



**INTER IIT
TECH MEET 13.0**

***MID
PREP***



**NEXT-GEN TEAM BUILDER
WITH PREDICTIVE AI**

About Dream Sports & Dream11

Dream Sports is India's leading sports technology company with 250 million users, housing brands such as Dream11, the world's largest fantasy sports platform, FanCode, a premier sports content & commerce platform and DreamSetGo, a sports experiences platform. Dream Sports is based in Mumbai and has a workforce of close to 1,000 'Sportans'. Founded in 2008 by Harsh Jain and Bhavit Sheth, Dream Sports' vision is to 'Make Sports Better' for fans through the confluence of sports and technology.

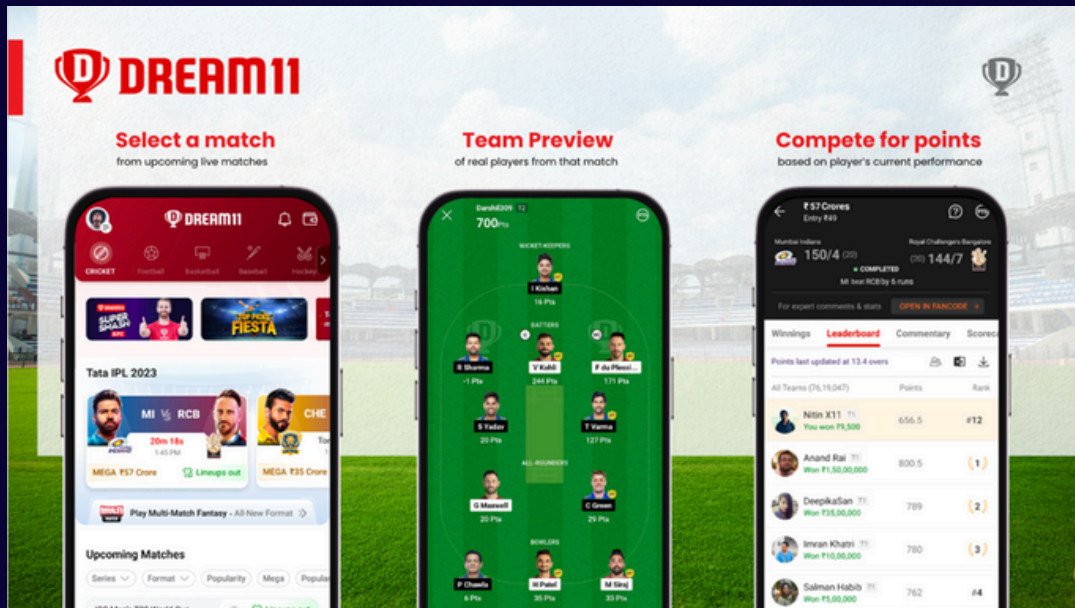
Dream11 is the world's largest fantasy sports platform with 220 million users playing fantasy cricket, football, kabaddi, basketball, hockey, volleyball, handball, rugby, futsal, American football & baseball, on it. Dream11 is the flagship brand of Dream Sports, India's leading Sports Technology company and has partnerships with several national & international sports bodies and cricketers.

They believe in offering the best in class fantasy sports experience to all sports fans. They aim to host the widest selection of sports, matches, and fantasy sports contests and make every sports event more exciting than ever.

"We have one goal - to be synonymous with sports. When it comes to the skills and knowledge of sports like cricket, football, kabaddi, basketball or hockey, we want India to think of Dream11." - Harsh Jain, CEO (Culture Enforcement Officer) & Co-Founder, Dream Sports.

The platform thrives on data, transforming statistics, game insights, and player performances into meaningful, actionable choices for millions of sports enthusiasts. At Dream11, they leverage cutting-edge AI and machine learning (ML) technologies to enhance user experience, from team creation to gameplay predictions. Through Inter IIT Tech Meet, they invite you to take on a real-world challenge and contribute to the future of fantasy sports.

For more information: <https://dreamsports.group/>



A typical team creation journey on Dream11

Background of the Problem Statement

The essence of Dream11's success lies in engaging users through data-driven fantasy sports experiences that are both immersive and strategic. Helping users make informed team-building choices is crucial to sustaining high levels of user satisfaction, retention, and competitive engagement on the platform.

This problem statement aligns closely with Dream11's mission by addressing core aspects of the user experience and enhancing the analytical support available to fantasy sports enthusiasts.

1. Enhancing User Engagement through Data-Driven Team Creation

At Dream11, users rely on player performance data and game insights to make informed decisions about their fantasy teams. By developing a predictive ML model that forecasts player performance, this solution will empower users to make strategic team selections based on more sophisticated data insights.

This feature directly increases user satisfaction and engagement, as they can build stronger teams, gain competitive edges, and enjoy the gameplay more thoroughly.

2. Improving User Experience with Technology Powered Guidance

Integrating advanced technologies into the UI allows Dream11 to offer an advanced user experience that makes complex insights easily accessible. Interactive audio and video descriptions will simplify the decision-making process, making player data comprehensible even to less data-savvy users.

