The eSports Statistics Bot

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HO 496 Capstone Revised Proposal

Honors School

Monmouth University

December 9, 2022

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Abstract

eSports has gained much traction in recent years, bringing to gamers what sports does for athletes. As with any professional sport, viewers want player statistics, and they want them during games and conversation. The objective of this project is to provide these statistics in a convenient and quick manner to players wherever and whenever they need.

Discord, the text and voice communication platform widely used by PC gamers, has a feature called bots. These are user-made programs functioning as users that can send messages and join voice calls. The eSports Statistics Bot takes queries from users and displays an information card with data about a requested player, team, or tournament for a specific game. This bot aims to make eSports information readily available on the platform most strongly associated with eSports and PC communication.

This proposal will begin with a breakdown of the project, discussing the technologies that have been used and the method for creating the eSports Statistics Bot. It concludes with a Literature Review discussing the likeliness between sports and eSports and determines what motivates fans to watch eSports.

Introduction

To explain the need for the eSports Statistics Bot (ESB), there are a few services and concepts that must be defined and explained, starting with eSports. While sports have had a hold over the entertainment industry for years, the popularity of eSports has grown significantly in the recent decade. Like regular sports, eSports is a something not only gamers enjoy; many play the same games as these professionals for leisure, while others solely watch eSport for entertainment. It is for this reason that tens of thousands watch eSports live streams daily, when in season.

Valorant

ESB covers two main games: Valorant and League of Legends. Starting with Valorant, it is defined as a team based, tactical, first-person shooter. There are two, five person teams playing attacker and defender sides. Attackers are given one minute forty seconds to plant a device called the spike on one of multiple sites labeled alphabetically. Once the spike is planted, they must defend it for 40 seconds allowing it to explode. The defenders protect each of the sites, trying to stop the attackers from planting the spike. In the event the spike is planted, the defenders must try to defuse the spike before it blows up. Before each round there is a buy phases where all players can use points to buy from a selection of weapons and utilities. A round can be won if the spike explodes, spike is defused, time runs out, or all players of a team are killed. After 12 rounds the teams swap sides, and the first team to reach thirteen points wins. In the event the score reaches 12 to 12, the game goes into overtime where a team needs to win by two points (ex: 14 to 12). Valorant players are required to have fast reaction times and clear communication with teammates to be successful.

League of Legends: Summoners Rift

The next game is League of Legends (LoL) which has two main components: Summoners Rift and Team Fight Tactics. Summoners Rift, a multiplayer online battle arena, is the main mode for LoL and has been played at the competitive level for over a decade. There are two teams with five positions on each. Each position has a different job to do and can pick from a cast of over one hundred champions. There are two teams of six people each protecting a *rift crystal* in their bases at the far ends of the map. There are three lanes (top, middle, bottom) that connect the bases to one another. The characters travel along these lanes, fighting enemy turrets and each other as they try to destroy the enemy rift crystal. Players gain gold, the currency used to buy abilities and items, through kills and surviving extended periods of time. These make characters more powerful and are imperative in winning the game. Once a rift crystal is destroyed the game ends. LoL is a hugely different game when compared to Valorant, its players must have map awareness and be able to switch targets instantly if they hope to secure a win.

Other Games

After completing development of ESB, coverage of four other games have been included. These titles are Overwatch, Counter Strike: Global Offensive, Rainbow Six Siege, and Rocket League. The rules for these games varies widely, but the skills needed to effectively play them are the same as discussed for League or Legends and Valorant.

