Journey To Challenger: Analyzing the Strategies of Top Players Worldwide

Part I: Abstract/ Introduction

Names:

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Contribution:

Hieu (Calvin) Hoang: Analysis, Coding, Data Visualization, Github.

Vy Vo: Analysis, Data Visualization, Writer.

Quoc Anh: Coding, Data Visualization.

Link to the Github:
https://github.com/calvinhoang203/Journey-To-Challenger-Analyzing-the-Strategies-of-Top-Players-Worldwide/tree/main

###We use AI assistive tool###

Introduction:

We, as (hard-stuck Bronze) League of Legends players, always ask, "How can we improve our gameplay?" and "How does our playstyle differ from that of professionals?" Using this research opportunity, we aim to analyze both top players and professionals to discern the most effective and preferred playstyles and champions for climbing ranks. By doing so, we hope to apply these insights to our own gameplay, ultimately enhancing our performance and ranking.

Topic/Background Information:

League of Legends is a multiplayer online battle arena video game that has experienced immense growth in popularity over the years. Figure 1 illustrates the player base expansion from eleven million five hundred thousand in 2011 to one hundred fifty-one million in 2023. One of the primary factors contributing to its widespread appeal is the game's versatility, offering players a choice among five distinct roles: Jungler, Bottom Laner, Support, Middle Laner, and Top Laner. Figure 2 shows the distribution of champions in various roles. With a roster of 165 champions,

each with its own unique style and role, League of Legends provides players with endless possibilities.

Our objective is to uncover the favored playstyles of these top players around the world—whether it be Attack, Tank, or Utility—for each role. We also want to apply the finding to our own game play.

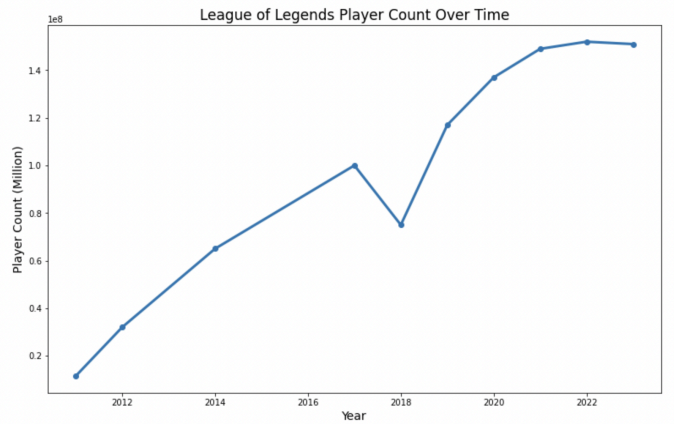

Figure 1: *Line chart showing League of Legend popularity throughout the year*

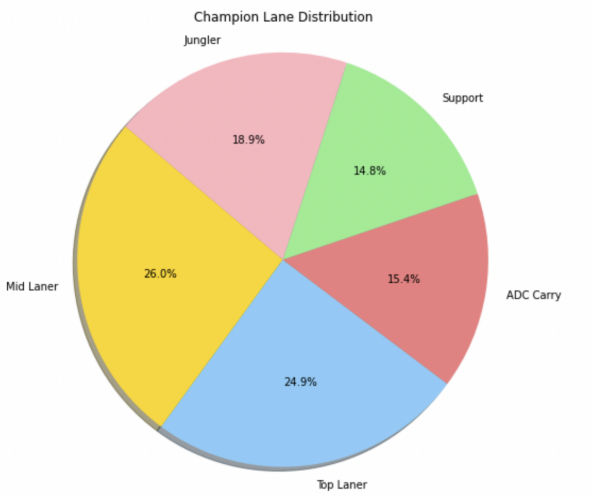

Figure 2: *Pie chart showing the distribution of main role play by top players around the world currently*

<u>Some methods and Python library we'll be using:</u>

- Web scraping
- Requests
- Hypertext Transfer Protocol (HTTP)
- Pandas
- Numpy
- Appendix

Part II: Procedures + Problem

Procedures:

