Module Eight Journal: Self-Reflection

Hector Maldonado

Southern New Hampshire University

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Professor Ramsey Kraya

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Professional Self-Assessment

As I reflect on my journey through the Computer Science program at Southern New Hampshire University, I am proud of the growth I have achieved both as a student and as a developing professional. My ePortfolio, centered around the enhancement of a 3D Scene Manager application in C++ and OpenGL, is a testament to my commitment to continuous learning, technical excellence, and adaptability in the ever-evolving field of computer science.

Growth in Software Design and Engineering

Throughout my academic and professional experiences, I have learned the importance of modularity, maintainability, and scalability in software design. My capstone project demonstrates these principles through the refactoring of the Scene Manager into a more modular architecture. By introducing dedicated TextureManager and MaterialManager classes, I centralized resource management and improved code reusability. This not only made the codebase easier to maintain and extend, but also mirrored industry best practices for separation of concerns and single responsibility design. My experience leading agile teams and working as both a developer and tester informed my approach, ensuring that my enhancements were robust, well documented, and aligned with real-world software engineering standards.

Mastery of Algorithms and Data Structures

A significant milestone in my project was the implementation of an octree spatial partitioning structure. This enhancement required a deep understanding of data structures and their practical applications in graphics programming. By integrating the octree, I enabled efficient culling and querying of scene objects, which greatly improved rendering performance and scalability for complex scenes. This experience reinforced my ability to analyze problems, select appropriate algorithms, and implement solutions that optimize both speed and resource usage. It also highlighted the value of data driven decision making, a skill I continue to develop through my studies in data analytics.

Application of Database Concepts

Recognizing the importance of data persistence and user experience, I enhanced my project by adding JSON-based save and load functionality for both scene objects and camera state. This required designing serialization and deserialization routines, as well as integrating them seamlessly into the application workflow. The ability to save and restore the state of the application at runtime not only demonstrates my understanding of database concepts, but also my ability to bridge the gap between backend data management and user facing features. This enhancement reflects my broader interest in data analytics and my commitment to building software that is both functional and user centric.

Professionalism, Adaptability, and Future Goals

Beyond technical skills, this project has strengthened my abilities in project planning, code review, and self-directed learning. Creating a code review video and written narratives for each enhancement challenged me to communicate complex ideas clearly and concisely an essential skill for any professional. My background in EMS has instilled in me a strong sense of vigilance, responsibility, and teamwork, all of which I bring to my work in technology.

Looking ahead, I am excited to continue building on these foundations as I pursue a career in computer science, with a particular interest in data analytics and software engineering. My ePortfolio not only showcases my technical achievements, but also my dedication to lifelong learning, adaptability, and delivering value in collaborative environments. I am confident that the skills and mindset I have developed will enable me to contribute meaningfully to any organization and to continue growing as a professional in this dynamic field.