# Machine Learning Models for Electricity Consumption Forecasting

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**Keywords:**

Electricity;
Smart meters;
Billing system;
Power station;
Consumption;

## Abstract

The prediction of electricity consumption is a task that allows electricity supply companies to adapt to certain behaviours. Among these activities that companies can perform is to know the behaviour of their customers to adapt their rates to consumption or know the intervals in which it will produce a greater demand for electricity and have planned the adaptation of supply chains. In this sense, it is necessary to carry out an evaluation of methods that allow forecasting future electricity consumption based on the consumption history and other variables of the users themselves.

In this article, a review of the main machine learning models that allow predicting electricity consumption using a one-year data set of a store was made. The ML models like RF & Decision tree are proposed and the comparison is done on basis of performance.

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## 1.Introduction

The electricity consumption data can be easily extracted from the smart meters, billing system and also power station. Big data analytics techniques have been used for data preprocessing, data exploration and also preparing data which is fit for model prediction using machine learning. They used previous electricity consumption dataset and performed descriptive and predictive analytics. Linear regression is the algorithm that they used to predict the electricity consumption. The main limitation of the paper is that there is no usage of external factors like weather dataset in electricity consumption which otherwise plays a major role in electricity consumption.

### 1.1 Motivation

Analyzing this electricity data will give us a better understanding of how consumer consumes electricity in their daily life. Apart from user daily electricity consumption there are also External factor which plays a major role in defining the amount of electricity consumed. One of the major external factor is Weather , like in a sunny day a family can use Cooler , AC, Refrigerator which increases the electrical consumption similarly on a cold day user can use Heater , geezer kind off things. By inspecting the convolution, volatility, and variability of the users' electricity consumption behavior and weather data, this paper proposes a machine learning model using data analytics to analyze this behavior.

**Introduction – Motivation - Existing System - Proposed System – Result and Analysis – Conclusion –**
**References**.

### 1.2 Existing system

The dataset containing different cities with their features and prices is used for training Linear Regression Model.

the dataset entities will be divided into two parts 80% for training and 20% for testing. Linear Regression model will be trained using X_train Independent variable entries and Y_train Dependent variable entries.the trained model will be tested upon the 20% test dataset entities. After training and testing the model will be use for prediction purpose. the accuracy for trained linear regression model is 76.67%.
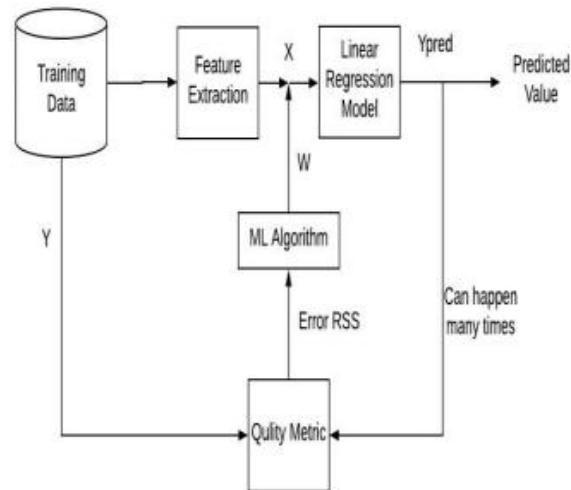
**Fig 1: system architecture**

## 1.3 Proposed System

The pattern of question inquiry or thinking can be changed so as to remove needless samples. For example, comparedwith all the parameters the unwanted null values and the relative minority can be removed preferentially when the model is constructed.Where appropriate, advanced data processing methods can be added to reinforce the rationality of data interpretation and summarization and to make the data abundant. The data can be increased or decreased by means or up-sampling and down sampling process.
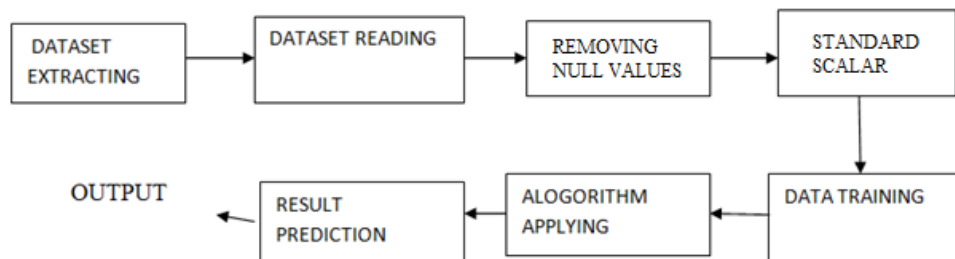


