Capstone Project Submission

Bike Sharing Demand Prediction

Instructions:
i) Please fill in all the required information.
ii) Avoid grammatical errors.

Team Member's Name, Email and Contribution:
Name- Saurabh Ravindra Shinkar   **Email**- saurabhshinkar26@gmail.com   **Contribution**- Everything in the project
Please paste the GitHub Repo link.
GitHub Link: https://github.com/saurabhshinkar/Seoul-Bike-Sharing-Demand-Prediction
Please write a short summary of your Capstone project and its components. Describe the problem statement, your approaches and your conclusions. (200-400 words)   Currently Rental bikes are introduced in many urban cities for the enhancement of mobility comfort. 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, providing the city with a stable supply of rental bikes becomes a major concern.   Problem Statement is the prediction of bike count required at each hour for the stable supply of rental bikes.   First step was to clean the dataset and make it in proper format.   Next to get the solution of the problem statement it was necessary to understand each feature in our dataset.   After analysing each feature separately, we started to implement different regression models to data.

Linear Regression, Decision Tree Regression, Decision Tree Regression with Hyperparameter Tuning, Random Forest Regression, Random Forest Regression with Hyperparameter Tuning, Gradient Boosting, Gradient Boosting with Hyperparameter Tuning, XG Boost, XG Boost with Hyperparameter Tuning

These models are applied to the data.

Conclusions from project-

- Linear Regression Model Has Accuracy Of 65%.
- Decision Tree Has Accuracy Of 82%.

- Decision Tree with Hyperparameter Tuning Has Accuracy Of 80%.

- Random Forest Has Accuracy Of 91%.

- Random Forest with Hyperparameter Tuning Has Accuracy Of 84%

- Gradient Boosting Has Accuracy Of 87%.

- Gradient Boosting with Hyperparameter Tuning Has Accuracy Of 73%.

- XG Boost Has Accuracy Of 87%.

- XG Boost with Hyperparameter Tuning Has Accuracy Of 92%.

- **From Above We Can Conclude That XG Boost with Hyperparameter Tuning Is the Best Fitted Model to Our Data.**

- **XG Boost with Hyperparameter Tuning Gives About 97% Accuracy in Training Data And 92% Accuracy in Test Data. Also, XG Boost Has Lowest Mean Squared Error in Test Data.**

- Seasons, Temperature, Hour, Functioning Day, Humidity are the most important features which affects our Target variable.