



FONSAC 2023

University Auditorium,
IBB University, Lapai,
Niger State.
16th -19th October, 2023

FACULTY OF NATURAL SCIENCES
IBRAHIM BADAMASI BABANGIDA UNIVERSITY LAPAI

3rd FACULTY OF NATURAL SCIENCES ANNUAL CONFERENCE



— *Theme* —

**Scientific Research for Smart,
Secure and Sustainable Future**

*Book of
Abstracts*

**SYSTEMATIC LITERATURE REVIEW OF ATTACK ON MEDICAL
CYBERPHYSICAL SYSTEMS (MCPS)**

Michael, O. U., Waziri, V. O., Ismaila Idris., Ojeniyi J. A., Adebayo, O. S., Engr. Isah, A. O.
Department of Cyber Security Science, Federal University of Technology, Minna
Success.kemstar@gmail.com 07064218186

Abstract

The rapid integration of advanced technologies in the healthcare domain has given rise to Medical Cyber-Physical Systems (MCPS) that offer substantial benefits in patient care, enabling real-time data exchange and remote patient monitoring and treatment. However, this increased connectivity also exposes these systems to potential cyber-attacks, posing significant risks to patient safety and data integrity. As a result, the development of robust attack detection mechanisms for MCPS has become paramount. This paper presents a comprehensive Systematic Literature Review (SLR) focusing on well-versed attack detection methodologies employed in MCPS. This survey aims to provide a comprehensive explanation of the problems of cyber-attacks on medical cyber physical systems as well as to gather, analyze, and summarize existing knowledge to advance our understanding of the security challenges in this critical domain and to provide guidance for improving the security of MCPS. The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) methodology was utilized to ensure rigor and transparency throughout the review process. A systematic search of electronic databases, including PubMed, IEEE Xplore, ACM Digital Library, Springer, Science direct, ResearchGate, and Elsevier was conducted to identify relevant articles published up to the present date. The initial search yielded a total of 210 articles, of which 47 articles were included in the final analysis after applying stringent inclusion and exclusion criteria. The selected studies encompassed diverse attack detection techniques, ranging from machine learning-based anomaly detection to behavior analysis and rule-based approaches.

Keywords: Cyber Physical System (CPS), Medical Cyber Physical system (MCPS), attacks, healthcare.