Abigail Sibazeu

CS-499

02/16/2025

**Journal Entry: Emerging and Disruptive Technologies**

Part One:

As I continue my journey in computer science with a focus on data science, I am fascinated by the rapid evolution of emerging technologies that are shaping the industry. Two game-changing technologies that stand out to me are artificial intelligence (AI) and quantum computing. Both have the potential to redefine the way we process data, make decisions, and solve complex problems—areas that are directly relevant to my career aspirations.

AI, especially advancements in machine learning and deep learning, has already transformed industries like healthcare, finance, and marketing. As someone pursuing a career in data science, I see AI as both an incredible opportunity and a challenge. AI models can analyze massive datasets, uncover patterns, and automate decision-making processes, which aligns perfectly with my passion for working with data. The rise of generative AI and automated analytics tools means that data scientists must continuously upskill to stay ahead. While AI enhances efficiency, it also raises ethical concerns, such as biases in models and responsible data usage—topics that I want to explore further in my studies and future career.

Quantum computing is another disruptive technology that intrigues me, especially in its potential to revolutionize data processing. Unlike traditional computing, which relies on binary bits, quantum computing uses qubits, allowing for exponentially faster calculations. For data science, this could mean solving optimization problems, running simulations, and training AI models at unprecedented speeds. While quantum computing is still in its early stages, I am excited about its implications for cryptography, big data analytics, and AI advancements. As I continue learning, I want to understand how quantum computing might integrate with machine learning and whether it could lead to new breakthroughs in predictive modeling.

Beyond their technical impacts, these technologies will reshape how humans interact with data and make decisions. AI-powered automation is already changing workplaces, and quantum computing could redefine secure communications and data encryption. However, these advancements also come with challenges, such as ensuring fair AI practices and addressing accessibility gaps. I want to contribute to this evolving field by focusing on ethical and practical applications of data science, ensuring that AI-driven insights are transparent and beneficial to society.

Throughout my coursework, I have built a strong foundation in data management, machine learning, and software development. However, I know there is still much to learn, especially in AI model interpretability, quantum computing principles, and real-world AI applications. Moving forward, I aim to deepen my expertise in these areas, stay updated on industry trends, and prepare for a career where I can leverage data to drive meaningful impact.

Part Two:

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| **Status Checkpoints** | **Software Design** | **Algorithms** | **Databases** |
| **1** Artifact Selected | CS360 – Inventory App | IT145 – Zoo Monitor  System | CS340 – Sibazeu Search  Web App |
| **2** Working on Initial Enhancement | * Complete forgot password feature in LoginActivity. * Complete coding on ItemActivity user CRUD features. * Complete SQL handle file refactor. * Complete general code cleaning. * Complete testing of   code. | * Complete pseudocode development. * Complete coding module for animals monitoring. * Complete coding   module for habitats monitoring.   * Complete updating   library and code to work with Java 17.   * Complete testing of code. * General code cleaning. | * Complete setting local Windows environment. * Complete testing   functionality of interface with python  libraries and framework.   * Setup of MongoDB database. * Testing code. |
| **3** Submitted: Awaiting  Instructor  Feedback | Submitted and feedback received. | Submitted and feedback received. | Submitted and received feedback. |
| **4** Working on Final Enhancements | completed | Completed | completed |
| **5** Uploaded to  ePortfolio | Formatting narrative for ePortfolio home page and description page for the artifact. | started | started |
| **6** Finalized ePortfolio Entry | Formatting ePortfolio content. | Arrangement of GitHub page layout per wireframe | Arrangement of GitHub page layout per wireframe |

Reference:

 Chollet, F. (2021). Deep learning with Python (2nd ed.). Manning Publications.

 International Business Machines Corporation. (n.d.). Machine learning. IBM. Retrieved February 9, 2025, from <https://www.ibm.com/cloud/learn/machine-learning>

 Microsoft. (n.d.). Quantum computing basics. Retrieved February 9, 2025, from <https://azure.microsoft.com/>

 National Institute of Standards and Technology. (n.d.). Post-quantum cryptography. Retrieved February 9, 2025, from <https://csrc.nist.gov/>

 Bass, L., Clements, P., & Kazman, R. (2012). Software architecture in practice (3rd ed.). Addison-Wesley.

 Brynjolfsson, E., & McAfee, A. (2014). The second machine age: Work, progress, and prosperity in a time of brilliant technologies. W. W. Norton & Company.