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Signature Work Portfolio Reflection Essay

In my Signature Work Portfolio, I decided to showcase two computer graphic assignments, a statistics report, and a homemade project that I created with my housemates. Besides the two computer graphic assignments, these projects may not seem to be related in any way, but they are. They all focus on my favorite hobbies and interests. As we all know Saint Thomas's mission is "Inspired by Catholic intellectual tradition, the University of St. Thomas educates students to be morally responsible leaders who think critically, act wisely, and work skillfully to advance the common good." I believe these projects can help me accomplish Saint Thomas's mission. In this essay I will give a brief overview about each project, discuss why they interest me, and reflect on how I can use the skills I learned from these projects to complete UST's mission.

The first two projects I am going to talk about are the computer graphic assignments. The assignment, "2D Line Drawing - Shapes and Curves," was the first assignment of the semester and it was my introduction to computer graphics. The goals of this assignment were to create a straight line, a circle, a Bezier Curve, and draw my name. In addition to this, I had to show all points used in the shapes and implement a feature where you could change the number of sections in a curve. For example, if you had a low number of curve sections in the circle, it would look like a square, hexagon, or octagon. The higher number of curve sections you had, the smoother the circle would appear.

The reason I chose to include this project because it allowed me to show off my creativity. This assignment reminded me about how much fun I had in my Graphic Design class that I took in high school. Even though I am not a great artist, I still enjoy designing and creating projects on the computer for my friends. Using the skills I learned from this assignment, I was able to create an overlay for Tabletop Gaming Club's Extra Life charity event. When someone donated, the program drew a dollar sign on the stream. A little chime played as well to alert us that someone donated. Even though it was only for aesthetics, this assignment helped my club raise $946 for Gillette Children's Specialty Healthcare. This money helps advance the common good because it will help fund cancer research as well as help parents pay for their child's medical expenses.

The second computer graphics assignment I included into the portfolio was the 3D Projections assignment. For this, I had to use the skills I gained from the 2D Line Drawing assignment to create 3D-like shapes and project them on to the view-plane. The twist here is there were two different methods of projection, parallel and perspective. Depending on the position of the camera, I had to use Cohen-Sutherland's 3D line clipping algorithm to clip the 3D models to make it appear as if they were coming in and out of view. Seeing the models clipping in and out of the camera's view gives the impression that you are playing a video game.

I love video games. I have been playing them since I was a toddler. Video games are one of the main reasons I am who I am today. It was also a big reason I got into computer science. Assignments like the 3D Projections are the assignments that interested me. In my free time I liked to look at the source code for all my favorite games to see how they were built. I always dreamed of developing my own game once I retire and learning how to render simple 3D models

will certainly help with the development process. Honestly, right now, I do not know how this assignment will help me advance the common good. However, I believe I still have accomplished one of Saint Thomas's core values. I would argue that I am fulfilling the university's first conviction, Pursuit of Truth. I hope to use the knowledge I gained from this assignment to create different textures and shapes that I will use in my games.

The third project I will discuss is the project from my STAT 360 class. In this project I was trying to calculate and predict which variables correlate with Premier League teams that have the highest win to loss ratio. Win to loss ratio is important because the financial and emotional stakes for English Premier League (EPL) teams are high, and it benefits those invested in the clubs to create a formula to win. This study looks at which pieces of play correlate to the best season outcomes. I hypothesized that "Offense" would have the highest significant relationship with "Season Success" and "Season Winner," and that "Clean Sheets" would have a significant relationship with "Relegated." What I found was the independent variables "Shots on Goal," "Corners Taken," "Passes Completed," "Touches," and "Time of Possession," all loaded onto one supervariable, called "Offense." The dependent variables "Winning Season" and "Rank" loaded onto one supervariable, called "Season Success." "Clean Sheets" had a significant correlation with "Relegated," "Season Winner," and "Season Success." Just as I predicted "Offense" had a significant correlation with "Season Success."

In addition to video games, sports have also played a key role in defining my personality. Up until my freshman year of college, I have played baseball and soccer since I was five. Since then, I have played badminton at badminton club. Since sports has always been a part of my life, I knew I wanted to work in sports. If I worked for a sports team, I would be giving back to the

community by collecting and interpreting the stats the fans want to see. Sports brings the community together. If I can be a part of or create projects like this one, I can create a more diverse and inclusive community through statistics and sports.

The last project I want to cover is the custom-built Dungeons & Dragons table I built with my housemates Patrick and Josh. To get a better understanding of what this table project is, it is good to know a little bit about D&D. "Dungeons and Dragons is a game all about telling stories, becoming a character, and having fun with your friends. It's set in a fantasy world of swords and sorcery, but whether you want to join a pirate gang, explore a jungle, or take part in a political plot is entirely up to you. Everything is your decision, from what you look like, to how you act, to what happens next. The dice just help you along. Most of all though, it's about spending time with your nearest and dearest, sharing dwarven ales, and making memories."[1] Since this game is all about using your imagination, Patrick, Josh and I wanted to make it feel like you were in the same place as your character. For example, if your character was standing in a thunderstorm, we wanted to have a visual effect that simulated rain and lightning. To achieve this effect, we attached a strand of LEDs to the side of our table. The LEDs were soldered to an Arduino board, and the board plugged into a computer through a USB cable. We created a GUI in Python and Java that has multiple buttons that toggle the different lighting effects. In total we created ten different lighting effects, rain, storm, candlelight, romance, fire/inferno, day, evening, night, refocus (strobing effect), and forest. As a bonus, when our characters enter combat, the lights transform into visual health bars.

[1] "What Is D&D: Dungeons & Dragons." *D&D Official | Dungeons & Dragons*, Wizards of the Coast LLC, a Subsidiary of Hasbro, Inc., 2018, https://dnd.wizards.com/what-is-dnd.

Even though this is a personal project, I believe this project helps me uphold the university's mission and advance the common good. By building and developing this table, I have achieved St. Thomas's Diversity, Pursuit of Truth, and Academic Excellence convictions. This table has created an inclusive community because students from four different clubs have shown interest in the table. I then invited them over to try it out, and by the end of the night, they all became friends. To this day they still meet up every weekend to play D&D together. The table also helps me convey the Pursuit of Truth and Academic Excellence convictions because this project was creative, used skills from three different majors, and required rigorous thinking to design and develop. Lastly, we are going to be advancing the common good because Patrick Josh and I plan on selling the software and donating a certain percentage of the profits to help combat climate change.

In conclusion, these four projects have and will continue to help me propel my career. Even though most of these projects have not directly contributed to St. Thomas's mission or its convictions, I have been able to use the knowledge and skills I learned from them to help make the community and its people more generous and inclusive. I believe I have helped make the Saint Thomas community better than it was when I joined it, and I hope I can continue to do throughout my career.