Seoul Bike Sharing Demand

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Agenda

- Introduction
- Objectives
- Methodology
- Exploratory Data Analysis
- Results
- Conclusion
- Recommendations

Introduction

- Bike-sharing systems have been adopted to offer an affordable, convenient, and eco-friendly transportation option
- Dataset: Seoul Bike Sharing Demand
  - Records rented bike count per hour of each day from December 2017 to November 2018
  - 8760 observations and 14 variables
  - 12 predictor variables containing weather information

Objectives

1. Identify key factors influencing bike sharing demand

2. Develop a model to predict the number of rental bikes per hour

Methodology

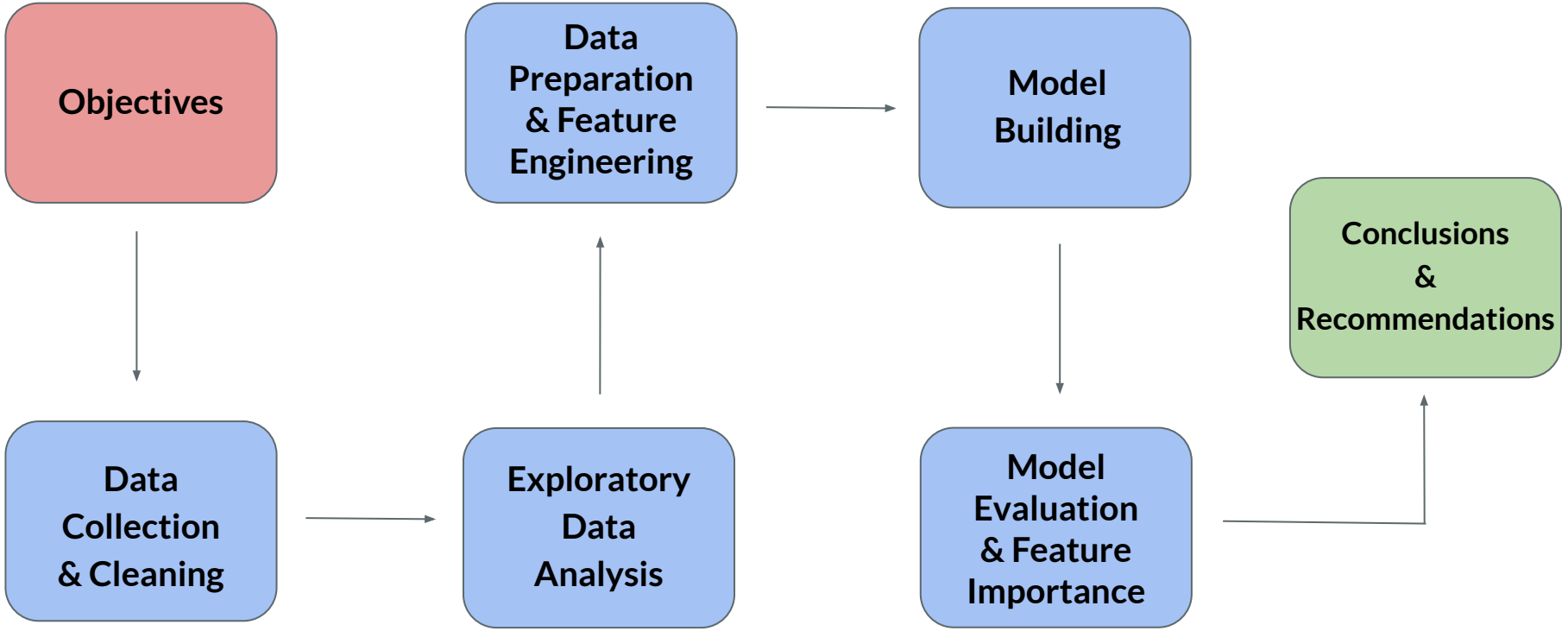

Figure 1: Methodology for Seoul Biking Demand Dataset

Descriptive Statistics

	Rented Bike Count	Temperature (F)	Snowfall (cm)
Min	0.0	-0.04	0.0
1Q	191.0	38.3	0.0
Median	504.5	56.7	0.0
Mean	704.6	55.2	0.1
3Q	1065.2	72.5	0.0
Max	3556.0	102.9	8.8

