Centralized Smart Monitoring System for Energy Consumption
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Abstract

With the increase in technological development, the rates of energy consumption increased dramatically, which led to an increase in electricity bills, and this became a problem that exhausted every citizen's thinking. Therefore, there is an increasing concern for the smart monitoring systems for energy consumption. The main problems in the existing energy monitoring system are: no existing system detect the appliances accurately, most of the existing systems are hard to install and to use, and they are so costly.

We described in this thesis our work in the area of power monitoring system, plus we presented our solutions to solve those issues that we mentioned above. We built our model that consists of hardware layer (Emontx, ADC, and CT sensor), and software layer (If then statement, and K-Nearest Neighbor) with two processes (the collecting data process, and detection process). Then, we performed our model on the appliances to detect each individual device at home. We performed two algorithms of machine learning in software layer as we mentioned above if then Rules, and the K-Nearest Neighbor (KNN). The If then Rules shows bad results. In contrast, much better results we had when we applied the KNN. Therefore, we had to enhance our detection process. Thus, we performed three methods on our dataset that we collected. At the end, we used to evaluate which method to be adopted to use on our model according to the higher accuracy among all three studies.