A vibrant illustration of four League of Legends characters in a dark, cavernous setting. In the center, a blonde woman in a silver and black outfit (Seraphine) has her arms raised, surrounded by a swirling blue and white magical energy. To her left, a man with a red mask and a scorpion-like tail (Rell) points forward. To her right, a woman with red hair and a large, ornate golden shield (Thresh) holds a small axe. On the far left, a blonde man in a blue and white outfit (Lux) is partially visible. The background is filled with dark, jagged rock formations and glowing blue and green magical particles.

PREDICT THE OUTCOME OF THE RANKED GAME IN LEAGUE OF LEGENDS

- **Yunxuan Zeng**
- **Data Science Initiative**
- **Brown University**
- **10/15/2020**
- **<https://github.com/YunxuanZeng/1030Project>**



OUTLINE

- **Introduction**
- **Exploratory Data Analysis**
- **Data Splitting**
- **Data Preprocessing**





INTRODUCTION

- **Dataset: League of Legends Diamond Ranked Games (10 min)**
 - 9879 ranked games
 - 19 features per team (38 in total)
 - Target variable: blueWins (0/1)
 - Link: <https://www.kaggle.com/bobbyscience/league-of-legends-diamond-ranked-games-10-min>
- **Classification Problem:**
 - Predict the winner of a ranked game based on the statistics of two teams in the first 10 minutes
- **Significance:**
 - Popularity
 - Diversity and Inclusion
 - Fairness



