CS 499 Module 5 Journal

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One of the major emerging trends in technology is Artificial Intelligence. There are a number of companies that are working on AI, including Microsoft with their collaboration with OpenAI, as well as Google with their Gemini project (Schroer). AI is also being made available to run on client devices from companies like Meta who released their Llama AI modules that can be configured and run by average users (*Build the future: Llama API*). This push towards AI is a major enhancement for data analysis and makes the vast amount of information on the internet even more searchable. It also allows for more human-like interactions with the computer and the ability for the system that is being asked a question to better understand the context around the question that is being asked (Stryker & Kavlakoglu, 2025).

This trend in AI will mean much faster data analysis and data generation. On the one hand, it can be a major tool for helping to do things like troubleshoot code or quickly analyze vast amounts of data to aid in coming up with solutions to problems that before were almost impossible. However, on the other hand it is tempting by many to try and use AI to fully write code or to do all of the work for them. This temptation is very bad because not only does it allow the user to skip doing the work, and therefore skip potentially valuable learning experiences, but it also often leads to faulty code because the sources that the AI is pulling from are not always legitimate, out of date, or not the most efficient or secure way of doing things. For average citizens it also is having major effects with things like the generation of videos that are fake but look very real, or cheating in academia. However it also can help with the creations of works of art that the average person might not have had the skills to accomplish before, and information can be even quicker to obtain. Like most tools, it really depends on how the AI is used and for what purpose.

This potentially fits into my future career because many of the advancements in technology and the expansion of things like datacenters are in support of the growing usage of Artificial Intelligence and the growing amount of resources that are needed in order for it to correctly operate. This means that if I stay in the datacenter I will most likely be doing more work for the enablement of AI.

Another major trend in computer science is the development of the quantum computer. This type of computer using quantum physics in order to operate by manipulating quantum elements known as quarks. The power of these computers theoretically will be much more than even the fastest modern machines, with the ability to do things like break much of the existing encryption algorithms in a matter of moments (Schneider & Smalley, 2025).

This trend will completely change computer science assuming it fully catches on. The qubits that are used in quantum computers mean that the machines no longer use binary bits but instead can store many values in each qubit. The computer itself is being redesigned from the ground up and new languages will eventually have to be written in order to take advantage of the new systems.

Currently this trend isn’t really affecting the average consumer, however if it takes off you will see another leap in the power and capabilities of consumer devices as they are able to perform much more complex calculations much faster.

This may affect my career at a later stage in my career, therefore I need to make sure to keep track of the progress that is being made in this area as well as try to understand what work is going into these systems so that I have at least some idea of how they might be able to be programmed and operated.

So far in the project I have completed the majority of the gui elements, and created a sorting algorithm for the favorites. Now I am working on adding a SQL database to the application. I created a server instance in Microsoft Azure and a database within it so that it could be accessed from anywhere. I then created a User table, a Trip table, and a table for the favorites information that links them. I was able to get the user login for the application connected to the database so that username and password information could be verified using it. I will continue working to connect the trip information to the database, including converting the images to binary form so that they can be stored in the database and then retrieved and converted back to images for viewing. I will also work on connecting the registration part of the application and making sure that the password is hashed for security. Finally I need to make sure that the database can be accessed by other users who are using the application.

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| **Checkpoint** | **Software Design and Engineering** | **Algorithms and Data Structures** | **Databases** |
| **Name of Artifact Used** | CS 250 Travel Destinations | CS 250 Travel Destinations | CS 250 Travel Destinations |
| **Status of Initial Enhancement** | All pages are present. The majority of functionality is present | Added Quicksort sorting algorithm for sorting favorite destinations | Database created in Azure. Application connected to database. User login connected to database. |
| **Submission Status** | Submitting further enhancement | Submitting gui element with sorting algorithm | Submitting updated application with database connections |
| **Status of Final Enhancement** |  |  |  |
| **Uploaded to ePortfolio** |  |  |  |
| **Status of Finalized ePortfolio** |  |  |  |

References:

*Build the future: Llama API*. Build the Future | Llama API. (n.d.). https://www.llama.com/products/llama-api/

Schneider, J., & Smalley, I. (2025, June 4). *What is quantum computing?*. IBM. https://www.ibm.com/think/topics/quantum-computing

Schroer, A. (n.d.). *76 artificial intelligence (AI) Companies To Know*. Built In. https://builtin.com/artificial-intelligence/ai-companies-roundup

**Stryker, C., & Kavlakoglu, E. (2025, June 4). *What is Artificial Intelligence (AI)?*. IBM. https://www.ibm.com/think/topics/artificial-intelligence**