This improvement is particularly valuable as it creates an inclusive experience that appeals to a broader audience by providing personalized, real-time guidance and context for team creation.

3. Driving Competitive Differentiation

The fantasy sports market is highly competitive, with new players entering regularly. Offering AI-powered team creation tools and an intuitive UI with GenAI features positions Dream11 as a leader in innovation within the fantasy sports space.

This unique feature set not only differentiates Dream11 from its competitors but also serves to retain users by providing enhanced value, contributing directly to user loyalty and overall platform growth.

Current State of the Product in Relation to the Problem Statement

Dream11 already offers a range of features aimed at assisting users in creating successful fantasy teams. The platform provides access to comprehensive player statistics and performance measures, which allow users to make data-driven decisions based on historical and current player insights. Additionally, Dream11 includes expert guidance from a host of gurus who share curated teams and recommendations, giving users access to expert strategies to inform their choices.

The app also supports users with a variety of team creation tools including Gen AI tools like AI coach designed to make the team-building process straightforward, even for users who may not be deeply familiar with player statistics. These features aim to lower the entry barrier, making team selection intuitive while still rewarding data-savvy users with detailed performance metrics.

They encourage participants to explore the app in depth to understand existing functionalities, user flows, and available data as they work to envision an even more interactive and insightful team-building experience.

Problem Description

Develop a solution that helps users create winning fantasy sports teams on Dream11, utilizing player data. The focus is only on cricket for this Inter IIT Tech Meet.

The primary task is to build a robust ML model that assists users in team creation by predicting player performance based on historical data, contextual factors (like match conditions), and other game-relevant variables. Your model should not only deliver high-performance predictions but also be accompanied by detailed explainability of features to help users understand the rationale behind player recommendations.

Beyond the model itself, your solution should include an intuitive user interface (UI) that enables easy team-building interactions. For example, use Generative AI to incorporate interactive audio and video descriptions that guide users through the team-building process. For instance, implement voice or visual aids that help users understand player insights, game predictions, or team formation suggestions in real-time.

Expected Output

Python-based UI with Two Interactive Interfaces

Design and develop a Python-based tool with two key interfaces: the **Product UI** for user-friendly team recommender, with interactive text-based / audio/video descriptions for enhanced user engagement, and a **Model UI** for model evaluation. Ensure the interface is easy to navigate and visually engaging, focusing on both clarity and user experience.

Interface 1 : Product UI – Your Ultimate Team Selection Tool

Objective:

Provide users with an interactive experience to recommend a team of 11 cricket players for fantasy game in upcoming matches. The output should be explainable, and visually intuitive, enhancing the user's confidence in the recommended team.

Assume you are the user of this tool trying to win on Dream11 and develop it accordingly.

Inputs:

1. **Team Names:** Provide exact team names as listed in Cricsheet data.
2. **Match Date:** Provide the date of the upcoming match (for matches scheduled on or after 2024-07-01).
3. **Training Period:** No data after 2024-06-30 should be used for training the model. This is a very strict rule and non-adherence to this will lead to disqualification.

Example Input:

- **Team 1:** Colombo Strikers
- **Team 2:** Kandy Falcons
- **Match Date:** 2024-07-18

Important Constraints:

- **Selection Composition:** Dream11 requires fantasy cricket teams to adhere to specific player composition rules. Each team must consist of 11 players from the squads from both the teams. The selection must follow the following composition.

	Batsman	Bowler	All-Rounders	Wicket-Keeper
Selection Range	1-8	1-8	1-8	1-8

- Additionally there should be at least 1 player from each team.

Goal: Recommend the best performing team to the user - Also referred to as Dream Team

- Best team / Dream Team is the one that scored the highest total fantasy points across the selected players.
- **Fantasy Points:** Fantasy points are computed based on the following [point-system](#)

Output

Display a list of the **best 11 players** (from the total of 30 or more players in the squads) predicted to perform best in the selected match adhering to Dream11 constraints. Each player's contribution should be justified to the user to make the predictions understandable and compelling. Add optional insights on each player's strengths or past performance trends to further enhance believability.

Note: The Product UI will be tested on matches scheduled from 2024-07-01 onward. It should use a pretrained model named 'ProductUI_Model' stored in the folder model_artifacts.

Interface 2: Model UI – Dive into Model Performance Analysis

Objective:

Allow evaluators and data scientists to assess model performance across specific training and testing periods. This interface provides a way to validate predictions, view metrics, and save updated model versions.

