PROCESS BOOK

FOOTBALL

DATA VISUALIZATION

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TEAM Y3

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Introduction

Our project is motivated by the upcoming 2022 Football World Cup. We want to do visualizations of the previous head-to-head records of the World Cup teams, the information of each team, and the information of each player.

In addition to that, we also make a special analysis of the Chinese team, hoping to find the gap between Chinese football and the teams participating in the World Cup through data visualization.

To visualize our data, we found player data (FIFA 2020) from Kaggle and international football matches between 1872 and 2022. We processed the original data, reduced the amount of data by filtering the more important information by python pandas, and re-extracted and generated new data files, such as JSON format files (playerList.json).

We will later go into more detail about statistics and story-telling, such as the visualizations we implemented, the pre-processing done on the data, and the difficulties we encountered.

Statistics

Nativagtion

We started by making a navigation bar where you can see our pages and switch between them.

Flags

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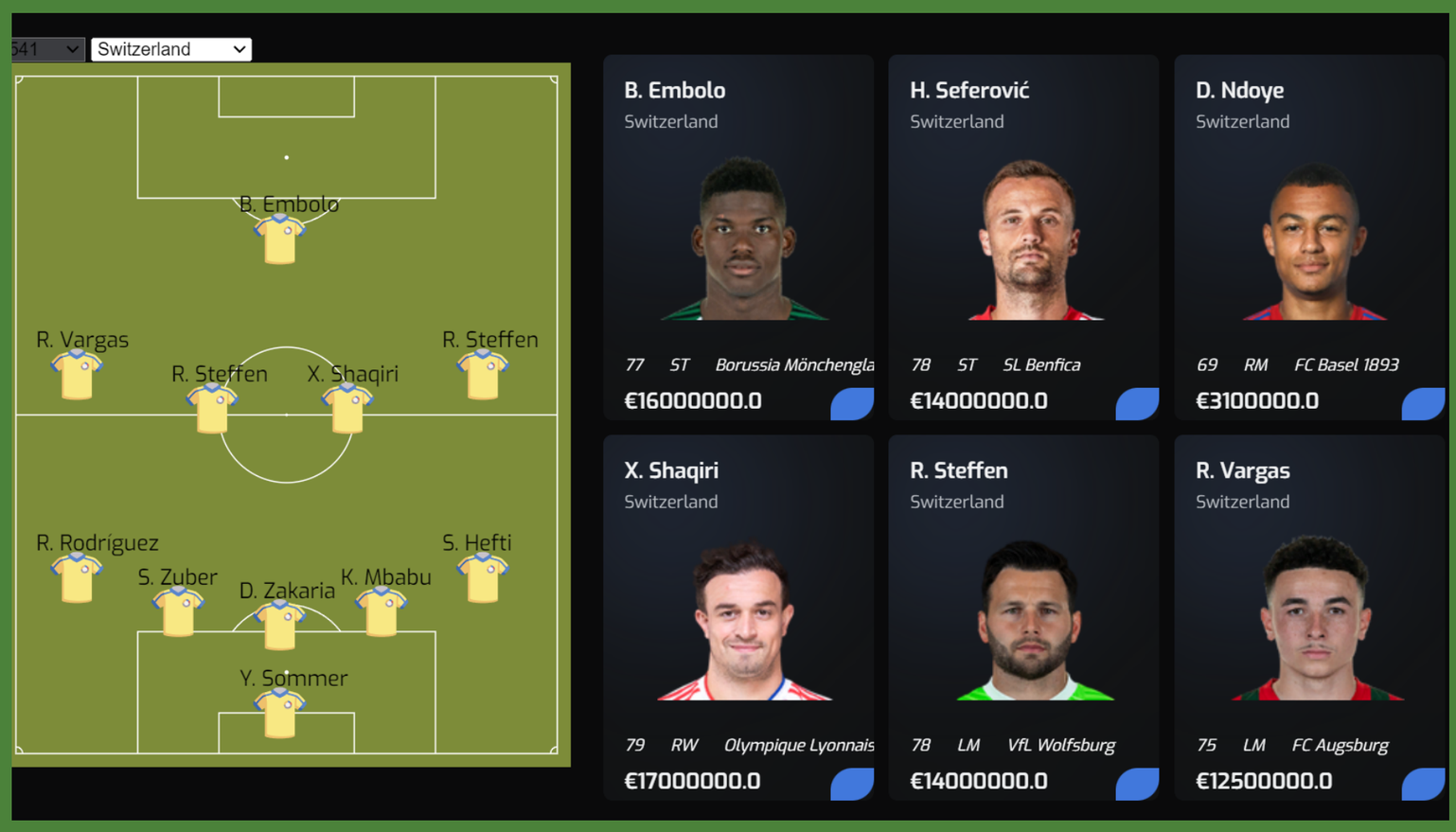
In this section, you can see the flags of 30 countries, which are football powerhouses from all over the world. You can click on the flag to see the team of this national team as well as the player information.

