**Uber Fare Prediction using Regression Analysis**

**## Project Overview**

This project aims to predict the fare amount of Uber rides using historical ride data and regression analysis. The model is built using Python and utilizes linear regression to estimate the fare based on ride distance and time of day.

**## Files**

**- `uber\_fare\_prediction.py`:** The main Python script that loads data, processes it, trains the model, and evaluates the results.

**- `presentation.pdf`:** A PDF presentation summarizing the project, methodology, and results.

**- `README.md`:** This file.

**## Data**

The data used in this project includes the following features:

**- `fare\_amount`:** The fare amount in USD.

- **`pickup\_latitude` and `pickup\_longitude`:** Coordinates of the pickup location.

- **`dropoff\_latitude` and `dropoff\_longitude`:** Coordinates of the drop-off location.

- **`pickup\_datetime`:** Date and time of the pickup.

**## Project Steps**

**1. Data Loading and Cleaning:** The data is loaded and cleaned to remove outliers and erroneous values.

**2. Feature Engineering:** New features such as ride distance and hour of the day are created.

**3. Model Training:** A linear regression model is trained on the data.

**4. Evaluation:** The model's performance is evaluated using MAE, MSE, and R-squared metrics.

**5. Visualization:** Results are visualized using scatter plots to compare actual vs. predicted fares.

**## How to Run the Project**

1. Ensure you have Python installed.

2. Install the required libraries: ```bash

pip install pandas numpy scikit-learn matplotlib seaborn