

# **Big Data Analytics**

## **Mini Project 2**

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## **Introduction**

League of legends is a MOBA (multiplayer online battleground arena) game. It has two teams each one has five players, where they fight in a multilane map to destroy the enemy's nexus. The game has five lanes the player chooses their position from which are top lane, jungle, middle lane, support, and attack damage carry. The player at the start of the game chooses a champion from 161 champions.

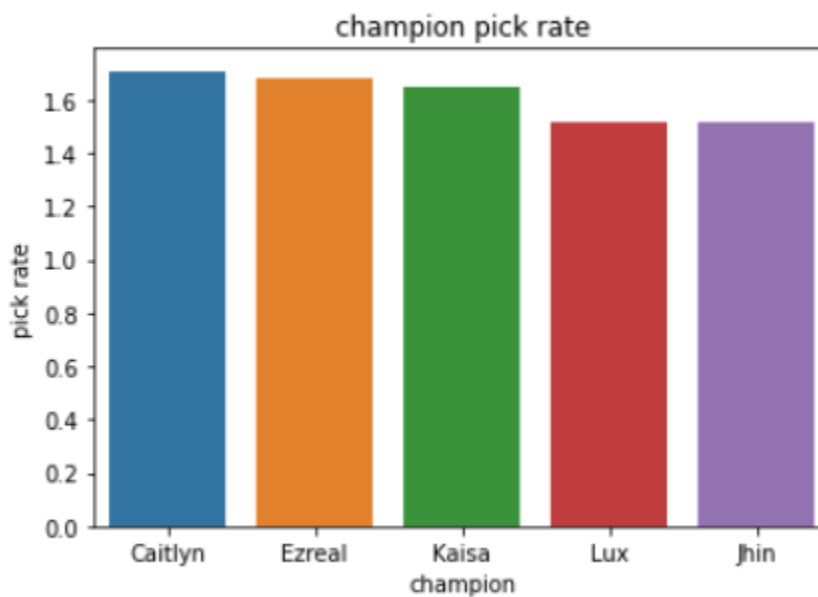
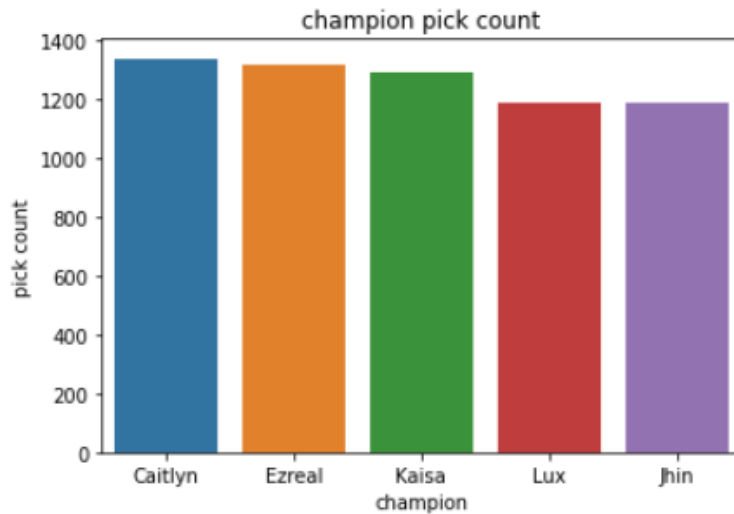
The matches used in our case are from Europe west region with all ranks and for solo-duo ranked matches only.

