6-1 Journal: Emerging Technology and Artifact Update Stephen Zaferopolos

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CS499 Computer Science Capstone

08/09/25

Part One:

1. **What is the identification and description of each technology?**

Without a doubt the biggest emerging technology that will affect the computer science discipline will be Artificial Intelligence. AI is the simulation of human intelligence in machines. The second most prevalent technology would be Robotic automation. Robotic automation is the use of robotics to simulate repetitive tasks such as assembly line, or machining parts. Both technologies can benefit humankind greatly. They could also be harmful if overly relied upon.

1. **What are the likely impacts on computer science or your career?**

AI has the potential of reducing opportunities in computer science depending on how far the technology is developed. As of today, AI assisted programming reduces the number of programmers required for a project. Only a few programmers would be needed to direct the AI on the development of the code. Robotics, on the other hand, would provide more opportunities for the computer science field. While robotics may limit the amount of manufacturing jobs, the robots will require programming and maintenance which will benefit computer scientists greatly.

1. **How might the two technologies impact humans, communities, or the world?**

Both technologies have the potential of greatly improving quality of life for humans, communities, and the world. AI will develop new technologies used to cure diseases, previously thought to be uncurable. It will improve efficiency of community needs, such as utility delivery and maintenance, and traffic control. Robotics will reduce the cost of manufacturing, which in turn will reduce the cost of living for the average person. These technologies, while very promising, do have downsides. The increased adoption of AI, for instance, will increase the demand for power that is already spread thin. Increased use of robotics will lessen the need for manpower. While this will save money for the manufacturer, it will generally hurt the consumer they rely on, as less jobs will be available.

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

As we come to the end of the course, I feel most of the outcomes have been achieved. Deploying strategies for building collaborative environments has been satisfied by the code review exercise. The code review required working with work from other developers and strategizing the improvements of the applications. Design develop and deliver professional-quality oral, written and visual communications has been satisfied by the narratives created for each software enhancement exercise. Design and evaluate computing solutions while managing trade offs of design choices has been satisfied by the second artifact enhancement. Creating a way to save the information while maintaining the core functions of the linked list. Developing an ability to use well founded and innovative technique, skills and tools has been satisfied by the first application enhancement porting an application from one language to the other, while ensuring proper coding practices are maintained. Finally developing a security mind set has been satisfied by the last enhancement creating a database interface that secures data from a csv to a database with security protection, as well as providing data checking in the code itself, which verifies the validity of data.

Note: The technologies can be at the center of computer science—such as new application programming interfaces (APIs), cloud computing, or augmented reality—or technological developments that will touch on or impact computer science, such as different types of biotechnologies or emerging energy sources. Deploying strategies for building collaborative environments has been satisfied by the code review exercise. The code review required working with work from other developers and strategizing the improvements of the applications. Design develop and deliver professional-quality oral, written and visual communications has been satisfied by the narratives created for each software enhancement exercise.

Part Two:

Provide an update to your instructor on your progress with each category of artifacts for the ePortfolio:

* Software design and engineering
* Algorithms and data structures
* Databases

Use the following Status Checkpoints table to document your progress in each of your three category enhancements. Complete the table with a report on each category, including its status and some details. For instance, if you are working on the initial enhancement for your work in the databases category, you would briefly note which enhancements you have completed and which are still to come in that cell of the table. Also, note any trouble spots or places where you may need help. An exemplar can be found in the Reading and Resources section of the course.

**Status Checkpoints for All Categories**

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| --- | --- | --- | --- |
| **Checkpoint** | **Software Design and Engineering** | **Algorithms and Data Structures** | **Databases** |
| **Name of Artifact Used** | CS260 Data Structure and Algorithm LinkedList (C++ version) | CS260 Data Structure and Algorithm  LinkedList (Python version) | CS260 Data Structure and Algorithm  Linked List (enhanced version) Enhancement completed. Ported to python |
| **Status of Initial Enhancement** | Enhancement completed. Ported to python | Enhancement completed | Enhancement completed |
| **Submission Status** | Submitted. Feedback received | Submitted. Feedback received | Submitted. Feedback received |
| **Status of Final Enhancement** | Feedback applied. Final polish complete | Feedback applied. Final polish complete | Planned but not complete |
| **Uploaded to ePortfolio** | Added to local copy of ePortfolio | Added to local copy of ePortfolio | Planned but not complete |
| **Status of Finalized ePortfolio** | Planned but not complete | Planned but not complete | Planned but not complete |