

John Schlagbaum

Individual Capstone Assessment

For the 2021-2022 academic year, Team Covert is planning on creating a covert channel system to send messages from one user to another without warranting detection from 3rd person parties. For me, this project will be a good accumulation of skills that we as computer scientists have learned over the past 5 years. These skills include cryptography, cyber defense, software development, and most importantly teamwork. Overall, I believe the Capstone Project is a good way to show employers that we, as students, are now ready for our career field.

Cincinnati has prepared me academically for a host of different topics over the past few years. Starting with Computer Science 1 (CS 1021) and Python Programming (CS 2021), I learned the semantics of coding basic programs and avoiding the many pitfalls of creating bad code; Data Structures (CS 2071) helped to further solidify those skills as well as build upon them. These skills continued to develop over the next couple years with the help of more specific courses like Programming Languages (CS 3003), AI Principals (CS 4033), and Cyber Defense Overview (CS 5155). On the less technical side of things, my minor in economics has helped develop my skills when it comes to business as well. Classes like Intermediate Micro Econ (ECON 2020) and Digital Entrepreneurship (ENTR 3015) opened my eyes to an entirely different side of problems and solutions when creating new projects.

Although academics helped me greatly in honing my skills for an upcoming career and the projects to follow, Co-Op was vital for my technical and professional development. My second year Co-Op with GE Digital opened my eyes to what a full-scale project looks like and gave me the opportunity to work with a team and develop skills in technologies such as Golang, Docker, Jenkins, and Linux. My other Co-op with GE showed me what working from home was like during the Covid crisis while still allowing me to work closely with others and develop new skills in Java and JavaScript. My final Co-Op with Great American insurance allowed me to get a new taste in a different company and gave me the opportunity to continue to work from home on new technologies like Spring boot.

I'm excited to participate with Team Covert on our project because I believe that the scope of this project will make it a good challenge for all of us, but it will also still be obtainable to fully complete by the end of Spring semester. Additionally, there is plenty of different aspects that go into this project such as: cyber defense, front-end software development and back-end software development. Our team of four will be able to break up the different aspects of this project in such a way that we will get to develop our strengths, but also learn more on our weak spots from others.

Once we decided on what our broad idea would be, a covert channel, we could then move on to further developing what would go into such a system. We started from the basis that we would need to have a safe environment to create this system as to not ring any legal bells. Our

first move was to consult our faculty advisor John Franco to ensure that we couldn't get into any legal trouble with this project. After getting some background information, we decided that everything would have to be local, so we would have to develop a website that fit our needs to build a covert channel on top of. After a local website will be built, it will just be a matter of researching more into the technologies required to develop our covert channel on top of it. If we do this project correctly, we should be able to do a live demonstration on our covert channel using 3 computers: one for sending a message, one for receiving the message, and one for trying to detect what message was sent. I believe that we would be successful in our project if we are able to show and describe what a covert channel is to someone with little to no technical expertise.