ABSTRACT

The lungs are an important human organ that is susceptible to disease because it comes into direct contact with air that is inhaled through the nose. How to detect lung health is to use a CT scan. Many people do not know about this system and it is usually expensive, then they are lazy to have their lungs checked.

In this study, a prototype of a patient lung health detection tool was designed using the Internet of Things (IoT) based Fuzzy Logic method. The sensors used are the TCS3200 color sensor, DS18B20 temperature sensor and Piezoelectric sensor connected to the Esp2866 microcontroller and presented in the android smartphone application. Then the sensor data along with the fuzzy values will be forwarded to the Firebase database.

From the results of system testing, it is known that the tool can be connected to the database and the reading goes well. In protototype testing, it is known that the larger the sensor input will result in an unhealthy *fuzzy* value. The *fuzzy logic* algorithm has an accuracy of 99.995% . For the average *delay* value for the tools to the API is 0.670 s, while for the average *delay* data reading from the API to the device is 0.566 s and the average *throughput* value for reading data from the device to the API is 26969 bps while the average *throughput* of data reading from API to the device is 26535 bps.

Kata Kunci : *IoT*, *Fuzzy logic*, Paru-paru, *Ct-Scan*, TCS3200, DS18B20, ESP2866, Piezoelektrik, *Firebase*, *Smartphone*, *Mikrokontroller* .