Learning Portfolio Cover Letter

Math 441 Discrete Optimization
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In putting my learning portfolio together, I learned various aspects of discrete optimization, seeing how mathematical techniques are employed in portfolio optimization, understanding the distinctions between L1 and L2 regression, and medical imaging reconstruction. The most important realization was the abundance of knowledgeable people willing to offer help and support. At times when I faced challenges, either with complex proofs or troubleshooting code, finding help was the most effective approach. Without the insights and assistance from these people, the learning process would have been far more difficult.

The process of crafting each artifact was straightforward yet deliberate. During class sessions, I reflected on the material we had just covered and brainstormed applications in real-world scenarios. I then looked up some information online on the idea to understand it better and gather relevant information. To ensure diversity in my learning portfolio, I used different approaches for each artifact. Whether creating a video interview, an IPYNB notebook demonstrating a working example, or writing a literature review, I tried to show different ways to improve my learning experience. As I neared completion of each artifact, I asked for feedback from peers and mentors. Their perspectives often provided insights and ideas for improving the quality of the artifact. Whenever I was stuck, whether conceptual or technical, I reached out for assistance from class instructors, former mentors, or industry professionals, such as physicians and quantitative investment managers. Applying the feedback received, I improved each artifact to its final version.

The artifact that I am most proud of is the L1 vs L2 Optimization notebook. This particular item got my interest because it delved into concepts that I had encountered in various classes but never explored in depth, specifically comparing different regression methods. While I had encountered L1 and L2 optimization separately in my linear programming and matrix algebra courses, respectively, it was during an actuarial exam that I had to apply both methods. Feeling uncertain about the approach, I reached out to my professor from the linear programming course for help and also got feedback from my current instructor to finalize the understanding between the two methods. Through this process, I gained insight that I implemented into the notebook, with the hope that it will serve as a resource for future students.

One of the most challenging aspects of the process was reaching the point of near completion on an item only to get stuck. Moving forward required both courage and humility to ask for help from others. Initially, reaching out for help felt daunting, but after doing it a few times it got easier. For example, while working on the literature review of medical sensing, I found myself confused by the intricacies of data collection procedures. To better understand, I reached out to Dr. Koen Geerts, who provided insights into the procedures and the underlying mathematics involved. His guidance helped me to finalize the item and develop an example based on the information he shared. The part of getting through this barrier and seeing the final results were my favourite.

The most valuable advice I can give to students is to begin their work early and not hesitate

to seek help from others. Starting the brainstorming process ahead of time allows for new ideas before completing the initial one. Reaching out for help early, when encountering challenges makes sure quick resolution and progress. Overall, you get out of this course what you put in, so make sure to give it your best. Also, make sure you go to class.

I believe that a 97% grade accurately reflects the quality and effort I invested in my learning portfolio. While checking off all the requirements outlined in the rubric I took proactive steps to improve my portfolio items by asking for help and feedback from people outside the course. Rather than settling for meeting the minimum standards I consistently strived to exceed expectations and make sure my work was to the best of my ability.

Apart from my learning portfolio, I attended every lecture except for one due to illness and another due to sport-related travel. After each class I talked with fellow students to brainstorm ideas for the project and looked to form a group early. Throughout the lectures I participated by asking questions when concepts were unclear and gave insights to change approaches that seemed illogical to me. This process not only helped my understanding but also improved my engagement with the course material, as I revisited the information presented to make sure it was logical with my understanding.