
* Algorithms and data structures
  + I have implemented enhancements for this artifact. Additional updates based on feedback are ongoing.
* Databases
  + I have begun developing enhancements for this artifact.

**Status Checkpoints for All Categories**

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| --- | --- | --- | --- |
| **Checkpoint** | **Software Design and Engineering** | **Algorithms and Data Structures** | **Databases** |
| **Name of Artifact Used** | CS360 Android Inventory Management Application | CS300 Course Catalog Management Application | CS340 Animal Shelter Dashboard |
| **Status of Initial Enhancement** | Complete | Complete | In progress |
| **Submission Status** | Submitted | Submitted | Not submitted |
| **Status of Final Enhancement** | Completed | In progress | Not started |
| **Uploaded to ePortfolio** | No | No | No |
| **Status of Finalized ePortfolio** | Not started | Not started | Not started |

**References**

Fernandez, E. (2019, November 30). *AI is not similar to human intelligence: Thinking so could be dangerous.* Forbes. <https://www.forbes.com/sites/fernandezelizabeth/2019/11/30/ai-is-not-similar-to-human-intelligence-thinking-so-could-be-dangerous/>

Goodfellow, I., Bengio, Y., & Courville, A. (2016). *Deep Learning*. MIT Press. <https://www.deeplearningbook.org/>

Mathews, P. (2018, May 01). *The future of VR and AR*. IEEE Computer Society. Retrieved November 30, 2024, from <https://www.computer.org/publications/tech-news/trends/the-future-of-vr-and-ar>