League of Legends: Champion Mastery Analysis

LoL is one of the most popular multiplayer games but is still widely notorious for not being noob-friendly, in part due to its many game mechanics and its ever-expanding roster of over 150 playable Champions.

Team Name: Champions

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Toolbox

Database

apipheny

aws

PostgreSQL

Data Analysis

jupyter

pandas

scikit learn

TensorFlow

Web App

JavaScript

HTML 5

Bootstrap

Data Visualization

tableau

Database

| Riot Games | Google Sheets & | Amazon Web Services | pgAdmin 4 |
| Riot Developer Portal | Apipheny API Connector | (AWS) | |

Riot Games
Riot Developer Portal

The specific API from Riot's Developer Portal involves inputting summoner data to pull their game/champion stats, which is what we will be using in our machine learning model.

Google Sheets & Apipheny API Connector

With the help of Apipheny API Connector, we were able to utilize the API and pull the dataset into Google Sheets.

Amazon Web Services (AWS)

Our database is connected to AWS, giving everybody access to the information via pgAdmin4.

pgAdmin 4

Using pgAdmin 4, we are able to merge all datasets (Ranked Leagues, Champion Mastery, Champions Information, and Summoner Information)

Glossary

- Summoner: the players (you!)
- Champion: the characters that players are able to select
- Diamond, Master, GrandMaster: these are all ranks that players can work their way up towards
- Champion Points: earned after completing a game with that Champion, and used to level up and gain rewards

Champions

- Lots of different types with different skills
- Currently 159 available to choose from
- New users can get a certain number of Champions for free, after that, they can play to earn more points to purchase Champions
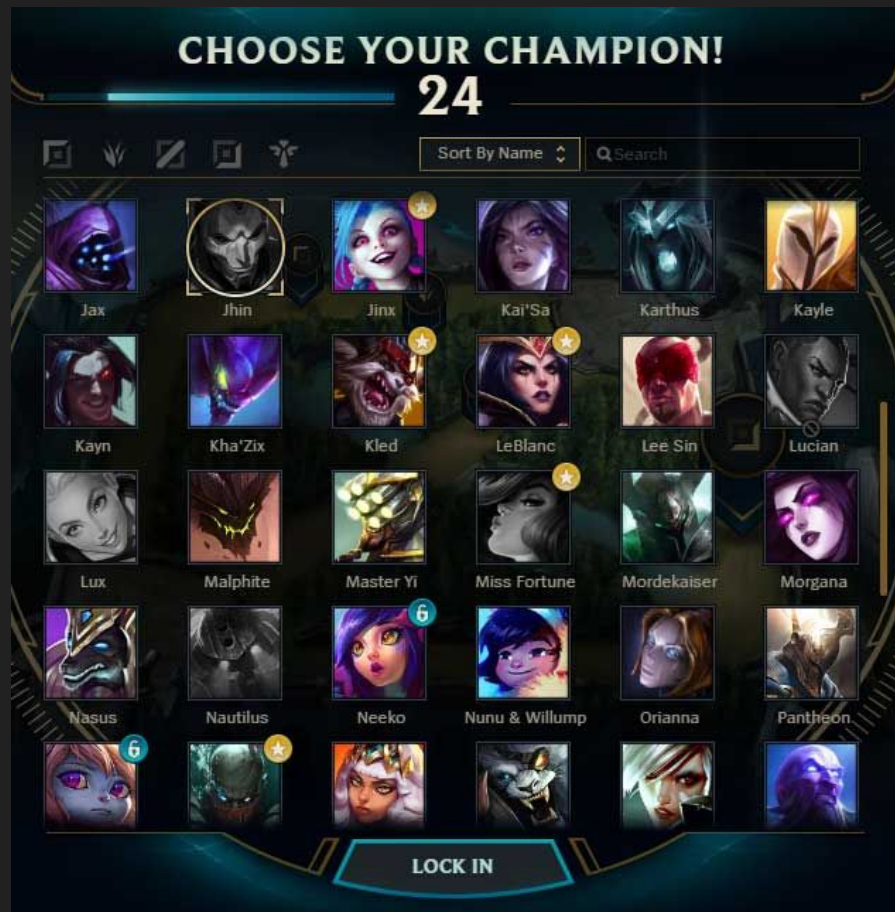
Questions

How long does it take to master a Champion? How many matches would it take?

How "hard" is it to play a Champion?

Are the newer Champions harder to learn than the original lineup?

Which Champions have similar characteristics?

What's our data?

League of Legends API:

- /lol/champion-mastery/v4/champion-masteries/by-summoner/{encryptedSummonerId}
- Official API from League of Legends that shows all champion mastery entries sorted by the number of champion points descending
- We pull only summoners ranked Diamond I and higher

Champion Data:

- Pulled from DataDragon
- A comprehensive list of all champions that includes both quantitative (attack, defense, magic, etc.) and qualitative (name, title, blurb) information

How are we using our data?

League of Legends API

- Pull Summoners ranked Master and above
- Look at the match history of those Summoners
- Create a machine learning model based off that match history, using the ChampionPoints

Tools to create our Dashboard:

Champion Stats

- Match the Champion Names with the Champion IDs from the API data
- Create an easy-to-use website that allows beginners to explore Champions and their stats

Machine Learning

| Logistic Regression | Basic Neural Network | Deep Learning Model | Random Forest |

Logistic Regression
1) Split and train the dataset
2) Scale the data
3) Define and train the logistic regression model
4) Evaluate

Model accuracy: 0.400

Basic Neural Network
1) Define the basic neural network
2) Compile sequential model
3) Train and evaluate the model

Model accuracy: 0.315

Deep Learning Model
1) Define the deep learning model
2) Add the hidden and output layers
3) Compile sequential model
4) Train and evaluate the model

Random Forest
1) Fit and transform OneHotEncoder
2) Split and train the dataset
3) Scale the data
4) Create a random forest classifier
5) Fit and evaluate the model

Dashboard Blueprint

Interactive elements to include drop down list of Champions and their stats