

Individual Capstone Assessment

For our senior design project, my group has decided that we will focus on both AI/ML and game development. We are going to create a product where a user can input a description of a game character. We will then use natural language processing to break down the query into specific character attributes. This data will then be fed to another AI model that will generate the game character and/or the stage that the character will appear on. The user will then be able to move around and test out the character that was generated for them. I see this as a very good project, because it covers two interesting topic areas of AI/ML and game design, as well as having a fun and engaging final product.

Over the course of my college experience, I have taken several courses that will help me in collaborating with my team members to complete this project. One of these classes was Software Engineering (EECE 3039C). In this class, we chose groups and worked on a semester-long software project. My group chose to create both a website and mobile app where users could plan out their vacation by planning out hotels and sightseeing locations. There was a calendar page where the user could break down what they were doing each day in terms of activities, lodging, and food. Another class that is helpful in how I approach this project was Database Design/Development (CS 4092). Similar to Software Engineering, in this class we were broken up into groups and had to build a full stack storage application. This required creating a database and endpoints so that the web interface could access the data in the database.

Over my five co-op rotations I have worked at three different companies: London Computer Systems (LCS), Pole/Zero Corporation, and NaviStone. At LCS I worked on updating existing features and creating new features of their primary web application, Rent Manager. This taught me a lot about the web framework Angular as well as teaching me to code in Typescript. Pole/Zero Corporation is a company that creates RF and microwave emitting products that go on boats and planes for communication. Here, I developed web applications in .NET that interacted with hardware. Finally, at

NaviStone, my most recent co-op, I worked in a small group with other interns to develop an application where users could safely request and receive data from an external user. We built this application using the Nuxt framework (typescript, html) and GraphQL for the database interactions. At all of these co-op experiences, I had to collaborate within my team to complete the work.

My group and I decided on this project because it covers two topics that we are all interested in which are AI/ML and game design. I personally, have pretty limited experience in game design and no experience in AI/ML. So, this project offers me a way to get more acquainted with both of these topics. Our current approach to the project is to use natural language processing to break down the initial user query. This will give us more specific data points that we can use to create the character that the user specified. Then, we will use this data to create the sprites for the character (character model and attacks). We will have a set library of sprites that the AI model can choose from. Finally, we will create a level where the user can test out the character that was created for them.

The final result will be a game level where the user can test out different aspects of the character. Depending on what they described in the query, the character will have different jump heights, attacks, attack damage, movement speed, etc. The project will be a success if we can get the product that we have created to consistently create different and accurate characters based on the query. My contributions to this project will primarily be in software development and documentation. So, I will have done a good job with my part if the game works with limited bugs. Additionally, if we have excellent documentation and presentation material then I will be happy with my work.