**Nishidha Koneru  
Individual Capstone Assessment**

My senior design project will be a virtual reality application that allows the user to wander through an art gallery that exhibits paintings generated using artificial intelligence. I decided to do this project because I wanted to gain more exposure to new, relevant technologies like VR and AI. Most of my co-ops have been in software test automation and software development, so I wasn’t able to explore these kinds of exciting concepts. This project will require a lot of external research, however I still think this project will be a good application of what I’ve learned studying computer science, since it will require the ability to code and some understanding of AI algorithms. I believe this project is a great demonstration of both academic growth and personal interest because we will be using many lessons we’ve learned in class and in the workplace, as well as learning more about new technologies.

I believe I have taken many courses that will guide the development of this project. We will be using Python to code the AI/machine learning portion of this project, and I first learned Python in the Python Programming (CS 2021) class from sophomore year. The Data Structures (CS 2028C) course taught me a lot about object-oriented programming and I learned how to utilize and apply multiple data structures that may be needed to code the AI portion using Python and the VR portion in C#. The Design and Analysis of Algorithms (CS 4071) and AI Principles and Applications (CS 4033) courses gave me an understanding of reasoning and knowledge representation basics of AI techniques, as well as a basic understanding of algorithms used to solve problems that require AI solutions. The Software Engineering (EECE 3093C) course taught me how to work with a team to plan and develop an end-to-end software project.

I believe my co-op experiences will also guide the development of this project. I first worked at PCMS Datafit for one semester as QA Analyst Co-op, and the main skills I learned there were how to manually test software and how to work in teams using Agile Scrum methodology. I then worked at Myriad Neuroscience for two semesters as a Software Test Engineer Co-op, where I learned how to write NUnit tests and debug through code to fix broken tests. I also learned how to work with a smaller team and better communicate any issues that I encountered. For my last two semesters, I worked at Siemens DISW as a Software Development Co-op, where I learned how to complete a software project from top to bottom, all the way from planning and creating a 4+1 architectural view model, to implementation and presentation of the final product. I got a better grasp at coding during my time at Siemens, and I gained a solid understanding of software architecture.

I’m extremely motivated to participate in this project because I have done a few Python ML projects on the side, such as analyzing a dataset of California housing prices and classifying handwritten numbers using the MNIST dataset. I want to gain more experience in the data science/artificial intelligence/machine learning areas since they are some of the fastest growing industries due to the amount of available data there is and the power of predictions that can be made based off of this data. I also don’t have much experience with VR, or any kinds of video games, so I’m very interested in learning more and trying to merge AI and VR. AI-generated imagery has been a huge trend this past year, and I was always curious to understand how a program is able to generate abstract art pieces from simple words or phrases. I would say that my curiosity and passion for learning is my biggest motivation for this project, since I want to gain exposure to areas of computer science I’ve barely explored.

Our preliminary approach is to develop an AI program to generate art and a VR application to display the art in parallel, and then merge the two. Our expected result is that the user will be able to select a word from a drop-down menu in the VR application, and the AI program will generate different pieces of art based off of the word chosen, and the user will be able to walk around and browse through the generated art pieces. I will self-evaluate my contributions throughout the year by making sure I submit my deliverables on time and keep in constant touch with my team. My individual responsibility is to work on the AI program to generate the art, and I know I will be done with my task once my program is able to take a word as an input and output an AI-generated piece of art. I will know that I’ve done a good job with the approval of my teammates and the success of our project when we present it at the CEAS Expo.