Optimizing Power Consumption on Home Appliances using Machine Learning

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**Abstract:** Power (electricity) optimization will be a crucial task in the coming years as there will be a limited supply. While we run out of electricity, it will affect both domestic and industrial applications. This paper demonstrates techniques and strategies to optimize power consumption when there is a limited supply, using Machine Learning to predict the amount of electricity consumed at a given hour for a given device specifically for home appliances. It also notifies the user of excess power consumption and also suggests measures to save power. It also considers factors like weather, time of the day and type of the device and the device priority to make the final decision. Machine Learning algorithms such as Multiple Linear Regression, Decision Tree Regression, Random Forest Regression are used to predict the values. We present results of each algorithm by showing in how much each algorithm is better (or worse) compared to the rest of the algorithms.

**Keywords:** *Machine Learning, Regression, Home Automation*

I. INTRODUCTION

In an indication of growing appetite for electricity and with the increase in usage on electric devices, optimizing it will become a huge task. Machine Learing is a fantastic technique when it comes to predicting values. In this paper, we use multiple regression techniques to predict power consumption based on previously given data. After the values are predicted,

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II. LITERATURE SURVEY

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III. DATASET GENERATION

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IV. METHODOLOGIES

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V. PREDICTION

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VI. CUSTOM ALGORITHM

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VII. VISUALISATION

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VIII. PERFORMANCE ANALYSIS

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XI. RESULTS

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