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ML-based security analytics in South African SMEs: A review and classification

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**Abstract**

In recent decades, the number of internet users has grown rapidly, leading to an increase in the number of cybercriminal activities. As a result, the research community has presented many cybersecurity studies to predict and prevent these activities from occurring. Cybersecurity is a crucial defence mechanism that safeguards digital assets, data, and online interactions, playing an indispensable role in maintaining the integrity, confidentiality, and availability of information in today's interconnected world. However, based on our comprehensive research, a noticeable gap was highlighted, indicating limited studies that specifically address Small and Medium Enterprises (SMEs), with a pronounced scarcity in the South African context. Predominantly, existing research has focused on the implementation of cybersecurity analytics for larger corporations. Therefore, this article is an exploration of cybersecurity analytics for small businesses in South Africa. It aims to enrich the current understanding of security analytics in SMEs by highlighting use cases, security issues involved, and what areas of research still need further exploration. These issues are then categorised and discussed to put into context how machine learning-driven security analytics can be used in SMEs to take proactive measures against cyber threats so that they protect their systems, networks, and digital assets.