

Michael Oelschlager: Professional Self-Assessment

During the course of my Computer Science Capstone class, CS-499, I have completed coursework and developed an ePortfolio to help me showcase my strengths and prepare to enter the field of computer science. An 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. The journal assignments have also refreshed my knowledge on a variety of topics which I will certainly find useful when I enter the computer science field, such as computer science trends, emerging technologies, career choices, and ways of marketing my skills.

For the computer science categories that the project milestones focused on, my main area of competence is in the software design and engineering category. Collaborating with other software developers isn't something I have had much experience with; however, most of my computer science education has been focused on programming skills and general computer science knowledge, 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 some of these 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 in 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. This enhancement demonstrates my competence with the Software Design and Engineering category of computer science.

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 a specified time. There are parts of the enhancement which have gone unused since the program isn't actually connected to a smart thermostat, and the original code is specifically designed to work on the hardware setup from CS-350, but the enhancement is implemented, with the machine learning model now available for its intended purpose. This enhancement demonstrates my competence with the Algorithms and Data Structures category of computer science.

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 records of 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 further 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 enhancements I could come up with in the database category that

weren't already implemented as a part of the original project from before I started my capstone class. This enhancement demonstrates my competence with the Databases category of computer science.