FINAL PROJECT PROPOSAL

DraftZone

PREPARED FOR
COM S 3190 - Construction of User Interfaces
Iowa State University Computer Science Department

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1. Introduction

We, Neel Rajan and Aadi Bhatia, are from Team PS_2, both juniors majoring in Computer Science and Data Science at Iowa State University. We are currently enhancing our skills in full-stack web development through COM S 3190, focusing on React for the frontend and

Node.js for the backend.

From class projects and labs, we have developed interactive web applications using React, and Node JS. By combining this experience with backend integration and database management, we aim to design a complete, interactive fantasy football web platform. Our shared enthusiasm for sports analytics and technology inspired us to create DraftZone, a project that merges data-driven insights with the thrill of football drafting.

2. Purpose of the Proposal

DraftZone is an interactive fantasy football platform that enables users to simulate drafts, view player statistics, and engage in real-time analytics. The purpose of this project is to deliver an engaging experience for users who want to analyze player performance, create mock drafts, and make data-informed team-building decisions.

Unlike traditional static fantasy tools, DraftZone will integrate live sports APIs to provide up-to-date player data, draft trends, and rankings. It will feature both user and admin interfaces, with AI-assisted draft recommendations based on position, league format, and player performance trends. Our goal is to blend sports analytics, interactivity, and modern web design into a single, seamless platform.

3. Goals & Objectives

Goals:
- Develop a responsive full-stack web application using React, Node.js, and MongoDB.
- Create an intuitive, visually appealing interface for sports fans.
- Integrate live sports APIs for real-time player statistics and draft insights.
- Implement AI-assisted draft recommendations using Gemini 2.0 Flash.
- Provide CRUD functionality for both Admin and User roles.
- Ensure secure authentication, efficient data management, and smooth user experience.

Objectives:
- Week 1 (Nov 10–Nov 16): Set up React structure, navigation, and initial wireframes.
- Week 2 (Nov 17–Nov 23): Build frontend pages (Home, Search, Draft Simulation).
- Week 3 (Nov 24–Nov 30): Implement backend logic for data management.
- Week 4 (Dec 1–Dec 7): Connect backend with APIs, integrate authentication.
- Week 5 (Dec 8–Dec 14): Test, debug, deploy, and prepare presentation.

4. Project Description

DraftZone will allow users to explore NFL player data, simulate drafts, and view performance analytics. The system will have two main actors: User and Admin. Users can browse players, simulate drafts, and receive AI suggestions; Admins can manage player datasets and oversee user activities.

Frontend: React, React Router, Tailwind CSS
Backend: Node.js, Express

Database: MongoDB Atlas
APIs: Sportradar API (player stats), Sleeper API (fantasy data), Gemini 2.0 Flash (AI)

Planned Pages:
1. Home Page: Overview of DraftZone and top trending players.
2. Player Search Page: Search and filter players by position, team, and stats.
3. Draft Simulator Page: Mock draft with real-time updates and AI suggestions.
4. User Dashboard: Personalized mock drafts, saved rosters, and history.
5. Betting Odds Page: Display current betting odds and fantasy projections to help users make informed draft decisions.
6. Admin Panel: CRUD management for players, users, and statistics.

5. Exercising Project Options

We have selected Option 1: Extend the Midterm Project.

This version of DraftZone rebuilds and expands our midterm project using React, Node.js, and MongoDB, focusing on dynamic functionality and live data.

Planned enhancements include:
- Complete React frontend redevelopment with modular components.
- Live data fetching and visualization using external sports APIs.
- AI draft assistant using Gemini 2.0 Flash for prediction and player analysis.
- Secure login, user dashboards, and admin tools for scalability.

6. Feature Ownership & Responsibility

Each team member will take full-stack ownership (frontend + backend) of assigned features:

Feature	Description	Owner
Login & Signup	User authentication, secure access control	Neel Rajan
Search & Filter	Player search and filter by team/position	Aadi Bhatia
Draft Simulator	Mock draft flow with AI player suggestions	Aadi Bhatia
User Dashboard	Displays saved drafts and player watchlists	Neel Rajan
Admin Panel	CRUD for players and users	Aadi Bhatia
AI Draft Assistant	Gemini-based AI recommendation module	Neel Rajan

7. Resources and Tools

Technologies: React, Node.js, Express, MongoDB Atlas, React Router, Axios, Tailwind CSS.
Design Tools: Figma, Excalidraw.
Version Control: GitLab (shared repository with issue tracking).
Testing: Postman, Jest, Browser DevTools.
Hosting: Vercel (frontend), Railway (backend).

