ABSTRACT

In today's modern era, the Internet of Things is growing very rapidly in various fields, including in the health sector. Advances in technology cause several impacts on health, one of which is to make the body lack of oxygen and decrease heart health. This causes the body to feel tired, tired and sleepy.

Therefore, in this final project, a system is designed to diagnose and monitor the health of the body with conditions that affect oxygen levels in the blood, where the results will be connected by an android-based smartphone application. The tool used to diagnose a person's body lack of oxygen and also heart rate is an oximeter. In this study, the MAX30100 sensor was used to measure oxygen saturation in the body and the ESP8266 to interface on an Android-based smartphone using ESP8266. If the detected data is abnormal and requires action, the 800L SIM will immediately sending message to emergency number registered.

Based on the test results on the ESP8266-based MAX30100 sensor, it can be concluded that the first is the MAX30100 sensor system, SIM800L and also the LED light indicator works well. 98.56%, while the detection of BPM gets a result of 92.95%. When testing the MAX30100 sensor the PPG reflectance method proved to be accurate in detecting oxygen saturation (SpO2). The second QoS performance in the morning gets an average delay value of 33.971894 ms, throughput of 1841.4 bps and packet loss 0%. While the average value of QoS performance in the afternoon is not good, namely getting an average delay value of 47.85524 ms, throughput of 1669.9 bps and packet loss 0%. Based on the ITU-T G1010 delay and packet loss standards, this thesis has good delay and packet loss conditions, because the resulting delay is less than 2 seconds (s) and packet loss 0%.

Keyword: ESP8266, MAX30100, SIM800L, OXIMETER, QoS.