

Reflective Essay

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Since the beginning of my academic career, I have been a part of ODU's interdisciplinary cybersecurity program that combines technical aspects and social science alongside my elective courses in religious studies and criminal justice, and hands-on professional experience. The use of the above disciplines have challenged me to strive for greatness as I gain skills such as problem solving, understanding different perspectives and environments, and learning how to apply them across different environments. In return, I developed a strong foundation of skills that will help me in my career of cybersecurity in the real-world.

In this reflective essay, I focus on my top three skills and strengths I gained during my academic career: Network System and Operations, Data Collecting and Tracing, and Communication. These skills were developed through various coursework, professional roles, and my internship, where they are displayed throughout the artifacts I have selected from different parts of my academic career. Every artifact that is displayed shows a growth of skills that will be transferable and essential to my future career in cybersecurity.

As each artifact is reviewed, it will be explained how my academic career in interdisciplinary studies has contributed to my overall understanding of cybersecurity concepts, along with strengthening my critical thinking skills and preparing to work in the real-world for cybersecurity. My program has taught me that different aspects of cybersecurity lie in technical knowledge but is combined with interpersonal communication and investigation—two skills needed for jobs in the cybersecurity field now. As a whole, these skills I have learned and honed, along with the experiences I have gained will help prepare me for my future career.

One of the main skills I have developed in my academic career is Network Systems and Operations. This skill requires an understanding of network functions, how data travels through a system, and how to identify vulnerabilities within a system, network, and environment. I

developed and strengthened the skill through many types of cybersecurity courses and real-world experience that helped me understand the technical and operational aspects of network security.

An artifact that supports my knowledge in the technical side of network systems and operations is a project from CYSE 301, the Cybersecurity Techniques and Operations course. For said project, I was required to create three identities with different usernames and passwords—all with different levels of strength. Once I did that, I had to deploy a John the Ripper program and release a wordlist called “rockyou.txt” to crack all the passwords in a controlled environment. I also practiced decrypting WEP and WPA 2 wireless traffic, analyzing packets with the use of Wireshark, and cracking password hashes using Meterpreter. This project gave me a perspective on how hackers identify weak passwords, encryption functions, and why having strong passwords is important. This hands-on experience gave me the opportunity to understand the offensive and defensive sides of network security and how to use techniques that are common in the cybersecurity field.

The second artifact that supports my skill of Network Systems and Operations is another assignment I did in CYSE 301, which is called Network Traffic Monitoring and Sniffing. In this assignment, I used Wireshark to monitor live network traffic to find specific packets that held sensitive information and was essentially playing the role of an attacker. I was successful in this assignment because I was able to capture the username and password, analyze packet information, and trace and investigate source and destination IP addresses. This assignment granted me the ability to monitor network traffic and how it travels throughout the network, recognize suspicious activity, and gain knowledge of how attackers can intercept sensitive information. It also made me appreciate and understand the importance of network security protocols and monitoring tools.

The final artifact I chose to use in supporting my skill of Network Systems and Operations comes from my real-world experience as a government intern. In my government internship, I was tasked with a project involving wire installation and setting up a computer for an emergency operation room. I had to use my current knowledge of networking to select the correct materials, configure devices, run wiring to all of the devices, and ensure the computers were working properly and ready to be used. This allowed me to gain more experience and increase my knowledge of networks in hardware and software, such as system readiness and need of reliability in emergency situations. It allowed me to apply the knowledge I have gained from course material and demonstrate how it applies in the real-world. Overall, these artifacts demonstrate how I have developed a strong foundation in network systems and operations. This is a skill that is considered essential for a large majority of cybersecurity jobs for positions such as Network Technician, Network Security Specialist, and Data Analyst. With the use of real tools, I gain experience in network analytics and know how to use them in a professional setting which has given me the technical confidence and experience needed for the cybersecurity field.

Another key skill I have gained during my academic career is Data Collection and Tracing. This skill requires me to gather information from different sources and verify its credibility by finding patterns and using all that information to make a conclusion. In the cybersecurity field, it is common that one is required to investigate potential threats, verify information, and trace digital footprints. Needless to say, this skill is essential for my career path. My coursework in different disciplines and interdisciplines such as criminal justice, religion, and cybersecurity help me develop strong research and analytical skills, which allow me to use that knowledge and apply it in technical contexts.

The first artifact that demonstrates my skill is an assignment I completed in my REL 147G: Cults and Conspiracies course where I was given a screenshot of a conspiracy theory tweet from X and was tasked with using the SIFT method to determine if the conspiracy theory was true or false. The first step I did was to research the username of the X profile, which allowed me to find the user's actual name and educational background to see if they're a credible individual. In the investigation, I learned that it is important to always validate online information, trace digital footprints, and identify misinformation. That being said, it is clear that this assignment was non-technical but it still applied to the field of cybersecurity as in that field I will be required to verify threats, online behavior and information.

The second artifact I used is from CRJS 495, which is a course on Cyber Terrorism. In this course, I was able to develop my skill of data tracing due to my completion of a project that discussed how terrorist organizations are using modern technology and online platforms to recruit members to help carry out terrorist attacks. To develop this skill, I analyzed different websites, academic journals and articles, and released government files to gain a better understanding of the tactics these organizations use and how the United States responds to them. This project required me to look through large amounts of data and compare each finding to different sources, which in turn led me to discover a trend in how technology is misused. Completing this project allowed me to better hone my skills in weighing and evaluating data quality, recognizing patterns of criminal activity, and understanding how digital tools can be used to cause harm in the digital and physical world. These skills apply to roles such as threat intelligence and roles and cybercrime investigator roles.

