ABSTRACT

Several telecommunications service providers in Indonesia, such as Telkomsel, Indosat Ooredoo, and XL Axiata, have started testing and launching 5G networks in Surabaya. Each service provider is working with various technology partners to implement 5G infrastructure. 5G implementation is still in its early stages, so 5G network coverage may not yet cover the entire city. Nowadays technological developments are progressing very rapidly. Especially in the field of cellular communications technology. The role of the internet in human life is very important, making it a primary need in the future. However, as time progresses, internet needs are increasing. Even though technology is developing so rapidly, there are still challenges regarding data access speed demands where the 4G network cannot meet the desired needs.

This research includes several main steps, namely data collection from various 5G network sources, data pre-processing, selecting important features, and applying various machine learning algorithms such as k-Nearest Neighbors (k-NN), Decision Tree, Random Forest, and Neural Networks. The analysis results show that the use of machine learning can significantly improve the QoS of 5G networks, especially in terms of Throughput, Packet Loss and Delay.

From the results obtained in the analysis of the KNN Machine Learning algorithm for 5G network QoS, the Throughput value is at a test size of 0.7 with an accuracy value of 1.0000, the Packet loss value result is that there is no relationship because the managed dataset does not show the performance pattern that was formed, and the results delay is producing the best value on a test size of 0.9 with an accuracy value of 1.0000

Keywords: Quality of service, 5G, Machine Learning, KNN