**Fig 2: methodology for workflow model**

## 2. Result and Analysis

Python is a program that was originally designed to simplify the implementation of numerical linear algebra routines. It has since grown into something much bigger, and it is used to implement numerical algorithms for a wide range of applications. The basic language used is very similar to standard linear algebra notation.
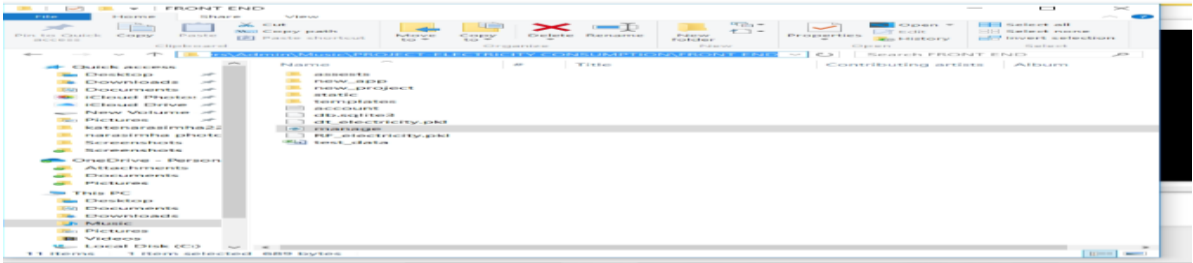
Figure 1.Open Anaconda prompt



