Data Analysis in Esports

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Esports

What is Esports?

- ✔ Esports is competitive video games.
- ✔ It can be seen in a professional, amateur, collegiate or other developmental environments.
- ✔ Not to be confused with gaming, something that anyone can do. Just like how anyone can throw a baseball, but not everyone is in the MLB.

League of Legends (LoL)

- ✔ LoL is a video game where two teams of five players try to destroy the enemy's team base.
- ✔ Before you reach the base there are other objectives on the map that act as defenses or roadblocks before you can destroy the base.

Goals

The goal of this research project is to compare Schalke 04's stats to its opponents throughout the 2020 season. With proper analysis, conclusions should be made of why Schalke was able to win seven games in a row to make the summer playoffs. In other words, contextualize the wins and losses at a base level. With these stats, Schalke should be able to identify their team's strengths and weaknesses and how to form strategies that will work for future matches.

While this data is old and out of date, it gives a base fundamental idea of how data in esports is important and must be interpreted to discover the best practices for a team.

Introduction

Just like in traditional sports where data analysis is starting to become more and more prevalent and advanced, data analysis is just as important in esports as well. However, esports is relatively new, where some people may not understand how important data is and more importantly the context that comes with the data. This research project will go through the League of Legends European Pro Scene from the lens of the Schalke 04 team, a team that went from last place to win 7 games straight to make the summer playoffs in 2020. This project will compare stats from the first half of the season to the second half and define what stats improved and provide some context to these wins. Data analysis will be done using Python.

Data analysis can also be used by organizations to help make informed decisions about roster swaps, player acquisitions, and talent development. One case of this is the team Cloud 9 and their decisions on forming a roster for the 2022 League of Legends season. Similarly, Schalke would make roster swaps after a few weeks of competition to better the team.

In the 2021 MAAC Collegiate League of Legends tournament, Niagara University's League of Legends team was able to use data successfully to predict what the other teams were going to play and the style of how the enemy team would play to help guide the Purple Eagles to victory.

Design and Development

All statistics are pulled from Schalke's LEC 2020 summer split season. The data was put into an excel spreadsheet and exported to python for further analysis. Python code was used for charts and graphics and other stats seen on this poster.

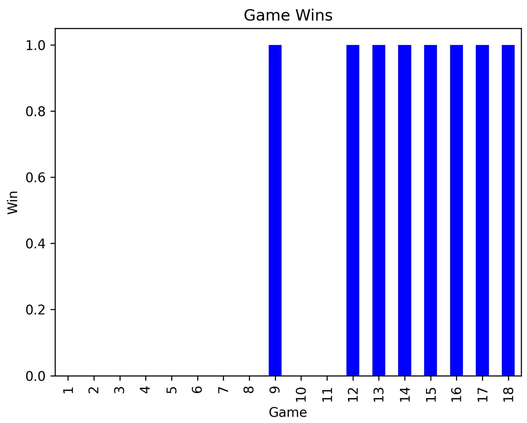
Key data models in this demonstration include dragons taken pre 20 minutes, Gold difference throughout the game, and champions picked. Dragons provide "buffs" or power ups to the team, some teams want them early other teams are fine with giving up dragons early. Gold difference is an important stat and usually indicates the team that is winning. Champions selected is also important to keep track of. Champions reveal what teams want to do or achieve in a game. For example Schalke picked a lot of late game champions later in the season, something where they found success. This example is why they lose out on dragons early on in the game, but they win the game later on. Their late game champion picks such as Senna and Tahm Kench allows for a safe early game and allows the team to scale and also allows their mid laner to play a scaling champion such as Azir, Zoe, and Corki.

Future Work

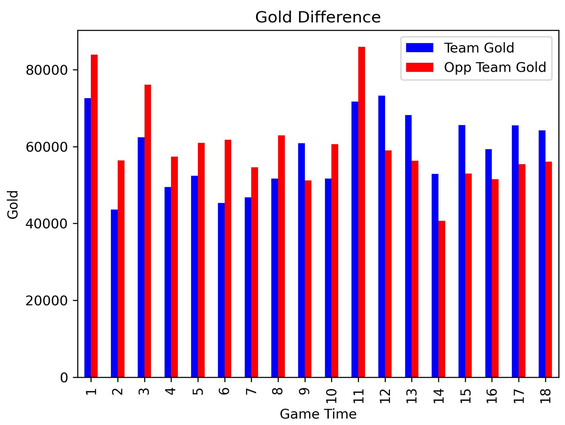
Looking at other deeper statistics such as individual team members. Individual moments in matches, that swing a team in a winning favor is also critical to look at. The point is, use data to help players, coaching, and staff to ask better questions. This is a brief overview that barely scratches the surface and only captures the team aspect. Future work would include comparing individual players and see how players can improve on the individual level. Stats on the individual level include but not limited to gold per minute, damage per minute, creeps killed per minute.

