

ABSTRACT

Electricity is one of the basic human needs to support daily activities. By the time, the types of electronic devices are increasingly diverse and can cause electricity consumption to increase over time. Saving electrical energy is very important in life and can provide many benefits. One of the factors causing electricity wastage, because consumers cannot monitor or know the electrical devices that are being used.

The system that will be designed in this final project is an electrical load identification system based on the Internet of Things using the Decision Tree algorithm. This system can be utilized in various applications, such as electricity theft monitoring systems, electricity billing systems, energy management in smart grids and home electrical system automation. The system uses the PZEM-004T module which is integrated with the Raspberry Pi 3 B+ to process data and send the identification results to the Antares IoT API server via the internet to be displayed to users.

In this study successfully communicated PZEM-004T with Raspberry Pi 3 B+ using USB to UART CP2102. Electrical device identification system tests carried out on 5 electrical devices: Fan, LED Lamp, Rice Cooker, TV, and Smartphone. This research is initiated by collecting information related to the electricity consumption of the device being tested. The test results obtained that the system can identify the 5 electrical devices with 99% accuracy using the Decision Tree model that was formed, with the average time required for the system to recognize and send data to the Antares server is less than 1 second.

Keywords: *Identification, load type, PZEM-004T, current, active power, dataset, Decision Tree.*