# **SECURITY CHALLENGES IN IOT DEVICES**

Barun Sharma , BCA, Invertis University , Budaun, vsharmabdn2012@gmail.com

Anshika Singh, BCA, Invertis University , Bareilly, [anshikasingh4825@gmail.com](mailto:anshikasingh4825@gmail.com)

Ashutosh Singh , BCA, Invertis University , Bareilly, [singhashutosh8585@gmail.com](mailto:singhashutosh8585@gmail.com)

Kushal Johari, Assistant Professor, Invertis University, Bareilly, India, " [kushal.j@invertis.org](mailto:kushal.j@invertis.org)

***Abstract-***The Internet of Things (IoT) has revolutionized modern life by enabling seamless connectivity among smart devices, sensors, and systems. While IoT offers remarkable convenience and innovation across sectors such as healthcare, transportation, and smart homes, it also introduces a broad range of security vulnerabilities. These vulnerabilities arise from factors like weak authentication protocols, insecure communication channels, outdated firmware, and the lack of standardized security frameworks. This paper explores the most prevalent security challenges associated with IoT devices, such as botnet attacks, data breaches, and unauthorized access, and presents countermeasures to mitigate these threats. Furthermore, it discusses future research directions, including the application of artificial intelligence, blockchain, and post-quantum cryptography to enhance IoT security. By understanding and addressing these critical issues, we can build safer and more resilient IoT ecosystems.

***Keywords—***Internet of Things (IoT), IoT Security, Cybersecurity, Authentication, Encryption, Botnet, Privacy, Firmware Updates, Secure Communication, Network Attacks