

HOW WELL DO YOU KNOW YOUR FIFA PLAYERS?

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The link to our Github repository is available [here](#).

INTRODUCTION

FIFA series has enjoyed a monumental popularity since its inception, now known to virtually anyone who is into football or videogaming. It is a football simulation video game published by Electronic Arts (EA). This latest of the series, FIFA21, was released on October 9th 2020 and it can be played in Microsoft Windows, Nintendo Switch, PlayStation 4 and Xbox One.

EA goes through a rigorous player assessment process and quantifies the player attributes every series. The steady improvement of this process and rising computational power of gamers have allowed EA to create a rather realistic simulation game. This, in turn, means strategy aspect is as important as the gamer's control skill. Gamers cannot just recruit the "best" players, but need to be careful with the available fund, and acquire players that fit the game plan and the existing squad. Meaning, gamers often need to spend considerable amount of time comparing different players and judge which player would be worth the investment. For this purpose, our project aims to create a self-service platform where different players can be easily compared with various visual aids.

Note, to avoid confusion, "players" refer to football players in FIFA21, where as "gamers" refer to people who play the game, throughout this report.

DATASET DESCRIPTION

The dataset was found on Kaggle available on this [link](#). [1] As the player stats are updated every installment, we decided to confine our scope to FIFA21.csv data only. The file contains a list of all the football players available on FIFA21. The data is highly extensive, encompassing personal information, wages, and all the quantified technical aspects related to the player attributes such as attacking, defending, movement scores and goalkeeping. We also limited our scope to the five biggest leagues in the world due to the limited computational power, namely, *League 1*, *Premier League*, *La Liga*, *Bundesliga*, and *Serie A*.

The original dataset contained 3093 rows, which corresponds to the number of players, and 105 columns. After identifying the characteristics needed to create the dashboard, 48 attributes have been chosen. These can be classified into information of the player, such as nationality and club; physical and mental characteristics, for example pace and aggression; and finally football skills that can be further divided for example into attacking and defending.

VISUALIZATION AND INTERACTION CHOICES

The past decade can be highlighted by the vehement growth of video game industry with the estimated industry revenue of 114B USD in 2020 compared to music (54B USD in 2018) and movie industry (35B USD in 2019)[2][3][4]. The popularity has only grown in 2020, as government restrictions and social distancing pushed people to online entertainment. In fact, the gaming industry enjoyed a special status as it always has been primarily an indoor activity even before Covid-19, unlike movie and music manias frequenting to cinemas and concerts.

Despite many controversies, EA remains to be one of the largest game company with FIFA series being one of its flagship products. The latest installment, 1.5 million digital copies of FIFA was sold worldwide in its first month, 0.3 million more than the sales of the previous year's edition[5]. The entry barrier and learning curve is rather low to casually enjoy the game. However, for anyone who is serious about playing matches against other gamers, it is imperative to study player attributes; resources are limited, and every gamer has their own playstyle. In turn, it is important for gamers to devise game plans and form the optimal squad based on available data. For example, just like in the real world, if a gamer's playstyle is focused on counter-attacks, a cheaper high *pace* player would be the choice for the team, instead of more expensive player who may be better in other stats but very slow. For many FIFA gamers, comparing different players is a daily activity. This visualization aims to help anyone who wishes to make data-driven player recruitment.

In our dashboard, all leagues and all player types are selected by default. However, we have provided an option to filter by specific league (multiple selection possible) and player type if the user wishes to. Then, the user can simply type the last name of the players to be compared, up to 5 players. A general information about the selected players' nationality, league, club, position, preferred foot, wage and market value is provided in a simple table.

The visualization moves onto base attribute overview per player through a bar chart. In this visualization we opted to show more of an overview of these stats per player, rather than a comparison. This decision was made as we initially hoped to provide breakdown of each stat in the following section (however this plan was later discarded, as discussed in Limitation section). If comparison was the sole focus we would have grouped the bar, we would have grouped the bars for each attribute rather than player. However, with the attribute values visible on each bar and different attributes color-coded, comparison is still very easy. Radial charts would follow to give further break-down of "physic" attribute.

The next section provides a radar map of positional attributes (attacking, defending, and goal keeping) the selected players. Users can simply click on the attribute group they are interested in and multi-selection is possible. We included "movement" group as well, as this group has very high interaction with positional attributes in the game.

Throughout the project, we intended to create a most intuitive user interface possible. We provided further tips and instructions to help the user explore our visualization more smoothly.

TECHNICAL ASPECTS

The project was developed using Power BI. The csv was downloaded, data have been selected, and some orthographic mistakes have been fixed.

In order to develop the project, the same dataset has been modified and cleaned to get to the three different components of the dashboard. The radar, bar and radio plots were created using the table with the necessary unpivoted columns. Lastly, for all the tables to be connected between each other, an additional table with the IDs was created.

DISCUSSION

Limitations

Unfortunately, power BI was not able to guarantee uniform colors for the players across the dashboard. This appears to be a common problem that power BI users have faced, yet without a definitive fix. We have tested default colour setting, custom visualization development, and restructuring of datasets without success. It would be ideal to develop a measurement to attribute different colours to different players based on the player ranking and use the same colour for the player throughout the report.

Another aspect that can be improved is the special characters and accents in the players names. The dataset contained several different special characters. We had to “replace value” one special character at a time, but it would be better to find an automatize solution for it in case we want to use this with fifa datasets from different years.

Nevertheless, computational power may have been the most serious limitation. For this project, we had to consider not only our available resources but the users as well. To improve the responsiveness of the interactive visualization, we had to significantly restrict our scope and amount of visualizations used. For example, breakdowns of each base attribute (dribbling, pace, passing, shooting, and physic) were built originally then later removed, however we had to opt out for only physic as there was a considerable pressure on our hardware. It was our belief, regardless of how insightful our self-service dashboard may be, no one would want to spend time on a laggy platform, causing other programs to crash in worst cases.

REFERENCES

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