Example Inputs:

1. Training Period: Define the start and end dates for the training set.
 - Example: 2000-01-01 to 2024-05-30
2. Testing Period: Define the start and end dates for the test set.
 - Example: 2024-08-01 to 2024-09-22

Output:

- The model will train on all matches in the specified training period only.
- Generate predictions for the matches in specified test duration.
- Output results in a CSV file with the following columns

Match Date	Team	Team 2	Predicted Player 1	Predicted Player 1 Points	Predicted Player 2	Predicted Player 2 Points	...	Predicted Player 11	Predicted Player 11 Points	Dream Team Player 1	Dream Team Player 1 Points	Dream Team Player 2	Dream Team Player 2 Points	...	Dream Team Player 11	Dream Team Player 11 Points	Total Points Predicted	Total Dream Team Points	Total points MAE
2024-07-01	Colombo Strikers	Kandy Falcons	Wanindu Hasaranga	85	Dinesh Chandimal	50	...	Angelo Mathews	10	Dinesh Chandimal	120	Kamindu Mendis	60	...	Andre Fletcher	5	623	780	157

Dream Team Player 1	Dream Team Player 1 Points	Dream Team Player 2	Dream Team Player 2 Points	Dream Team Player 11	Dream Team Player 11 Points	Total Points Predicted	Total Dream Team Points	Total points MAE
Dinesh Chandimal	120	Kamindu Mendis	60	Andre Fletcher	5	623	780	157

- **Match Date**
- **Name of Team 1**
- **Name of Team 2**
- **Predicted Best 11 Players** (in descending order of predicted fantasy points)
- **Dream Team (Best) 11 Players** (in descending order of actual fantasy points)
- **Predicted Points of Each Player**
- **MAE (Mean Absolute Error)** (Dream Team Total Fantasy Points - Total Fantasy Points of the predicted team)
- Save the retrained model as “model_2024-06-30.pkl” in the src/model_artifacts folder (or similar based on the training end date). Github instructions and folder structure to be followed is mentioned at the bottom of the document.
- Save the newly created training data in the src/data/processed as training_data_2024-06-30.csv (or similar based on the training end date).

Note : Best team / Dream Team is the team that scored the highest total fantasy points across the best players in the match under the Dream11 team creation constraints (refer to **Important Constraints** section above)

- **Fantasy Points:** Fantasy points are computed based on the following [point-system](#)

Note: This UI will be tested on all the available matches in the [cricsheet](#).

Judging Criteria

Your solution will be judged based on the following aspects:

Model Accuracy would solely be judged on the Model UI, and rest of the things would only be judged on Product UI.

- **ML Model Quality & Explainability (60%)**

1. Model accuracy and robustness in predicting player performance.
2. Explainability and transparency of the model, including clear documentation and feature importance.
3. Creativity in leveraging player performance data and contextual factors for effective team formation.
4. Effective usage of advanced technologies for presenting explanations.

- **User Interface (20%)**

1. An intuitive and interactive UI that enhances the team-building experience.
2. Effective integration of audio/video descriptions in the interface for user guidance.

- **Presentation & Documentation (20%)**

1. Clarity in articulating the solution, model design, and UI features.
2. Well-structured presentation of the team's work, results, and model performance.
3. Completeness of documentation, making the solution easy to understand and evaluate.

No data after 2024-06-31 should be used for training the model. This is a very strict rule and non-adherence to this will lead to disqualification.

Model Evaluation Methodology: Model UI will be used to judge the model performance only, and the model would be trained on all the matches till 2024-06-31. Its performance would be judged on the basis MAE of Fantasy Points on the matches 2024-07-01 onwards.

Submission Guidelines & Important Points

1. **Code & Documentation:** Submit all code files, along with a README explaining the setup and usage of your solution. Include model explainability and GenAI implementation details. All files are to be submitted on GitHub.

GitHub Guidelines:

https://github.com/Otakusky/D11_Sample_Structure.git

2. Add requirements.txt with versions of the libraries being used in the project.

3. Do not include any matches other than those of the <https://cricsheet.org/>

However you are free to use any other data, for Eg: weather, pitch report, if you are using another source of data ensure that it is well integrated in the UI and available publicly.

4. Do everything programmatically, from downloading the data till shipping the codes on github. Python is preferred however you are free to use any other programming language.

5. Since your model will be judged on the matches that will take place after the submission date ensure that whatever data/feature is being used will be available for future matches as well.

6. If the model's performance as per the generated CSV in Model UI cannot be replicated, It will result in instant disqualification.

7. Product UI – Your Ultimate Team Selection Tool - Should generate teams within 10 secs max

8. Cricket matches also include domestic, tier 2 and tier 3 matches which are less popular.

For Reference Open Dream11 app and you can check active matches on that day

9. Demo & Presentation: Submit a video demo of the solution in action, demonstrating how the ML model recommends players and how the UI facilitates team creation.

10. Report: Include a report (up to 10 pages) detailing your approach, model architecture, features used, and insights derived from the results.

11. Data for training : No data after 2024-06-30 should be used for training any model. This is a very strict rule and non-adherence to this will lead to disqualification.

Have Following assumption while predicting a team for a match:

- Data for training : No data after 2024-06-30 should be used for training any model. This is a very strict rule and non-adherence to this will lead to disqualification.
- Have following assumption while predicting a team for a match
 - 1.Toss has not happened yet, so there is no information on actual playing 11 from a team (out of ~15) or the team batting first.
 - 2.You have information on the complete squad of the team which is a 15 or more member squad for that match for a team
 - 3.You have information on the stadium the match is being played and type of pitch on that stadium in general.

Good Luck and Innovate Freely! Use creativity and explainable AI techniques to make this tool informative and impactful for both users and evaluators.