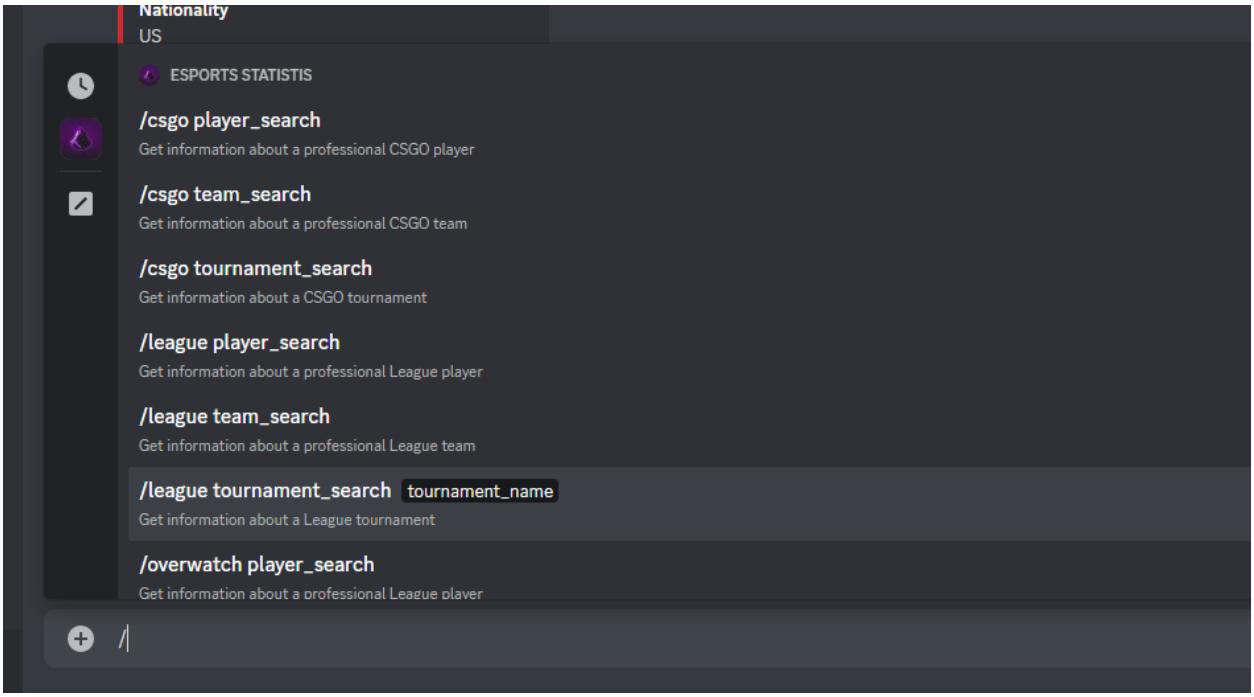
Discord

While playing with friends, most gamers use a platform called Discord to communicate. It is a messaging platform like Skype, Microsoft Teams, and TeamSpeak that supports both text and voice chat. Discord operates on servers created by users. Someone can create a server (either

public or private) and invite other users to join. Within servers there are text and voice channels, giving users a variety of ways to communicate. While the main use of Discord is communication during games, it has quickly become a social environment for casual conversation due to its simplicity and vast number of features. It is the preferred platform for gamers because it allows friends to communicate in and out of games while taking up little system resources.

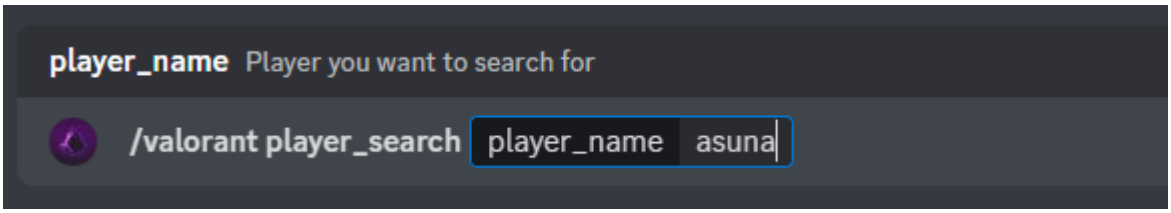
Understanding a Bot

Within Discord users can create always running applications called bots. These are programs, written in either Java Script or Python, which appear as users in servers. They interact with other users in text and voice channels and serve to make the communication experience better. ESB is a text-only user, operating in specified text channels as permitted by server administrators. Text-channel based bots work on a "called upon" basis. Commands for bots typically begin with a slash. This is a new convention being pushed by Discord and as such is slowly being adopted by existing bots. When a '/' is typed Discord will show a popup with the commands bots in a server have. As a user continues typing the name of the command the list narrows down to predict what the users wants. The user can either type out their command completely or select an option from the popup. If the command has user input, called parameters, text boxes will appear indicating to the user they must enter something.