1. Scrape data from three different websites:
    a. The Spike (https://www.thespike.gg/league-of-legends/beginner-guides/league-of-legends-player-count#:~:text=League%20of%20Legends%20yearly%20player%20count&text=Back%20in%202012%2C%20the%20game,2023%3A%20151%20million): Year-to-year count of League of Legends players.
    b. League of Graphs (https://www.leagueofgraphs.com): Extract information on the top 100 players from each of the 16 different servers. In total, we will be analyzing data from 1600 normal players.
    c. Rotowire Esports (https://www.rotowire.com/esports/stats-lol.php): Gather data on professional players' games and statistics. Focus on scraping information about the top team members in each region's tournament.
    d. Game Of League Of Legend Esport (https://gol.gg/tournament/tournament-ranking/LEC%20Spring%20Season%202024/): Scrape data from Europe, Middle and East Africa professional tournament.
2. Clean the data and create DataFrames and Dictionaries for the various sample groups we will be analyzing.
    a. For Normal players, we will focus on the top 100 players from each of the 16 different servers.
    b. For Professional players, we will examine the winning teams from professional tournament across different regions.
3. Assign players to roles—Mid Laner, Jungler, Top Laner, Bottom Laner, ADC—and categorize the champions they play according to specific playstyles: Attack, Tank, Utility.
4. Compare and analyze data from different regions to answer our research questions.
5. Apply finding to our personal game play.

Problem and Solution:

1. **Problem:** When scraping from https://www.leagueofgraphs.com, we encountered error 4.3, which prevents us from scraping the website.
   Solution: We discovered that utilizing a header can serve as a workaround for the error. We used ChatGPT to generate a header which allows us to effectively bypass the obstacle and proceed with our task.
2. **Problem:** The biggest problem we faced was in our data scraping process for https://www.leagueofgraphs.com. Initially, we created codes that would loop through the top 100 players from 16 different servers to find most played champions, winrate, role,

and kill-death-assist ratio. To do so, we needed to go into each player profile. Unfortunately, we were not able to access it because it was a dynamic HTML.
Solution: We decided to not access the player's profile; instead, we only scrape from the overall ranking page. This limits our dataset to only champions and player names. In order to make up some of the other data, we manually assign roles and styles to each champion. We then use champions to assign roles and styles for each player.

3. **Problem:** Due to the limitation in problem 2, we only have categorical variables and we lack numeric data for analysis.
Solution: There is very little that we can do to solve this problem. Instead, we focus on our categorical and data visualization to answer our question. Additionally, we did a little more data scraping of the League of Legend player base and used it as our additional numeric data to enhance our introduction. While our research could be more interesting with additional numeric data, we were still able to answer our research questions with the data we scraped.

Part III: Visualization, Analysis, and Interpretation

Analysis and Interpretation:

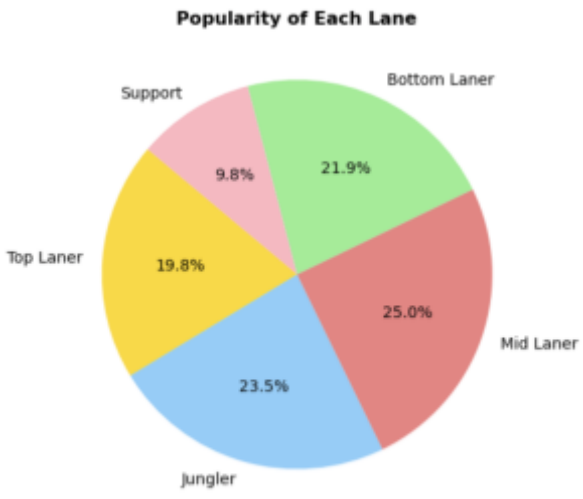

Figure 3

The first aspect that caught our attention was the overall popularity of each lane among the top 100 players from all servers. Figure 3 shows that the most favored role is Mid laner, with a 25% preference rate among players. On the other hand, the role of support is the least preferred lane at 9.8%. This shows that ¼ of the top players find that playing Mid Role allows them to climb the ranking ladder easier. On the other hand, Support roles will have a much harder time. This discrepancy can likely be traced back to the design of champions where Mid lane champions are equipped with aggressive powerful Attack, perfect for solo play that can dominate the game while Supports have limited offensive toolkit and must rely heavily on their Bottom Laner to find success in the game.

