**Individual Capstone Assessment**

A Privacy-Preserving Generative Adversarial Network (PP-GAN) for Case-Based Explainability in Medical Image Analysis is something that my project is going to revolve around. Although my final topic is not yet decided, but it is going to something related to the above topic. This project aims to enhance the interpretability of deep learning models in the medical field by generating synthetic graphics and explanations while maintaining patient privacy. I am a University of Cincinnati computer science student, and I bring to this project a broad variety of technical skills and real-world knowledge that I have acquired via coursework and co-op positions.

Throughout my academic career, I have honed my technological skills in a range of computer science courses. Notably, owing to modules like CS 2028C – Data Structures, CS 4033 – Artificial Intelligence and CS 5173 – Deep Learning, I have a solid foundation in the machine learning methods and image analysis techniques required for our study. Plus, my certifications in IBM Data Sciences, Neural networks & ML will be of additional help as well. My coursework-based understanding of programming languages such as Python, Java, and C++ will also be highly useful in developing the PP-GAN model and its accompanying algorithms.

Professionally, I had the chance to study about artificial intelligence to predict passenger flow at intervals of time, as a Technology Innovation Intern at the Carl H. Lindner College of Business. My research skills have improved because of this experience, which will be helpful for researching about data sets for the findings of our PP-GAN project's medical picture analysis. During my tenure as a Software Developer at Honeywell Intelligrated, I honed my Java skills and worked extensively with Spring Frameworks, RabbitMQ, and Docker. These technical skills will be instrumental in optimizing our PP-GAN's performance and maintainability. Similarly, my time at Crown Equipment Corporation allowed me to work on Bluetooth connectivity and error handling systems, which will be directly transferable to our project's development. These co-op experiences have not only enriched my technical skills but have also instilled in me the importance of effective project management and teamwork.

This project has the potential to have a significant impact on the field of medical image analysis, which motivates me to participate in it. It is critical to safeguard privacy while detailing AI system options, and I am willing to assist in finding a solution. Our first solution employs GAN structures and powerful encryption technologies to generate understandable images while respecting patient privacy.

One of our goals is to create a functional PP-GAN system that can provide case-based explainability for medical image analysis while maintaining patient privacy. To evaluate my contributions, I wish to use both quantitative and qualitative metrics, such as the accuracy of the developed justifications and the safety of the privacy-preserving methods. Additionally, frequent peer reviews and feedback meetings within the project team will ensure that we provide a high-quality solution collectively. Finally, I have the technical and non-technical skills necessary to excel in our senior design project thanks to my college degree and co-op experiences.