## **Our discussion on the analysis done**

### **1- Requirement one: Champion pick, win, and ban rates**

- Champion Pick rate

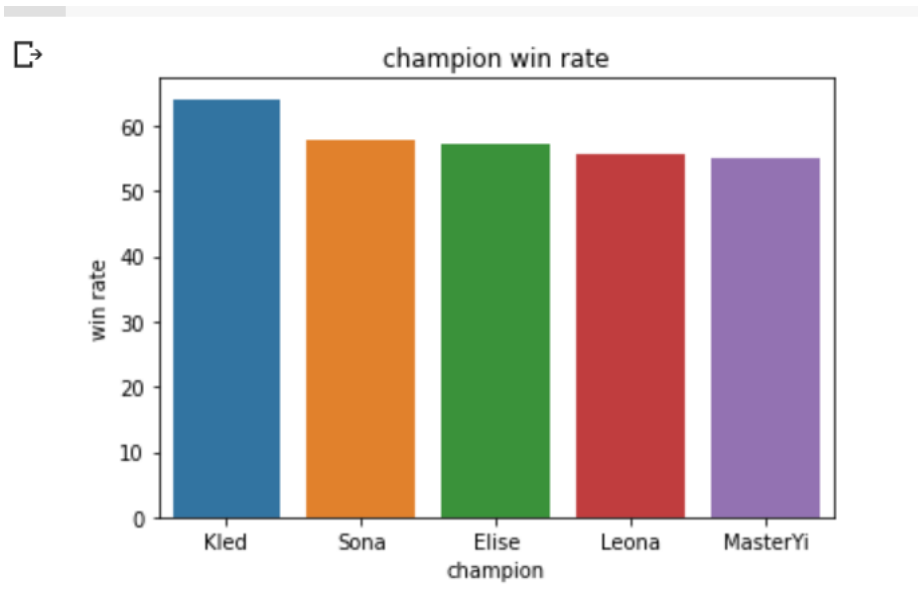
According to our analysis, the top five most frequently chosen champions were[ Caitlyn, Ezreal, Kaisa, Lux, Jhin ] in that order. Our findings are consistent with the statistics on [League of graphs](#), given our limited sample size. Specifically, Our most picked champions are among the first seven popular champions picked in the website.



- Champion Win rate

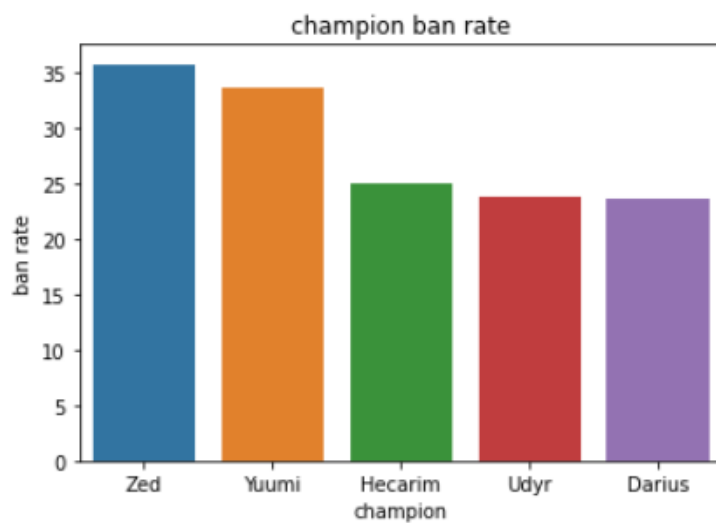
According to our analysis, the top winning champions are ['Kled','Sona','Elise', 'Leona', 'MasterYi], this result is not very consistent with the above mentioned website due to different reasons. We attribute this to the sample size of our data

and the sample size does not show all the wins shown online. Additionally, the sample size shows results very close to the top five.



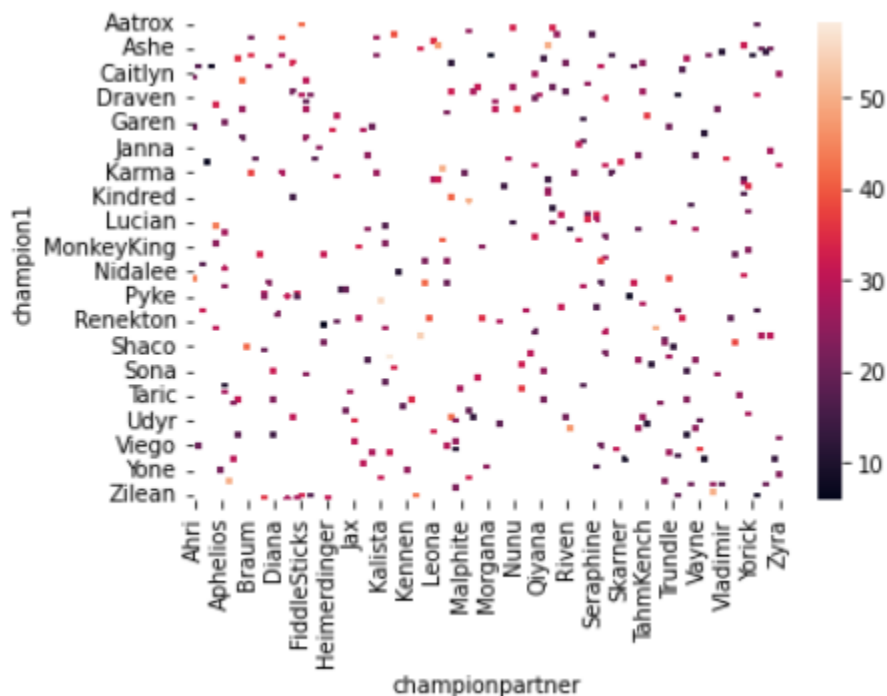
- Champions ban rate

From our analysis, the five highest banned champions are Zed, Yumi, Hecarim, Udyr and Darius. This result is consistent with the statistics found online.



