

27th ACIS International Summer Conference on Software Engineering, Artificial Intelligence, Networking and Parallel/Distributed Computing (SNPD-Summer 2024), Beijing, China, 5-7 July 2024

A review of dynamic RRA techniques on 5G and beyond mobile networks

Nokane, Boikobo; Isong, B; Masonta, Moshe T

**Abstract:**

The 5G mobile network aims to enhance wireless communication by providing faster and more reliable connectivity. Open radio access network (RAN) architecture, which offers flexibility and innovation in Radio Resource Allocation (RRA), is central for optimal network performance. However, traditional RRA methods fall short of meeting the complex demands of 5G due to scalability issues. Incorporating machine learning (ML) techniques into open RAN can enhance adaptability and intelligence, ensuring that 5G networks meet high performance and service quality standards. This paper presents a comprehensive review of ML-based and traditional RRA methods in meeting the evolving demands of wireless networks. Literature from relevant articles was selected and analysed to highlight the techniques used, trends, strengths, and limitations. The findings reveal the potential and transformative impact of ML on the future of wireless communications, particularly in achieving the key performance indicators and quality of service expected from 5G and beyond networks. It also shows that research in ML-based RRA methods is at its infancy stage and more research is needed to advance the technology.