RIVALYTICS

An analytics and strategy optimization platform based around the hero-shooter game Marvel Rivals.

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CSIS 4495 - Applied Research Project

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Introduction

Marvel Rivals is a fast-paced *team-based* hero shooter that has very quickly gained a name for itself in the gaming community with its rich roster of Marvel characters and intricate strategies. Players must select heroes, synergize with teammates, and adapt to dynamic gameplay in a variety of playable maps. In each match, a total of 12 players will be divided into 2 teams of 6. Each hero has a unique set of abilities and powers which they use to eliminate the opposing team and capture the objectives to win the game.

Marvel Rivals is considered a live service game, which means that the game is constantly patched to achieve a balance. That is, to weaken characters who are overperforming, or strengthening those who are underperforming. As such, you'll need to constantly rethink how to strategize to optimize your performance and climb up the ranks.

Framing the Problem

Despite its growing popularity, Marvel Rivals is still a very recent game and thus there is no dedicated analytics platform to help players improve performance or refine strategies, leaving a significant gap in the community's needs. Competitive multiplayer games depend heavily on data analysis to optimize strategies, understand trends, and enhance player performance.

Tools like Lolalytics have successfully catered to the League of Legends community, providing comprehensive insights into win rates, hero matchups, and meta trends. However, no similar platform exists for Marvel Rivals. As such, I've developed a few key questions to guide the development of this project:

1. How can an analytics website deliver the necessary insights into hero performance and strategy optimization?
2. What are the most effective ways to present data for easy user comprehension?
3. What other tools can aid users to improve their performance in the game?
4. How can emerging trends and player feedback be integrated into the platform's functionality?

Existing Research

The success of platforms like Lolalytics and Overbuff, which focus on League of Legends and Overwatch respectively, demonstrates the value of detailed analytics for competitive games. These tools emphasize win rates, pick rates, and team synergy to help players make informed decisions. However, common challenges include the lack of real-time updates, limited interactivity, and inadequate support for mobile devices. Rivalytics aims to address these limitations while tailoring the solution to Marvel Rivals' unique mechanics and gameplay.

Hypotheses and Benefits

A dedicated analytics platform for Marvel Rivals has the potential to significantly enhance player performance by providing valuable insights from game data. By presenting this data through visual dashboards and interactive tools, the platform is expected to improve player understanding of game mechanics, allowing for more informed decision-making during gameplay.

The platform will offer several key benefits: Players will have the opportunity to refine their gameplay and strategies using the insights provided, creating a more competitive environment where every advantage matters. Additionally, game developers can utilize the platform's data to gain valuable insights into the balancing of heroes and updating game mechanics, ensuring a fair and engaging experience for all players.

Proposed Research Project

The main objective of this project is to develop a web-based platform featuring hero statistics, matchup data, meta trends, interactive tools, and community features to assist Marvel Rivals players.

Objectives:

1. Aggregate and process game data to extract meaningful insights.
2. Design a visually appealing, intuitive interface for users.
3. Offer tools for team-building, strategy development, and meta analysis.

Methodology:

1. **Data Collection**:
    - Utilize available APIs or simulated datasets to gather data on hero win rates, pick rates, and performance metrics.
    - Take into consideration player feedback and match data to identify trends.
2. **Data Analysis**:
    - Use machine learning models to predict hero synergies and match outcomes.
    - Develop statistical visualizations to highlight performance and trends.
3. **Development**:
    - Employ the agile methodology for development and user feedback incorporation.
    - Design a responsive platform ensuring accessibility on both desktop and mobile devices.

Technologies

In the server environment, Windows provides an easy-to-use interface and has extensive compatibility with almost all types of development tools and frameworks. For a project of this scope, *Windows Server* is ideal for this platform.

The frontend will be designed in *React.js*, a JavaScript library efficient for developing interactive user interfaces. React is a component-based architecture in which developers can create reusable components. *Bootstrap* will be integrated to facilitate styling and produce a responsive user experience on mobile devices.

