NBA Data Analysis Project
Project Definition Document

Tunahan Oğuz
Ali Eren Kurt
Alkım Doryan
Beyzanur Zeybek

1. Project Summary

NBA Data Analysis is a web-based platform that provides comprehensive insights, visualizations, and analysis of NBA players' performances using data sourced from Kaggle. The platform aims to assist basketball enthusiasts, analysts, and casual fans in understanding player statistics, trends, and comparisons through an intuitive and interactive user interface.

By leveraging data science techniques and advanced visualizations, this project will make complex NBA data accessible and engaging, allowing users to explore player statistics, compare performances, and generate in-depth reports.

2. Objectives

- Develop a fully functional application that displays NBA player statistics and analytics.
- Implement data visualizations to help users easily interpret player performances.
- Enable users to compare players based on key performance metrics.
- Integrate filters and search functionality for easy navigation of players and teams.
- Ensure a user-friendly and visually appealing interface for seamless user experience.

3. Scope

Included:

- Data extraction and processing from Kaggle NBA datasets.
- Interactive visualizations of player statistics (e.g., points, assists, rebounds).
- Player comparison tool with key performance indicators.
- Team statistics and trends visualization.
- Responsive UI for desktop and mobile users.

Not Included:

- Real-time data updates (only periodic updates based on new Kaggle datasets).
- Fantasy basketball or betting-related features.
- Video analysis or AI-based predictions.

4. Target Audience

- Basketball enthusiasts and NBA fans
- Sports analysts and data scientists
- Fantasy basketball players looking for deeper insights
- Students and researchers studying sports analytics

5. Key Features

1. **Player Performance Dashboard** – Displays key statistics and trends for individual players.
2. **Player Comparison Tool** – Allows users to compare two or more players based on selected metrics.
3. **Advanced Visualizations** – Interactive charts and graphs for better data interpretation.
4. **Team Analytics** – Aggregated team statistics and season performance insights.
5. **Search & Filter Functionality** – Enables users to quickly find players, teams, and stats.
6. **Responsive and Modern UI** – Ensures smooth usability across devices.
7. **Report Generation** – Users can download analytics reports in PDF or CSV format.

6. Deliverables

- A fully functional NBA analytics web application.
- Processed and cleaned NBA dataset from Kaggle.
- Data visualization and player comparison features.
- User documentation and guidelines for navigating the platform.

7. Communication Plan

Team Communication:

- **Weekly Meetings:** A standing meeting every Monday to review progress and set priorities.
- **Daily Stand-Ups (Optional):** Short updates (15 minutes) via an online communication tool (e.g., Slack, Microsoft Teams).
- **Documentation:** Use a shared project repository (Github) for status updates.

8. Budget and Resources

Resources Needed:

- **Development Tools:** Python (Flask/Django), JavaScript (React.js), HTML/CSS, PostgreSQL/MySQL.
- **Data Processing:** Pandas, NumPy, Matplotlib, Plotly, Seaborn. SQL
- **Time & Manpower:** Estimated 4-5 weeks, requiring 2 backend developers and 2 frontend developers.

Budget Considerations:

- Potential API costs if external data sources are integrated.
- Potential costs for API access (if premium data is required)

9. Risks and Mitigation Strategies

Risk	**Mitigation Strategy**
Data availability issues	Ensure the dataset is periodically updated or explore alternative sources.
Performance issues with large datasets	Optimize database queries and use caching mechanisms.
UI/UX complexity	Conduct user testing and iterative design improvements.

10. Project Success Criteria

1. Successfully displays and processes NBA data with visualizations.
2. The application includes all five key features as planned.
3. The data should be verified against official NBA statistics to ensure correctness.

11. Project Definition Document Task Matrix

Task ID	**Task Description**	**Team Member(s) Responsible**	**Completion Status**	**Notes**
T1	Define project name and scope	Tunahan Oğuz	Completed	Ensured scope boundaries are clear
T2	Write project summary	Ali Eren Kurt	Completed	Summarized project goals and purpose concisely
T3	Identify project objectives	Alkım Doryan	Completed	Listed clear and measurable objectives
T4	Define target audience	Tunahan Oğuz	Completed	Identified relevant user groups
T5	List key features of the project	Ali Eren Kurt	Completed	Included at least 5 essential features
T6	Specify project deliverables	Alkım Doryan	Completed	Defined key outputs of the project

T7	Outline budget and resource needs	Beyzanur Zeybek	Completed	Considered cloud hosting, tools, and development needs
T8	Identify risks and mitigation strategies	Ali Eren Kurt	Completed	Addressed potential risks and solutions
T9	Define success criteria	Alkım Doryan	Completed	Included measurable success metrics
T10	Compile and format the document	Beyzanur Zeybek	Completed	Ensured document consistency and clarity
T11	Review and finalize document	Beyzanur Zeybek	Completed	Conducted final review and edits