Stephanie Mullins Capstone

The senior design project that I am working on is a sign language translator. This entails that we will be using full-stack development and computer vision to create our website application. I have a strong desire to complete one more computer vision-based project while I’m still in college and I can learn freely. I’m very excited to be able to progress my knowledge of computer vision through this project and continue to strengthen my skills of full-stack development. This project also fills an empty hole for language translators, so it feels good to be able to create something that is very useful for today’s society. I’m looking forward to completing this project as it will make me feel accomplished with my new skills and knowledge of computer vision but also the rewarding aspect of creating a sign language translator so people can communicate more accessibly.

As this project is at the end of my college curriculum, I felt that the courses leading me up to this point were creating a solid foundation for my application skills. Specifically related to this project, Data Structures (CS 2028C) and Database Design/ Development (CS 4092) as these will have built a good base for my data management skills. This will help when we are storing data taken from the video feed and processing it. Along with storing data, having a good project setup and workflow is also very important. The project management skills learned in Software Engineering (EECE 3093C) will help the team stay on track and hold each other accountable. College courses helped me learn how to be a good engineer with solid skills and background information of relevant technology.

College courses are a great way to learn about technologies and software that are relevant to my career choice. With that being said, actually going out into the corporate world and applying that knowledge solidifies my understanding and skills of topics. My first co-op with Infoscitex as a software engineering intern was a computer vision project. This built my foundation of what happens when a computer “sees” and what to do with the information. It showed me specific libraries that are great for computer vision, and it showed me the workflow of how a big project should be. Also, at Infoscitex, I did a machine learning project. That will help me here because computer vision is the combination of computers seeing and computers thinking. Lastly, I had two companies that I did full-stack web development for, Siemens and Radiance Technologies. These companies taught me the process of how to deal with lots of data and the skills and knowledge to build websites. At Radiance Technologies, I was also introduced to the agile development workflow which we will be using in our project to stay on top of things.

This project is very exciting for me because I haven’t done a big project outside of homework assignments and co-ops. I can really call the finished product something I worked on from top to bottom. Also, with our project objective of creating a sign language translator, I feel it will be a great help to people, both deaf and hearing, for better communication. I’m excited to create something that is needed by a lot of people. Since no one on the team is deaf, we will start by interviewing people we know who are connected to the deaf community to see what they think is needed. It’s best to get information from the people who are affected the most. From there, we will focus on how our computer vision aspect and web app will connect with each other, create a mockup of what the finished project could look like. Then, we will start to figure out what is needed from the backend portion. Everything that has to be coded.

At the CEAS expo, we hope to have a fully functional sign language translator where a person could sign at the camera and the different signings will be picked up by the computer vision hand detection algorithm to then translate hand signals into fluent English words. Also, inputting a video of someone signing into the algorithm and then it also outputting fluent English words. I expect to be a lot more familiar and confident with my computer vision skills and background knowledge. I also hope to pick up some sign language phrases so I can be of help when we are testing our translator. For this to be a successful project for me, I want our project to be fully fleshed out of all bugs and producing fluent translations. The translation also must be as close to real time as possible. I want a good looking and user-friendly UI to display our app. I will know if I’ve done a good job on the project when at the end of the second senior design semester when we are presenting at the expo, I can answer any question and I am well-rounded on everything on the project.