ABSTRACT

Muscles are an important part of the body that works all the time, so monitoring muscle health is very necessary. This research aims to integrate Internet of Things (IoT) technology with electromyography (EMG) sensors to monitor human muscle activity in real-time. EMG is a method used to record the electrical signals produced by muscles during contraction. In this research, we implement EMG sensors on specific areas of the human body, such as arms or legs, and transmit muscle signal data via an IoT network. Electromyography testing was performed on the triceps and quadriceps muscles for the dominant and non-dominant parts. The method used involves using the ESP8266 module as an IoT device connected to a Wi-Fi network. The EMG sensor measures the electrical potential on the skin surface and sends analog data to the ESP8266. This data is then processed and sent to the Thinger.io platform. When the muscle contracts, electrical signals are measured using electrodes connected to an electromyography sensor. Testing on the triceps and quadriceps muscles with the participation of 3 experimental subjects, the results of testing using an electromyography sensor obtained an average of 927.79 mV/s for the dominant triceps muscle, 675.19 mV/s for the non-dominant triceps muscle. Potential applications of this research include patient rehabilitation monitoring, movement analysis, and development of muscle-based automation interfaces.

Keywords: *Triceps Muscle, Quadriceps Muscle, Electromyography, Internet of Things, Thinger.io*