PYTHON PROJECT

DATASET : Seoul Bike Sharing Demand

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DESCRIPTION OF THE DATASET

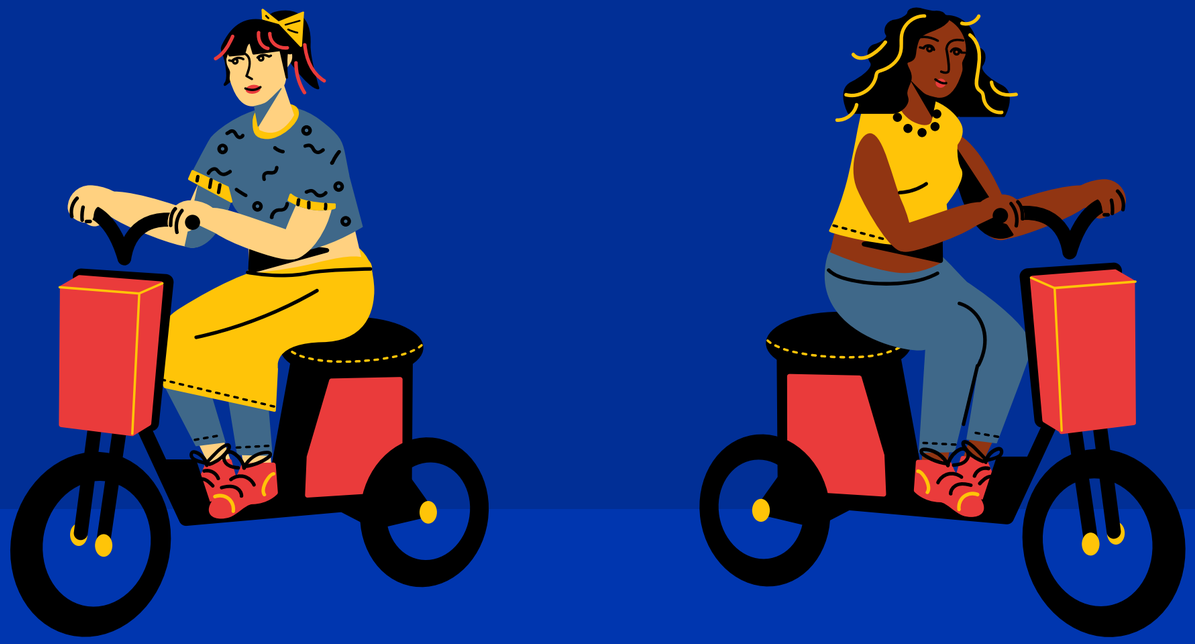
Currently Rental bikes are introduced in many urban cities for the enhancement of mobility comfort.
It is important to make the rental bike available at the right time.

Providing the city with a stable supply of rental bikes becomes a major concern.

The crucial part is the prediction of bike count required at each hour for the stable supply of rental bikes.

Attribute Information:

- Date
- Hour
- Humidity (%)
- Visibility (10m)
- Solar radiation (MJ/m²)
- Snowfall (cm)
- Holiday
- Rented Bike Count
- Temperature (°C)
- Windspeed (m/s)
- Dew point temperature (°C)
- Rainfall (mm)
- Seasons
- Functional Day



PROBLEMATIC

We want to be able to predict the number of bikes rented around the city for certain hours/periods and with certain meteorologic conditions so that we can make sure there are enough bikes available and predict when maintenance can be handed.

