

GROUP 3 - FINAL PROJECT TOPIC PROPOSAL

Research Topic:

Urban mobility is undergoing rapid transformation, with shared bicycle systems becoming a cornerstone of sustainable transport. The Capital Bikeshare system in Washington, DC, provide efficient and accessible transportation to the city's residents and visitors. The project focuses on developing predictive models and analytical frameworks to forecast bike demand using historical data and external factors like weather. The goal is to provide actionable insights for better bike allocation and meeting demand through data-driven approaches.

SMART Question(s):

1. How do variations in weather conditions such as Temperature, Precipitation affect daily bike demand in the Capital Bikeshare system?
2. How can we predict the demand for bikes at each station for future time periods
3. What trip characteristics can be used to most effectively predict whether a Capital Bikeshare user will be a member or a casual user?
4. How can start time, trip duration, and location be used to predict when a user is likely to return a bike to the station?

Dataset Information:

<https://capitalbikeshare.com/system-data>

<https://www.kaggle.com/datasets/taweilo/capital-bikeshare-dataset-202005202408/data>

Our dataset has been merged from different datasets to include detailed information on Capital Bikeshare rentals. Key features include:

1. Weather details
2. Locations of rented bike
3. Trip Durations
4. Pickup and Dropoff counts for stations.

GitHub Repository:

https://github.com/Aakash2112/DATS6103_Project

Modeling Methods:

1. Linear Regression
2. Random Forest
3. Decision Tree
4. Naives Bayes Classification.