**Data Collection and Organization:**

* I used Python for this step because my API, soccerdata, only supports Python and not Rust. Through this API, I acquired the schedule data for Arsenal's 2022-23 season from FBref. Using the game IDs from this data, I retrieved the starting lineups for each match, and then obtained specific player data (defensive data for defenders, attacking data for attackers) based on the lineups and game IDs.
* I categorized the data and exported the schedule as a CSV file. Then, using the os module, I created folders in batches, each corresponding to a match, and placed the four CSV files for each match into their respective folders.

**Weight Determination:**

* Since machine learning in Rust is quite complicated and its ecosystem is not as developed as Python’s in this regard, I chose to handle the data in Python to determine the impact weights of each data item on match outcomes. I opted for fitting a multi-objective regression model, as it outperformed other models I tested. Eventually, I exported the weights as a CSV file.

**Data Processing:**

* For this step, I used Rust. It contains several functions: one to calculate the weighted composite scores for players, one to read the specific CSV files of each player’s data per match, one to read the weight CSV, and one to read the team’s schedule CSV. In the main function, I looped to collect data in a HashMap and then performed calculations.
* Given that Arsenal used only a 4-3-3 formation last season, I selected the top four defenders, three midfielders, and three forwards. (Since only Aaron Ramsdale played as goalkeeper last season, I did not consider this position).

**Results:**

* The best starting lineup concluded was:
* Defenders: Ben White, Gabriel Magalhães, Oleksandr Zinchenko, William Saliba,

Midfielders: Thomas Partey, Martin Ødegaard, Granit Xhaka,

Attackers: Bukayo Saka, Gabriel Martinelli, Gabriel Jesus.

* However, the challenge of this topic is that we can't truly know if the lineup we selected is the best possible. But we can refer to the best lineups chosen by the media and fans at the end of last season for comparison:
* *" Best XI: Ramsdale; Tomiyasu, Saliba, Gabriel, Zinchenko; Rice, Odegaard, Havertz; Saka, Jesus, Trossard.” By one football (*[*https://arc.net/l/quote/kuibdmqq*](https://arc.net/l/quote/kuibdmqq)*)*
* By *Who Scored*
* 图片包含 图形用户界面

  描述已自动生成
* Therefore, it can be seen that my results are essentially completely consistent. Moreover, for me personally, this is the best starting lineup from last season. The only possible question might be whether to choose Tomiyasu or Zinchenko (Zinchenko's defense：（ ).