Mouse hovers Switzerland flag

We do hover-highlight and click-jump animations on the flags here. When the mouse hovers over a flag, this flag will get highlighted for emphasis. Also when you click on a flag, the page will automatically slide down to the next section and you will see a green soccer field. The "Country" option at the top of the field automatically becomes the name of the country whose flag you have just clicked.

Statistics

Football Pitch and players comparison



When you click on the Swiss flag, you will be directed to the pitch. Here you can see the Swiss national team players in their positions. The default formation is 541, but you can also choose between 442 and 352 by using the selection box in the upper left corner of the pitch. The players and the formation on the field will change according to your choice. Here the stadium and jersey are built by SVG, while the formation conversion is done by manipulating DOM elements through jQuery functions. The data of the field lineups of different countries is pre-processed in python and stored in a JSON file called playerList.

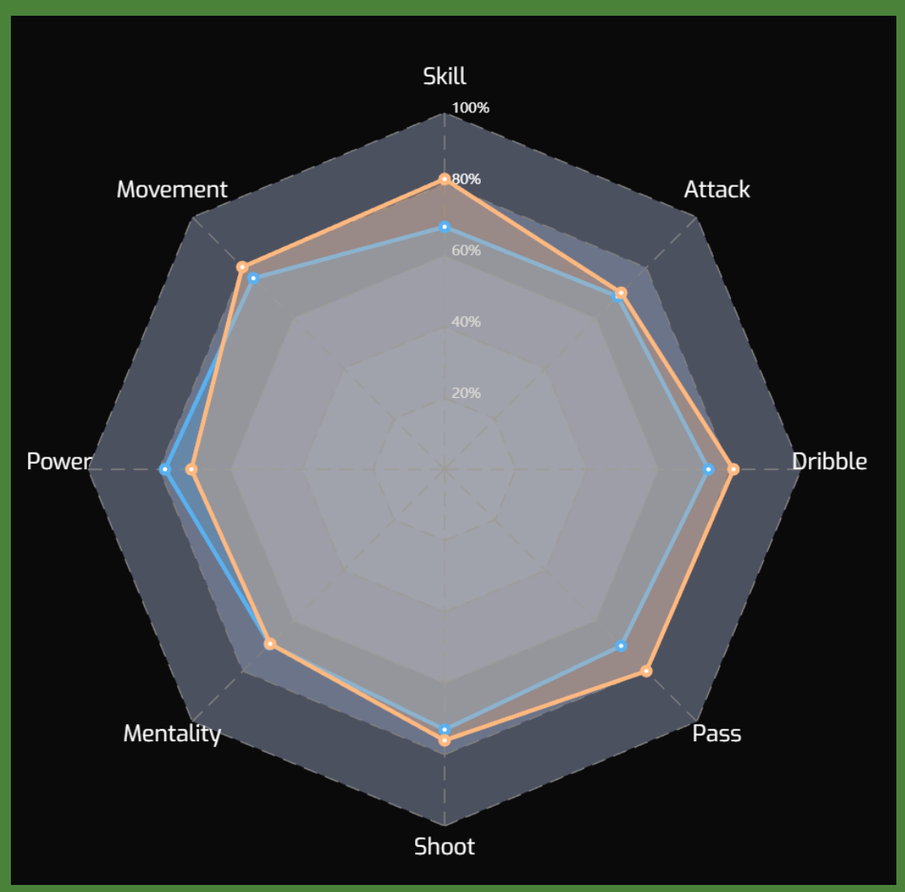
We have set up a player comparison section. You can click on any player on the field (jersey) and on the right side of the pitch the best three players (including himself) from the same team and in the same position will be shown. Of course you can also click on a player in a different position and the player bar on the right side will be automatically expanded.

