**Capstone Project Submission**

Now a days rental bikes are used in many urban cities around the world. It gives a flexibility to the people to make mobility very comfortable. It is important to make the rental bike available and accessible to the public at the right time as it lessens the waiting time. Eventually, it will be providing the city with a stable supply of bikes becomes a major concern. Here the important part is to prediction of bike count required at each hour for the stable supply of rental bikes.

Bike sharing system is an innovative transportation strategy that provides individuals with bikes for their common use on a short-term basis for a price or for free. Over the last few decades, there has been a significant increase in the popularity of bike-sharing systems all over the world. This is because it is an environmentally sustainable, convenient and economical way of improving urban mobility. In addition to this, this system also helps to promote healthier habits among its users and reduce fuel consumption.

With the growing demand and user base for bike-sharing system, providing the city with a stable supply of rental bikes could eventually become a challenging task. The success of bike-sharing system relies in ensuring that the quality of facilities provided, meets the needs and expectations of the users. Therefore, it is important to ensure that rental bikes are available and accessible to the users at right time, as it reduces the waiting time. Forecasting the number of bikes required and identifying the key factors that influence the demand for rental bikes can greatly help in managing the bike-sharing system.

Understand the trends in the data and identify key factors affecting the hourly demand for rental bikes.

Build an appropriate regression model to forecast the number of rental bikes required per hour.

In second part analysis we do hotel wise analysis like which type of hotel has highest number of bookings, highest room type booked, which room type generate highest adr so we can understand how revenue come from room and analysis in each hotel type booking in yearly basic.

In the first part we explore the dataset we have “SeoulBikeData.csv” how many rows and column are present and information regarding overall dataset like Null values, data type column name etc. Then we go for the clearing data process. Which is important step before we going for the EDA (Exploratory Data Analysis).

In the Second part we do the EDA with our modified dataset. There we have to analysis the independent variable relation with respect to dependent variable and independent variable. There are two type of relation scenario can happen like independent variable (Rented\_Bike\_Count) vs Categorical Variable

(Month, Weekdays and Weekend, Functioning Day And Non-Functioning Day, Season And Hour) and like independent variable (Rented\_Bike\_Count) vs Numerical Variable(Temperature, Windspeed, Dew\_Point\_Temperature, Solar\_Radiation, Snowfall, Rainfall).

In the third part we plot some regression plot to see the liner relation b/w numeric and target variable.

Here we will get two type of linear relation positively relation and negative relation. Next we go for checking of correlation between dependent variable here in the project we find temperature and dew point temperature are positively correlated to each other. So we can eliminate dew point temperature.

Now in the fourth part we go for model training and testing. For that we must split the data in training and testing. Mostly we split in 80/20 or 70/30 ratio respectively.After split the data we go for various regression process( **LINEAR REGRESSION, LASSO REGRESSION, RIDGE REGRESSION, ELASTIC NET REGRESSION, DECISION TREE,**

**, RANDOM FOREST**). After this process we go for gradient boosting and hyper tuning.

At last we go for final conclusion about

**Contributor Role: -**

**N Narayan Santosh Ku. Choudhury**

* Data Wrangling
* Checking data frame
* Data frame Exploration
* Finding most common segment prefer for hotel booking.
* Which moth highest booking happened.
* Visualizing each Hotel type wise yearly bookings.
* What is the relationship between market segment and cancellation?
* Correlation of the columns.
* Which top 10 Country have most babies during their visit?
* Which type of Meal is mostly preferred by the guests during their visit?
* Draw the boxplots of the two columns

**Kuresh Chandra tripathy: -**

* Data Wrangling.
* Mounting and read the data frame
* Clearing and Processing Data frame
* Which Year most room booking happen?
* Country with Highest Number of Booking
* Map wise room booking density graph.
* Which type of Hotel has highest number of booking?
* Which room type booked in highest Number?
* Number of rooms booking by top 10 Agent
* which room type generates highest adr?
* Find is the most common market segment prefer to booking hotels?
* How long do people stays at the hotel?

**GitHub link: -**

[https://github.com/kuresh02/Hotel\_Booking\_EDA](https://github.com/kuresh02/Hotel_Booking_EDA%20)

**Google drive link for dataset: -**

https://drive.google.com/drive/folders/1ICkChUTdVHRowsh2DbMdc6DwW5yWrkBN?usp=sharing

**Google drive link for project data: -**

https://drive.google.com/drive/folders/1XQh0jd2hF36hfX3JpVrP-bdXyV0SpLf5?usp=sharing