Data models can also be used. Professional organizations such as Evil Geniuses, have a successful model to predict when a team is winning or losing a League of Legends game based on many factors. This has only been proven to be successful as the team recently won the North American League of Legends Championship playoffs on April 24th 2022. Using automation to also gather data to collect information would also be important as many League of Legends games are played by players each day.

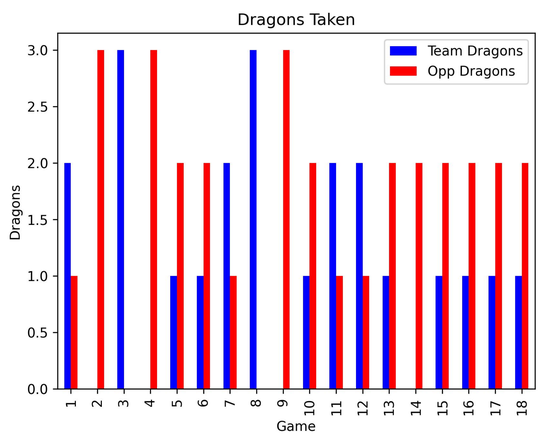
Ideally, this work should be done during a season where coaches can properly use the data to help their players understand future decisions and ask better questions.



Bar Chart representing the 18 games played in the season. A bar represents a win. A late surge in the season is demonstrated by this graph.



Bar Chart representing the gold difference in games. Typically the team with the more gold will win, the more gold in a game also indicates the length of the game as more gold has been accumulated. While Schalke gave up early dragons, their scaling composition allowed them to win out later in the game and thus granting them more gold.



Dragons taken pre 20 minutes. Typically teams will opt in or out of dragons depending on what style teams are playing. When looking at games 13-18, Schalke opted to give up early dragons due to the team composition they were playing.

Here are Champions Picked:

	Top	Jungle	Mid	ADC	Support
1	Maokai	Graves	Zoe	Aphelios	Lulu
2	Wukong	Kindred	Orianna	Ezreal	Karma
3	Ornn	Lee Sin	Zoe	Aphelios	Lulu
4	Aatrox	Jarvan IV	Corki	Miss Fortune	Yuumi
5	Ornn	Rek'Sai	Viktor	Ezreal	Yuumi
6	Gangplank	Trundle	Orianna	Ashe	Thresh
7	Quinn	Trundle	Le Blanc	Aphelios	Nautilus
8	Renekton	Lee Sin	Galio	Varus	Nautilus
9	Wukong	Lee Sin	Galio	Ezreal	Leona
10	Urgot	Graves	Twisted Fate	Ashe	Nautilus
11	Jayce	Olaf	Syndra	Ezreal	Nautilus
12	Ornn	Kha'Zix	Azir	Ezreal	Nautilus
13	Kennen	Nocturne	Orianna	Senna	Tahm Kench
14	Camille	Sejuani	Zoe	Senna	Tahm Kench
15	Ornn	Lee Sin	Akali	Senna	Tahm Kench
16	Camille	Sejuani	Azir	Ezreal	Bard
17	Shen	Kha'Zix	Zoe	Ezreal	Yuumi
18	Shen	Sejuani	Corki	Ashe	Tahm Kench

List of champions played. After game 10, Shackle figures out a solid consistent composition. Mid and ADC on safe scaling picks for late game insurance. Top and Jungle for tanky front line and early game presence. Support allows to fit whatever they need, usually more protection for mid or the adc (ex: Tahm Kench).

Evil Geniuses (2021, March 19th) *Data and Tech Innovation in Esports Workshop* [Video]. YouTube. https://www.youtube.com/watch?v=5LtV2pc1pKE

Cloud9 League of Legends (2021, December 27th) *Building the 2022 Cloud9 LCS Academy Roster ft. LS and Data (Roster Announcement)* [Video]. YouTube. https://youtu.be/cGhjk38x-Bs

LoL Esports VODs and Highlights YouTube. https://www.youtube.com/watch?v=huJZcJPbDn0&list=PLyQvIOxTaHdTrzQubUNQRU5G2GM2FKGXL