IBM AI:101 Measure Energy Consumption

M.R.Mohamed Farhan (mohamed.112121@sxcce.edu.in)
K. Santhosh Raj (santhosh.1121472@sxcce.edu.in)
S Mohamed Jasir (mohamedzasir@gmail.com)
Mugesh G.K (mugesh.112124@sxcce.edu.in)

Phase 1: Problem definition and design thinking

Problem Definition: The constant improvement and industrialization causes the rise in energy consumption day by day and in order to keep the economy, environment and resources under check it is not only sufficient to evaluate current energy expenditure but also to predict the future energy consumptions.

Being able to calculate future energy expenses will be helpful for small and large companies alike, and is also essential to estimate the growth of our nation.

Our plan is to predict the future energy consumption based on past data using one of many machine learning algorithms like ARIMA, SARIMA, LSTM, XGboost, etc. Applying whatever provides the best accuracy for the given dataset and to automate the project such that it updates itself in order to make itself more relevant even in the future.

Design Thinking:

1. Data Source: Our primary dataset is taken from https://www.kaggle.com/datasets/robikscube/hourly-energy-consumption , we are planning to further append data updates to our dataset.
2. Data Preprocessing: We can use techniques such as EDA, Bayesian method, classical data analysis or any other modern data analysis technique in order to clean, filter, transform and prepare our dataset.
3. Feature Extraction: We can extract the various trends and patterns which are formed in our dataset and extract the relevant metrics in order to improve the efficiency of our model.
4. Model Development:We will analyse the data statistically and using z-score and IQR analysis we can remove the outliers found in the dataset.
5. Visualization: Using various visualization tools such as matplotlib, power Bi, etc we could visualize the data in order to find furthermore trends and patterns making it easier to verify, modify or present the obtained model.
6. Automation: Using techniques like data warehousing and web scraping we could continue adding dataset to our model in order to improve its accuracy further automatically.