ANALYZING PLAN

01 PRE-PROCESSING

02 VISUALIZATION

03 MODELING

04 FLASK

01

PRE-PROCESSING

DISCOVERY OF THE DATASET

```
df.isna().sum()
```

0.1s

Date	0
Rented Bike Count	0
Hour	0
Temperature(C)	0
Humidity(%)	0
Wind speed (m/s)	0
Visibility (10m)	0
Dew point temperature(C)	0
Solar Radiation (MJ/m2)	0
Rainfall(mm)	0
Snowfall (cm)	0
Seasons	0
Holiday	0
Functioning Day	0

dtype: int64

```
df.info()
```

[171] 0.1s

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 8760 entries, 0 to 8759
Data columns (total 14 columns):
 #   Column                     Non-Null Count  Dtype
---  ------                     --------------  -----
 0   Date                       8760 non-null   object
 1   Rented Bike Count          8760 non-null   int64
 2   Hour                       8760 non-null   int64
 3   Temperature(C)             8760 non-null   float64
 4   Humidity(%)                8760 non-null   int64
 5   Wind speed (m/s)           8760 non-null   float64
 6   Visibility (10m)           8760 non-null   int64
 7   Dew point temperature(C)   8760 non-null   float64
 8   Solar Radiation (MJ/m2)    8760 non-null   float64
 9   Rainfall(mm)               8760 non-null   float64
 10  Snowfall (cm)              8760 non-null   float64
 11  Seasons                    8760 non-null   object
 12  Holiday                    8760 non-null   object
 13  Functioning Day            8760 non-null   object
dtypes: float64(6), int64(4), object(4)
memory usage: 958.2+ KB
```

01

PRE-PROCESSING

CHANGES MADE ON VARIABLES

DATA NORMALIZATION

- We changed the type of the Date column from string to Datetime
- Transform the columns Seasons and Holiday to int

For Seasons:

Spring = 1
Summer = 2
Autumn = 3
Winter = 4

For Holiday:

Holiday = 1
No holiday = 0

DATA ENCODING

New column FullDate that puts together the 2 columns Date and Hour

Data Encoding

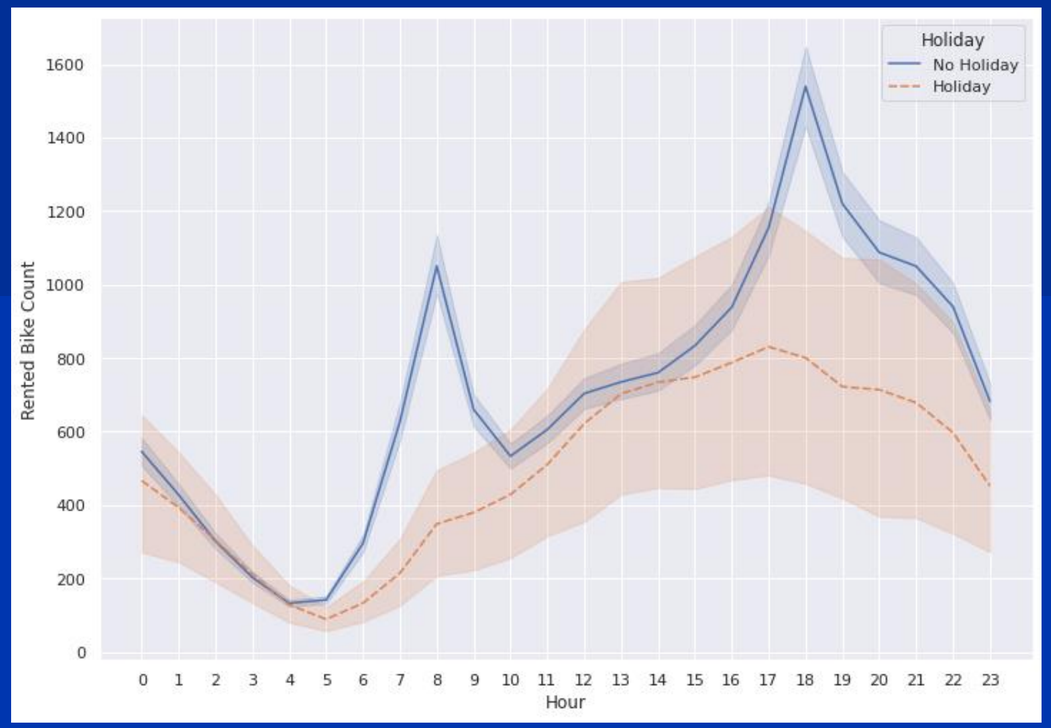
Datetime Datas

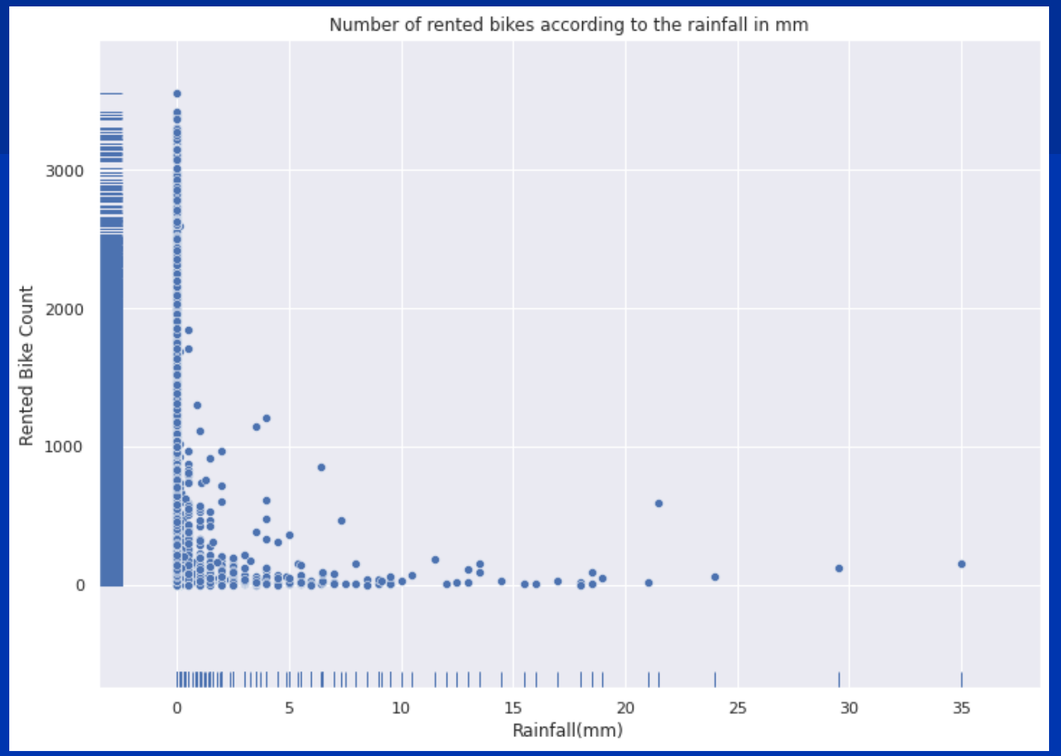
```
[177]
df['Date']=df['Date'].astype(str)
df['Hour']=df['Hour'].astype(str)
df['Full Date']=df[['Hour','Date']].apply(' '.join,axis=1)
df['Full Date']=pd.to_datetime(df['Full Date'],format="%H %d/%m/%Y")
df['Full Date'].info()
✓ 0.2s