Table 1: Summary Statistics of Numeric Variables in the Seoul Biking Dataset

Data Visualization

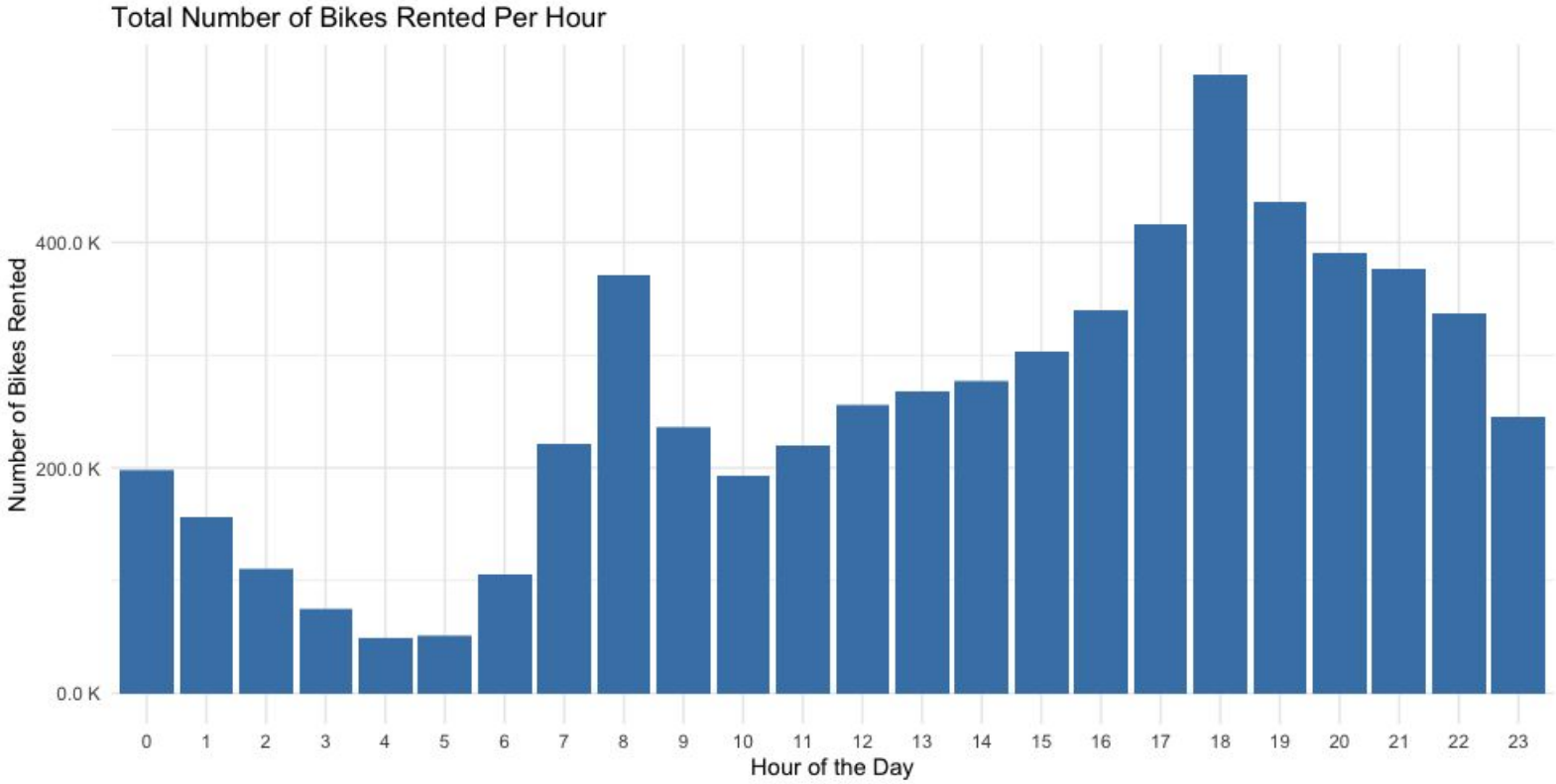

Figure 2: Total Number of Bikes Rented Per Hour

Results – Model Evaluation

Model	MSE	RMSE
Decision Tree	131,302	362
Random Forest	23,307	153
XGBoost	18,174	135

Table 2: Model Performance Comparison using MSE and RMSE

Results - Feature Importance (XGBoost)

