# IDS 493 Reflective Essay

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IDS 493: Electronic Portfolio Project

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May 5 2026

**Abstract**

This reflective essay examines the multidisciplinary nature of cybersecurity education through my academic and professional experiences from my time at Old Dominion University. As cybersecurity spans various fields of study, I successfully showcase how integrating knowledge from distinct disciplines enhances problem-solving and technical proficiency. The reflection highlights three pivotal areas of my development. First, it explores the intersection of philosophy and technology in "Cybersecurity Ethics," where ethical tools like Utilitarianism were applied to analyze privacy concerns in Google Street View. Second, the essay details the technical synergy required in "Generative AI in Cybersecurity". This work combined computer science, specifically Python programming and data structures, with the MITRE ATT&CK matrix to automate the detection and mitigation of network sniffing. Finally, I reflect on a professional internship with the City of Virginia Beach's Security Operations Center. This experience utilized digital forensics, through the creation of standard operating procedures for the Autopsy platform, and behavioral science, which provided the cognitive framework necessary to anticipate and analyze adversary motivations. Ultimately, the essay demonstrates that a successful cybersecurity professional must look beyond technical hardware to incorporate ethical reasoning, automated intelligence, and behavioral analysis. By combining these diverse perspectives, I will argue that a multidisciplinary approach is essential for navigating the complex and evolving landscape of modern cyber threats.

**Introduction**

Throughout the four long years I spent studying cybersecurity at Old Dominion University in Norfolk, Virginia, I had to complete several assignments across multiple disciplines of study, as cybersecurity is a multidisciplinary study. Due to this, I have been able to take in a great deal of knowledge across multiple distinct, but similar disciplines in an effort to expand my general knowledge of cybersecurity. This paper reflects on these experiences, looking into specific examples of essays, labs, and experiences where multiple disciplines came together during my work, and how this multidisciplinary approach enhanced the quality of my essays, labs and experiences.

**PHIL 355E Essays**

PHIL 355E, or *Cybersecurity Ethics*, was a very interesting class to me and one of the first that I took and completed for my major. It was particularly interesting in the way that the class was structured and how the essays were to be written. Each week I would cover a particular topic in the umbrella that is computer science. Privacy, user data, cyberconflict, etc. were all topics that I covered during that semester in that class. The first one we covered in fact was on the topic of privacy, and with each of the essays we had to do there would be a short article to read that would aid in answering the question that the essay had us tackle. Our article for privacy was on ethical issues pertaining to Google Street View, and we had to answer the question "What would have been a more ethical way to implement Google Street View?" In addition to the article, we had to read, this class was unique because we had to tie in an "ethical tool" to the essay. The ethical tools focused on philosophical concepts such as consequentialism, deontology, ethics of care, etc. There was an assignment to "unlock" each ethical tool, where you read a story about the particular philosophical concept and wrote a short essay that essentially confirmed that

you understood the concept and its use. For the privacy essay, I used the consequentialist ethical tool, where the ethical tool specifically dove into the concept of Utilitarianism, which is the consequentialist ethical theory that states the best action to take is the one that maximizes overall happiness of individuals. So, using the ethical theory of Utilitarianism, I argued in my writing that we should put emphasis on the overall happiness, wellbeing, and desire of individuals and grant them total privacy against Google and stop them from infringing upon the privacy rights of individuals. This essay required that I use skills from different disciplines in order to complete it, one of which being philosophy. The use of the consequentialist ethical tool was applied to my writing and help elevate my argument. Another important discipline that was utilized in the completion of this essay was research, since I had to do a little bit of independent research on utilitarianism since the story provided for the ethical tool couldn't provide as much information on the topic as I wanted to. This helped me in my writing process. I also utilized literary analysis so I could grasp an understanding for the concept of utilitarianism so I could properly articulate it in my essay. These three disciplines elevated my essay to a higher standard.

