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Date: 09/08/2023
Project Title: Charlotte Football Sports Analytics

Company: Professor John Tobias, University of North Carolina at Charlotte
Dates of Internship: 08/22/2023 – 12/01/2023

Project Objective

The main goal of this project is to study how the UNC Charlotte football players perform during games and provide live statistics. We also want to help the coaches with their game strategies and building a strong team.

Methodology

The key approaches employed to achieve the project's goal in sports analytics include:

- Live Player Tracking : We will continuously monitor and gather data on each player's performance during practice games using Catapault.
- Positional Analysis: Focus on in-depth analysis of quarterbacks, running backs, and wide receivers to optimize offensive strategies and build a formidable offensive team.

Major Tasks

Task 1. Collect & Evaluate quality of Data, 8/22/2023 - 10/15/2023

   Task 1.1. Data Collection by Live Tracking, 8/22/2023 - 10/10/2023

   Task 1.2. Data Exploration & Validation, 9/ 15/2023 - 10/15/2023

Task 2. Model Building, 10/16/2023 - 11/20/2023

   Task 2.1. Model Building and Implementation, 10/16/2023 - 11/15/2023

    Task 2.2. Model Tuning, 11/05/2023 - 11/18/2023

    Task 2.3. Best Model Selection and Entropy Model, 11/18/2023 - 11/20/2023

Task 3. Minimum Viable Product & Presentation, 11/20/2023 - 12/01/2023

Task 3.1. Deploy the model for business use, 11/20/2023 - 11/30/2023

Task 3.2. Presentation to Stakeholders & Feedback, 11/30/2023 - 12/01/2023

Expected Outcomes

The expected outcome of this sports analytics project is to provide valuable insights and recommendations that can enhance the performance of the UNC Charlotte football team. Specifically, the project aims to:

- Improve Player Performance: By analyzing player gameplay, the project should help identify areas where individual players can enhance their skills and contribute more effectively to the team.
- Optimize Offensive Strategies: Through positional analysis, the project intends to develop strategies that make the offense more effective, maximizing the team's scoring potential.
- Real-Time Statistics: The project aims to provide real-time statistical data to coaches and stakeholders, enabling them to make informed decisions during games and for future planning.
- Enhanced Team Building: By understanding player strengths and weaknesses, the project seeks to contribute to better team cohesion and collaboration.
- Stakeholder Engagement: The project outcome includes presenting findings and recommendations to stakeholders, involving them in the decision-making process and obtaining their feedback.

Overall, the expected outcome is a more competitive and successful UNC Charlotte football team, driven by data-driven insights and improved player performance.

Potential Risks and Strategies to Overcome

Risks

1. Incomplete Data Sources: There may be gaps or limitations in the available data, potentially hindering comprehensive analysis.
2. Technical Constraints: Limitations in data collection technology could hinder the application of advanced analytics methods.
3. Performance Variability: Player performance can be influenced by various external factors, making it challenging to isolate individual contributions accurately.
4. Model Complexity: Overly complex models can be challenging to interpret.

Strategies to Overcome

1. Data Validation and Augmentation: Implement rigorous data validation processes and consider supplementing existing data with additional sources to improve reliability.
2. Data Fusion: Considering data collected from various sources, which includes traditional method of data collection along with using airborne devices and video footages to capture data.
3. Historical Analysis: Conduct historical analysis to identify patterns and trends in player performance under various external conditions. This historical context can be used to adjust for variability in current performance evaluations.
4. Simplicity and Explainability: Prioritize model simplicity and interpretability. Use feature selection techniques to identify the most relevant variables and streamline the model.