Project Title:

NFL Sports Betting Assistant

Project Summary:

The NFL Sports Betting Assistant is a web-based application designed to help users make informed decisions about NFL sports betting. The app will utilize various data sources, including game statistics, historical player performance, and betting odds, to provide users with predictions and recommendations. Users can interact with the platform to access detailed insights, receive betting tips, and analyze past performance data for more informed betting strategies.

Detailed Description of the Application:

Our web app will assist users in making educated bets by analyzing NFL games and offering betting insights based on past performance and data. It will address the common problem of users making uninformed decisions based purely on intuition or incomplete information. By aggregating data from multiple sources and offering tailored recommendations, the app provides a data-driven approach to betting.

Key Features:

- **Historical analysis**: Users will be able to view historical performance data of teams and players, helping them make predictions based on past trends.
- **Betting recommendations**: The app will use algorithms to analyze trends and recommend betting strategies based on a user's betting history and preferences. The users will be able to utilize the data stored in the app's database to track their records and what they think
- **User Betting Records:** Users can store their previous bets using CRUD principles to keep a log of their previous bets in a singular place.

Creative Component:

Creative Component: The creative component will involve querying the database using user-defined fields to generate interactive visualizations of game statistics. We will leverage Python libraries, such as Matplotlib, Plotly, or Seaborn, to create visualizations like line charts, bar graphs, and heatmaps directly from the database. Users will be able to simulate betting outcomes based on various strategies and historical patterns, with the data being dynamically pulled from the database to ensure real-time relevance and accuracy.

Another challenging feature will be integrating multiple APIs, including those that provide game data, betting odds, and historical performance metrics, and presenting all of this in a seamless, user-friendly interface.

Usefulness:

This app will be useful for sports betting enthusiasts who want to improve their chances by using data-driven strategies. While there are other betting apps that offer odds, ours stands out by providing an in-depth analysis of past performance, player stats, and trends. Users will be able to compare the recommendations against their gut feelings or other sources, helping them make more informed betting decisions.

Realness (Data Sources):

- **NFL Game Stats API**: Provides historical game data stats.
    - If we want to include real-time stats we will use SportsData.io, which is an API that offers real-time updates for games
        - API Format: JSON
        - Data Provided: Real-time game stats, player information, schedules, scores, etc
- **Betting Odds API**: Provides up-to-date betting odds for ongoing and upcoming games.
    - **The Odds API**: This API provides up-to-date betting odds for various sports, including NFL.
        - API Format: JSON
        - Data Provided: Current and historical odds, sportsbook comparisons.
- **NFL Individual Game Stats-1966-2024**
    - https://www.kaggle.com/datasets/tobycrabtree/nfl-scores-and-betting-data?select=spreadspoke_scores.csv
    - In csv format with Cardinality = 14000, Degree = 41.
    - Description from Kaggle: “NFL football games since the 1966 season with game results and descriptive info including a playoff game, played at a neutral site, and weather information if available. Data set was built from publicly available NFL data, weather provided by the NOAA, and betting data from a variety of sources but cross referenced with Pro Football Reference.”
- **NFL Stats - 1999-2022**
    - https://www.kaggle.com/datasets/philiphyde1/nfl-stats-1999-2022
    - Collection of player and team weekly and yearly statistics
    - Can be used to see player trends and used to calculate/predict

We’ll aggregate data from two or more APIs, offering betting insights, odds comparisons, and recommendations. Data formats will include JSON for API data and CSV for historical datasets.

