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IoT Security Challenges and Solutions for Data at Rest: A Systematic Literature Review

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Abstract: *The rapid expansion of the Internet of Things (IoT) has significantly transformed both consumer and industrial domains, driving the urgent need for robust security measures to protect data at rest. SLR investigates into the challenges associated with securing IoT devices and data, exploring the limitations of existing security frameworks and the intricate requirements imposed by global data protection regulations such as GDPR. The researcher review current approaches, including privacy-by-design principles and the deployment of symmetrical data protection frameworks, as highlighted in recent studies. Through a comprehensive analysis of literature and existing technologies, we identify critical gaps in the protection strategies and propose enhanced methods for ensuring data security and privacy in IoT systems. The findings emphasize the role of developers in integrating privacy considerations early in the development process and the impact of regulatory complexities on the practical implementation of data protection measures. Furthermore, the paper evaluates innovative security solutions, such as full stack security architectures and adversarial training models, assessing their effectiveness in real-world applications. This study aims to provide a deeper understanding of the IoT security landscape and to suggest actionable strategies for improving data protection practices across the IoT ecosystem.*

Keywords: Internet of Things, data security, GDPR, privacy-by-design

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