Our next area of interest lies in determining the favored style (Attack, Tank, Utility) for each role and whether it varies across different regions. To do this, we utilized stacked bar graphs to illustrate the distribution of style counts for each of our 5 roles. We know that certain roles such

as ADC, typically favor the Attack style, we are interested in identifying if there are any particular roles that have interesting trends.

After comparing the graphs, we found that the most interesting role is Support. While Mid laner, Bottom laner, Jungler, and Top laner all heavily use attack, the Support role varies from region to region. For example, when selecting Europe North & East and Taiwan in our double bar plot, we will see that while Taiwan has a good balance between Attack, Tank, and Utility style, Europe North & East does not use Tank style at all. This diverse trend is also evident in professional play, as demonstrated by the well-distributed representation of all three styles in the support category, as shown in Figure 5. We decided to conduct further investigation into the general preference for styles among support roles to find which have the most preference overall. Interestingly, our analysis from Figure 6 revealed that Attack style remains the most preferred style among Support roles.

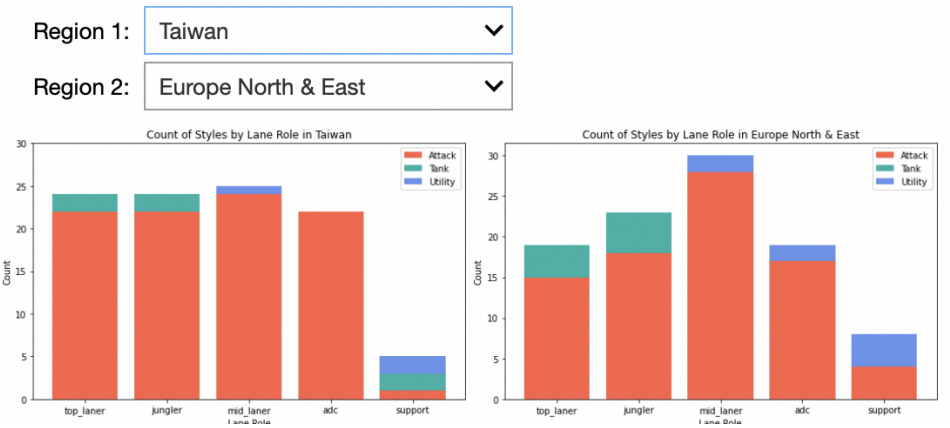

Figure 4

*** Figure 4-5, Double Bar Plot, is one of the few interactive plots we have created. The plot can be found in our Github,* https://github.com/calvinhoang203/Journey-To-Challenger-Analyzing-the-Strategies-of-Top-Players-Worldwide/tree/main*, inside our Jupiter Notebook. Our purpose in making this graph is to compare styles across different regions. To use this graph, simply select a region from Region 1 and Region 2 dropdown selection.*

