**Prediction of Sales fluctuation based on Linear Regression analysis model on Bike Rentals Application Dataset**

**Abstract**:

Change in trend or fluctuation in sales happens for several factors when considered a business model like a Bike Rentals Application. This business model is accepted by folk from city lifestyle as the customers can enjoy the fruits of better means of commute from point to point rather than relying on public transportation or waiting for taxi company services. In this project, we aim to predict the sales of such a Bike Rentals Application by building a Linear Regression Machine Learning Model so that the business owners can act accordingly on predicted fluctuations if any. We also aim to analyse the dataset by means of Exploratory Data Analysis and perform Univariate and Bivariate analysis. The model takes into account all the important factors affecting the business based on data collected over a period of two years. We plan to make the model building process more transparent in every step by taking into account the significance of every dimension or predictor variable and also the variance inflation factor of the predictor variables for better prediction of the target variable. Once the model is built, we will showcase the weights on each predictor variable for optimal prediction of target and also evaluate the model against a test dataset.

**Key Words**: Linear Regression, Machine Learning, Exploratory Data Analysis, Sales Prediction

**Tools/Technologies**:

1. Python 3.x,
2. Python Libraries (numpy, pandas, scikit-learn, seaborn, matplotlib, etc),
3. Anaconda-Navigator,
4. Jupyter Notebook,
5. PyCharm