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CRICKBIDDER

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Abstract: Local and grassroots cricket tournaments continue to rely on manual player selection methods such as verbal bidding, paper records, and spreadsheet-based tracking. These traditional approaches lack transparency, are prone to calculation errors, and often result in disputes, biased selections, and inefficient budget management. The absence of real-time validation and post-auction analytics further reduces the credibility and effectiveness of tournament organization.

To address these challenges, CrickBidder is proposed as a web-based online cricket player auction platform that digitizes and automates the entire auction workflow. The system enables organizers to conduct IPL-style live auctions where teams can bid for registered players in real time under predefined rules. CrickBidder incorporates role-based access for organizers, teams, and players, ensuring secure participation and controlled auction management. Real-time communication mechanisms ensure instant bid updates, timer synchronization, and transparent winner determination.

The platform is developed using modern web technologies, including React.js for the frontend, Node.js with Express.js for backend services, MongoDB for data storage, and Socket.io for real-time bidding updates. Automated bid validation, purse management, and squad constraints reduce human errors and ensure fairness. Post-auction reports and analytics provide valuable insights into team spending and player demand.

By digitizing the auction process, CrickBidder enhances transparency, efficiency, and professionalism in grassroots cricket management. The system demonstrates how real-time web technologies can be effectively applied to modernize sports management and deliver a scalable, data-driven auction solution.

I. INTRODUCTION

Cricket is one of the most widely played sports at the grassroots and semi-professional levels, where tournaments are often organized with limited technological support. Despite the popularity of player auctions inspired by professional leagues such as the Indian Premier League (IPL), most local tournaments continue to follow manual auction processes. These processes rely on verbal bidding, handwritten notes, or basic spreadsheets, which are inefficient and error-prone. Manual auction systems frequently lead to budget miscalculations, delayed updates, lack of transparency, and disputes among participating teams. Organizers face difficulties in tracking bids, enforcing auction rules, and maintaining accurate records, while players often experience biased or unclear selection processes. These limitations reduce trust in tournament management and negatively impact the overall quality of the event.

CrickBidder is introduced to overcome these limitations by providing a structured, transparent, and automated online auction platform tailored for local and semi-professional cricket tournaments. The system enables organizers to manage auctions digitally while allowing teams to participate in live bidding sessions through a secure web interface. Real-time bid validation and automated rule enforcement ensure fairness and consistency throughout the auction.

By integrating real-time communication, role-based access control, and centralized data management, CrickBidder bridges the gap between professional auction systems and grassroots cricket needs. The platform demonstrates how modern web technologies can transform traditional sports management practices into efficient and trustworthy digital solutions.

1.1 Project Description

CrickBidder is a real-time, web-based cricket player auction platform designed to automate and streamline the player selection process for local and semi-professional tournaments. The system supports live auctions where teams bid for players under predefined constraints such as base price, bid increment, team purse limits, and squad size restrictions.

The platform is designed for three primary stakeholders: Organizer, Team, and Player. Organizers manage auction setup, approve teams and players, configure rules, and monitor bidding activities. Teams participate in auctions by placing bids and managing their budget, while players register and track their auction status. All auction data is stored digitally, ensuring transparency and post-auction analysis.

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1.2 Motivation

As a cricket player, I've seen many local tournaments where player auctions are messy and confusing. Teams rely on papers or spreadsheets, budgets are hard to track, and the process often feels unfair. Watching professional leagues like the IPL, I realized how smooth auctions can be with technology and analytics.

I wanted to bring the same clarity to local cricket tournaments. By combining my experience as a player with my coding and analytics skills, I aimed to build a platform that makes auctions simple, fair, and data-driven. This project is my attempt to make local cricket auctions professional, transparent, and smarter.

II. RELATED WORK

Several studies have explored the development of online auction platforms and sports-related bidding systems. Research on online auction systems highlights the importance of real-time bid processing, secure authentication, and scalable system architecture. Studies related to IPL-style auction systems emphasize transparency, automated budget management, and structured bidding workflows.

Existing research on real-time web applications demonstrates the effectiveness of event-driven architectures and WebSocket-based communication for live interactions. However, many systems focus either on generic auction platforms or professional league-level solutions. There is limited work addressing the specific needs of grassroots cricket tournaments, such as affordability, simplicity, and ease of adoption.

CrickBidder addresses this gap by combining real-time auction mechanisms with a user-friendly interface and role-based access control, making professional auction concepts accessible to local tournaments.

