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Book of Abstracts

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A SYSTEMATIC LITERATURE REVIEW OF CLOUD RADIO ACCESS NETWORK AND NETWORK SLICING TECHNOLOGY ON 5G

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Abstract

The rapid advancement of wireless communication technologies and the increasing demand for ubiquitous and diverse services have paved the way for the emergence of 5G networks. As 5G promises ultra-low latency, high capacity, and massive connectivity, it introduces revolutionary paradigms in network architecture and management. Among the key innovations under the 5G umbrella, Cloud Radio Access Network (C-RAN) and Network Slicing have garnered significant attention due to their potential to enhance network performance, efficiency, and flexibility. However, there are security challenges hindering the performances of C-RAN and Network Slicing such as Isolation and Data Privacy, Slice Management Security, Cross-Slice Attacks. Additionally, C-RAN faced issues concerning cloud data centre security, fronthaul and backhaul security, virtualization vulnerabilities, and time synchronization attacks. This systematic literature review investigates to help solve the current security challenges facing the integration and implementation of C-RAN and Network Slicing respectively by providing solutions to these lingering security challenges using the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) method. The PRISMA methodology was employed to ensure methodical and transparent procedures during the review. A systematic exploration of prominent online databases, such as ACM Digital Library, IEEE Xplore, Elsevier, ResearchGate, Google Scholar, Science Direct, and SpringerLink, was conducted to identify pertinent documents concerning the subject matter up to the present date. The preliminary search yielded a total of 390 articles, out of which 47 articles were meticulously examined and included in the final analysis after rigorous application of specific inclusion and exclusion criteria. The chosen studies covered a wide range of approaches for implementation, challenges, potential solutions, and the integration of C-RAN and Network Slicing. In conclusion, my thesis work will bridge the identified gaps in the systematic literature review by proposing novel solutions to the security challenges of implementing and integrating C-RAN and Network Slicing in 5G networks as I look forward to exploring more research depths in the subject matter.

Keywords: 5G, C-RAN, network slicing, challenges, Integration, Implementation.