APPLIED ECONOMETRICS AND TIME SERIES ANALYSIS – PROJECT PROPOSAL

Authors:
Abhishek Dubey, Aditi Tiwari, Aparna Mishra, Jayesh Saini, Jefferson Nguithi Kimani, Manmohan Dash, Neeti Mishra, Santhosh Sekar, Umang Singhal

Research Question:
What is the impact of environmental and seasonal factors on bike rental demand?

Objective:
The aim of the project is to determine the impact of various environmental and seasonal factors on bike rental demand. By applying econometric and statistical methods, we will identify important predictors that influence bike usage patterns.

This research can additionally help small businesses and startups who are into bike sharing businesses. Moreover, certain other businesses like local food delivery and parcel delivery can also leverage the same.

Existing research on data:
Some research on the dataset highlights event labeling model based on ensemble methods to accurately predict any events throughout the year that affect the demand of bike sharing. There are also practical applications such as decision support and recommendation systems for bike-sharing management.

Data:
We will use the UCI Bike Sharing Dataset, which includes **17,379 observations** across **16 attributes** along with daily and hourly information on bike rental counts. The dataset contains attributes such as temperature, humidity, wind speed, and whether the day is a working day or holiday.

Dataset Link: https://archive.ics.uci.edu/dataset/275/bike+sharing+dataset

Way forward:
Our project will involve a combination of data processing and regression analysis using Python and STATA.

Some specific steps include:

- Exploratory Data Analysis
- Inferential Statistics
- Regression Analysis
- Hypothesis Testing

Citations:
Fanaee-T, H., & Gama, J. (2013). Event labeling combining ensemble detectors and background knowledge.