- Regression Problem : Bike Sharing

## Introduction about the problem(Bike-sharing system)

Bike-sharing system is a shared micromobility service for short term bike rental. The service can be free of charge (e.g., paid by a city) or offered for a price. There are around 2000 bike-sharing services available around the world, mostly based in cities.

The first bike-sharing system was introduced in 1965 in Amsterdam when a group named Provo left 50 bikes unlocked around the city for everyone to use. The second-generation arrangement in bike-sharing was a coin-deposit system. In this system, the users could unlock the bicycles with a coin that was refunded to them upon return of the bicycle.

Today, the most popular bike-sharing systems are automated docking stations (third generation) and dockless systems (fourth generation). In many cities, renting a bike has become an everyday digital service. For unlocking the bike, the users only need a subscription card or their Smartphone. The users can leave the bikes to suitable docking stations or areas. This makes bike-sharing a convenient alternative to both public transportation and private cars.

Bike-sharing customers don’t depend on transportation routes and can use the service on demand. They can reach their destination without traffic jams or parking costs while contributing to a cleaner city environment as well as their health. For these benefits to have an effect, both the cities and service providers need to continually invest in infrastructure, system maintenance and innovation.

**- Description of dataset (Number of instances, Number of Features, …etc)**

This dataset contains the hourly and daily count of rental bikes between the years 2011 and 2012 in the Capital bike share system with the corresponding weather and seasonal information. Data Set Information: Bike sharing systems are new generation of traditional bike rentals where whole process from membership, rental and return back has become automatic. Through these systems, user is able to easily rent a bike from a particular position and return back at another position. Currently, there are about over 500 bike-sharing programs around the world which is composed of over 500 thousands bicycles. Today, there exists great interest in these systems due to their important role in traffic, environmental and health issues. Apart from interesting real world applications of bike sharing systems, the characteristics of data being generated by these systems make them attractive for the research. Opposed to other transport services such as bus or subway, the duration of travel, departure and arrival position is explicitly recorded in these systems. This feature turns bike sharing system into a virtual sensor network that can be used for sensing mobility in the city. Hence, it is expected that most of important events in the city could be detected via monitoring these data.

Attribute Information:

Both hour.csv and day.csv have the following fields, except hr which is not available in day.csv instant: record index

**dteday :** date

**season :** season (1:winter, 2:spring, 3:summer, 4:fall)

**yr :** year (0: 2011, 1:2012)

**mnth :** month ( 1 to 12)

**hr :** hour (0 to 23)

**holiday :** weather day is holiday or not

**weekday :** day of the week

**workingday :** if day is neither weekend nor holiday is 1, otherwise is 0

**weathersit :**

- 1: Clear, Few clouds, Partly cloudy, Partly cloudy

- 2: Mist + Cloudy, Mist + Broken clouds, Mist + Few clouds, Mist

- 3: Light Snow, Light Rain + Thunderstorm + Scattered clouds, Light Rain + Scattered clouds

- 4: Heavy Rain + Ice Pallets + Thunderstorm + Mist, Snow + Fog

**temp :** Normalized temperature in Celsius. The values are derived via (t-tmin)/(tmax-tmin), tmin=-8, t\_max=+39 (only in hourly scale)

**atemp:** Normalized feeling temperature in Celsius. The values are derived via (t-tmin)/(tmax-tmin), tmin=-16, t\_max=+50 (only in hourly scale)

**hum:** Normalized humidity. The values are divided to 100 (max)

**windspeed:** Normalized wind speed. The values are divided to 67 (max) casual: count of casual users

**registered:** count of registered users

**cnt:** count of total rental bikes including both casual and registered.

[[1]](Diabetic Retinopathy | National Eye Institute, https://www.nei.nih.gov/learn-about-eye-health/eye-conditions-and-diseases/diabetic-retinopathy)

<Diabetic Retinopathy | National Eye Institute, https://www.nei.nih.gov/learn-about-eye-health/eye-conditions-and-diseases/diabetic-retinopathy>

[2]

[Diabetic Retinopathy: Definition and Patient Education](https://www.healthline.com/health/type-2-diabetes/retinopathy)

, <https://www.healthline.com/health/type-2-diabetes/retinopathy#types>

[3] [What is a bike-sharing system? - Car Rental Glossary](https://www.carrentalgateway.com/glossary/bike-sharing-system/)

,https://www.carrentalgateway.com/glossary/bike-sharing-system/