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CS499

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CS499 5-1 Journal: Computer Science Trends and Artifact Update

Part One:

Trend 1: Machine Learning, AI, and Natural Language Processing

Trend 2: The Internet of Thing or IoT

1. What is the significance of each trend?
   a. Trend 1: While the immediate benefits of this trend may not have much in terms of visible effects yet, the potential automation that these three can bring could completely change how we approach personalization, customization, and our own decisions. Some ways that we see a lot online when it comes to using both machine learning and natural language processing in tandem is advertising that takes in information from the user's searches and their interests in an effort to grab their attention more than they would with traditional advertising. Overall, the benefits fall under automation in some form and the convenience that automation brings by not needing constant or any human supervision.
   b. Trend 2: The biggest significance of IoT is how accessible it makes data and analytics that would otherwise be hard to attain, as well as the convenience that it brings from being so accessible. One of the most notable changes that is visible in many average households nowadays is smart home devices. For instance, having a smart enabled refrigerator connected to a network could allow the user to be notified when there are issues or any other convenient notification such as ice being made or completed.
2. How will each trend change the field of computer science?
   a. Trend 1: Whether or not Machine learning and AI will affect the job market negatively has yet to truly be seen in any way, but we can already see the career and research opportunities that have been created due to it. I will lead to

automation of more mundane code, while allowing for complex implementations of machine learning that must be headed by competent programmers.

b. Trend 2: The IoT opens the doors to programmers being needed to create and maintain code for more than just computers and phones. In turn, more time passing with people getting used to IoT in their daily life means that more innovation will come from experienced and passionate programmers aiming to make a difference in the field.

3. How will each trend change the experience of consumers, workers, or citizens?
   a. Trend 1:
      i. Consumers: enhanced personalization and targeted advertising.
      ii. Workers: automation of mundane tasks. Accessible Help through use of NLP systems.
      iii. Citizens: Similar to workers, automation of mundane tasks as well as access to help through systems that use NLP.
   b. Trend 2:
      i. Consumers: A lot of smart home products in attempt to get the IoT into the common household
      ii. Workers: Automation of systems can be tracked and controlled through other devices such as sprinklers that go off based on temperature that could notify workers when there are temperature issues. This
      iii. Citizens: Smart home products and automated systems become more common and can be easier ways to access otherwise hard to get data for yourself or your home.

4. How will each trend fit in with your career interests or aspirations?
   a. Trend 1: I aspire to use machine learning in my own projects in the future where possible if I become affluent in how it works. Having only worked on one machine learning project before, I still have a lot to learn.
   b. Trend 2: While it doesn't directly fit in with my career aspirations, I will look into smart home devices if they are convenient and will be more than happy to learn to customize them to my liking if it would be beneficial to do so.

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

   a. **Completed:** *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.*
      i. By converting my code over to Java as well as expanding the code to use inheritance, multiple methods for operations that use said inheritance, and input validation, I believe that I have demonstrated that I have achieved the goal.

   b. **Completed:** 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.
      i. By applying hashmaps, I find that my code has improved overall in terms of versatility and looks a lot less amateur than before.

    c.   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.

Part Two:

Status Checkpoints Table Update

Checkpoint	Software Design and Engineering	Algorithms and Data Structures	Databases
Name of Artifact Used	Final Project CS410 Reverse Software Engineering	Final Project CS410 Reverse Software Engineering	Final Project CS410 Reverse Software Engineering
Status of Initial Enhancement	Completed	Completed	To be completed today
Submission Status	Submitted	Submitted	Not yet submitted
Status of Final Enhancement	Completed, No help needed	Completed, No help needed	In progress, Code in progress,
Uploaded to ePortfolio	Uploaded Week 4	Uploaded Week 5	Not yet, Must be completed first
Status of Finalized ePortfolio	In progress	To be completed	To be completed