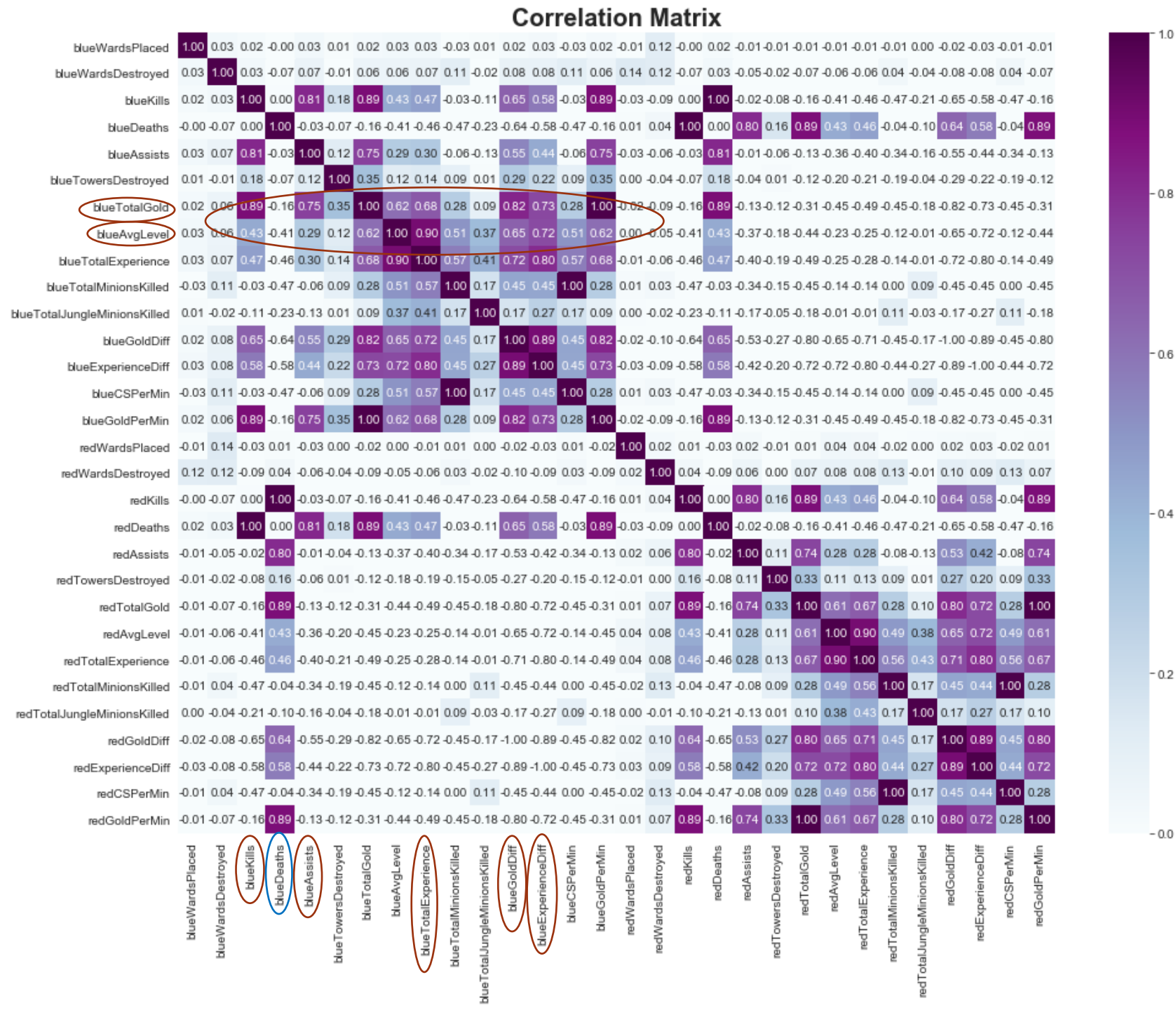
EXPLORATORY DATA ANALYSIS

■ Positive Relation:

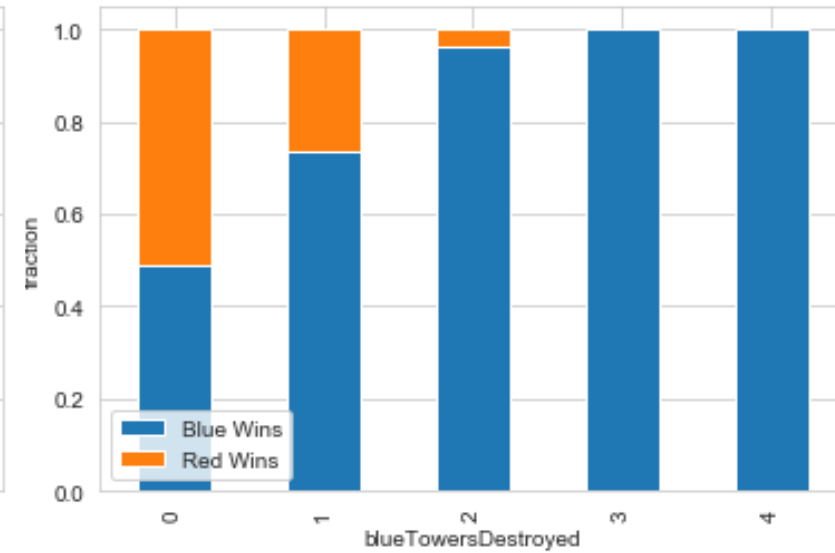
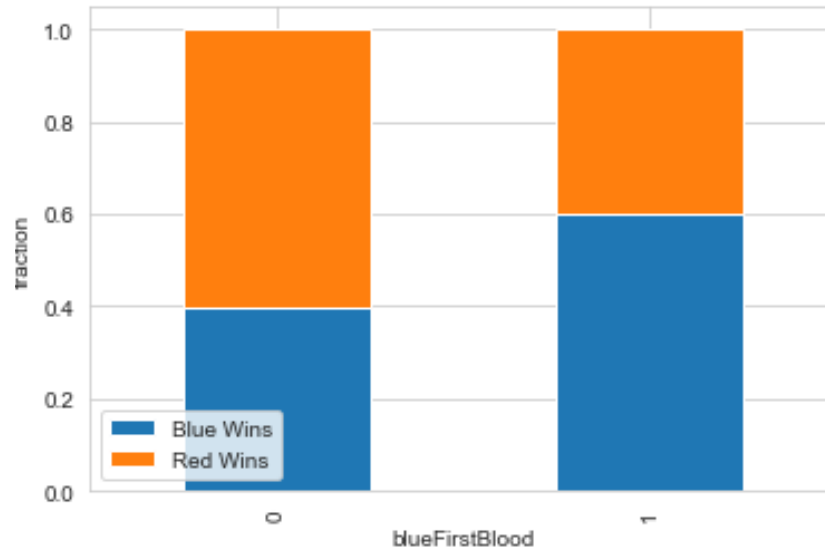
