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Course: CS 499 – Computer Science Capstone

Assignment: Journal – Emerging Trends and Artifact Progress

Date: 6 / 8 / 25

Part One: Emerging Trends in Computer Science

Trend 1: Artificial Intelligence (AI) and Machine Learning (ML)

Significance:

Artificial Intelligence and Machine Learning continue to revolutionize how systems process data and make decisions. Their ability to learn from large datasets and improve performance over time makes them incredibly valuable in areas such as healthcare, finance, and transportation.

Impact on Computer Science:

AI/ML is reshaping the focus of computer science by integrating statistical modeling with programming to build intelligent systems. It’s influencing research directions, job opportunities, and the required skillsets for computer science professionals.

Impact on Users:

For consumers and workers, AI brings smarter products, automation, and predictive systems. From personalized recommendations to fraud detection and self-driving cars, AI changes how we interact with technology.

Fit With Career Goals:

As a student interested in software engineering and development, understanding and possibly incorporating AI logic or frameworks into applications is a valuable skill. It opens up job roles in AI development, automation, and smart system design.

Trend 2: Cloud Computing and Edge Computing

Significance:

Cloud computing allows companies to scale infrastructure, storage, and computing power, while edge computing brings processing closer to the data source for real-time applications. Together, they offer flexible, efficient, and cost-effective computing solutions.

Impact on Computer Science:

These technologies shift focus from centralized infrastructure to distributed systems and require developers to understand containerization, networking, and system design in the cloud. They also open new areas of development like IoT and real-time services.

Impact on Users:

Consumers and businesses benefit from faster response times, high availability, and on-demand services. Workers can collaborate more easily using cloud platforms, and citizens gain access to scalable digital services.

Fit With Career Goals:

Cloud computing is a key skill in software engineering. As I continue building apps and systems, using cloud services like AWS or Azure can improve deployment, data storage, and user scalability.

Course Outcomes Achieved So Far:

Software engineering/design and algorithmic enhancement (Milestones 2 and 3 complete).

Created a Unity-based craps game with design improvements and logic refactoring.

Database enhancement still in progress.

Course Outcomes Remaining:

Final database enhancement and integration.

Final polishing and ePortfolio upload for all categories.

Further integration of security practices and complete final presentation design.

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| Checkpoint | Software Design and Engineering | Algorithms and Data Structures | Databases |
| Name of Artifact Used | Craps Game Project | Craps Game Project | Craps Game Project |
| Status of Initial Enhancement | Completed code cleanup, improved naming, separated logic into smaller classes for better structure and readability. | Refactored dice logic, improved condition checks and used structured loops for clarity and maintainability. | Replaced SQLite with CSV logging to store and track player results, timestamps, and win/loss data. |
| Submission Status | Submitted in Milestone 2 | Submitted in Milestone 3 | Submitted in Milestone 4 |
| Status of Final Enhancement | Complete | Minor testing planned to optimize roll logic; adding comments and Javadoc-style notes. | Final polish includes formatting CSV output and adding file error-handling. Will write summary log reader script. |
| Uploaded to ePortfolio | Complete | In progress code and explanation uploaded | In progress – file read/write functions tested, final explanation being written. |
| Status of Finalized ePortfolio | Focused on presentation and alignment to outcomes. | Still refining layout and visuals. Working on summaries that explain my logic clearly to non-technical viewers. | Final wording in progress. Will include a sample CSV and code explaining how the data supports player analytics. |