Winning Technical Challenge

Description of the technical challenge

WINNING.

Technical Test

This technical assessment is designed to evaluate your general engineering and programming knowledge, problem-solving skills and ability to integrate different technologies. The challenge consists of two distinct but related exercises.

1. Data Integration & Web Scraping

Objective: Develop a web scraping tool that extracts football data from a specific target domain (e.g., Transfermarkt or similar). The program should take a Team Name and a Season (e.g., 2024-2025) as inputs and output structured data.

Data Requirements: The scraper should generate a database schema or structured output (JSON/CSV) containing at least the following entities:

- Players: name, age, current_club, birth_date, preferred_foot, nationality, etc.
- Transfers: player_id, from_club, to_club, transfer_fee, transfer_date.
- Valuations: player_id, valuation_amount, valuation_date.

Note: You are encouraged to capture additional attributes or create extra tables if they add value to the dataset.

Documentation & Deliverables. Please provide a professional README.md that includes:

- **Technical Decisions**: Explanation of the libraries/frameworks chosen and why.
- **Challenges**: A description of any anti-scraping mechanisms or data inconsistencies encountered and how you solved them.
- **Enhancements**: Any extra features implemented (e.g., scraping a whole league instead of a single club, handling date ranges, or concurrent scraping).

2. AI Integration & Web Development

Objective. Create an interactive and reactive web application for a football transfer strategies simulator. The main goal is to demonstrate your ability to integrate AI/ML technologies for data processing, visualization, or simulation adaptation.

Application Logic. The application would accept the following inputs:

- Club Name
- Starting Season
- Transfer Budget
- Salary Budget

Based on these inputs, the application would visualize/simulate results for each year/strategy, such as:

- Players bought/sold.
- Current squad list.
- Squad valuation changes.
- Net financial benefit.

The AI Component. You are expected to integrate an AI/ML component. This could be:

- Using LLMs to generate a text summary of the season.
- AI-assisted visualization of squad depth.

Important: We do not expect a simulation engine. A simple logic mock-up for the simulation mechanics is acceptable and appreciated. We are assessing the architecture, UI/UX and AI integration.

Deliverables

- **Source Code**: Hosted in a public GitHub repository.
- **Deployment**: A live URL where the app can be tested (e.g., Vercel, Netlify, Render, AWS Free Tier).
- **Documentation**: A section in your README covering:
    - Stack used (Frontend, Backend, AI models).
    - Limitations and trade-offs.
    - Instructions on how to run it locally.