The third artifact I will be using to support my skill of data collecting and tracing a case study I completed on John Albert Gardner III for my CRJS 222 course. For that assignment, I researched Gardner's criminal history, analyzed the summaries of his cases, reviewed news articles, and studied the procedures used by law enforcement. While doing so, I also created a timeline of the victims' disappearances, how evidence was found throughout the investigation and how law enforcement identified Gardner III as a possible suspect. This helped me learn how investigators use details, such as DNA, location data and behavior patterns, to solve the case. It also strengthened my ability in investigation, source review, cross-examination, and understanding protocols used by law enforcement. These are all skills that would be used in cybersecurity practices such as identifying and tracing attackers and collecting digital evidence.

Altogether, these artifacts demonstrate that I am able to collect data, how my tracing ability has grown across different disciplines, and be used in a technical and non-technical sense. These skills are necessary for cybersecurity positions that involve digital forensics, intelligence gathering, and threat analysis. By learning how to evaluate information, trace and compare sources, and how to identify human patterns, I am better prepared to analyze cybersecurity incidents and how to support evidence properly.

The final skill of the main skills I have developed throughout my academic career is communication. Communication is one of the most important skills to have in any type of field, especially one like cybersecurity. In the field of cybersecurity, it's required to work with others, come up with different solutions, ask questions, and explain technical issues or tone it down in a manner where others can understand. Having said that, my communication skills have been shaped from my academic career and work experience. Both things have allowed me to learn

how to speak more clearly, confidently, and how to present information and adjust it in order to explain things easier depending on the situation or person I'm talking to.

The first artifact that displays my communication skills is a presentation from my government internship, where I was tasked with presenting a case study to my supervisor and fellow interns. To present the case study, I had to gather credible information, analyze it, and compare and contrast in order to present it in a manner that everyone could understand what I was talking about. This experience required me to take part in an oral presentation but also taught me how to think quickly as I did have my audience ask questions and I needed to make sure it made sense to both of us. Furthermore, I do believe that this experience touched on my skill of being a leader as I had to help the other interns throughout the presentation so they would be able to analyze the information. This experience allowed me to strengthen my abilities in breaking down complex information and communicating it in a professional manner, which is relatable in the cybersecurity field due to how often I will need to explain threats and vulnerabilities to those who might not have a technical background.

My second artifact that supports my communication skill is my prior work experience as a Customer Service Supervisor at Food Lion. In this role, I interacted with customers from different backgrounds and provided them aid in different ways. This included helping them with payment method concerns, selling them lottery tickets, sending money, or solving their complaints about a product or coworkers. All of these interactions required me to be calm, patient, and listen in order to understand the customer. This often made me switch how I spoke to customers, as I purposefully made my voice more welcoming and calming in order to make a customer's experience more comfortable. Working in customer service has taught me how to resolve conflicts, communicate respectfully even when being mistreated, and how to work in a

high speed environment. These abilities will roll over into my cybersecurity role as I will have to communicate with clients and coworkers who might be stressed over a cyber attack.

The third and final artifact that I chose is connected to the skill of communication, which is my work experience of being a Resident Assistant (RA) for Old Dominion University. Being an RA requires me to know how to work in crisis situations, conflict management, and uphold university policy to ensure everyone's safety. When responding to a crisis, I have to manage my own emotions, stay alert, think quickly, and communicate clearly with those in crisis and those helping in order to resolve the situation peacefully and effectively. In conflict, I also need to think and take action quickly. Doing so can include splitting roommates up due to a disagreement, listening to both sides of the conflict, understanding the concerns, and coming up with a solution. At the same time, I am also required to properly document the conflict or crisis in a report but it needs to be done in third person. Knowing all this, I can say that this position gave me the opportunity to advance my current skills to allow me to problem solve quickly, be a leader and work in crisis, and how to engage in written and oral communication. These abilities will prove beneficial as I transfer into the cybersecurity workforce full-time as I will be responding or leading on incidents where emotions can be high but I still need to remain calm, document properly, and solve the incident.

Combined, all three artifacts demonstrate how my communication skills have developed and how I use them in different situations or environments. In all of these positions I have held, I have learned how to communicate respectfully, professionally, and clearly. Communication is important in cybersecurity because professionals must be able to work with people from all backgrounds, while explaining the cybersecurity correctly and to make sure it is documented properly. In the end, throughout my internship, customer service supervisor position, and RA

role, I have gained communication skills that will aid me in being successful in my cybersecurity journey and will increase the effectiveness of me working with others.

I have learned that throughout my academic journey and professional experiences, it is important to address the topic of cybersecurity by using different disciplines and interdisciplines. It is also important to strengthen my confidence in using skills in data collecting and tracing, network systems and operations, and communication. The numerous artifacts that go along with each of these skills have shown me the different abilities I have. The combination of interdisciplinary studies, disciplines, technical coursework, and real world experiences helped me understand the topic of cybersecurity from different perspectives. In turn, this has prepared me to think more critically. At the same time, I gained hands-on experience by completing projects, analyzing complex data, and communication in high-stress situations which has helped me gain confidence and to understand the need for a cybersecurity workforce in our modern times. My degree program has given me the opportunity to face different challenges to find solutions, how to investigate, and work as a team—all essential skills needed for the cybersecurity field. These experiences I have gone through have helped me overall enhance my skills and prepare me for the next steps as I enter the cybersecurity workforce full-time.