

Reflection Essay: Cybersecurity and Fiber Optic Engineering E-Portfolio

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Abstract

This essay analyzes the interdisciplinary skills I developed and the artifacts I created during my cybersecurity degree program. The primary skills highlighted are fiber optic network engineering, creativity, and research. The artifacts chosen to best illustrate these competencies include my final internship/full-time report from Genesis Fiber Optic Splicing Inc. (CYSE 368), the National Cybersecurity Strategy paper on protecting critical infrastructure (CYSE 425W), a reflective assignment analyzing ethical dilemmas in cybersecurity (PHIL 355E), and comprehensive research papers such as "*Can America Protect Critical Infrastructure From Cyber-Terrorism?*" (IDS 300W), "*Medical Device Hijacking: Stopping the Invisible Invasion*" (CYSE 495), and a cybersecurity risk assessment conducted for Anthem.

These artifacts demonstrate my ability to practically apply interdisciplinary concepts from telecommunications, ethical theory, and advanced cybersecurity principles. Each project strengthened my career readiness by providing the crucial hands-on experience and theoretical knowledge necessary for a successful career in cybersecurity and network infrastructure management. My creativity was significantly developed through the strategic planning and policy integration seen in the CYSE 425W paper, along with ethical considerations addressed in PHIL 355E. My comprehensive research skills were demonstrated by the IDS 300W paper, which involved integrating multiple disciplinary perspectives, and the CYSE 495 project, which required detailed technical analysis of medical device vulnerabilities. The sum of these experiences has given me robust, interdisciplinary skills to apply to the complex challenges being faced in cybersecurity and network security.

Introduction

This essay reflects on the interdisciplinary skills I have developed and refined throughout my cybersecurity degree program. The skills I focused on include fiber optic network engineering, creativity, and research, each integral to my academic and professional growth. My coursework and practical experiences provided diverse opportunities to strengthen these skills through various challenging projects. Specifically, I highlight artifacts that represent significant milestones in my learning journey: my full-time employment at Genesis Fiber Optic Splicing Inc. (CYSE 368), the National Cybersecurity Strategy paper (CYSE 425W), ethical dilemma analyses (PHIL 355E), and major research projects conducted for IDS 300W and CYSE 495. Each artifact illustrates how interdisciplinary knowledge from telecommunications, cybersecurity strategies, ethical theory, and comprehensive research methods contributed to my overall career readiness. This reflective analysis will explore how each skill and artifact has shaped my professional capabilities, preparing me to confidently address and manage complex issues within cybersecurity and network infrastructure fields.

Fiber Optic Network Engineering

The internship I completed at Genesis Fiber Optic Splicing Inc. (CYSE 368) significantly contributed to my development of fiber optic network engineering skills. Beginning as a cable installer, I gained fundamental knowledge in cable placement, network infrastructure basics, and essential safety protocols. These initial experiences provided a solid foundation that allowed me

to quickly progress to more advanced responsibilities. As a technician, I became proficient in the meticulous task of fusion splicing, which involved precise preparation and alignment of fiber cables to ensure optimal network performance. This role demanded a high level of technical accuracy, patience, and careful attention to detail and critical qualities that enhanced my skills significantly.

One particularly impactful aspect of my internship was handling emergency network outages, which required rapid troubleshooting and resolution under stressful conditions. These experiences taught me how to effectively analyze complex technical problems and implement solutions quickly and accurately, demonstrating my ability to maintain composure and efficiency in high-pressure environments. Additionally, the internship emphasized autonomy and self-reliance, as many projects required me to work independently in the field, further developing my decision-making and problem-solving skills.

In conjunction with taking my courses full time this caused a strong development of my organizational skills. To balance full time work and full time I had to hone my time management abilities to stay on track. I learned how to prioritize in dynamic situations, problem solving on the fly. Combining with the constant growth of education I felt a confidence in my abilities I had lacked prior to this experience.

Creativity

Creativity was an essential skill that I cultivated throughout my cybersecurity degree program, significantly reflected in various interdisciplinary projects. Notably, my National Cybersecurity Strategy paper (CYSE 425W) allowed me to explore innovative approaches to safeguarding critical infrastructure against cyber threats. This project challenged me to creatively

integrate advanced cybersecurity techniques with practical policy recommendations. By addressing both technical and policy-driven aspects of cybersecurity, I learned to develop comprehensive strategies that are both innovative and realistically implementable.

