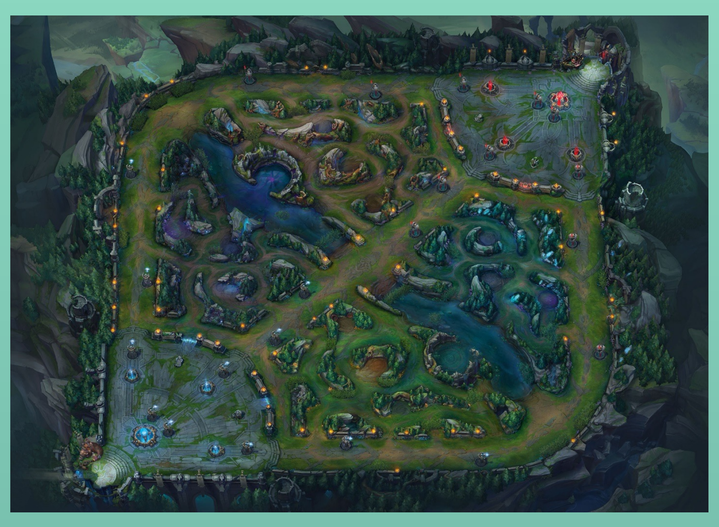
LOL ESPORTS MVP PREDICTION

Finding a statistical solution to determining the MVP in a LoL Esports season

Jackson Joyner

Introduction

In 2009, Riot Games founded by Brandon Beck and Marc Merrill released a game that would soon become one of the largest video games in the world, League of Legends . While the game was growing to astronomical levels, the interest in a professional level of league was growing at similar rates. This was due to having one of the best in-game ranking systems in modern video games. Players joined up and started teams to compete in various tournaments across the world, competing against the best of the best players. As this grassroots tournament scene grew, so did Riot Games' efforts to support the players in this pro scene. In 2011, the first world championship took place at a gaming convention called Dreamhack in Sweden, thus LoL Esports was born.



League of Legends is a Multiplayer Online Battle Arena (MOBA) game where two teams duke it out to destroy the other team's base. Each team consists of 5 players; Top lane, Jungle, Mid lane, Bot lane, and Support. Each player plays a different role in the team, each with varying responsibilities. Each lane has waves of minions (CS) which spawn that players attack to grant them gold and experience (XP). The gold is used to buy and upgrade items, while XP is used to power up your character by leveling up your abilities. The jungle consists of neutral monsters that grant gold and XP to anyone who kills them. These are typically killed by the Jungler of each team. As the game progresses, each team becomes stronger allowing for objectives to be taken, and eventually, a base gets destroyed, declaring the victor of the game.

The lolesports season is split into two splits, spring and summer split. There is an MVP award is given each split. In the 2021 LCS season, Spica, the Jungler for TSM was awarded the MVP for the season, due to his outstanding performance, on a lower-tier team. I thought that the Jungler for 100 Thieves, Closer, was a more deserving candidate for his team, by taking them to the finals and winning the 2021 LCS Championship. Historically, this award was decided based on regular-season performance and did not include post-season performance. There has been discussions on changing this award to include post-season performance. I wanted to see if there was a statistical way to determine this MVP for the 2022 season.

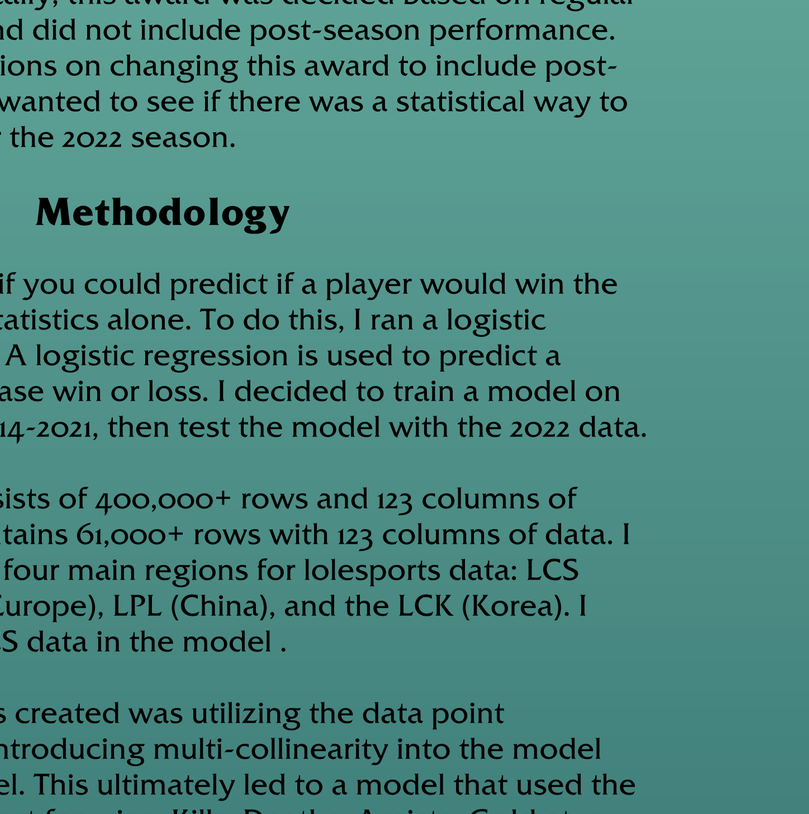
Methodology

I wanted to test to see if you could predict if a player would win the game, based on their statistics alone. To do this, I ran a logistic regression on my data. A logistic regression is used to predict a binary variable, in my case win or loss. I decided to train a model on lolesports data from 2014-2021, then test the model with the 2022 data.