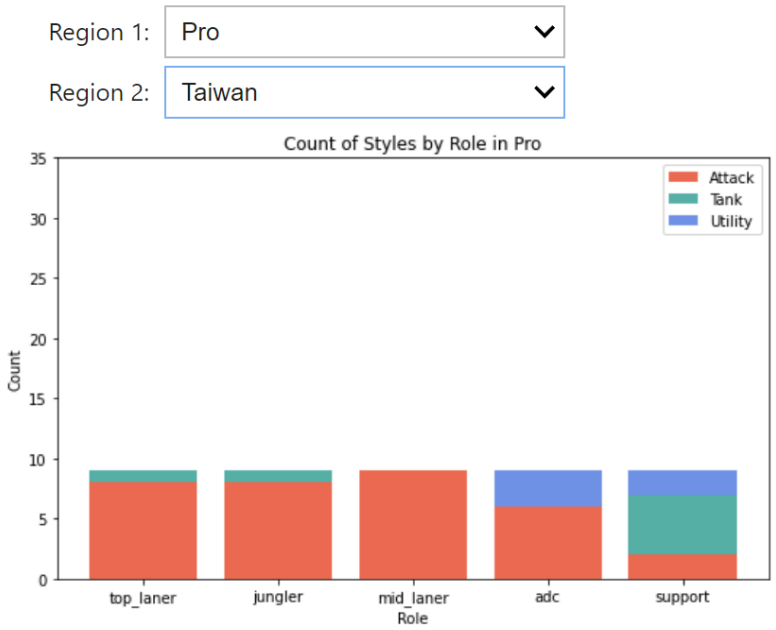

Figure 5

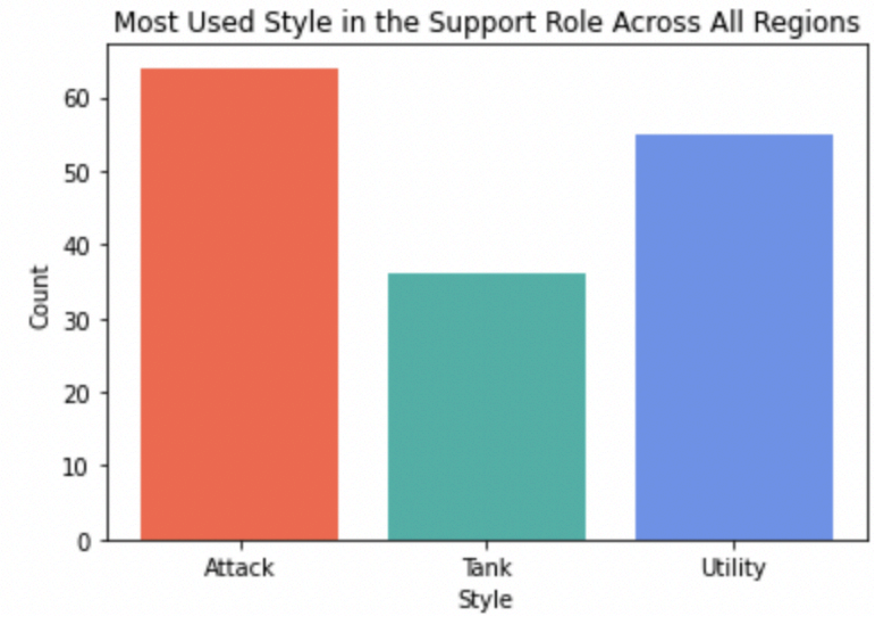

Figure 6: *General style distribution of Support role.*

Applying Style and Analysis

Finally, we want to apply the knowledge of style and champions to our own gameplay. Interestingly, all three of us researchers play support in different styles. Vy enjoys playing Morgana, an Attack champion. Hieu (Calvin) plays Janna, a Utility support. Quoc Anh's main champion is Blitzcrank, a Tank support. We want to compare the top 100 players' and professionals' champion picks with our own to see if our main champion is the best option for our chosen role and style.

After looking at our interactive plot, I find that Vy's pick of Morgana is not the best choice for Attack style in the role of support. The top 100 and professional players find more success playing a champion named Karma, an extremely aggressive support champion. To advance Vy's performance, we highly recommend Vy to consider changing to playing Pyke or one of the top three champions shown in "Top 3 Champions for Attack in Support" bar plot, Figure 7.

As for Hieu (Calvin), his pick of Janna is within the top 3 for the preferred champions among the top 100 and professional. To improve his performance, we recommend that Calvin attempt either the top ranked champion, Bard, or the second ranked, Rakan, as shown in Figure 8. In addition, he can consider transitioning to playing the Attack style for support role, as our earlier research shows that Attack-style Support champions find more success.

Finally, for Quoc Anh, his pick of Blitzcrank ranks as the second among the top three champions for Tank in Support, as shown in Figure 9. However, we highly recommend trying Nautilus, as he is the current number 1 pick. Additionally, we also recommend transitioning to Attack-style support.

