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TIC Experiential Component Proposal

I propose to use my summer research as a basis for my Technology Innovation Concentration Experience. The research is with Professor Keith Brown.

Professor Brown's research is on using machine learning to design padding structures that are 3D printed using various polymers. The objective of my summer research is to commercialize his research in a way that would allow a company to make money using his designs. This fits into the Technology Innovation Concentration because the primary goal of my work is to make money from an innovation in technology. More specifically, my business idea is to make mass-customizable orthopedic seat cushions and lumbar pillows. They are primarily designed for the elderly, people in wheelchairs, people in need of additional lumbar support, and those recovering from surgery, but it could be used by anyone looking for a more comfortable sitting experience. The cushion could either be left on a single seat or be carried around for use in various situations.

My work will be mostly independent from the other work that is done in Professor Brown's lab in that I will not be working directly under one of his post-grad students on a research project. Instead, I will be working mostly on my own but routinely checking in with Professor Brown to run ideas by him and get his approval before sending any communications outside of the lab. I will also be working adjacent to the other students and will likely be learning from them as I organize a business model. Professor Brown is aware that I plan to use this as an experiential component and supports my efforts.

I plan on addressing many of the Technology Innovation components with my project. Because this is a primarily independent project, the leadership traits best exemplified by it will be internal motivation, innovative thinking, and independent timeline management. I will not be working with a team, but I will be communicating with Professor Brown and outside organizations that I believe could be interested in my business idea. The first step is to assess customer needs by validating the need for custom orthopedic seat cushions. To do this I plan to research online, talk to people I know, and send out surveys to see if people are satisfied with the current options on the market for orthopedic seat cushions. I will do a market assessment by analyzing competitors like Purple, Cushion Lab, Tempur-Pedic, Tush-Cush, and Mind Reader. I will analyze data from similar companies to estimate the market size, validate the product value, and find effective market entrance strategies. The societal impact of this product is dependent on its ability to provide greater comfort to those in need, so engineering costs and the ability to customize to individual needs will connect directly to the business value in the long-term. The costs will be approximately quantified and used to make a realistic financial forecast. Based on the customer and market data, I can also predict revenue for a full five-year financial forecast.

The deliverables for this project include a prototype/proof of concept, the investor pitch slide deck, and a business plan. The business plan will include customer and market data, a business canvas, and a five-year financial forecast and timeline. All deliverables will be completed by September 6, 2022.

The timeline for milestones is as follows. The customer and market data will be collected over June and early July to be complete by July 18. The data will be summarized, and conclusions will be made about market size and product value by August 2 such that they will be ready on August 15 when the first draft of the business plan will be submitted. I will talk with Professor Brown about what is feasible for him and his team and put together a five-year financial forecast and timeline that includes engineering costs for that first draft as well. The final draft of the business plan and the investor pitch slide deck will be due on August 29. Finally, the prototype/proof of concept will be completed by September 3 such that it can be featured in the video recording of my presentation which will be submitted by September 6. The overall goal of this project is to formulate a business plan that could actually be used by Professor Brown if he so chooses.