



ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

COM-480 - PROJECT ATAKHAN

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## MILESTONE 2

COM-480

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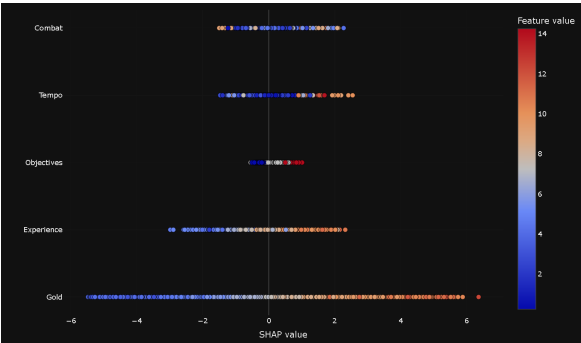
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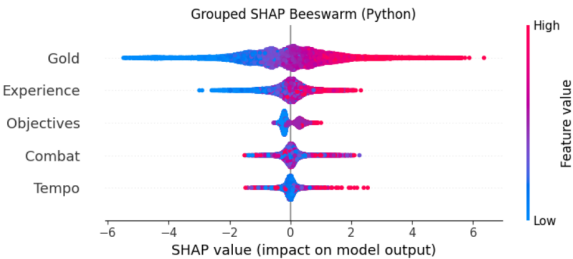
# 1 Visualization Ideas

We present and analyze the dataset using four core visualizations :

1. The SHAP summary plot illustrates how gameplay features affect the model’s prediction of match outcomes. SHAP (SHapley Additive exPlanations) is a method based on cooperative game theory that attributes each feature a value representing its impact on the prediction. The x-axis shows this impact, while the color gradient encodes the actual feature values for each data point. For example, the wide horizontal spread of SHAP values for Gold shows it has a strong and variable impact on predictions—high gold advantage (in red) shifts predictions toward a win, while low gold (in blue) contributes to predicted losses.



(a) Grouped SHAP summary (Web)



(b) Grouped SHAP summary (Python)

FIGURE 1 – SHAP summary plots showing feature impact on match outcome prediction.

2. The radar chart compares the performance of the team in key metrics such as kills, assists, and goals. Highlights the relative strengths of the winning and losing teams and reveals factors that contribute to the outcome of the match. We want to add a drop-down menu to choose between losing and winning stats. When choosing one, the other becomes less opaque.

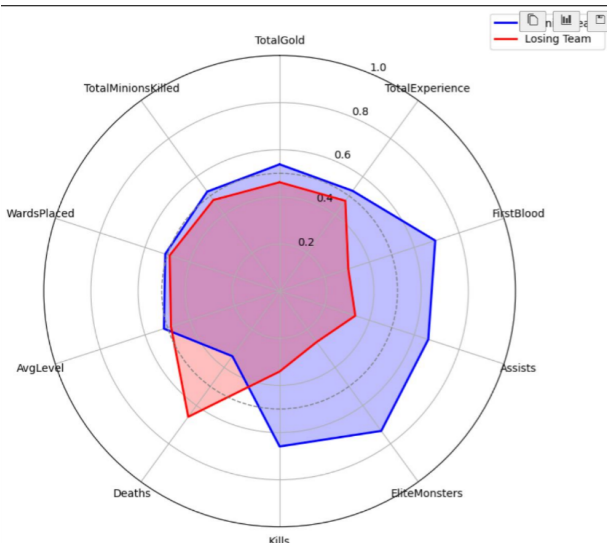


FIGURE 2 – Radar plot comparing team performance

3. A planned interactive map will display the jungle and objective data. Users can hover over elements like Dragon to explore localized match statistics and trends. We also want to add a drop-down menu as for the radar plot.

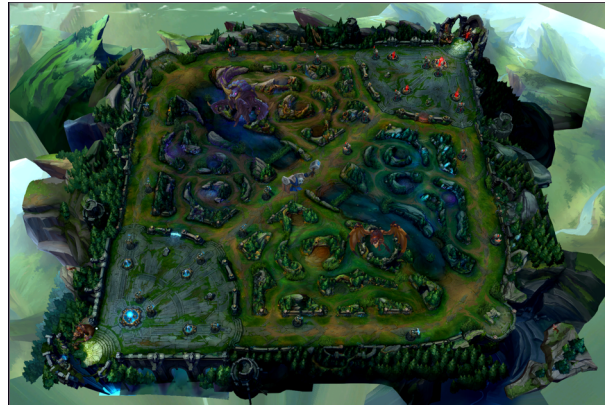


FIGURE 3 – Sketch of the interactive Summoner's Rift map

4. The final visualization will feature a predictive model enabling users to analyze their own matches to forecast victory likelihood and uncover potential areas for improvement. We are thinking of keeping the same map format, but instead of displaying the dataset infos, the user will be able to manually (or by loading a csv) enter his own games data to receive feedback.

## 2 Tools and Lecture

This project takes inspiration from :

- **Lecture 1 : Introduction to Data Visualization**
- **Lectures on Interaction**
- **Lecture on Maps**

We aim to develop a solution that is both intuitive and efficient. Our stack includes :

- **Plotly.js** — for interactive and responsive charts with zoom, hover, and color mapping.
- **Chart.js** — ideal for radar and line plots with clean syntax.
- **D3.js** — used for custom SVG manipulation and interaction logic.
- **Tippy.js** — to display contextual tooltips on hover.
- **Pico CSS** — a classless CSS framework for minimalist styling.
- **Vite** — fast build tool and dev server for modern frontend development.

## 3 Goals and Additional Work

Each visualization is being developed independently. For the final version, we aim to :

- **Interactive Map** : Allow users to click or hover over elements (e.g., Baron, Dragon) to reveal statistics and match-level insights. Add a drop-down menu
- **Radar Chart** : Improve readability, interactivity, and color distinction between teams.
- **SHAP Plot** : Customize appearance (labeling, axes, interactivity) to make insights more accessible, keep the violin shape as in python. Add a drop-down menu
- **Prediction Dashboard** : Clearly present model predictions and key contributing factors, perhaps with summary cards and interpretability hints.