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CISC 480 – Capstone

Reflection Essay on My College Years and Common Good

I am beyond grateful for my time at the University of St. Thomas. It has been full of growth, both personally and professionally. I came to St. Thomas as an international student from Indonesia. I applied to 13 colleges and got accepted to 10. I narrowed the decision process down to two choices, and St. Thomas was one of them. The other university offered me an almost full ride scholarship. Ultimately, I chose to attend St. Thomas for its medium size, Neuroscience program, and proximity to my host (American) family. It was not an easy decision, but I am so thankful for the decision and for my college education. St. Thomas has provided me with so many opportunities to grow immensely, and I would perhaps not major in Computer Science otherwise.

Through the liberal arts, CISC curriculum, and my time at St. Thomas, I have been able to better myself to advance the common good and St. Thomas's mission and values. The mission of the University of St. Thomas is as follow: "Inspired by Catholic intellectual tradition, the University of St. Thomas educated students to be morally responsible leaders who think critically, act wisely, and work skillfully to advance the common good." St. Thomas also commits to the following convictions: Pursuit of Truth, Academic Excellence, Faith and Reason, Dignity, Diversity, Personal Attention, and Gratitude. In this portfolio, I highlighted a few works during my time at St. Thomas. They help demonstrate my skills and growth during my college years.

The first project I would like to mention is "Error Handling: To Do List." This project is for the fifth lab in CISC 230 - Object Oriented with Prof. Yilek. The driver of this program will

prompt the user to enter their username, which is or will be the name of the CSV file created from this program. If the CSV file is on file, then the program will process the existing file. If not, then the program will create a new file for the corresponding username. The user then needs to choose whether they want to sort the tasks based on date, sort the tasks based on importance level, add a new task, or save and exit the program. I also added an option to exit the program without saving any changes. If an error is caught in "add a new task," then the program will prompt the user to re-choose one of the options available.

This class was the very first experience I had with Java, which is more complicated than Python because Java requires us to declare the type of each variable. This project was also the very first experience I had with error handling. It is impressive to compare my low and high moments in this class. At the beginning of the class, I did not even know how to run the program. I did not know what `public static void main(String[] args)` was; we had automatic testers for my intro CISC Python class. At the point of this project, I was able to exceed the instructor's expectations with more test cases and error handlers. I am so grateful for Dr. Yilek's office hours, which I visit almost every week. I thought critically and worked skillfully to make sure this program advances the common good of the users by eliminating bugs.

The second project we will discuss is "Dynamic Web Server: US Energy Consumption." This Project is for CISC 375 – Web Development with Prof. Marrinan. I worked in a group with two other students to create a dynamic web page that displays information on US energy consumption. A user can view energy consumption by year, state, or energy type using the menu available at the top of the page. This was made possible by the data available and our group collaboration on writing HTML, CSS, and JavaScript code. The HTML templates are dynamically

changed based on the related data, and the data is visualized using AnyChart JavaScript library. We used NodeJS for the server.

This project was the very first experience I had with JavaScript and more advanced web development. It was intimidating working with technologies I had never heard before. I am so grateful for Prof. Marrinan's virtual office hours and my team. Additionally, this project gave me an experience to work on a bigger project in a team setting. The setting is very similar to how the capstone project is setup, hence an act of Academic Excellence. Moreover, this project helped me to be morally responsible leader who act wisely. The data shows that non-renewable energy is significantly more widely used, which is a sustainability problem. Showing the data as is also demonstrates Pursuit of Truth. I have been more thoughtful with my energy consumption and encourage my circles to do the same. Hence, this advances the common good.