Another significant artifact showcasing my creativity was the reflective writing assignment on ethical dilemmas (PHIL 355E). In this assignment, I critically examined complex ethical scenarios related to cybersecurity practices, such as whistleblowing, cyber warfare, and the responsibilities of tech companies. This reflective process enabled me to creatively analyze ethical issues from various philosophical perspectives, deepening my understanding of the nuanced implications of cybersecurity decisions. It encouraged me to think beyond technical aspects, emphasizing the importance of moral considerations in real-world cybersecurity challenges.

My IDS 300W paper titled "*Can America Protect Critical Infrastructure From Cyber-Terrorism?*" further demonstrated my creative ability to synthesize information from multiple disciplines, including political science, economics, and cybersecurity. This project required extensive research and creative problem-solving skills, as I had to effectively combine diverse perspectives into a coherent and compelling argument. It significantly enhanced my strategic thinking capabilities and ability to innovate solutions to complex interdisciplinary problems.

Collectively, these artifacts illustrate my ability to creatively approach cybersecurity challenges, integrating technical knowledge, ethical considerations, and strategic thinking. This creativity has become an invaluable component of my professional skillset, preparing me for innovative problem-solving in my future career in cybersecurity and infrastructure management.

Research

My research skills developed extensively throughout the cybersecurity degree program, significantly demonstrated by projects such as the comprehensive research paper "Can America Protect Critical Infrastructure From Cyber-Terrorism?" (IDS 300W), the detailed technical analysis in "Medical Device Hijacking: Stopping the Invisible Invasion" (CYSE 495), and my cybersecurity risk assessment for Anthem. Additionally, my analytical commentary on the Dark Enlightenment highlighted my ability to critically engage with contemporary cybersecurity discourse.

The IDS 300W paper required extensive interdisciplinary research, integrating insights from cybersecurity, political science, and economics to explore vulnerabilities in critical infrastructure. This paper not only refined my research methods but also strengthened my ability to analyze complex issues from multiple angles.

In the CYSE 495 paper, I deeply explored vulnerabilities specific to medical devices, critically examining real-world cybersecurity threats and proposing viable solutions such as enhanced monitoring and network segmentation. This research sharpened my technical analysis skills, highlighting the intersection of healthcare technology and cybersecurity.

My analytical commentary on the Dark Enlightenment provided an opportunity to critically explore how modern technology platforms can be used to propagate certain ideologies, demonstrating my capability to engage deeply with complex socio-technological discussions. This research exemplified my ability to effectively analyze and synthesize interdisciplinary

information into clear, critical insights, strengthening my capacity for ongoing engagement with evolving cybersecurity challenges.

Career Readiness

The interdisciplinary skills and experiences I developed throughout my cybersecurity degree program have significantly enhanced my career readiness. My practical experiences from my employment at Genesis Fiber Optic Splicing Inc. equipped me with the hands-on technical skills necessary for a successful career in network infrastructure management. The strategic planning and policy development skills acquired through my CYSE 425W course have provided me with the creativity and analytical thinking required for addressing complex cybersecurity issues. My research-intensive projects, particularly the IDS 300W and CYSE 495 papers, further strengthened my capability to analyze, interpret, and address cybersecurity challenges effectively. Each of these skills aligns directly with industry expectations and ensures that I am well-prepared for professional roles in cybersecurity and infrastructure management.

Personal Reflection

Reflecting on my academic journey in the cybersecurity program, I recognize significant personal and professional growth. Engaging with diverse, interdisciplinary projects allowed me to explore and solidify my career interests deeply. Initially uncertain about my specific career direction, projects such as my time working full-time as a network splicer (CYSE 368) and comprehensive research assignments provided clarity and confidence in my ability to thrive in the cybersecurity field. Overcoming challenges such as handling emergency network outages and synthesizing complex interdisciplinary research greatly enhanced my problem-solving and critical thinking abilities. Additionally, receiving consistent positive feedback on my projects and

actively participating in class discussions strengthened my communication skills, further preparing me for professional success.

Conclusion

My cybersecurity degree program provided comprehensive training in fiber optic network engineering, creativity, and research, significantly enhancing my career readiness and professional skills. Through various artifacts and interdisciplinary coursework, I developed a strong foundation in both theoretical knowledge and practical application. Each project not only contributed to my immediate academic growth but also equipped me with the critical skills needed to confidently approach future professional challenges in cybersecurity and network infrastructure. My experiences have helped me clearly define my professional identity, clarified my career aspirations, and reinforced my readiness to excel in the field of cybersecurity.

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