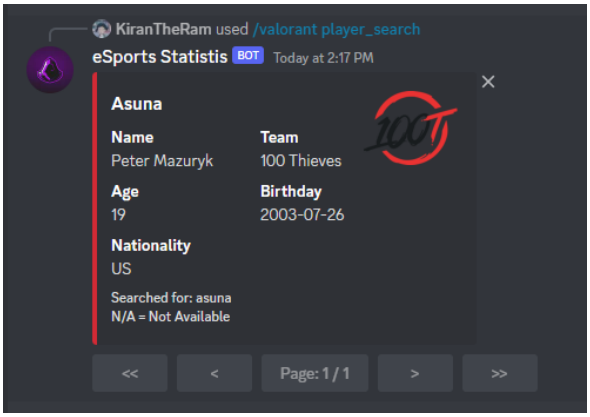
Typing "/" prompts the user with command options

Once the command is sent, Discord calls upon the bot to execute the function the user requested, passing along any parameters the user entered. As an example, lets observe usage of a command that searches for a professional Valorant player. A user would enter "/valorant player_search asuna". The first part, "valorant" specifies which game the user is talking about. The second part "player_search" is the name of the function being run. In this case we are looking for information on a single player. The last part, "asuna" is the parameter. Here the user can enter the name of whatever player they want to search for.



Example of a full command

After receiving the information the bot posts an embed into the text channel, which is a card of information pertaining to the requested player.



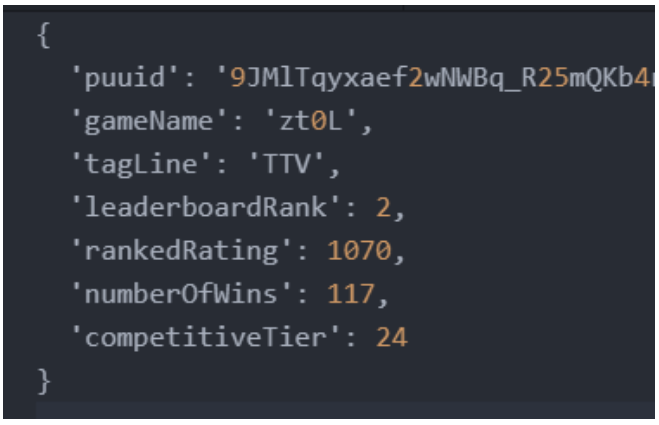
Information card returned from bot

Method: Attaining the information

This project hinges on the availability of player, team, and tournament data for the games specified. Luckily, there are a couple publicly available APIs that provide statistics for players, teams, and tournaments. The provider I settled on, PandaScore, holds information for over ten games. The first step to accessing the API is obtaining an API token through their developer portal. The token expires after 24 hours after each refresh. For each game there is a special link that provides the data when the token is appended to the URL. The data for each is given in a

json layout through the API call. The json can then be marshaled into a python dictionary making parsing to the data easy.

