CS 499

Professor Troy Hawk

Michael Thomas

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Emerging Technology and Artifact Update

Technologies:

* [Edge Computing](https://www.yourteaminindia.com/blog/emerging-trends-in-information-technology#:~:text=14.%20Edge%20Computing,in%20data%20centers.)
* [DNA Data Storage](https://www.sap.com/blogs/6-surprising-innovations-for-the-future-of-computing#:~:text=DNA%20data%20storage,few%20years%20away.)

Part One:

* What is the identification and description of each technology?
  + Edge Computing processes data locally at the source–such as a mobile device, IoT sensor, or embedded system–instead of relying on centralized cloud services. When used, latency can be greatly reduced and faster decision-making occurs, which is important for real-time applications like AR, mobile gaming, and autonomous systems (Guleria, 2025).
  + DNA Data Storage is an innovative technology that stores digital data using synthetic DNA molecules, encoding binary data into nucleotide sequences (A, T, C, G). DNA can store immense amounts of data within a microscopic space and retain stability for thousands of years, so it is being highly considered as a long-term solution for dataset archives (Wellers, 2022).
* What are the likely impacts on computer science or your career?
  + As edge development impacts the game development field, there is high relevance to its impact on my career. Video games rely on low-latency performance, where edge-based processing can improve gameplay, responsiveness, and integration of AR/VR technologies. Being a developer will require skills in understanding how to design distributed systems and process data locally. On the other hand, DNA data storage may not have heavy impact on my career aspirations, but I am excited about the impact of it on computer science. This could drastically advance industries like data security, archival methods, and bioinformatics. There is a possible overlap as games and media become more data-heavy, where DNA data storage could support game preservation or content libraries.
* How might the two technologies impact humans, communities, or the world?
  + Rural or under-connected communities could benefit from edge computing by enabling local data processing where cloud access is limited. This can also reduce strain on internet infrastructure, which benefits environmental sustainability and digital equity. Similarly, DNA data storage could also apply to global challenges with sustainability. Acting as an eco-friendly alternative to traditional data centers, this storage would require less energy consumption, while preserving important historical records. Both technologies contribute to sustainability efforts while contributing to the next generation.
* Which course outcomes have you achieved so far, and which ones remain?
  + The only outcome I have remaining is outcome 1, where my ePortfolio will serve as my collaborative environment that is understandable to diverse audiences. The remaining outcomes have been accomplished through my milestone enhancements, with the use of clean technical communication (outcome 2), structured algorithms (outcome 3), effective use of development tools (outcome 4), and secure coding practices within my database network completed with my final enhancement (outcome 5).

Part Two:

* Status Checkpoints for All Categories

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| --- | --- | --- | --- |
| **Checkpoint** | **Software Design and Engineering** | **Algorithms and Data Structures** | **Databases** |
| **Name of Artifact Used** | **Origin:** CS 320 Software Testing, Automation, and Quality Assurance  **Name:** Appointment Service | **Origin:** CS 320 Software Testing, Automation, and Quality Assurance  **Name:** Contact Service | **Origin:** IT 145 Foundation in Application Development  **Name:** Grazioso Salvare |
| **Status of Initial Enhancement** | Completed, instructor has reviewed, no changes necessary to codebase | Completed, instructor has reviewed, no changes necessary to codebase | Completed, instructor has reviewed, no changes necessary to codebase |
| **Submission Status** | Submitted and graded | Submitted and graded | Submitted and graded |
| **Status of Final Enhancement** | Feedback received, enhancements revolve around security and narrative documentation that will be updated with ePortfolio publication | Feedback received, enhancements revolve around security documentation that will be updated with ePortfolio publication | Feedback received, enhancements revolve around data storage solution documentation that will be updated with ePortfolio publication |
| **Uploaded to ePortfolio** | In progress | In progress | In progress |
| **Status of Finalized ePortfolio** | In progress | In progress | In progress |

Source(s)

Guleria, R. (2025, March 20). *15 Emerging Trends In Information Technology [2023]*. YourTeamIndia. <https://www.yourteaminindia.com/blog/emerging-trends-in-information-technology>

Wellers, D. (2022, October 14). *6 Surprising Innovations for the Future of Computing*. SAP; SAP Insights research center. <https://www.sap.com/blogs/6-surprising-innovations-for-the-future-of-computing>