III. METHODOLOGY

A. System Architecture Overview

CrickBidder is designed as a **web-based client–server application** with a multi-layered architecture consisting of:

Presentation Layer:
Built using React.js, this layer provides user interfaces for organizers, teams, and players. It displays auction dashboards, player details, live bids, timers, and notifications.

Application Layer:
Implemented using Node.js and Express.js, this layer handles business logic such as auction control, bid validation, purse management, and squad constraints.

Real-Time Communication Layer:
Socket.io is used to establish persistent connections between clients and the server, enabling instant bid updates, timer synchronization, and real-time notifications.

Data Layer:
MongoDB is used to store user credentials, team details, player profiles, bid history, and auction results securely.

B. User Roles and Access Control

The methodology defines three primary user roles:

- **Organizer:**
  Responsible for creating auctions, registering players, approving teams, configuring auction rules, and monitoring live bidding.
- **Team:**
  Participates in live auctions, views player details, tracks budget usage, and places bids.
- **Player:**
  Registers on the platform and tracks auction participation status.

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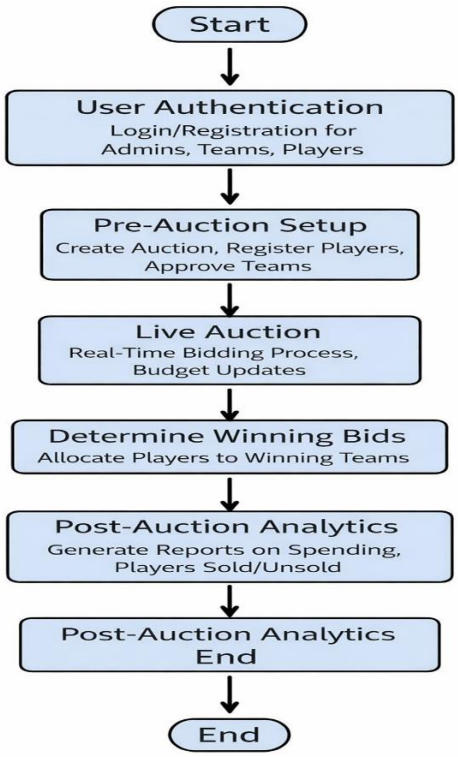

Fig. 1. Flowchart of methodology

C. Auction Workflow Methodology

The auction process in CrickBidder follows a clearly defined workflow:

Auction Setup:

The organizer configures auction parameters such as base prices, bidding increments, team purse limits, squad size limits, and auction schedule.

Player and Team Registration:

Players and teams register on the platform. Teams are approved by the organizer before participating in the auction.

Auction Initialization:

The organizer starts the auction, and player details are displayed sequentially.

Live Bidding:

Teams place bids in real time. Each bid is validated instantly to ensure it complies with auction rules.

Bid Validation:

The system verifies bid amount, team purse availability, and squad constraints before accepting bids.

Player Allocation:

When the bidding timer expires, the player is assigned to the highest bidding team, and the team purse is updated automatically.

Result Storage and Reporting:

Auction results and bid history are stored in the database and made available for reporting and analysis.

D. Hardware and Software Requirements

Hardware:

- Processor: Intel Core i5 or equivalent
- RAM: 8 GB
- Storage: 20 GB free disk space
- Display: 1024 × 768 resolution
- Internet: Stable broadband connection.

Software:

- Operating System: Windows / Linux / macOS
- Web Browser: Google Chrome or any modern browser
- Backend Runtime: Node.js

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- Database Server: MongoDB
- Code Editor: Visual Studio Code

IV. SIMULATION AND EVALUATION FRAMEWORK

This section describes the simulation environment, evaluation methodology, and performance assessment approach adopted for the CrickBidder – Online Cricket Player Auction Platform. The framework is designed to validate the correctness, reliability, and efficiency of the system under realistic auction scenarios. It evaluates how effectively the platform manages real-time bidding, rule enforcement, data consistency, and user interaction during live auctions.
The evaluation focuses on simulating real tournament conditions involving multiple teams, players, and concurrent bidding activities, ensuring that the system performs as expected in practical usage.

A. Simulation Environment

The CrickBidder system is deployed in a controlled web-based environment to simulate live cricket player auctions. The simulation setup includes:

- Multiple registered teams with predefined purse limits
- A set of registered players with base prices and roles
- An organizer account to configure and control the auction
- Simultaneous team participation during live bidding

B. Auction Simulation Workflow

The simulation follows a structured workflow to evaluate system behavior:
Auction Configuration:
The organizer configures auction rules such as bid increment, time duration, team purse limits, and squad size constraints.
User Participation:
Teams log in using authenticated credentials and join the auction room.
Live Bidding Simulation:
Multiple teams place bids simultaneously for players within a fixed time window.
Real-Time Validation:
Each bid is validated instantly for amount, purse availability, and rule compliance.
Player Allocation:
On timer expiration, players are assigned to the highest bidding team.
Result Storage:
Auction outcomes and bid history are stored in the database for evaluation.