The 2014-2021 data consists of 400,000+ rows and 123 columns of data. The 2022 data contains 61,000+ rows with 123 columns of data. I trained the data on the four main regions for lolesports data: LCS (North America), LEC (Europe), LPL (China), and the LCK (Korea). I then tested the 2022 LCS data in the model .

One of the first models created was utilizing the data point "Total_CS" which was introducing multi-collinearity into the model which is bad for a model. This ultimately led to a model that used the following variables to test for wins: Kills, Deaths, Assists, Gold at 15, XP at 15, Earned Gold Share, and Earned Gold per Minute.

Once the model was built, I took the predicted outcome of the game and found the top 10 highest average predicted outcome players. I compared these ten players with the 10 potential MVP candidates for the 2022 LCS spring split.



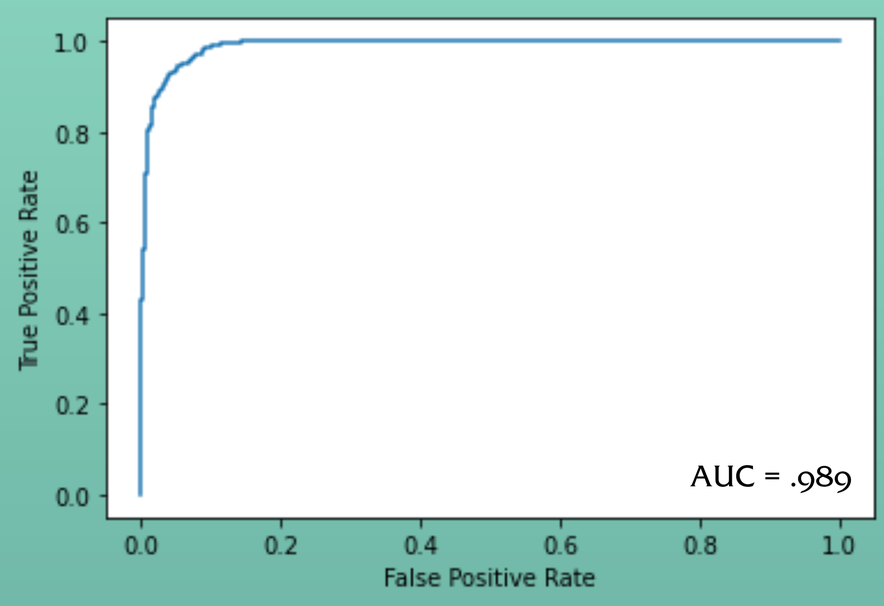
Outcomes

Variable	Coef.
Intercept	5.66
Kills	1.24
Deaths	0.36
Assists	1.37
Gold at 15	0.99
XP at 15	1.00
Earned Gold Share	0.21
Earned Gold per Minute	1.15

Table 1: Model Exponentiated Coefficients

Confidence Intervals	.05	.95
Intercept	1.09	29.46
Kills	1.03	1.50
Deaths	.29	.45
Assists	1.25	1.50
Gold at 15	.998	.999
XP at 15	1.00	1.00
Earned Gold Share	.17	.27
Earned Gold per Minute	1.12	1.17

Table 2: Model Exponentiated Confidence Intervals



playername	predscore
Eyla	0.731020
Bjergsen	0.720203
Santorin	0.682445
Inspired	0.678617
Hans sama	0.674816
Vulcan	0.673438
Winsome	0.672813
Bwipo	0.669684
Danny	0.661141
Impact	0.648023

Table 3: Best Performing Players

94% Accuracy	Loss	Win
Loss	759	41
Win	48	752

Table 4: Confusion Matrix

Results

The model produces a 94% accuracy rating. After cross-validating these results, we see an average accuracy rating of 94.3%. This provides evidence that these results are not one-offs, and this model is not overfit.

The model suggests that Elya, the backup support for Team Liquid should be the 2022 Spring Split MVP. Currently, Elya wouldn't be allowed to win the MVP, as he didn't in enough regular-season games. Personally, I agree with this notion, as Elya only played a few regular-season games. This would mean that Bjergsen, the Mid-Laner for Team Liquid would be the MVP, according to the model.

The actual MVP, Summit the Top-Laner for Cloud 9 isn't even in the top 10 players according to the model. This is due to his poor post-season performance. Summit was one of the most dominant players for the regular season but regressed in the postseason. Three players that weren't in the 10 possible MVP candidates but are predicted in the model are Impact, Inspired, and Danny, who both play for the championship-winning team Evil Geniuses.

Going into the postseason, Evil Geniuses were the 4th place team going playoffs. After losing in the first round, they went on an 11-game win streak in the loser's bracket to win the postseason and hoist the trophy. In those games, these three players played extremely well, and the model shows that.

Takeaways

- Change the data used in the model to predict actual per split MVP's
- Could be a useful scouting tool to find new players
- Seems to prefer consistency over pop-off games
- Model doesn't seem to prefer one position
- Small dataset for 2022, would be interesting to see how it compares in summer split.

Thank You

Tim Sevenhuysen – Oracles Elixer
Interviewed early in the process to determine which variables to look into, and what to look out for

Oracles Elixer
Providing easy access to LoLesports data

Riot Games
Hosting all games and providing the MVP results