Statistics

Football Pitch and players comparison

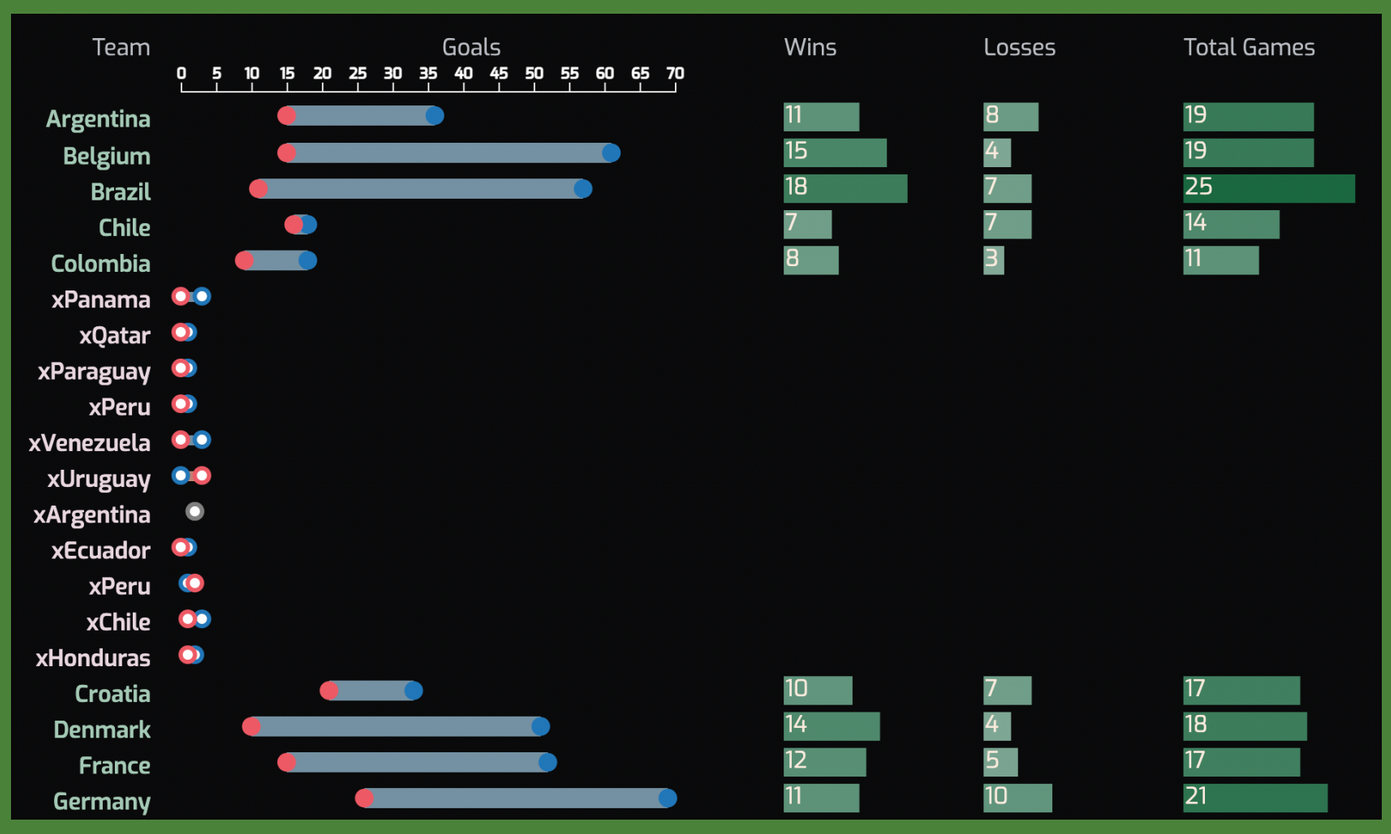
You can read the basic information about the player on the player card and compare the ability values between players by clicking on the button in the bottom right corner of the player card.

By doing so, you are able to compare any number of players you wish, hover you mouse over the area to highlight!



Match Statistics

We have also implemented a match statistics table. Here you will be able to see the information of each team against other teams in international matches. By clicking on the team name on the left, you can see the historical cumulative goal difference against the each specific country.



