

Michael Oelschlager: Professional Self-Assessment

During the course of CS-499, my 2025 Computer Science Capstone class, I have completed coursework and developed an ePortfolio which have helped me showcase my strengths and helped me prepare to enter the field of computer science. The biggest example of this is the final project and the milestones leading up to it, which helped me consolidate the skills I have learned from previous courses and gain experience with showcasing my abilities and experience, but the journal assignments have also refreshed or improved my knowledge on a variety of topics which I'm sure I will find useful when I enter the computer science field, such as computer science trends, emerging technologies, career choices, and marketing my skills.

I have decent skills in the computer science categories that the project milestones focused on, especially in the software design and engineering category. However, communication and collaboration are unfortunately not my area of expertise. Collaborating with other software developers is something I have had very little experience with, and receiving feedback on my work from teachers and instructors is the closest experience I have had to communicating with stakeholders. Most of my computer science education has focused on programming skills and general computer science knowledge rather than on working with other people, which means I have gained a solid grounding in software design, software engineering, programming, algorithms and data structures, databases, and security. As a student yet to enter the workforce, I have more theoretical knowledge than practical experience in the latter three categories, but I am able to use them to accomplish computer science related objectives without too much trouble.

The artifacts that I have enhanced to showcase my skills in this ePortfolio are projects I have assembled from previous courses: from CS-340, I chose the `ProjectTwoDashboard.ipynb`

and AnimalShelterCRUD.py program files, and from CS-350, I selected the Thermostat.py program.

The enhancement I made to the ProjectTwoDashboard.ipynb program was a series of changes to the layout of the user interface to improve its readability and ease of use, in order to showcase the software design and engineering skills I have developed and to achieve the CS-499 course outcome for that category. The dashboard is intended to be a user interface for workers from Grazioso Salvare who are searching through the databases of animal shelters in Austin, Texas to find dogs who could be trained for rescue operations.

The second enhancement was to the Thermostat.py program, where I implemented code to use a linear regression machine learning algorithm to predict the optimal settings for the temperature it records at that time. There are parts of the enhancement which have gone unused since the program isn't actually connected to a smart thermostat, and the code is specifically designed to work on the hardware setup from CS-350, but the enhancement is fully implemented, and the machine learning model is now usable for its intended purpose.

Finally, the third enhancement is to the AnimalShelterCRUD.py file, which was designed to provide an interactive layer between the ProjectTwoDashboard.ipynb and the database containing the animals in the animal shelters in Austin, including functionality for creating, reading, updating, and deleting entries in the database. Between the dashboard, this python file, and the database itself, this project had significant amounts of database functionality from the moment it was completed. My enhancement for the databases course outcome was to improve the CRUD functionality of this file to allow it to handle multiple database entries at a time for each function, and to implement an additional function for counting the database entries, being

one of the few database enhancements I could come up that weren't already a part of the project from before I started the CS-499 computer science capstone class.