

Cybersecurity Professional Career Paper: Cybersecurity Engineer

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Introduction

Cybersecurity engineers are professionals who design and protect computer systems from cyber threats. As technology continues to grow, cybersecurity has become very important in protecting personal data, businesses, and even governments. The purpose of this paper is to explain how cybersecurity engineers use social science concepts, how they apply what we learned in class, and how their work affects society and different groups of people.

Social science principles

Cybersecurity engineers do not only work with technology, but they also study human behavior. Many cyberattacks depend on tricking people rather than hacking systems. This means engineers must understand how people think, make decisions, and react online. For example, hackers often have advantages of trust, curiosity, or fear. Engineers use this knowledge to design systems that protect users, such as warning messages or stronger authentication. Social science also helps engineers create better cybersecurity training programs, so employees do not fall for scams.

Application of Key Concepts

We learned about concepts like risk, human behavior, and security awareness. Cybersecurity engineers rely on these concepts in their daily work. They analyze systems, identify weaknesses, and prevent attacks before they happen. According to research, cybersecurity engineers monitor networks, test systems, and design secure solutions to stop cyber threats. They also perform penetration testing, which means they try to hack their own systems to find problems before real hackers do. They also use risk analysis to decide which threats are most dangerous and how to fix them. This shows how concepts that are covered in class like risk management and data analysis are directly used in real jobs.

Marginalization

Access to technology and cybersecurity knowledge is not equal for everyone. This can make certain groups more vulnerable to cyber threats. For example, older adults or low-income communities may be easier targets for scams. Cybersecurity engineers help reduce this problem by creating safer

systems and educating users. Some companies also work on making cybersecurity tools more accessible and easier to understand. This helps protect everyone, not just people with advanced knowledge.

Career Connection to Society

Cybersecurity engineers play a huge role in society. They protect important systems like banks, hospitals, and transportation. If these systems are attacked, it can cause serious problems for millions of people. For example, cybersecurity is important in industries like automotive systems, where engineers must identify risks and protect connected vehicles from attacks. Their work helps keep people safe in everyday life. Cybersecurity engineers support laws and policies by testing systems, finding risks, and fixing security problems. They also follow guidelines and work with teams to make sure their company meets security standards and protects user data.

Scholarly Journal Articles

Source 1:

https://iacis.org/iis/2020/4_iis_2020_275-284.pdf

Callen, J., & James, J. E. (2020). CYBERSECURITY ENGINEERING: THE GROWING NEED. In Issues in Information Systems (Vol. 21, Issue 4, pp. 275–284). https://doi.org/10.48009/4_iis_2020_275-284

The article “Cybersecurity Engineering: The Growing Need” explains that cybersecurity engineers are responsible for monitoring systems, detecting threats, and preventing cyberattacks. It also says that there is a high demand for these professionals because cyber threats are increasing and organizations need stronger protection systems. This supports the importance of this career.

Source 2:

https://www.researchgate.net/publication/396620193_A_Cybersecurity_Engineer-Inspired_Heuristic_Optimization_Algorithm

Zhang, J. & Faculty of Science and Technology, Rajabhat Maha Sarakham University, Maha Sarakham. (n.d.). A cybersecurity Engineer-Inspired heuristic optimization algorithm. In Faculty of Science and Technology, Rajabhat Maha Sarakham University, Maha Sarakham [Journal-article].

This article explains how engineers think and act when dealing with threats. It shows that they use skills like threat prediction, analyzing attack paths, and adjusting defenses based on risks levels. This supports the idea that cybersecurity engineers rely on decision making and problem solving, which connect to social science concepts.

Source 3:

Fischer, A., Nuremberg Institute of Technology, Tolvanen, J.-P., MetaCase, Tavakoli Kolagari, R., & Nuremberg Institute of Technology. (n.d.). Automotive Cybersecurity Engineering with Modeling Support. IEEE.

<https://ieeexplore.ieee.org/document/10736032>

The article “Automotive Cybersecurity Engineering with Modeling Support” explains how engineers identify risks, analyze vulnerabilities, and apply security standards to protect systems. It also shows how engineers use models to understand threats and improve system security. This demonstrates how cybersecurity work directly impacts real world systems like vehicles and public safety.

Conclusion

In conclusion, cybersecurity engineers play an important role in protecting systems and people from cyber threats. Their work is not only technical but also involves understanding human behavior and social science concepts. They apply ideas like risk management, decision making, and awareness in their daily tasks. They also help protect society and support vulnerable groups by improving security for everyone. Overall, cybersecurity engineering is valuable and growing career that connects technology with human behavior.