# **Predictive Analysis of Electric Vehicle Charging Patterns Using Machine Learning**

## **Overview**

This repository contains the code for the project **"Predictive Analysis of EV Charging Patterns Using Machine Learning"**. The project aims to analyze and predict electric vehicle charging patterns using machine learning models, helping optimize EV charging infrastructure and manage demand effectively.

## **Key Features**

* Data pre-processing: Includes steps for cleaning, feature selection, and scaling.
* Machine Learning Models: Implements models such as Linear Regression, Polynomial Regression, Ridge, Lasso, SVR, and MLPRegressor.
* Performance Metrics: Evaluates models using MSE, MAE, RMSE, and R².
* Real-world Applications: Insights to enhance EV charging station efficiency.

## **Usage**

Open the Jupyter Notebook file:  
  
jupyter notebook Predictive\_Analysis\_of\_EV\_Charging\_ML.ipynb

Follow the notebook cells to load the dataset, train models, and evaluate performance.

## **Dataset**

The dataset used in this project is sourced from [Kaggle](https://www.kaggle.com/). Ensure the dataset is in the appropriate directory before running the notebook.

## **Results**

The project compares the performance of multiple ML models, highlighting the best approach for predicting EV charging durations and demand patterns.

## **Contributing**

Contributions are welcome! Please fork this repository, make your changes, and submit a pull request.