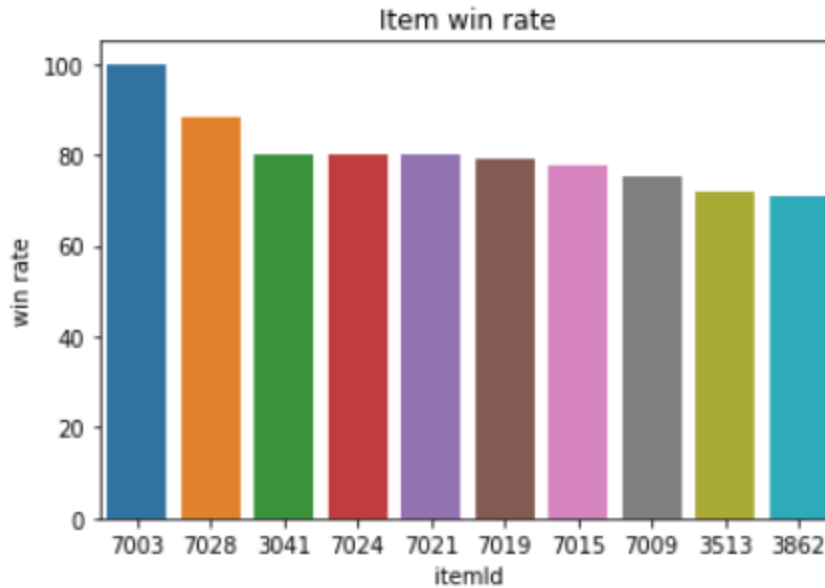
## 2- Requirement 2: champion synergy

Our analysis found more than 50 pairs of champions that showed complete synergy(100 % synergy). It is unlikely that all champion pairings would have a 100% success rate in a larger sample because it would be rare for all combinations to work perfectly across a large set of matches. This may be partly explained by instances where two champions only played together for a short period of time, resulting in a temporary synergy rate of 100%.

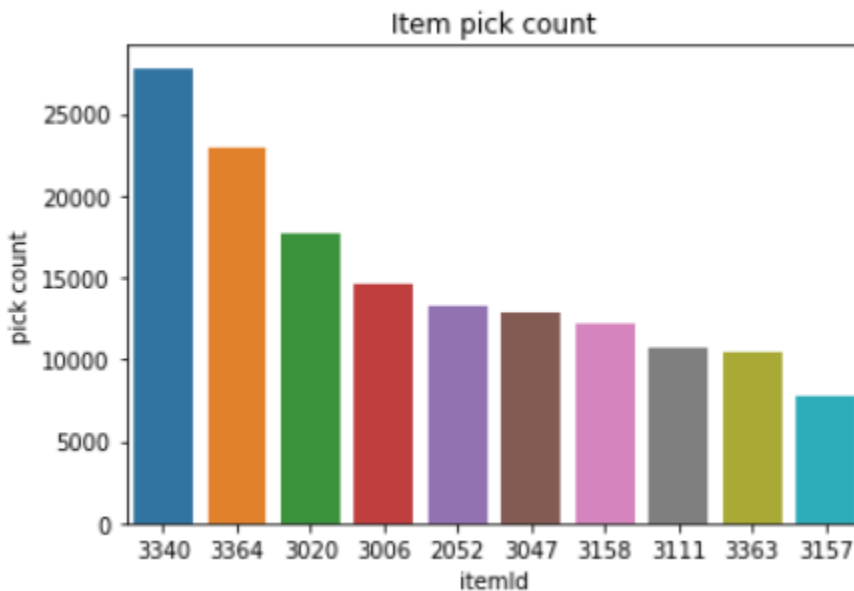


## 3-Requirement 3: item win and pick rate

- The most items that have winning rate from our analysis are the items that have the following IDs in the game which are [7003, 7028, 3041, 7021,7024].