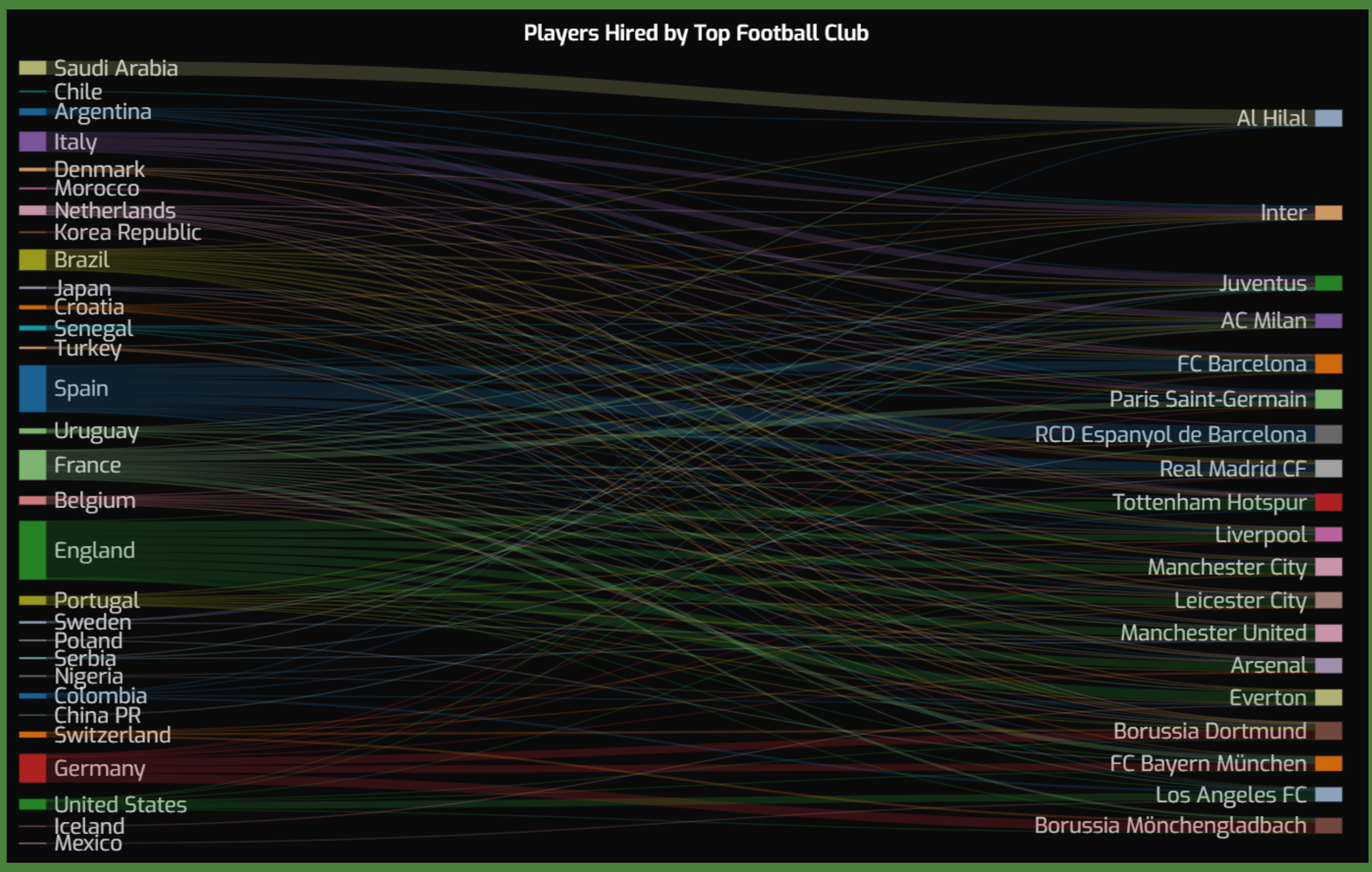
Story-telling

Introduction

This section aims at presenting the story of Chinese National Football Team, we will show users the history of Chinese football, the current situation, and our expectations for the future in the form of chart, text, photo, etc.

Sankey Chart of players data

In favor of D3 and sankey library, this graph shows the statistics of players from countries that regularly qualify for the World Cup finals at the world's top football clubs. By placing the mouse on the line segment at both ends of the connection, the line segment will highlight the connection status, while staying on the country node for a long time, the mouse position will display the statistical results of the country.