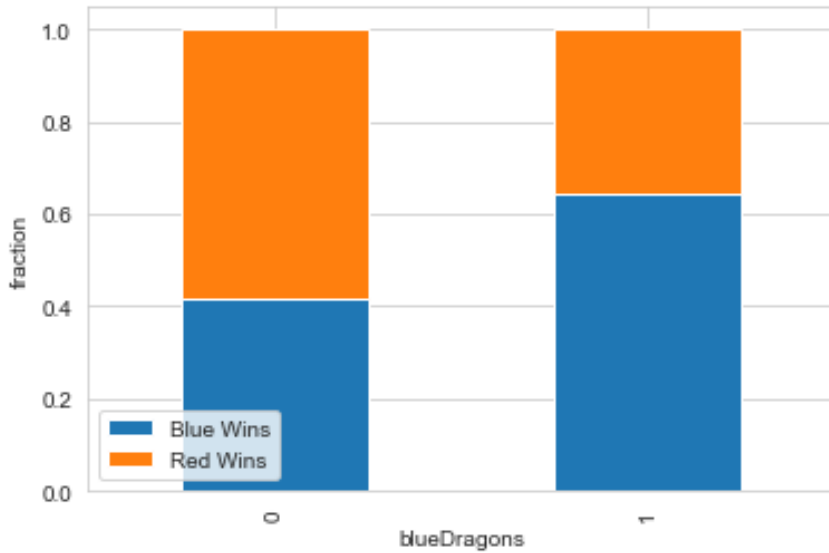
- Blue total gold & blue kills/assists
- Blue total gold & blue gold/experience diff
- Blue Avg Level & blue total experience

