

ABSTRACT

Mobile technology has evolved rapidly with the advent of 5G technology that offers higher speeds and lower latency. The current implementation of 5G requires specialized skills due to its complex configuration, so training institutions need solutions to adopt 5G technology to train workers' skills. However, this can be hampered by the limited resources available. In addition, 5G network management still faces challenges in real-time data collection and is prone to human error, which can reduce system efficiency and reliability.

This final project aims to develop a training dashboard in the form of a 5G RAN network simulation system. The system is implemented using the open-source OpenAirInterface (OAI) platform as a 5G component with a cloud native approach, supported by the ReactJS framework on the frontend side and Django on the backend side. All 5G components are run in a containerized environment with Kubernetes as the container orchestrator to support scalability that allows isolated RAN usage for each user. The function specifications implemented in this simulation system follow the standards set by the O-RAN Alliance.

The results obtained show that the simulation system is capable of supporting up to 10 simultaneous users, which means it can handle 10 different end-to-end connections. However, the number of users can be increased by increasing the resources used and calculating the estimated resources using the provided formula. In addition, testing on the frontend and backend shows that all functions and features run well. Based on User Acceptance Testing, the system received an SUS score of 77.1 with an indicator of “Good” which is close to “Excellent.”

Keywords: 5G, Simulation, Dashboard, OAI, CNF