ABSTRACT

Agriculture is one sector that is very influential in industry, exports, domestic food needs and can open or expand job opportunities. In maximizing agricultural yields, the authors and their teammates chose to conduct research on an autonomous mobile robot that has functions and features for automatic weeding and weeding. Of course, it will be quite inconvenient when the smart rover operates but the user cannot monitor the condition of the smart rover. One solution is to design a monitoring system that is placed on a smart rover based on the Internet of Things (IoT).

In this final project the author designed a monitoring system to determine the condition of the smart rover when operating. The data obtained from the results of the GPS sensor readings, compass, and voltage are then sent to the gateway, namely Antares and ends at the MIT App Invertor. The data can be viewed or accessed via the Android mobile app with the smart rover location maps feature.

In this system, Quality of Service testing is carried out with the test location on the Telkom University football field with a width of 45 meters and a length of 90 meters, communication testing is carried out during LoS and NLoS conditions. From the results of Quality of Service testing, it can be concluded that the LoRa position and the conditions of LoS and NLoS greatly affect communication or data transmission for monitoring. With a difference in the value of delay 0.001851 ms, throughput 1.27 bps, and jitter 0.0044654 ms at a distance of 45 meters, while at a distance of 90 meters with a delay difference of 0.0010366 ms, throughput 434.1 bps, and jitter 0.000403 Ms.

Keywords: *Smart Rover, LoRa, Internet of Things, MIT App Inventor, Quality of Service, Monitoring*