- Additionally, the most picked items based on our analysis are the following items[3340, 3364, 3020, 3006,2052].



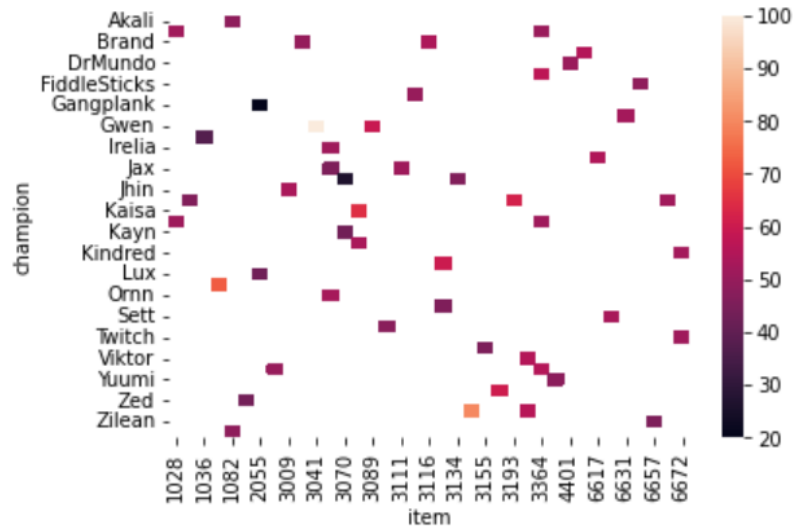
#### 4- Item Synergy

The point of item synergy shows what items are very important for winning

- For item- champion synergy: we found that different champions have different synergies with items. For example, [Akali] has the highest synergy with items

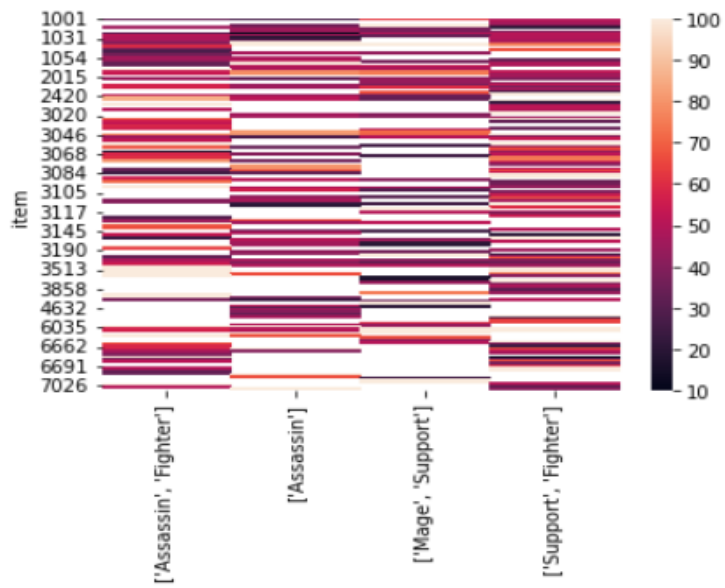
[1082, 3364]. The below heat map shows the different item synergy with different champions.

<matplotlib.axes.\_subplots.AxesSubplot at 0x7f7888835fa0>



We noticed that item 3364 is also present in the most winning item. This can show that our analysis is consistent together, and this item is also a very popular one

- For item-class synergy: we mapped the champion to its class , and we found different item synergy towards classes and this gives good observation on what items work well with different classes, and example of that is shown below:



