ABSTRACT

The initial examination of patients or vital signs is the application of a patient monitoring and diagnostic system anywhere: home, hospital, and outdoors (while traveling). The measurement of vital tools has four categories, namely body temperature, heart rate (pulse or heart rate), respiratory rate (respiratory rate), and blood pressure (blood pressure). Examination and patient vital sign data recipients still use manual techniques, which take a long time to transmit data. So in this study, the author designed a patient-designed monitoring system using LoRa wireless to retrieve data on body temperature, patient heart rate, blood pressure, and respiratoryfrequency in real-time using the Tsukamoto fuzzy method.

This study aims to create a system that can perform wireless interconnection between patients and the medical team and display the patient's condition remotely on the monitor screen periodically and in real time. The fuzzy method can provide the right decision to determine the patient's condition and delivery using LoRa wireless which can transmit data more quickly and efficientlyfor delivery time.

The results showed that the prototype could run well and can function. Thesensor can classify the conditions of body temperature and heart rate, assisted by the Tsukamoto fuzzy method. In QoS testing, the prototype is feasible if used in a 2-story building with a distance of equal to 1 kilometer because LoRa uses a waveantenna, so there is no need to use the internet. Also, Lora can be safe for the data taken because LoRa only has a connection between the transmitter and receiver.

Based on the error test, it means that the accuracy of the tool is excellent because the prototype gets 0.56% results for vital signs data collection and also 0.00% for Qos data which is according to the MAPE (Mean Absolute Percentage Error) standard if the percentage is below 10%.

Keywords: LoRa, SX1278, Fuzzy Tsukamoto, monitoring, classifying, QoS