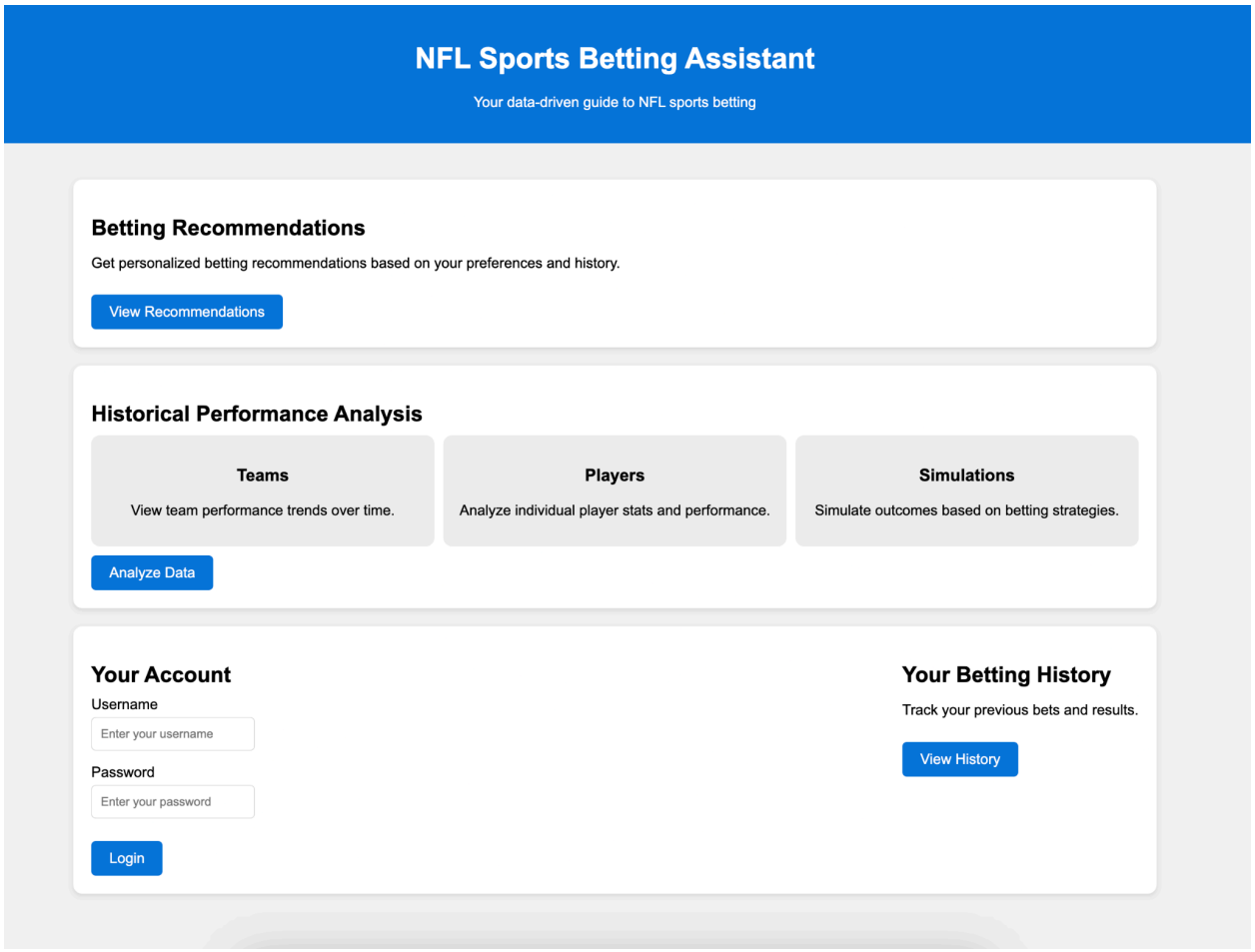
Functionality:

Users will be able to:

- **Analyze historical performance** data of teams and players.
- **Receive betting recommendations** based on analysis of game data and trends.

- **Compare betting strategies** and visualize potential outcomes based on different approaches.
- **Create an account**, track their betting history, and save preferences for future recommendations.
- **Store their bets,** by adding information about their bets and tracking whats they plan on betting on and whether or not they have won on their previously stored bets

Low-Fidelity UI Mockup:



Project Work Distribution:

- **Frontend (UI/UX)**: Aarush - responsible for designing the user interface and ensuring a smooth user experience. Experienced with Flask, ReactJs
- **Backend (Data Processing, API Integration)**: Abhay - responsible for handling API calls, and processing data. Experience with: WebScraping, APIs, Backend
- **Data Analysis/Prediction Models**: Nishk Patel - responsible for developing algorithms that predict betting outcomes based on historical data and trends. Experience with: Machine Learning

- **Database creation**: Ethan Mathew - responsible for testing the application and deploying it on a cloud platform. Experience with: SQL, Database Design