



Explainable AI for Cybersecurity

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Abstract

In recent years, the utilization of AI in the field of cybersecurity has become more widespread. Black-box AI models pose a significant challenge in terms of interpretability and transparency, which is one of the major drawbacks of AI-based systems. This chapter explores explainable AI (XAI) techniques as a solution to these challenges and discusses their application in cybersecurity. The chapter begins with an explanation of AI in cybersecurity, including the types of AI commonly utilized, such as DL, ML, and NLP, and their applications in cybersecurity, such as intrusion detection, malware analysis, and vulnerability assessment. The chapter then highlights the challenges with black-box AI, including difficulty identifying and resolving errors, the lack of transparency, and the inability to understand the decision-making process. The chapter then delves into XAI techniques for cybersecurity solutions, including interpretable machine-learning models, rule-based systems, and model explanation techniques.

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