■ Negative Relation:

- Blue total gold & blue deaths
- Blue Avg Level & blue deaths



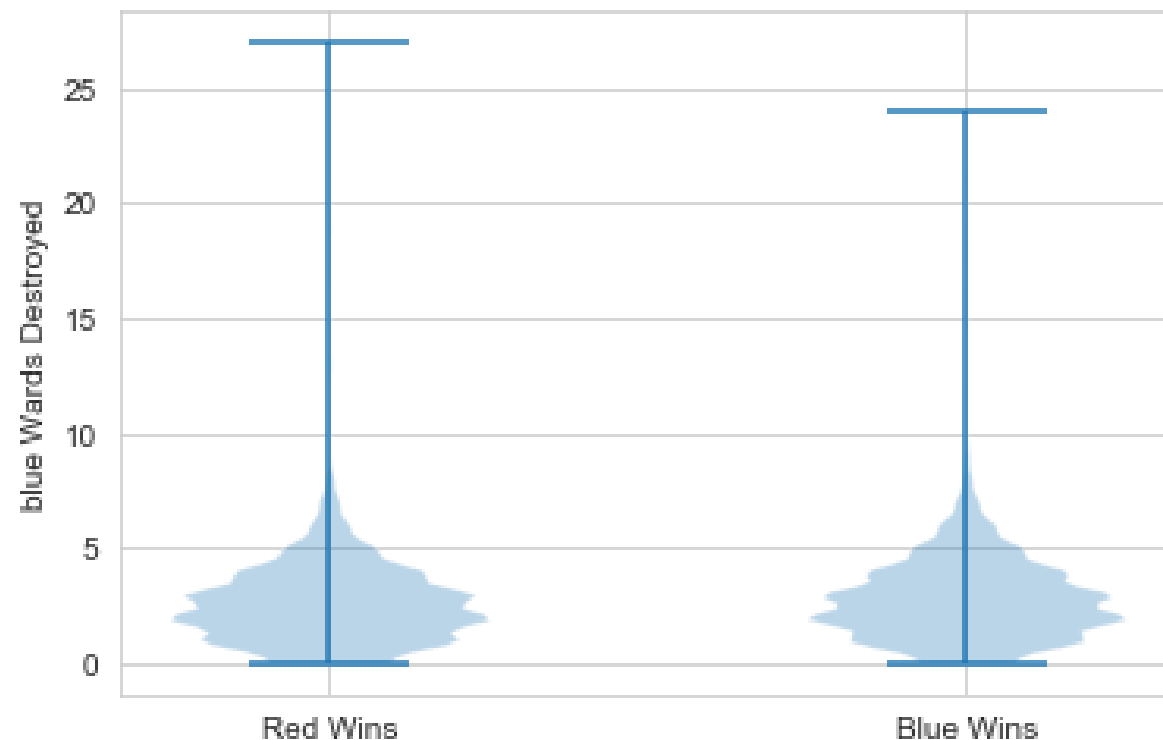
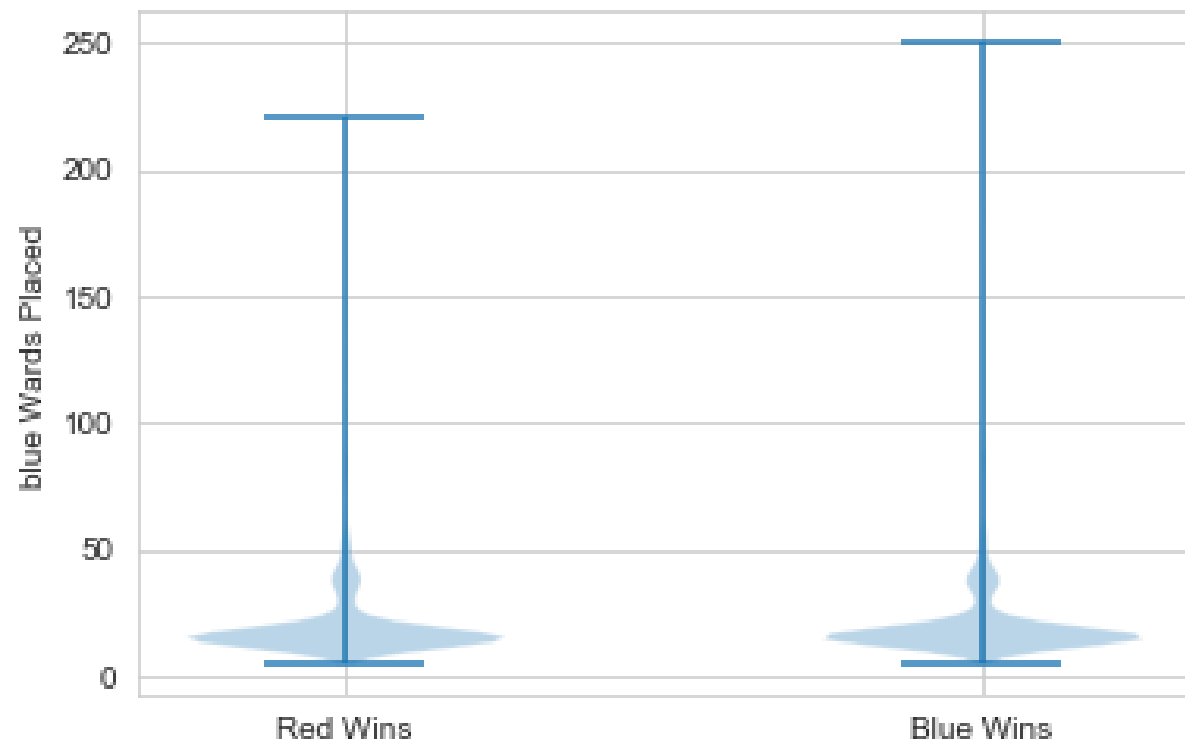
EXPLORATORY DATA ANALYSIS



- **Dragon:** grants armor, magic resistance, or bonus damage
- **First blood:** first champion kill in the game
- **Towers:** deal damage to enemies and provide vision
- Teams which kill first dragon, get first blood or destroy more towers has a higher win rate.