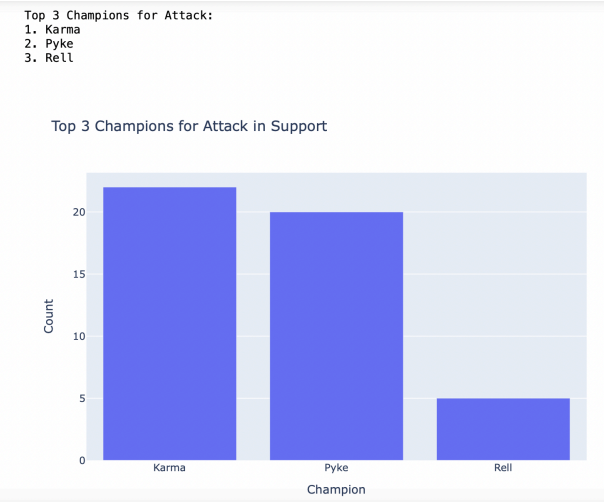

Figure 7

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Top 3 Champions for Utility:
1. Bard
2. Rakan
3. Janna
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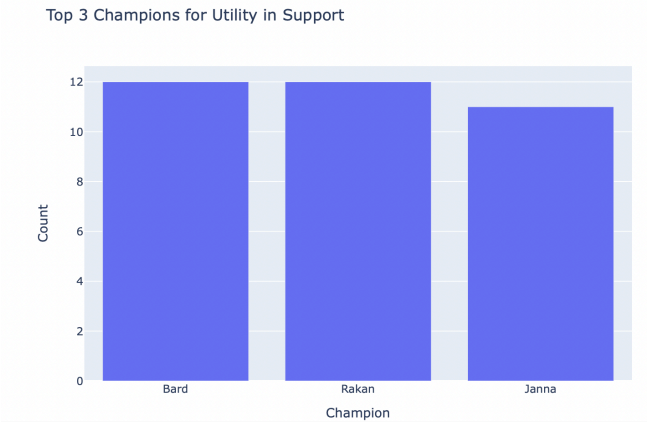

Figure 8

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Top 3 Champions for Tank:
1. Nautilus
2. Blitzcrank
3. Thresh
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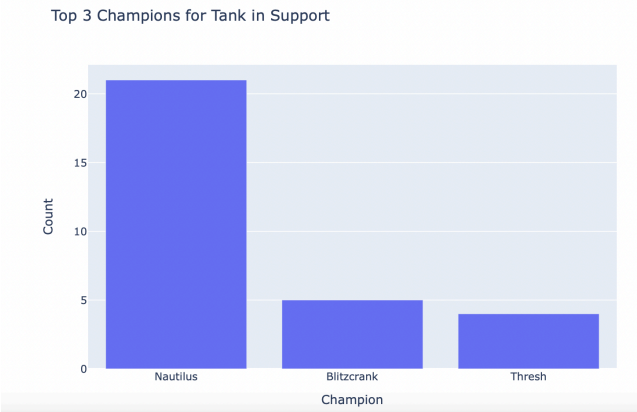

Figure 9

*** Figure 7-9 is from our Top 3 Champion Bar Plot. To access the plot, please go to our Github, https://github.com/calvinhoang203/Journey-To-Challenger-Analyzing-the-Strategies-of-Top-Players-Worldwide/tree/main, and access through our code. The purpose of this plot is to identify the current most preferred champions from top performing players, which, to a certain degree, highlights the current best champions for this meta. The plots are interactive with 2 filter options, Roles and Style. It's important to note that the result displayed in our report will be different from when users run our code, as the top players fluctuate daily.*

Conclusion:

As George Washington stated, "The best defense is a good offense". This not only applies to real life warfare but also to the game of League of Legend. From our research, we conclude that all 5 roles excel best in Attack style. This highlights the importance of proactive gameplay, prioritizing aggression to control objectives and gaining significant advantages. Attack is the

core principle of the game; therefore, our data analysis proves that having a strong offensive mindset is essential for success in climbing the rank ladder of League of Legends.