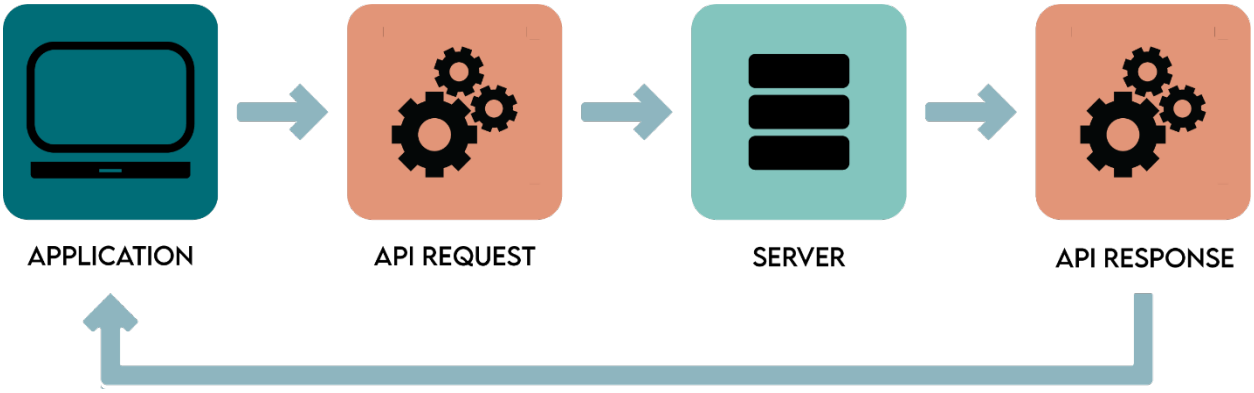
Example of JSON from API



Example of Python Dictionary

How the API works

This diagram simplifies the way an API works. An application needs information on a certain topic but does not have it. It reaches out to a server that has the information it needs. This is done through an API Request. The server receives this request and prepares the information it was asked for. The server then sends out an API Response with the information back to the application. The major benefit of using an API is ensuring the most up-to-date information is always available to the application.



Most live service games today break their content updates into seasons. When a new season launches, new content is added to keep the games fresh. Valorant has episodes, which consist of smaller sections called acts. Each act brings updated content to the game, but also a refresh to the global rankings. When calling on the API an “act id” must be specified so that information for the proper time period is displayed. The act ID is obtained through another API for in-game content which also includes weapon damage and agent ability information. Using this API the current act ID can be obtained, and then passed to the *ranked* API. Once the token and proper act id are appended to the request URL, player information is sent as json to the application which is then converted into a Python dictionary. From here accessing the data is simple, as it can be filtered by player name or global ranking. This gives users two ways to

search the top players. Since both APIs are provided by the same company, the method described here is roughly the same for all games ESB covers.

Literature Review

Abstract

The idea of eSports is nothing new, dating back to 1972 where students at Stanford University competed by playing the game “Intergalactic Spacewar Olympics”. While not as old as most traditional sports, eSports has risen in popularity over the past decades to a point where its following matches and sometimes exceeds that of other sports. To figure out what led to this massive growth this paper will (i) analyze what information is available about this still growing genre and how it is used (ii) compare eSports to traditional sports in terms of physical requirement, following through viewership, and participation and (iii) determine what factors lead people to watch and play videogames competitively, leading to participation into eSports.

Information available and what it is used for

Collection and analysis of eSport player statistics has a wide range of uses, both recreationally and competitively. Professional players and coaches use the data to better their play and determine what aspects need to be improved per player and what elements the team needs to work on (Novak, Andrew). An example is the specific motor skills and level of coordination required in different games (Hilvoorde, Ivo). Outside of competitive improvement, there is an even greater demand for statistics from viewers and fans. It has been noted by sports and eSports fans alike that it is often less stressful and more enjoyable to watch a sport rather than play the sport (Schmidt, Samuel). Watching eSports provides a way for people to stay

connected to the games they love without having to actively participate themselves. That said, one of the largest motivations for people to watch eSports is to be inspired to play the games themselves (Macey, Joseph). Combined, these factors account for the current demand for eSport statistics. Fans not only want to imitate the stunts displayed by professionals, but they also want to relate to these players and be inspired by them (Sun, Yaoyao).

Is eSports a sport?

Before discussing why people watch eSports, it must be addressed whether eSports can be considered a sport. In proving that they share enough commonalities, the motivations behind traditional sports fans can be applied to eSports fans.