## 5- Item suggestion

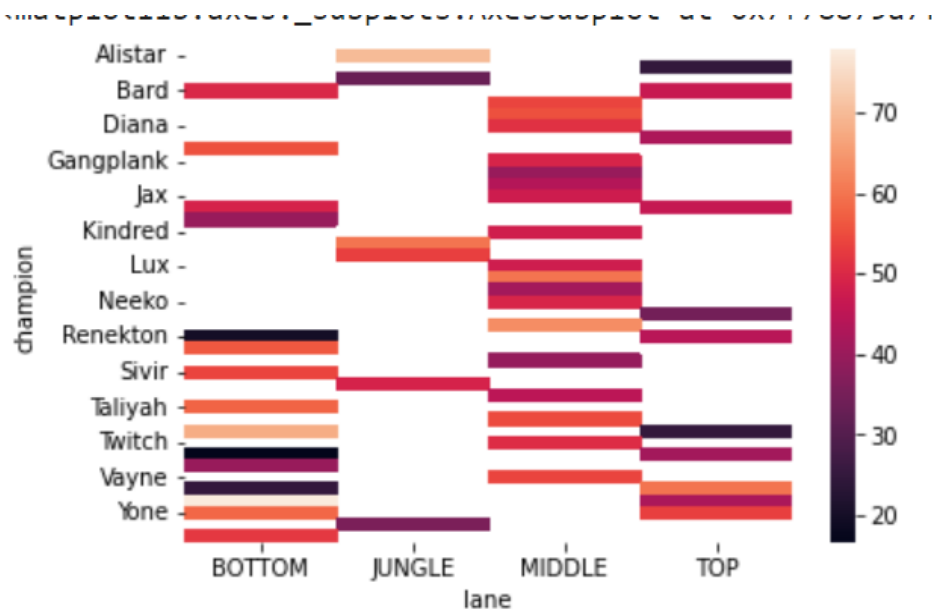
We implemented a function to suggest the best items every champion can get based on item-champion synergy, and we shows this suggestion for the following two champions:

```
[('Aatrox', 3340)  [('Azir', 3020)
 ('Aatrox', 3047)  [('Azir', 6655)
 ('Aatrox', 6692)  [('Azir', 4645)
 ('Aatrox', 6333)  [('Azir', 3340)
 ('Aatrox', 3074)  [('Azir', 3157)
 ('Aatrox', 3111)  [('Azir', 1058)
 ('Aatrox', 3071)  [('Azir', 3115)
 ('Aatrox', 6694)  [('Azir', 3089)
 ('Aatrox', 6665)  [('Azir', 6653)
 ('Aatrox', 1036)  [('Azir', 3363)
```

## 6- Champion lane synergy:

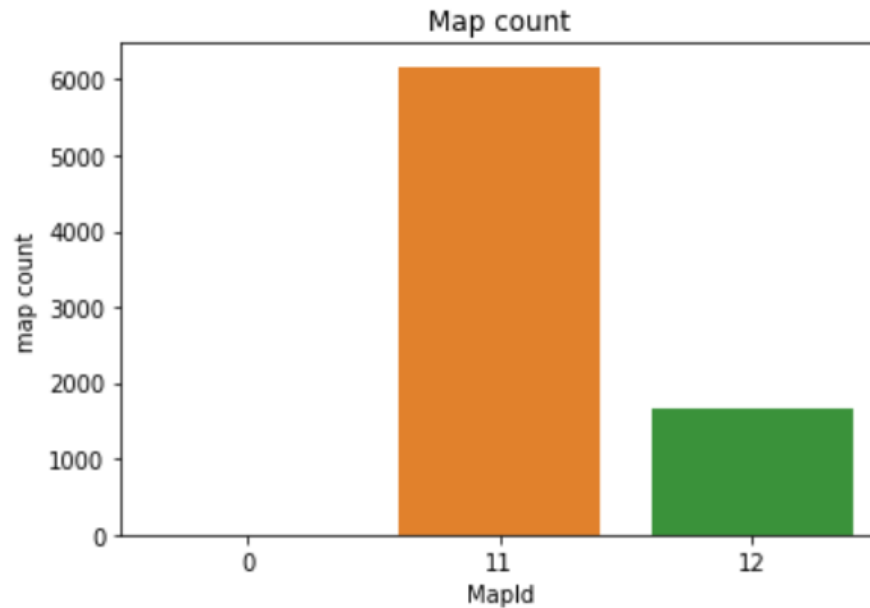


We did an analysis to determine the best lane that can work for every champion based on their synergy from winning the matches while playing in this lane and we showed the synergy for the champion lane in a heat map:



## 7- Regular used maps:

We try to get our hands on regular used maps by players in the game and the results shows that



We notice that the most used map is 11 which is "Summoner's Rift" which is consistent with our finding that this map is the most famous one. So, from this finding we can deduce that map 12 which is 'Howling Abyss' needs more features to be added to help attract the players.

### **Conclusion**

The above-mentioned analysis can help players to track the different characteristics of the game from items to champions to their synergy and this can help the beginners in the game to choose better. Additionally, these insights can help the game company to add some features to the game that can further improve some champions or items to make it a more enjoyable fair game.