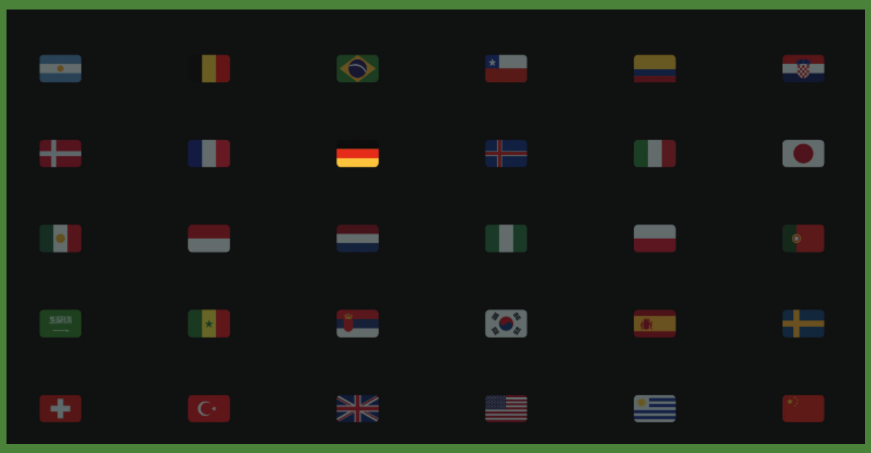


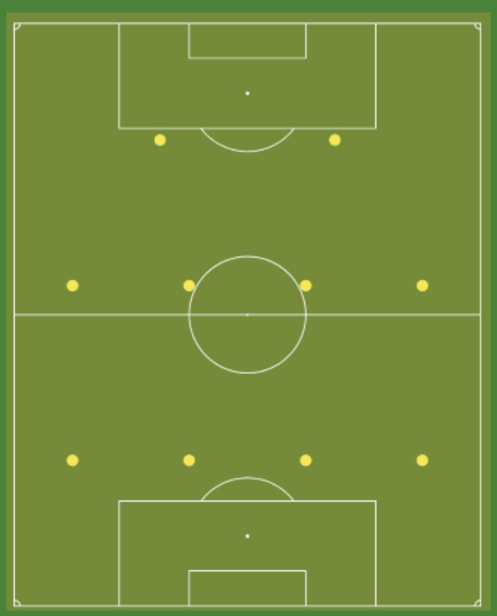
Feedback of Milestone

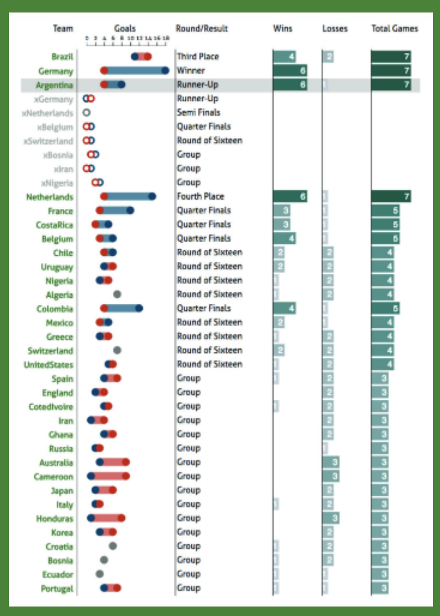
Sketches feedback

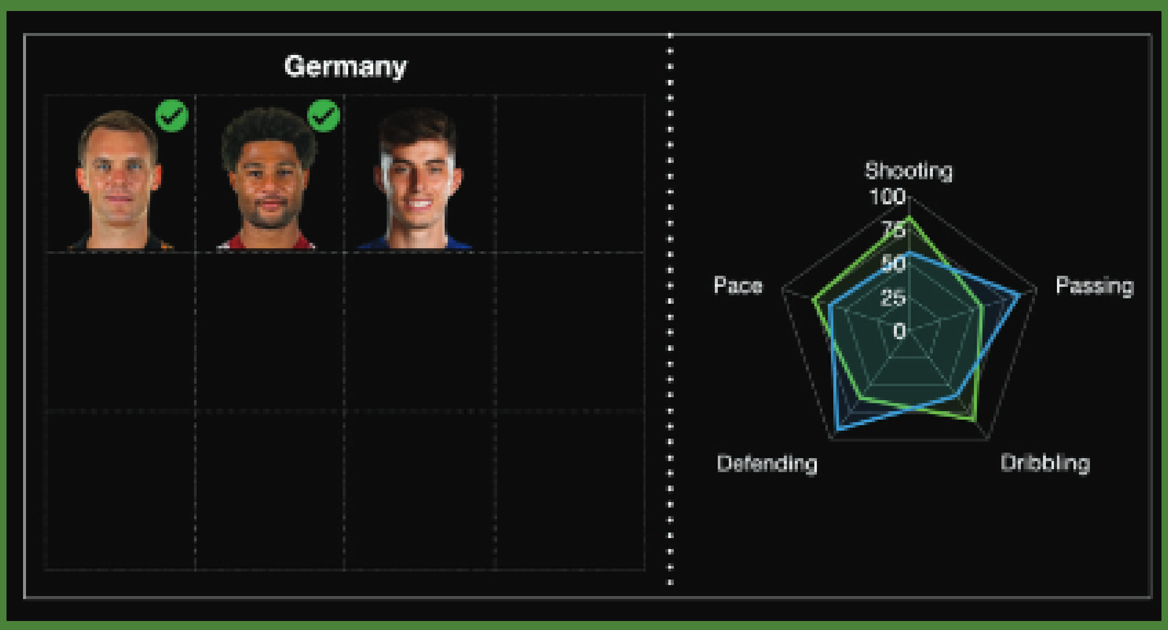
According to the plan in milestone2 report, we successfully implement all requirements that we put in the section "sketches of the final visualization. Here we show the result below:

IDEA

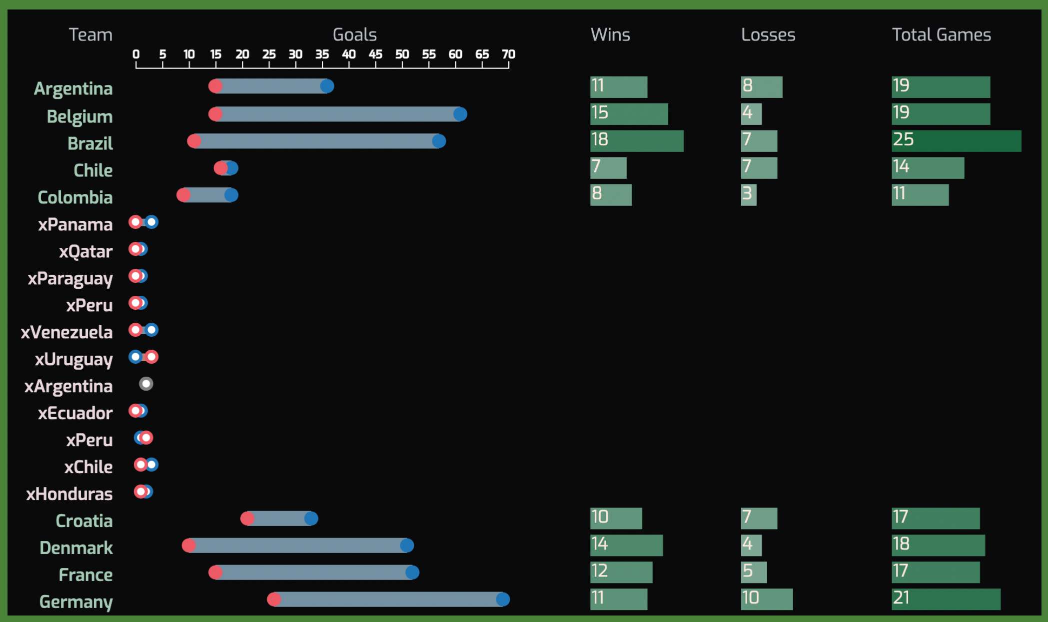


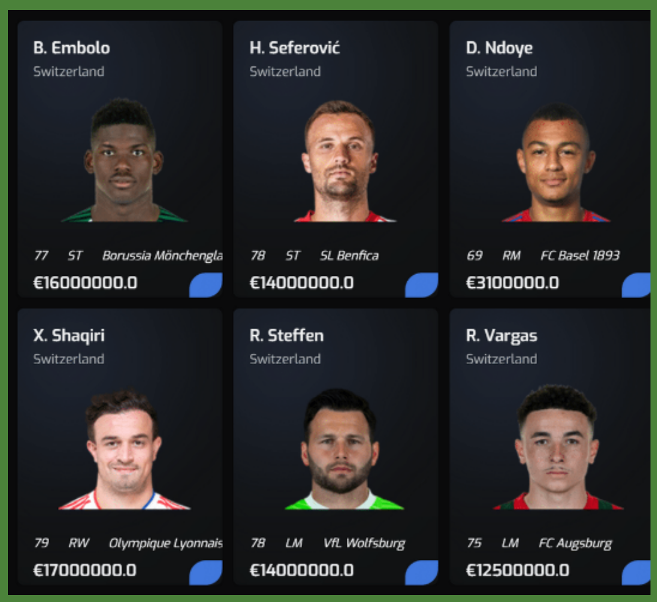


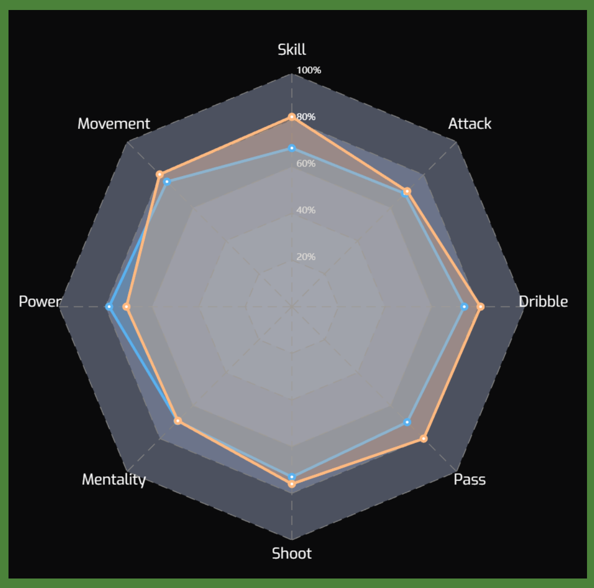




Our work







Extra ideas feedback

We futher implement some part of extra idea. Sankey chart is added to help us do the data visualization.