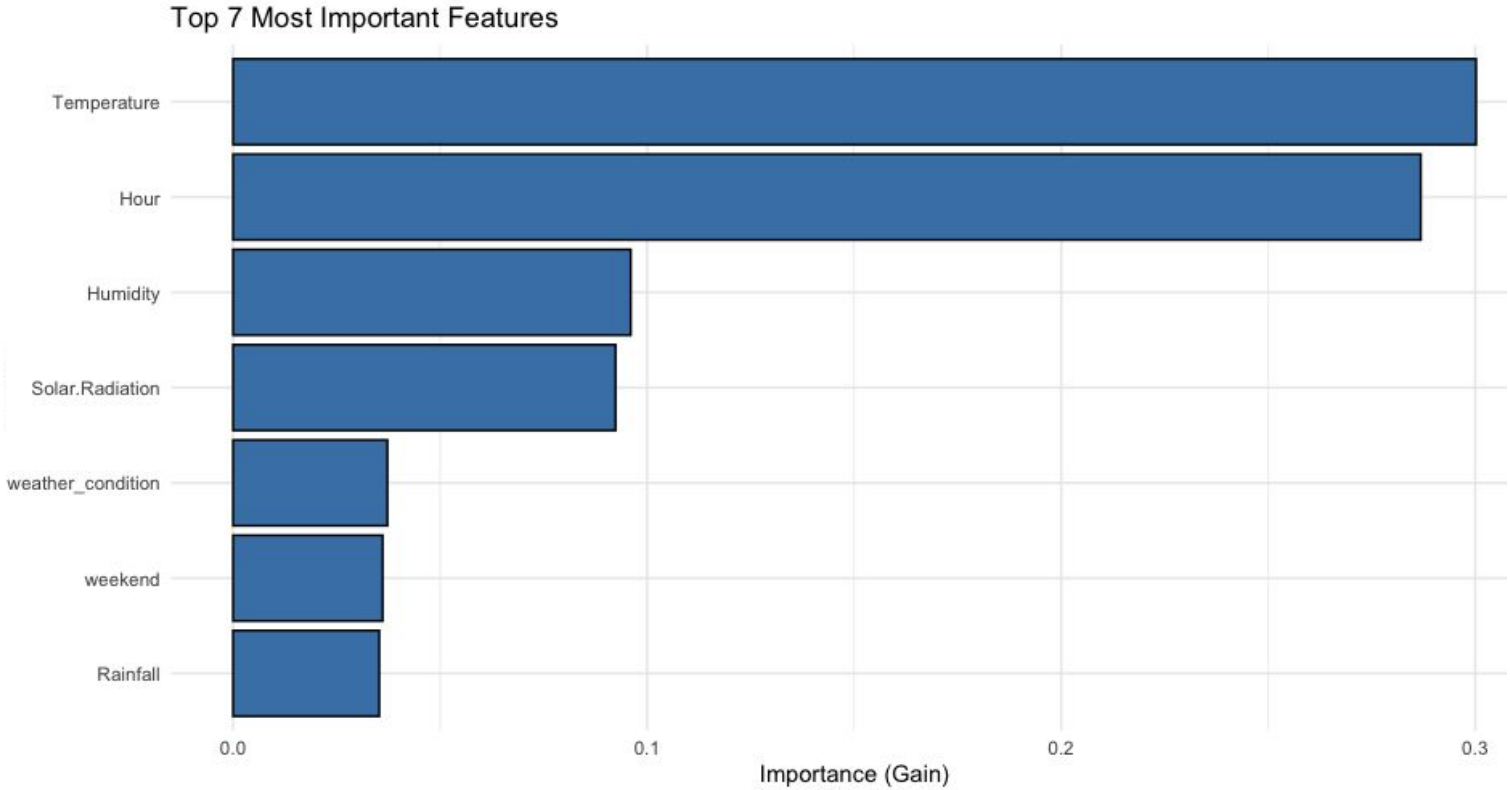

Figure 3: Feature Importance (Gain) of XGBoost Model

Conclusion

- Temperature, Hour, Humidity, and Solar Radiation are key factors influencing bike sharing demand

- An XGBoost model can predict the number of rental bikes per hour reasonably well (RMSE = 135)

Recommendations

1. Adjust bike availability based on temperature, solar radiation, and humidity forecasts.

2. Implement dynamic pricing strategies to encourage bike usage during non-peak hours

3. Improve user experience with real-time information apps showing bike availability and weather conditions

Thank You