C. Evaluation Metrics

Each interview session is uniquely associated with a digital session record that links candidate inputs, response transcripts, and AI evaluation results. As candidates progress through interview questions, responses are processed and stored securely. Upon completion, users can review detailed feedback reports that include ratings, answer analysis, and improvement suggestions. This process ensures transparent, repeatable, and trustworthy evaluation for both candidates and recruiters.

D. Results and Observations

The performance of the CrickBidder system is evaluated using the following metrics:

- **Bid Response Time:**
  Measures the time taken for a bid to be processed and reflected across all connected users.
- **Real-Time Synchronization Accuracy:**
  Evaluates consistency of bid values and auction state across different client sessions.
- **Rule Enforcement Accuracy:**
  Validates correct rejection of invalid bids and enforcement of purse and squad limits.
- **System Reliability:**
  Assesses system stability during continuous bidding and multiple concurrent users.
- **Data Integrity:**
  Verifies correctness and completeness of stored auction data.

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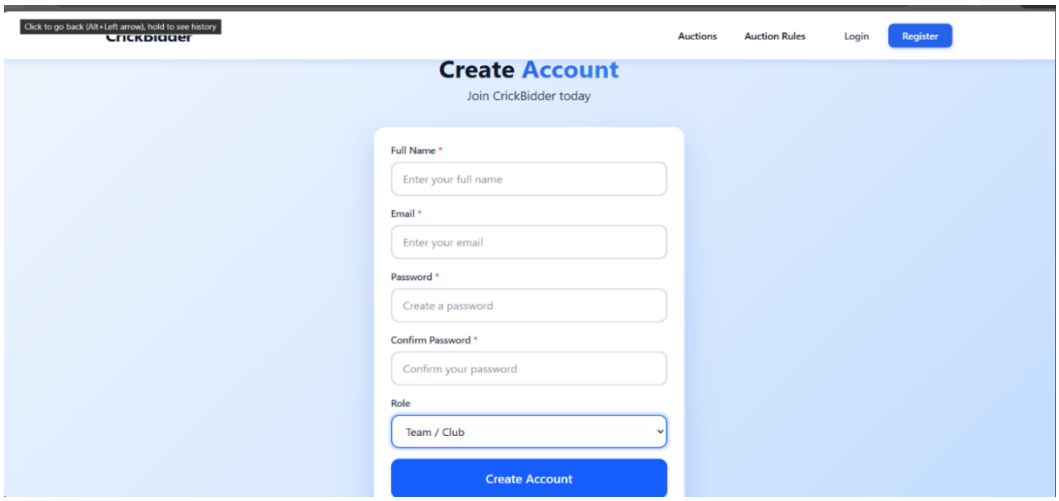

Fig.2. Add Details Page

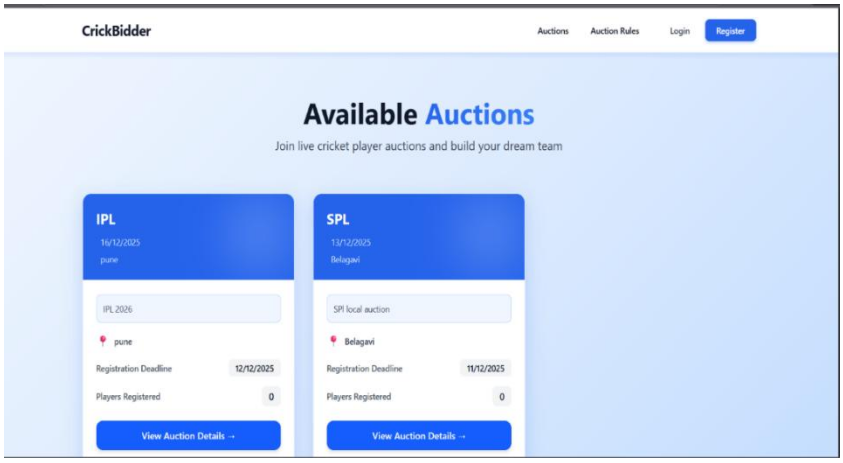

Fig.3. Available Auctions Page

This displays the All the available auctions that are currently available for the users to participate and register themselves in it. All these auctions will be displayed only if they are yet to occur.