Figure 2.  Copy that path



Figure 3. Paste that path
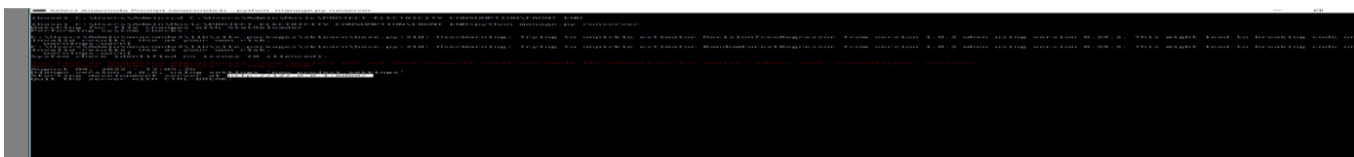


Figure 4. Select  that URL
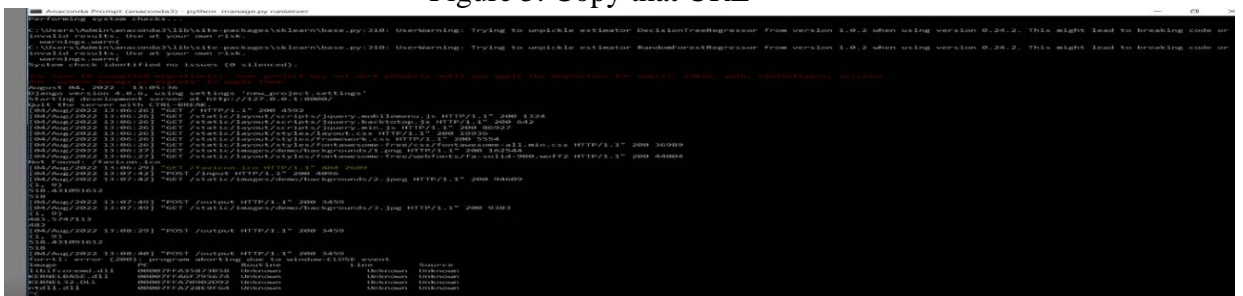


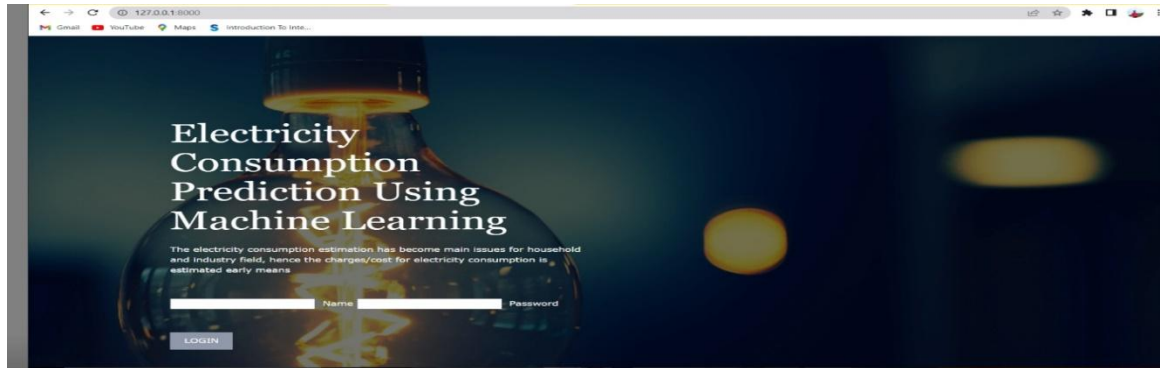Figure 5. Copy that URL



Figure 6. Paste that URL in the web browser

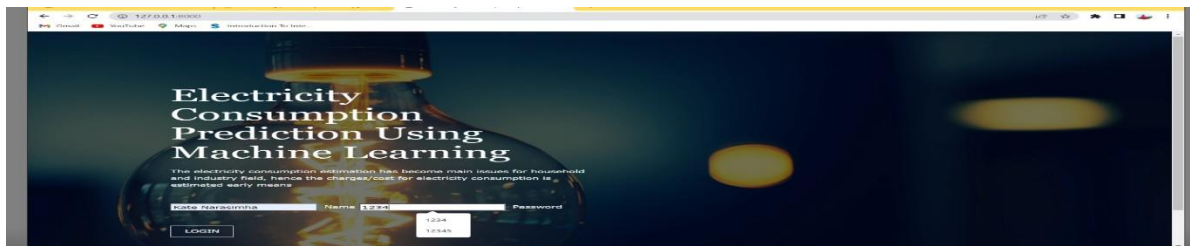Figure 7. Enter the Credentials


Figure 8. Submit it
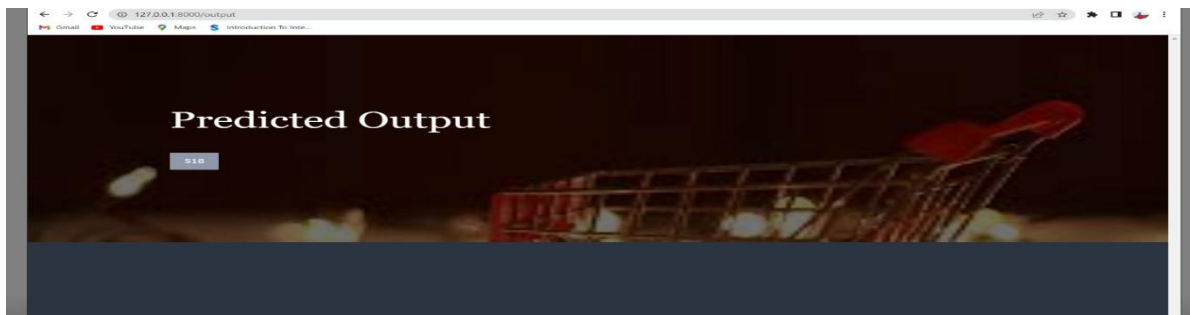

Figure 9. Select Algorithms



Figure 10. Output

**3.Conclusion**

This research was conducted mostly with a citizen centric approach; regarding the algorithms used, the basic conclusion is that the complexity of the model was not as high as to allow one of them to stand out. All the results are very close and sometimes identical.

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