While eSports has been rapidly gaining popularity, many view it as a recreational activity rather than a competitive sport. To compare the two, the major factors of athletic sport must be identified and related to eSports. A few journals analyzed this problem and identified key comparison points that could prove eSports validity as *sport*. They were: physical requirement, following through viewership (Jenny, Seth), and participation (Llorens, Mariona).

Physical ability is a strange metric for this comparison because there is no standard for it. In traditional sports such as basketball or soccer players have exceptional physical ability because those sports require it. Other sports like chess rely more on strategy, hence its players are often not exceptional in any physical regard. This was explored by Kirstin Hallmann who researched if eSports more closely resembled a recreational activity or a sport. She made the argument that activities classified as sport today require little physical ability, noting examples such as billiards and curling (Hallmann, Kirstin). By this logic, the lack of major physical

requirement should not be a barrier in counting eSports as sport. Skill however is needed in all sports and there is a great deal present in all eSports titles.

The specific “physical ability” required to participate in eSports is referred to as motor skill, defined as “functions that involve specific movements of the body's muscles to perform a certain task” (“Motor Skill”, Wikipedia, 2022). In multiplayer online battle arena games (MOBAs) the motor skill required is the ability to press sequences of key controls in certain situations in a fast manner. The speed at which a player can press these keys given a circumstance is what separates players into professionals and amateurs (Lange Andrey). Aside from superior motor skill, videogames of all genres have been found to require digital intelligence, expertise in prolonged computer interaction in a seated position, efficient communication, and enhanced cognitive abilities (Smithies, Tim). Additionally, it is known that most competitive gamers must be able to make strategic use of in-game information for decision making. This is often referred to as “game-sense” and is a difficult skill to master. It requires a fundamental understanding of the game being played and anticipation of numerous other players’ actions. The only way to improve this skill is to play a specific game frequently and for an extended period (Appelbaum, Gregory). Once one has trained and honed their skills in each aspect mentioned, they are considered “well-played", and often preform at the highest level a game has to offer (Ferrari, Simona). Though the requirements of skill present in eSports is not similar to those in popular traditional sports, there are plenty of specialized skills required to play videogames at the upper level.

As for following, eSports is on par (and occasionally out-classes) traditional sports viewership. During the 2014 World Championship, League of Legends (LoL) reached 134 million concurrent streams while lower bracket games and regional tournaments had an average

of 50,000 (McCormick, R.). To compare, the Superbowl in the same year reached only 112.2 million viewers (all together, nonconcurrent). The Superbowl is knows as one of the largest sporting events each year and it having over 20 million less viewers than the LoL Championship proves that eSports can at least match traditional sports in viewership.

In terms of participation, videogames have one of the largest player bases in the world year-round. League of Legends specifically, one of the oldest and most popular eSports titles to date, has an average 27 million daily players (Engerman, Jason). Traditional sports can be played anywhere the right equipment can be found, but typically a sport is only played during its season. For instance, many outdoor sports such as baseball have seasons limited to roughly eight months out of the year, typically starting in spring and ending in the fall. Outside of these months professional players train and the number of recreational games drops due to the weather. Videogames are not limited by weather conditions and have consistent player numbers throughout the year. Further, eSports tournaments are spread out among games and often run year-round as multiple tournaments are held. An example of this is Riot Game's *Valorant*. Its main competitive league, titled "Valorant Champions Tour" (VCT), is made up of three major tournaments and spans eight months starting in winter. During the off season, the women-only league, titled "Game Changers" is held. This means the game is played competitively year-round, whereas traditional sports take month long breaks.

Why are people watching eSports?

eSports offers itself as a pastime almost anyone can participate in, be it through watching tournaments or by playing games. From a study conducted by Ka-Man Leung, it was found that people across the world of all ages take part in videogames at a competitive level, with majority of results coming from highschoolers and young adults (Leung, Ka-Man). It should be noted that

at the professional level, the majority of ages range from 17-30 (Liquipedia.net, 2022). With such a wide-reaching audience, and established similarity to sports, the many reasons people watch eSports can be examined using both studies on eSports and by analyzing the motivation of traditional sports fans.

