**Individual Capstone Assessment**

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The senior design project our team has in mind will be a web based application which will use large data sets and AI to predict the probability of the Euchre card game. Although we are still working on architecture, we plan to have a view for playing Euchre with a probability overlay, an Admin view which will allow us to see data collected, and a view for automatic games to play out using our AI bot. Although there is a human element to Euchre, we hope we will be able to get a reliable prediction of outcomes which will both show the probability of winning tricks, the round, and give the best path to accomplish this outcome from the User view. The collection of data from games played in User view will not be enough data necessary for predicable outcomes which is why we need to facilitate the automatic games played while in our AI bot view. Lastly the Admin view will connect to the database and what information we have collected to give us graphical representations of this data. We can use this to ensure correct data collection and to see if trends in the data match our expectations of the prediction model.

The college curriculum that I will be able to directly apply to this project includes many of my senior computer science electives. However, I feel that much of my previous classwork was helpful in giving me context or a way to mathematically model the data for what will be required. CS-5167: User Interface 1 was the first class that gave me the confidence to create a web based application from just an idea and improved my HTML and CSS skills to a point where I was able to give real value to my applications. It was also my first introduction to ReactJS which has become my preferred framework. CS-5152: Intelligent Data Analysis I am currently enrolled in but has already given me inspiration on how to model data collection into a usable format that can be translated to the User. Finally, EECE-5132: Software Test & Quality Assurance has helped me build on my small team application development skills so that we should be able to efficiently plan and test our application throughout development.

Siemens AG in Milford, Ohio is the company where I completed all of my co-op experience as a software developer from 2022 to present. Here I learned many things about professionalism, application planning and development, technical skills, and small team dynamics which I plan to bring to this project. Current priority will be modeling the software architecture we will require from this project and to develop initial user interface mockups using Figma before code is implemented. This will need to be followed by research into which framework would work best for our application, and research into any APIs or libraries we will require. Our work at this point should transition into setting a priority of work for all features we deem necessary to this project and divide up the work to best meet my teammates individual skillset, while making tough choices about things which would be nice to have but less value to our project. Finally, we will need to set up good source control using Gitlens and GitHub which will also allow us a peer review process for any code changes. I deem these planning steps to be necessary so we can all gain new skills during this process while maintaining forward progress on our application.

I am personally motivated by this project as I believe it will give me new experiences with user interface design, database management, and the use of API’s and libraries. The use of AI and large data sets will be a learning exercise for me that I believe will be important as this is an emerging technology. Also, I have not created an application using Python as I previously have only done work using full stack Java and JavaScript development. However, I can use my previous experience to help with both mockups for the User Interface and the discussion of which framework will best work for this application. I plan to take responsibility for the look and feel of this application to the User and as a result increase the value of which features are able to include. I will consider this accomplished when we are able to meet our original mission statement in a form that is easily navigated by our Users and has a professional and consistent presentation.

Previously I discussed the primary approach we will take to planning before we begin the development process when I outlined how I could use my co-op experience when creating this project. However, I should discuss our preliminary approach to how we want to accomplish our project. Gabriel will handle the initial architecture and work with Simon on the Python backend and Data Analysis with Simon. Meanwhile I will initially work on creation of the initial project framework, User Interface, and connecting our application to the web. However, I see there being significant coordination between us to make sure everyone is aware of the technology we are using and how the data is being used throughout the application. Our expected results will be that we have created a professional web-based Euchre probability calculator while we all get experience with new technologies that will help us in our software development careers. When we all feel the value of this has been achieved, we will truly be at a stopping point for this project.