**AI 421 Labs**

Another class I found to be very interesting when it pertains to the study and use of multiple disciplines was my AI 421 class I completed in my senior year, or *Generative AI in Cybersecurity.* This class was very intriguing for the fact that AI is a very new technology that has become very widespread, so learning how it can be utilized in the context of cybersecurity was very interesting. For the second lab, we looked at how AI can automate mundane processes so that cybersecurity professionals can focus on more important tasks. This lab required that I be a little creative and write python code that would discover mitigation(s), detection(s), and procedure(s) for network sniffing. I had to plug in a chatbot into the code, and the chatbot would

pull information from the MITRE ATT&CK (Adversarial Tactics, Techniques, & Common Knowledge) matrix and list the information in several paragraphs. This assignment on the surface may just seem like it focuses on the brand-new discipline of artificial intelligence, but it actually requires knowledge in several other disciplines in order to complete the lab at a high quality. One of these disciplines is computer science, since the lab required me to be proficient in python to write the code, as well as configure the environment, such as when I had to set up several API keys for the code to work properly or the use of data structures like LLMChain (Learning Language Model) for it to also work properly. A bit obvious, but this lab does include the discipline of cybersecurity since the lab requires me to utilize the MITRE ATT&CK matrix to detect, analyze, and mitigate complex attack techniques, like network sniffing.

**CYSE 368 Experiences**

My degree requires that I pass two capstone courses. One of which being the E-portfolio project, *IDS 493,* and in addition to that, the Cybersecurity Internship class, *CYSE 368*. My focus here isn't on the class but rather my experience at my internship, and the disciplines of study used there. I interned with the City of Virginia Beach and their SOC (Security Operations Center) team for about 4 months between August through December 2025. I had the responsibilities of reviewing email reports in Microsoft Defender, analyzing plaintext email content to detect attempts of phishing, monitoring and potentially investigating user activity on Microsoft Azure Risky Users page, Conduct OSINT (Open Source Intelligence) investigations on flagged IP addresses using tools like Scamalytics, AbusreIDPB, and VirusTotal, and monitoring events on the Cortex XSIAM (eXtended Security Intelligence and Automation management) SIEM (System Incident and Event Monitoring) tool. The XSIAM, as we called it, was also one of my projects during my time there. I sat on video calls with employees at Palo

Alto networks and helped them to make recommendations and configurations to it so we could tailor it to our organizations' needs. I also wrote the final draft for a SOP (Standard Operating Procedure) for the Autopsy Digital Forensics platform, designed to analyze computer hardware and software to investigate cases of cybercrime. One obvious discipline to point out is the discipline of forensics, which I had to learn about and utilize to complete a high quality, informative SOP designed to provide guidance and instruction for basic operation of the platform. This internship also forced me to tap into a bit of behavioral science, mostly due to the fact that a lot of it required me to think like an adversary or bad actor. In order to understand the motivations and behaviors of cybercriminals, you must think like one and think of the underlying reasons for why they commit the crimes they do. This way, I can more easily solve problems and prevent said problems from occurring.

**Conclusion**

My four years spent at Old Dominion University have demonstrated that cybersecurity is not a solitary technical pursuit, but a multidisciplinary experience. Through the integration of diverse fields such as philosophy, computer science, forensics, and behavioral science, my academic and professional work attained a level of depth and quality that technical skill alone could not provide. The transition from theoretical ethics in PHIL 355E, where concepts like Utilitarianism provided a framework for privacy rights, to the practical application of Generative AI in automated defense, illustrates the breadth of knowledge required in this field. My time with the City of Virginia Beach's Security Operations Center further solidified this perspective. By merging the technical rigor of digital forensics with the psychological necessity of "thinking like an adversary," I gained a holistic understanding of how to protect complex digital infrastructures. Ultimately, these experiences underscore that the most effective cybersecurity professionals are

those who can bridge the gap between human behavior and machine logic. As I complete my final capstone requirements, including this electronic portfolio and my internship, I feel prepared to navigate the evolving threats of the digital age. This multidisciplinary journey has not only expanded my general knowledge but has also provided me with the versatile toolkit necessary to solve problems creatively and ethically in an increasingly interconnected world.