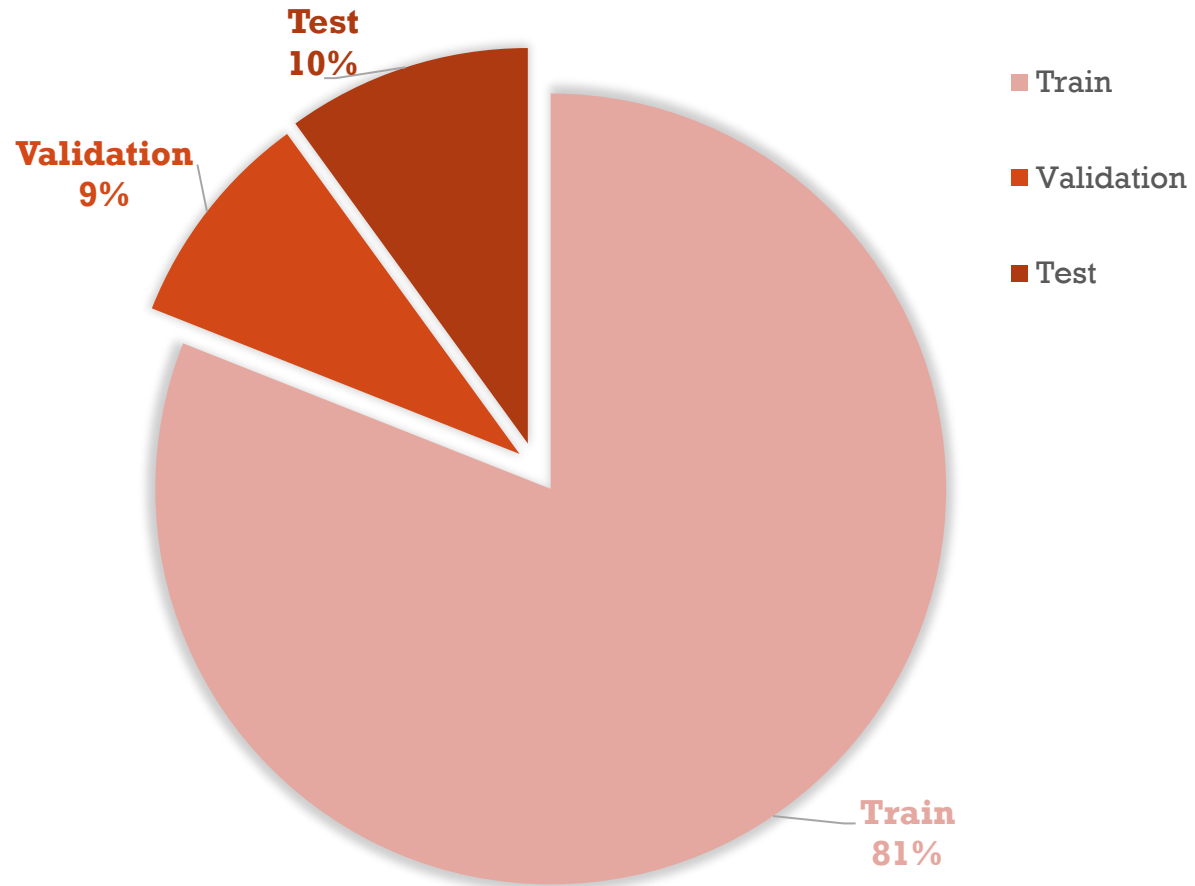
EXPLORATORY DATA ANALYSIS



- **Ward:** Vision in the game
- The distributions for both teams have the similar shape.
- Placing and destroying wards has low impact on game results.



DATA SPLITTING



- IID Data
- No missing values
- No group structure
- No time series data
- No need to preprocess labels
- StratifiedKFold



DATA PREPROCESSING

OneHotEncoder

- blueFirstBlood
- redFirstBlood
- blueHeralds
- redHeralds
- blueDragons
- redDragons
- blueWins

MinMaxScaler

- blueAvgLevel: 1 - 18
- redAvgLevel: 1 - 18
- blueTowersDestroyed: 0 - 9
- redTowersDestroyed: 0 - 9
- blueEliteMonsters: 0 - 3
- redEliteMonsters: 0 - 3

StandardScaler

- blueWardsPlaced
- blueWardsDestroyed
- blueKills
- blueDeaths
- blueAssists
- blueTotalExperience
- blueTotalMinionsKilled
- blueTotalJungleMinionsKilled
- blueCSPerMin
- blueTotalGold
- blueGoldDiff
- blueExperienceDiff
- blueGoldPerMin
- ...**Same for the red team**

Training set:

X:(8003,44)

y:(8003, 2)

Validation set:

X: (888, 44)

y: (888, 2)

Testing set:

X: (988, 44)

y: (988, 2)





THANK YOU FOR LISTENING!