IDEA

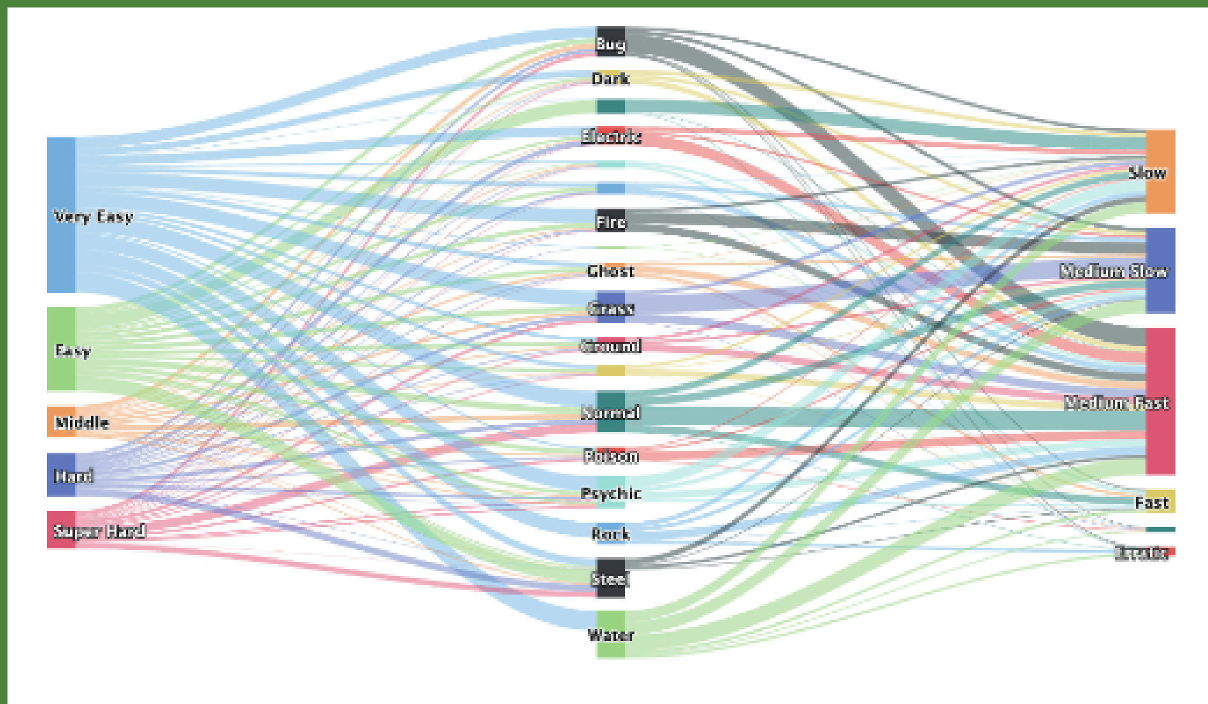
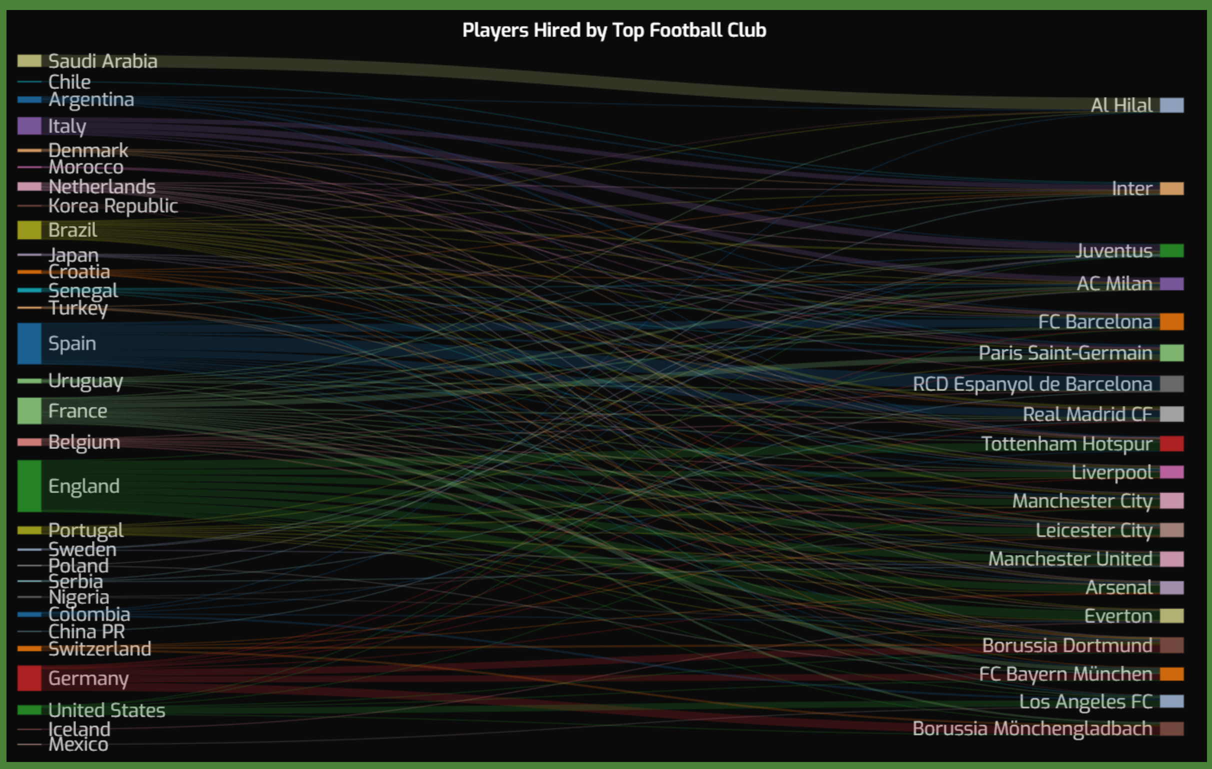


Fig. 7 Equivalent visualisation of affiliation relationship

Our work



Peer assessment

Yixuan Xu:
1. In charge of the project, from data processing and analysis, design of the website, web development and visualisation, version control, to host of website.
2. In index.html, implemented everything except football pitch.
3. Work together with the reports in each milestone.

Yisong Mao:
1. In index.html page, design and help to implement the flag selection section, design and help to implement the frame of player cards section.
2. In story_telling.html page, take in charge of the whole contents, including pre-processing corresponding data, designning and implementing sankey chart, displaying the web page.
3. Work together with the reports in each milestone.

Yifei Song:
1.The design and implementation of the pitch section in index.html page, including the composition of the pitch and jersey and related animation events, mainly worked on the formation.js, positionPlayer.js.
2. Data reprocessing : extract the team lineups and the best three players per position for each team in JSON files.
3. Work together with the reports in each milestone.