

ABSTRACT

In an era where digital threats are increasingly sophisticated, integrating Artificial Intelligence (AI) in Security Education, Training, and Awareness (SETA) programs is essential to foster cybersecurity resilience. This research explores the integration of AI in SETA programs, an important area in improving cybersecurity resilience. Despite the advancement of AI for technical cybersecurity applications, there is a lack of research on how AI can improve cybersecurity education. The main objective of this study is to analyze current trends and identify gaps in the use of AI for cybersecurity SETA through bibliometric analysis. Using a dataset of 637 Scopus-indexed articles published from 2019 to 2024, this study utilized VOSviewer software to map research trends and clusters related to AI, cybersecurity, education, training, and awareness. The analysis revealed six significant clusters, which address cybersecurity, application and education, artificial intelligence, cyber threat detection, security systems, and IoT and internet. Over the past few years, there has been a marked increase in research focusing on the use of AI in cybersecurity education, indicating growing academic interest in this domain. Key findings show that although AI is widely applied in improving cybersecurity defense mechanisms, its educational potential remains underutilized. This study concludes that future research should integrate AI into SETA programs that can enrich the learning experience and be tailored to different knowledge levels, ranging from the public to professionals. This enhanced approach could better prepare individuals to face real-world cyber threats and foster stronger cybersecurity resilience across user demographics.

Keywords—artificial intelligence (AI), security education, training and awareness (SETA), cybersecurity