Node.js and *Express.js* will be used to implement the backend. Node.js allows JavaScript to run on the server side, which enables smooth communication with the frontend. Express.js is a lightweight web application framework that provides an easier way to create APIs, routing, and middleware in general.

The proposed platform database will use *MongoDB* as a database for the storage and querying of data related to hero statistics, user information, and

trends in gameplay. Data visualization will be done using *Chart.js*. This library provides an intuitive way of creating common chart types, such as bar graphs and pie charts, whereby users can clearly see hero win rates, pick rates, and other trends.

REST APIs will feed the platform with live data on games to make sure users operate with statistics that are always updated. Firebase will handle user authentication, where users can securely create an account, log in, and manage their profiles.

Scope

After a process of brainstorming, research and consultation, and in line with the requirements outlined, I've defined the scope of this project under the following features that Rivalytics will have:

Hero Statistics

The platform will have comprehensive statistics for each hero to aid users in making informed decisions:

- **Win Rates:** Display the overall win rates of heroes across all matches to show their strengths.
- **Pick Rates:** Determine how often each hero is picked in matches, reflecting popularity.
- **Ban Rates:** Show which heroes are most banned due to perceived strength or annoyance. Matchup Data

Matchup Analytics

- **Hero Counters:** Instruct users on which heroes are best against which enemies to help with counter-picking.
- **Synergies:** Propose ideal hero combinations for balanced and effective teams.

Game Trends

- **Meta Analysis:** Insights into what is on the rise in terms of most successful strategies or hero combinations currently in the meta.

- **Patch Updates:** Analyze recent game patches and their effect on hero performance and player behavior so users will be aware of the changes.

Interactive Tools

- **Team Builder:** Users can make and test team compositions to see the predicted win probabilities.
- **Custom Match Simulator:** Users can simulate matches between specific hero teams to study potential outcomes and refine strategies.

Visual Dashboards

- **Chart and Graphs:** Visualize trends and statistics in the form of bar graphs, pie charts, and line graphs.
- **Heatmaps:** Show hero popularity and performance across different maps or regions, giving deep insights into the game dynamics.

Community Features

- **User Accounts:** Users can create an account to save favorite builds and track personal stats over time.
- **Forums and Discussions:** A platform where players can discuss strategies, builds, and updates with other community members.
- **User Voting System:** Users can vote on the most effective team compositions or strategies; this will allow users to share knowledge with each other.

Content and Resources

- **Video Integration:** In-game videos and tutorials from YouTube or Twitch can be embedded, thus enabling viewers to learn more and get pro strategies.
- **Guides and Tutorials:** Offer guides for new players on heroes, roles, and maps.

Core Technical Features

- **Responsiveness:** Ensure the site works perfectly on phones, tablets, and desktops for all users.
- **Search and Filters:** Enable the user to search for heroes, stats, or guides; filtering by role, map, or popularity.

Expected Results

MVP

The minimum viable product of the platform will consist of the following:

- A functional analytics platform tailored to Marvel Rivals.
- Hero statistics (win rates, pick rates, ban rates) and matchup data presented in an intuitive interface. .
- Dynamic visual dashboards with graphs.
- Community features, including user accounts, forums, and a voting system.

Practical Applications

- Players will have access to insights for better decision-making and performance.
- The insights from the platform can help guide game developers to achieve better hero balancing and gameplay updates.

Project Planning and Timeline

Below is the detailed schedule, including milestones, deadlines, and deliverables:

Planning and Research (Weeks 1–3)

Milestones:

- Finalize project proposal and scope.
- Review Marvel Rivals gameplay mechanics and data availability.

Deliverables:

- Completed project proposal.

Design and Architecture (Weeks 4–5)

Milestones:

- Review game analytics websites' designs and structure.
- Create wireframes for the website.
- Define the backend architecture and database schema.

