

ABSTRACT

Electrical energy is a primary need of modern humans today. As time goes by, the consumption of electrical energy is increasing. The increasing consumption of electrical energy needs to be balanced with savings in the use of electronic devices. In this case, the common factor is human negligence towards the use of electronic devices outside of the need, causing waste of electricity consumption.

In this research, a system is designed to identify the load/electrical device that is being used, by using a machine learning model with the K-Nearest Neighbor (K-NN) algorithm. The system can be applied in monitoring the use of electrical devices that are in operation which includes current harmonics so that they can determine the consumption of excessive electrical loads.

This research integrates EMG 25, Current Transformer MSQ-30, USB RS-485 modul, and Raspberry pi 3 for data retrieval, K-Nearest Neighbors (K-NN) modeling and system identification testing. Collecting and testing data using 4 electronic devices, namely fans, blenders, water heaters, and hair dryers. This system can identify these devices correctly based on the current harmonic characteristics of each electronic device.

This final project produces a system model from yahoo K-Nearest Neighbors with an accuracy of 84.47% and is proven to be able to identify electrical devices that are operating correctly based on the characteristics of the current harmonic data on each device.

Keywords: K-Nearest Neighbors (K-NN), electrical load identification, electricity-saving, and current harmonics