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Decision Support Approach to Domestic Energy Monitoring System

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Declaration

I declare that this thesis is my own work and has not been submitted in any form for another degree or diploma at any university or other institution of tertiary education. Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references is given.

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Dedication

I dedicate this thesis to my beloved parents who have never failed to support me, throughout my life. They have thought me that any task can be accomplished by taking a step at a time.

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Abstract

This thesis presents a new decision support approach to energy control and monitoring system of domestic appliances. In the modern world, people are rapidly turning to technology as a fast and cost-effective way of improving quality of daily living. This primary goal is to address the needs of the end user by employing networked low-power sensors sensitive to the environment, so it can be altered to their liking.

The proposed system consists of following steps: energy control and monitor, data analysis and data predictions. This research will present the design and implementation of a practical and simple smart home system, which can be further extended. The system is based on: group of sensors, Arduino UNO with unit and WIFI as a communication protocol.

These devices can be easily controlled via user-friendly interfaces via web applications. The web applications are available for Consumers and Administrative Staff. Those web applications represent to the users are statistical data by using Google charts.

Data analysis part has done using Data Mining techniques such as clustering and regression analysis. Sample data has been generated by using Test Data Generation Tool is DTM tool. Clustering and Regression Analysis has been done by using Rapid Miner Tool. Data prediction was done by using Regression Analysis technique.

The main advantage of the proposed system is that it is a sensible, secure and easily configurable system that provides end users with a cost-effective energy consumption solution.

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