Each member commits approximately 6–8 hours weekly to development, testing, and documentation.

8. Data Sources and Management

Primary Data Sources:
- Sportradar API: For player performance and live game data.
- Odds API: For integrating betting trends and team odds.
- MongoDB Atlas: For storing user profiles, mock drafts, and watchlists.

Data Flow:
1. Frontend triggers an API request (via Axios).
2. Express backend routes the request and fetches external API data.
3. Data is validated, processed, and stored in MongoDB.
4. Results are rendered dynamically in React UI components.

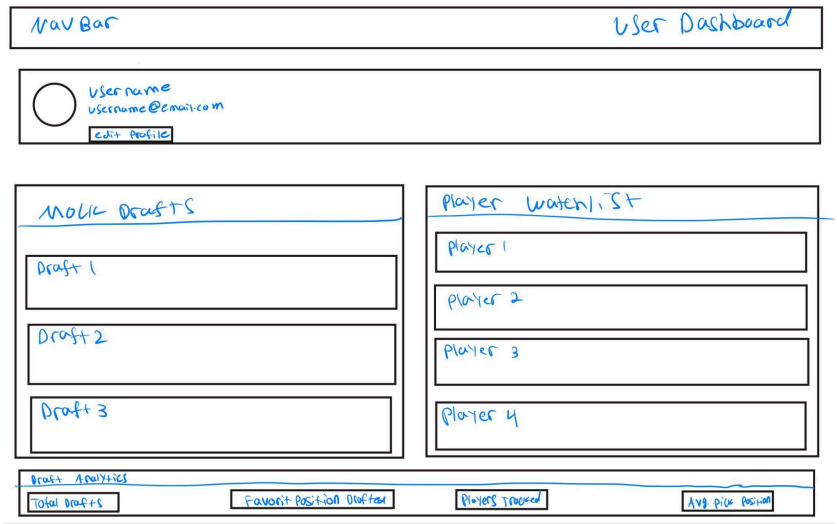
9. AI Features (Optional)

Using Gemini 2.0 Flash, we plan two AI-driven features:
1. AI Draft Assistant: Suggests optimal player selections based on user's position and roster.
2. AI Trade Analyzer: Evaluates hypothetical trades between users for fairness and performance impact.

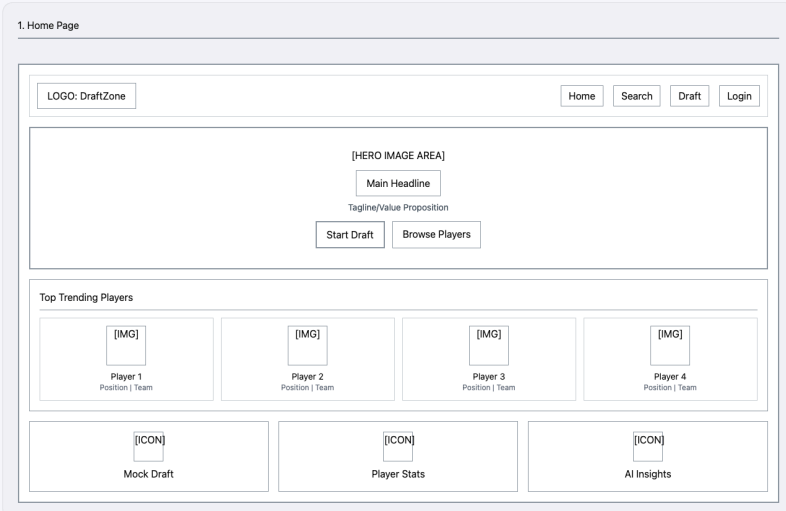
10. User Experience Views

Wireframes (to be created in Figma & Excalidraw):
- Home Page: Featured players and quick links.
- Player Search Page: Interactive player cards with filters.
- Draft Simulator: Drag-and-drop draft board with AI suggestions.
- Dashboard: User profile, saved drafts, and analytics.
- Admin Panel: CRUD interface for managing player data.

User Dashboard:



Home Page (Created with Figma):



11. Final Comments

DraftZone combines our shared passion for football, data, and software development. It challenges us to apply full-stack concepts while designing for user experience and data accuracy.

Learning Outcomes:
- Full-stack web app design using React and Node.js.
- Integration of live APIs and database management.
- Building and testing AI-assisted recommendation systems.

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