For one to become better at a task it requires practice but having the discipline to consistently train and learn about that task is easier said than done. Additionally, practicing something constantly can become boring and often leads people to giving up. In the case of eSports and becoming better at a video game, it is said that self-regulated learning is the best way to increase one's skill. Practicing certain moves or key combinations in a game can increase one's reactiveness to in-game situations. The ability to execute complex key-combinations while not breaking under the pressure of an intense match is key to winning games (García, J.). But for someone starting out, identifying what to do under different circumstances is difficult. Professional players have determined the best strategies to use in games and have the speed to execute them when needed. Through watching eSports, players can better themselves by not only learning game mechanics, but by observing how others participate in these games (Kleinman, Erica).

The athletic sports scene has notoriously been dominated by men. There have been successful efforts to change this, including all girl leagues for sports like basketball (WNBA), but in general it is a male dominated field due to the stronger athletic ability of males. eSports is much less reliant on overall physical ability, though it is still mostly male players in official eSports tournaments. Seeing the state of traditional sports, eSports titles have begun an earlier push for women in eSports with the creation of women only leagues and teams which has empowered women to join the sport (Kim, Se). This is evident in Valorant's *Game Changers*

Tournament, an all-girls league that began the same time as the other official tournaments. By creating an eSports scene with women in mind from the start, it has become one of the most successful women tournaments of any eSports title based on viewer numbers (over 35,000 peak viewers in 2021).

The largest factor slowing the rate in which women participate in videogames is gender bias in online games that leads to harassment and exclusivity. Videogames have been pitched as a male activity since its creation. There have been games designed for girls and marketing has become gender neutral in recent years, but the underlying idea that games are male oriented has persisted through time. This alone serves as a barrier stopping women from trying videogames. When female players do decide to play, online games are plagued by gender biases. Women are often harassed for playing poorly or are expected to fill roles "more fitting of women," such as a healer (general character in videogames that provides health and support to other players) (Rogstad, Egil). While these factors often drive away the female audience from both participating and watching videogames, it empowers some to try even harder and out preform their male counter parts. It is often this group that makes up the female eSport industry, becoming the role-models for young female gamers who hopefully follow in their footsteps (Madden, Daniel).

Despite their best efforts, eSports is just not a good fit for many people. Training for a videogame is an arduous task and is often looked down upon by society. This discourages players from trying and often leaves them feeling defeated. Prior to the age of streaming, many would outright quit the games they played and seek enjoyment elsewhere. Today, eSports tournaments and professional's personal games are streamed on websites like YouTube and Twitch, giving players a way to avoid the stress and effort of training while still enjoy the games

they love (Toth, Adam). There are cases where streaming is preferred for its two-way communication between streamer and viewer through a text chat. Often tournament announcers will address comments from the chat and hold discussions with viewers during breaks. When professionals stream their personal games (games played for fun or practice) they let the chat make decisions for them and talk to viewers while playing. By watching eSports, viewers avoid stress and training while picking up techniques and ideas from the best players (Jang, Wooyoung).

It has been found that one's likelihood of watching eSports has been linked to their gaming frequency. Those who play videogames frequently are more likely to watch eSports than those who play rarely or not at all (Jang, Wooyoung). As with any competitive sport, there are times when players become angered by the game or other players. It can be a call from a referee or mediocre performance from a player. This anger is so common it has been coined "athlete aggressiveness" (Hamari, Juho) in sports and "tilt" in the online gaming community. This anger is usually experienced by playing a game for a long time, eventually running into frustrating situations. In a study surveying League of Legends players it was found that "… players are tilted most commonly by their own teammates rather than opponents, with their most negative tilt responses reserved for themselves" (Wu, Minerva). The latter part of the statement refers back to the stress and demotivation players feel when they are not preforming great in game. To combat tilt people have again turned to eSports and personal streams. These outlets allow players to feel connected to the games they love while not having to deal with the stress that accompanies it (Poulus, Dylan). Watching streams can help calm players down after an aggravating game, without having to stop participating in the game altogether.

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