**INTRODUCTION**

Energy usage is a key consideration when planning and maintaining energy-efficient structures. Accurate energy consumption prediction is a difficult undertaking since it depends on a number of factors, including weather, occupancy patterns, and user behavior. Energy costs can be decreased and energy consumption can be optimized with proper forecasting.

In this research, Luis M. Candanedo, Véronique Feldheim, and Dominique Deramaix's publication "Data driven prediction models of energy use of appliances in a low-energy house" has a dataset titled "Appliances energy prediction" that we will examine. The dataset includes information from a low-energy home in Belgium where the energy use of appliances was tracked for 4.5 months.

The article offers several methods, including gradient boosting, decision trees, random forests, and linear regression, to forecast how much energy household appliances would use.

We will concentrate on the linear regression model, one of the most straightforward and often applied models in machine learning. We'll start by investigating the information and showing how the values for the various variables are distributed. The performance of the fitted linear regression model will next be assessed using mean squared error (MSE) and R-squared (R2) metrics. We'll contrast our findings with those in the publication.

To choose the optimum features for the linear regression model, we will also use Recursive Feature Estimation (RFE). RFE is a method for narrowing down a model's most crucial characteristics, and it can enhance model performance by lowering overfitting. We'll contrast our findings with those in the publication.

Finally, we can investigate additional machine learning techniques and evaluate how well they perform in comparison to the linear regression model. We want to replicate the findings in the research and learn more about how energy is used by various appliances in low-energy homes.

(Jupyter / Python)