The third project I would like to talk about is Using Jupyter Notebooks for Simulation Science. This project is done over the Summer of 2021 with Prof. Marrinan as my mentor at Argonne National Laboratory. We developed and tested the use of jupyter notebooks for the encapsulation of scientific simulations. Since it can be challenging to use high-performance computing (HPC) resources, many domain scientists and students prefer accessing those resources using a web-based interface, such as a Jupyter Notebook, instead of a command-line interface. We looked for ways to allow researchers to easily create and interactively analyze large-scale simulations using Jupyter Notebooks. I am very grateful for this summer internship opportunity as a Research Aide and for Prof. Marrinan as my mentor. I learned that research is not a linear process and to be comfortable with ambiguities.

This project helped me to develop necessary skills needed in Capstone. First, it developed my skills with UI/UX. Understanding how the end-product would be most beneficial for the users

is essential to advance the common good. Second, this project helped me feels more comfortable with ambiguities. Research is not a linear process. Feeling comfortable with uncertainties surrounding the process is necessary to remain calm and think clearly, hence advancing Personal Attention, Pursuit of Truth, and Academic Excellence. Capstone is unique compared to regular CISC classes; other classes' assignments are more linear. In Capstone, ambiguities are expected, which are like in the industry. The client or other team could change their mind and hence changing the direction of the end-product.

The fourth project in my portfolio is "Neuroscience if Computer's Face Recognition." This project is for HONR 480 - Biomimicry with Prof. Acton from the Engineering Department and Dr. Heimovics from the Biology Department. We had to reflect upon the ideas, concepts, examples of biomimicry that we read in the assigned Benyus's *Biomimicry: Innovation Inspired by Nature* chapters. Then, we had to select the one that stands out the most to us in terms of our major(s), career goals, life experiences, &/or hobbies. I decided to go with this topic because I was thinking of switching from Neuroscience major to Computer Science major then. We then had to prepare a ~20 minutes PowerPoint presentation about it, which is a very similar format to Summa Oral Examination. This presentation contains 4 sections why the biomimetic innovation interests me, the central problem the innovation addresses, how nature solves the problem, and how engineers are following nature's lead to develop innovations to address the problem. This project helped me develop some important skills to use in Capstone. It involved a lot of individual research and oral presentation. These skills are very useful. Research on which tools to use is very important in navigating different technologies used in Capstone. Oral presentation practices also help with presenting the demo. Additionally, this oral presentation is very similar to Summa Oral Examination format, which I recently passed in late April.

The last project I would like to mention is “Multi Genre Project: Emotional Eating” for ENGL 202 Final Project in Spring 2019. This project seeks multiple, sometimes even conflicting, substantive perspectives in a variety of genres to provide a rich context for wholistic understanding and empathy. I learned to communicate for multiple audiences, purposes, and forums. Knowing who my audiences are and how to communicate with them help advance the common good. I would also like to mention Dignity and Diversity under St. Thomas’s conviction. The professor told me multiple times, in front of the whole class, that English would be challenging for me as a non-native speaker, and not to a white Norwegian student. She kept getting where I was from wrong; she thought I was from Somalia, when really, I was from Indonesia. She probably thought so because I was wearing a hijab then. For me, remembering that I wear a hijab, have some Indonesian accent, and come from a working/struggling-class family in Indonesia makes me feel insecure sometimes. Her comments did not help; they might mirror her prejudice and negatively impact my grades in the class. I learned to have self-dignity and defy the prejudice by delivering this project. I continue to value and uplift the diverse perspectives others and I bring to the table. I learned to befriend my insecurities and excel in the works that I do.

Overall, my time at St. Thomas has been transformative in the best ways possible. These handful of projects showcase my abilities and growth. My experiences at St. Thomas have taught me to become a more morally responsible leaders who think critically, act wisely, and work skillfully to advance the common good. St. Thomas has encouraged me to commit to the Pursuit of Truth, Academic Excellence, Faith and Reason, Dignity, Diversity, Personal Attention, and Gratitude. Once again, I am beyond grateful for my time at St. Thomas and all the people I have encountered, directly or indirectly. I will continue to use my technical and soft skills to better myself and the society, and to advance the common good.