<class 'pandas.core.series.Series'>
RangeIndex: 8760 entries, 0 to 8759
Series name: Full Date
Non-Null Count  Dtype
--------------  -----
8760 non-null   datetime64[ns]
dtypes: datetime64[ns](1)
memory usage: 68.6 KB
```

```
[178]
df['Full Date'].sample(n=5)
✓ 0.1s

6302   2018-08-20 14:00:00
2505   2018-03-15 09:00:00
617    2017-12-26 17:00:00
3206   2018-04-13 14:00:00
7907   2018-10-26 11:00:00
Name: Full Date, dtype: datetime64[ns]
```

02 VISUALIZATION

SOME EXAMPLES OF VISUALIZATIONS





02

VISUALIZATION

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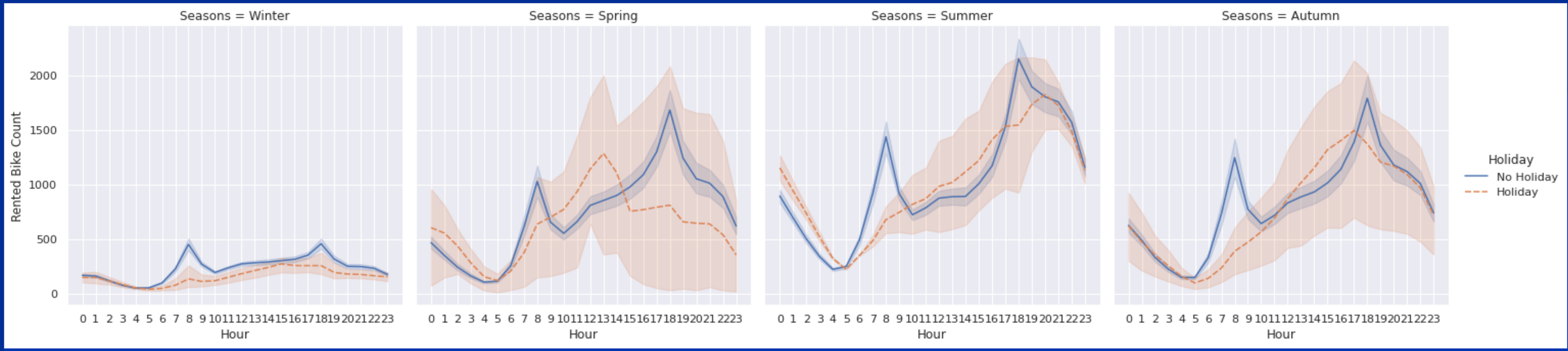
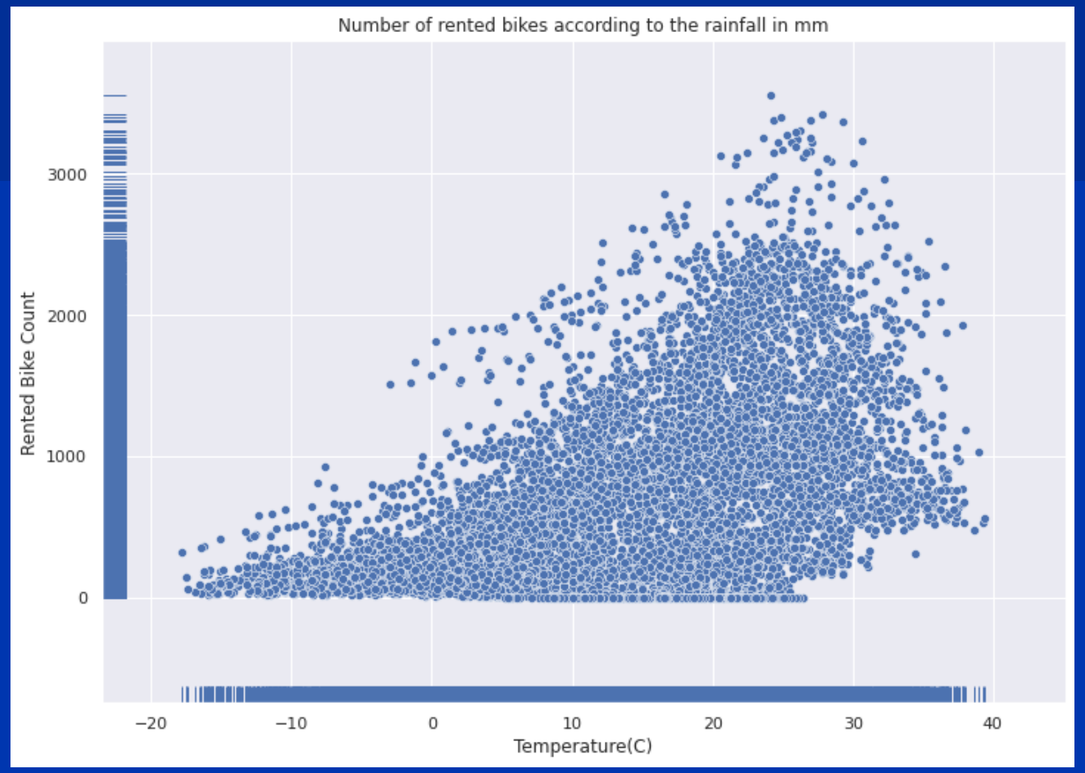
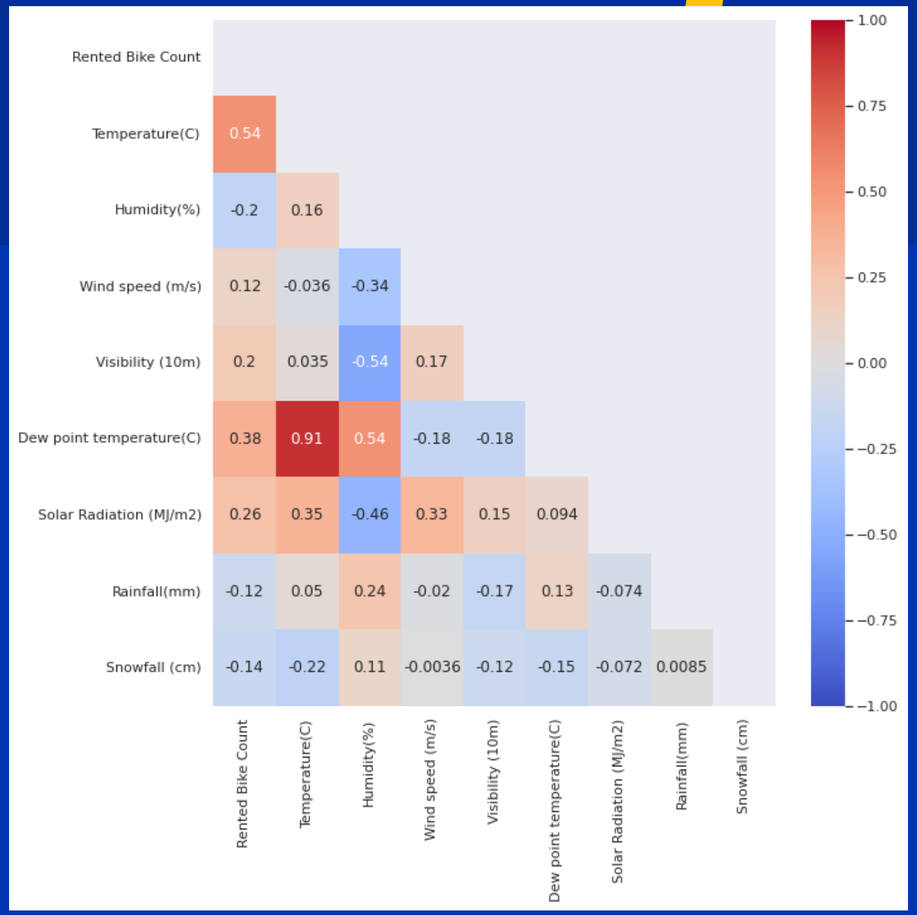


02

VISUALIZATION

SOME EXAMPLES OF VISUALIZATIONS

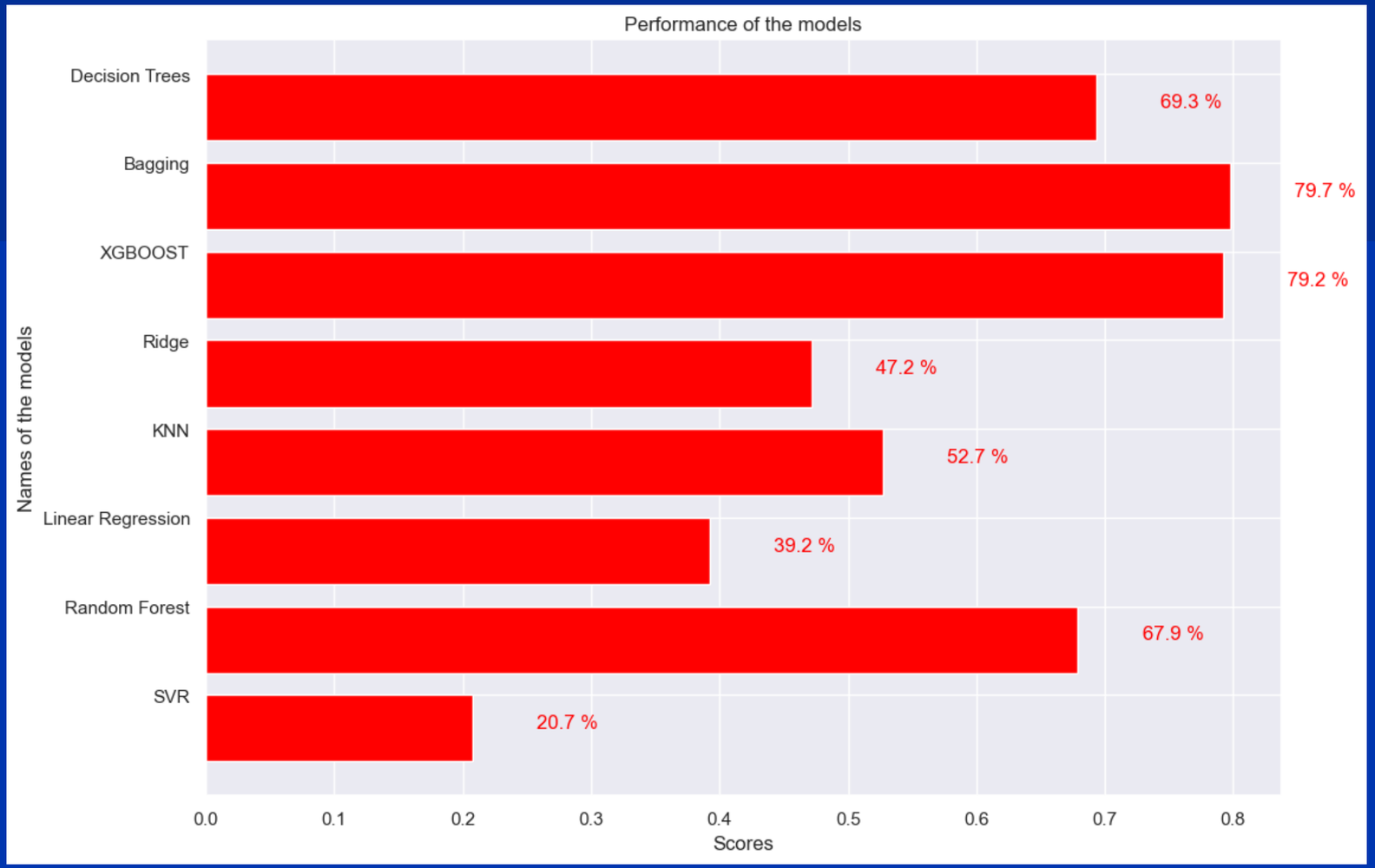




03

MODELING

MACHINE LEARNING



FLASK API

Temperature(C): Enter the temperature in Ce

Humidity(%): Enter the humidity in %

Wind speed (m/s): Enter the wind speed in m/s

Snowfall (cm): Enter the snowfall in cm

Dew Point Temperature: Enter the dew point temp in

Visibility: Enter the visibility

Solar Radiation (MJ/m2): Enter the solar radiation (M

Rainfall (mm): Enter the rainfall

Seasons: Enter the season

Holiday: Holiday ? (yes/no)

Year: Functioning day ? (yes/no)

Weekday: Functioning day ? (yes/no)

Run

914.26 Bikes

THANK YOU