Our senior design project is a Crowdsource Litter Pickup site that allows people to mark where litter is bad on streets. From my perspective our project is about designing a site that builds on everything we have learned through our years here. From basic backend work to database and frontend, we will use everything we have learned to make a great app to help volunteer coordinators and city cleaners. It is also another way to give back to the community, as most of us have volunteered while obtaining our degree. I particularly have helped clean up litter from the streets around the city and there needs to be an easier way than just driving around to find the bad litter areas. This is where our site comes in because it allows anyone to report where litter is bad and help volunteers and city coordinators determine where they need to go.

As mentioned above my college courses will play a large part in developing our app. Data Structures CS 2028 will play a large part as we will need the structures we learned about there to temporarily store and access information in our apps. CS 4092 Database Design and Development is another important class where we learned about storing, modifying and accessing data stored in databases which will be useful for storing the gps coordinates needed in our app as well as any other long-term information needed. EECE 3093C Software Engineering was also an important class because it taught us how to work as a team to design applications from effort matrixes to devops and everything in between. 2030C Info Security and Assurance taught us about basic security that we can transfer to our app to make sure we protect our site from bad actors. These classes helped contribute to my technical programming skills in Python and C++ as well as non-technical communication, project management and teamwork skills. All these classes and several others will help guide our development of our Crowdsource Litter Pickup application.

Another experience that will affect the development of our app is my coop experiences. In terms of coop, I only spent two semesters doing actual development the other semesters were Project Management Intern at the Kroger Co. (before I switched majors) and IT Support at University of Cincinnati where I mainly imaged and helped professors with tech issues. My final two semesters were spent doing software development at Redhawk Technologies as a Software Engineering Intern where I worked on the development of several applications. While my first two experiences helped mostly with nontechnical skills such as project management, communication and teamwork, my final experience helped me test what I had learned in classes in a practical environment and improve on them. The largest technical skill that I gained was front-end development in bootstrap, Ionic, CSS, HTML and JavaScript. But I also learned how to work with databases and the best practices for working in them, specifically with Supabase which utilizes PostgreSQL while also coming standard with an authentication system that can be integrated with an application. This knowledge came from building my own application for the company in C# MVC, with Bootstrap and a Supabase database. Finally, at my last experience I improved my backend coding while working with Python, C#, Angular and GO by working on the development of several applications. These experiences helped me hone what I had learned in class in a practical environment where I could learn how professional developers worked and the best practices to succeed. I expect to apply my C#, database skills and front-end skills with

this project as we are planning to develop the application with C#, and we will also need a database and front-end.

I am motivated to work on this project because it will allow us to give back to the community. It will allow volunteer organizations and city coordinators to identify the areas in need of litter clean up and will allow them to plan their efforts accordingly. It will also help because they will no longer have to go out and identify the problem areas as anyone will be able to mark a location on a map that needs cleanup and the more marks there are the more it needs cleaned up. I am also excited because it will be a final chance to test the skills I have learned here and on Co-op before finding an actual job. Especially since it will involve every step of the process from the basic planning phases to assigning work to the people in our group most suited for that task. I feel like this project will be a great way to demonstrate my skills while also giving back to the community.

Our preliminary approach to designing a solution will be first to plan out what we need to implement a solution. We have determined that most likely all we will need is a backend, front end and database to implement our solution. We want to have an authentication system so that people can login, place a marker on the map and then have someone else come in and determine what spots need cleaned up and remove those markers when they are done. Our expected results are to be able to build this application by the end of the second semester, and we hope to accomplish improving the conditions of the streets around town. I will self-evaluate my contributions and know that I'm done with a certain task after testing whatever I implemented works without bugs or other errors. I will know I have done a good job if that feature then integrates successfully with the rest of the application and works correctly without errors.