Deliverables:

- Progress Report 1

Backend Development (Weeks 6–7)

Milestones:

- Set up the backend environment (Node.js, Express.js).
- Implement APIs for hero statistics, matchup data, and game trends.
- Establish database connections and test data storage and retrieval.

Deliverables:

- Midterm Report and Video

Frontend Development (Weeks 8–11)

Milestones:

- Develop the user interface using React.js and Bootstrap.
- Integrate data visualizations.
- Implement user account features and community tools.
- Develop team builder feature and match simulation.
- Implement user guides and video embedding.

Deliverables:

- Progress Reports 2 and 3

Testing (Week 12)

Milestones:

- Conduct testing with potential users.
- Ensure mobile responsiveness

Deliverables:

- Progress Reports 4 and 5

Final Report and Submission (Week 13)

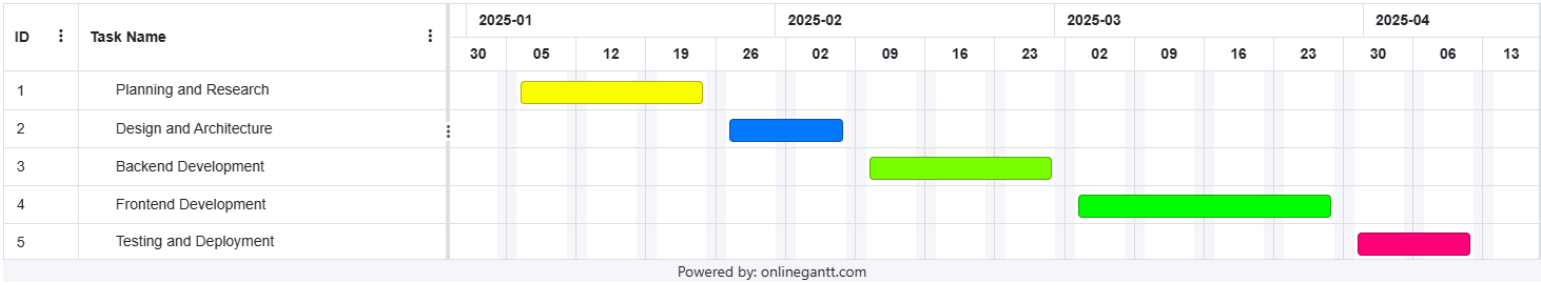
Milestones:

- Prepare final documentation.
- Submit fully working project.

Deliverables:

- Final report.

GANTT CHART



CONTRACT

Project Title: Rivalytics: an analytics and strategy optimization platform based around the hero-shooter game Marvel Rivals.

Team Member:

- **Camilo Arias** (Student ID: 300356827)

Responsibilities

As the sole developer, I will assume all responsibilities for the successful execution of the project. I agree to adhere to the timeline outlined in the "Project Planning and Timeline" section of this proposal. Progress reports will ensure the project remains on track, with adjustments made as needed to address any unforeseen challenges.

Acknowledgment and Commitment

By signing this contract, I acknowledge and commit to completing the project as per the scope and timeline specified in this proposal. I understand that I am solely responsible for the planning, development, testing, and presentation of the Rivalytics platform.

Signature:

Signed by **CAMILO ARIAS** on 26/01/2025.

HOURS LOG

Date	Number of Hours	Description of Work Done
January 16, 2025	1	Coming up with ideas for the project
January 17, 2025	1	In-class consultation about 2 different project ideas
January 21, 2025	0.5	Deciding the idea for the project
January 23, 2025	1	Starting the project proposal
January 24, 2025	1	In-class project consultation and initial check-in
January 24, 2025	2	Defining the project's scope and features after consultation
January 25, 2025	3	Continuing project proposal writing
January 26, 2025	4	Finishing project proposal and submitting

REFERENCES

- ***LoLalytics*** · League of Legends Analytics (n.d.). https://lolalytics.com/
- ***Overbuff*** - *Overwatch 2 Statistics*. (n.d.). https://www.overbuff.com/