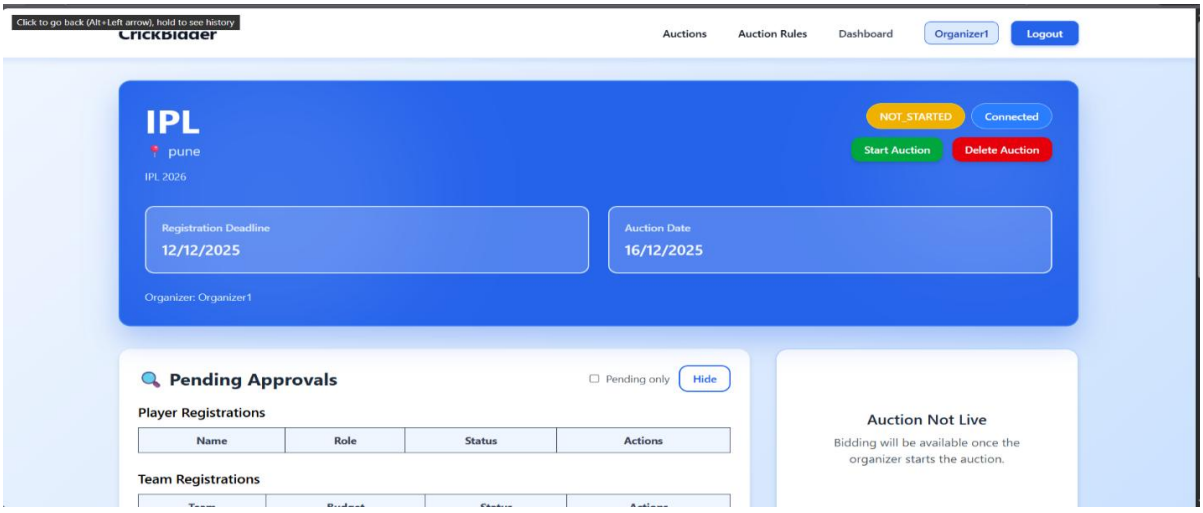

Fig. 4. Organizer Page

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V. RESULTS AND DISCUSSION

The results obtained from the implementation and evaluation of the CrickBidder system demonstrate that the platform effectively automates and manages the cricket player auction process in a reliable and transparent manner. Live auction simulations showed smooth execution of real-time bidding with instant bid updates, synchronized timers, and accurate winner determination across multiple participating teams.

The system consistently enforced auction rules such as bid increments, team purse limits, and squad size constraints, successfully rejecting invalid bids and preventing manual errors. Real-time communication ensured low latency and stable performance even during concurrent bidding scenarios, while all auction data, including bid history and final allocations, was stored securely and retrieved accurately for reporting. From an operational perspective, organizers were able to manage auctions efficiently with minimal manual intervention, teams experienced a fair and competitive bidding environment, and players gained clear visibility into auction outcomes.

Overall, the results confirm that CrickBidder provides a robust, efficient, and scalable solution that significantly improves transparency, reduces disputes, and modernizes the player auction process compared to traditional manual methods.

VI. CONCLUSION

He CrickBidder project successfully demonstrates the application of modern web technologies to automate and enhance the cricket player auction process for grassroots and semi-professional tournaments. By replacing traditional manual auction methods with a real-time, rule-driven digital platform, the system improves transparency, accuracy, and operational efficiency. The integration of live bidding, automated bid validation, and role-based access control ensures fair participation for all stakeholders, including organizers, teams, and players. Evaluation results confirm that the system performs reliably under concurrent bidding scenarios, maintains data integrity, and provides a seamless user experience. Overall, CrickBidder proves to be a practical, scalable, and effective solution for modernizing cricket auction management, bridging the gap between professional league practices and local tournament requirements, and laying a strong foundation for future enhancements such as advanced analytics and multi-tournament support.

VII. FUTURE WORK

While the CrickBidder system effectively addresses the core requirements of conducting transparent and real-time cricket player auctions, several enhancements can be incorporated in future versions to further improve its functionality and scalability. Future work may include integrating player performance analytics based on past match data to assist teams in making more informed bidding decisions. Support for custom auction formats such as mini-auctions, mega-auctions, and draft-based selections can be added to accommodate different tournament structures. Introducing a spectator mode would allow non-participating users to view live auctions, increasing engagement and transparency.

Additional enhancements may involve multi-language support to improve accessibility, exportable reports in formats such as PDF and Excel for official record keeping, and integration of payment and entry fee management to automate financial transactions. Furthermore, the system can be extended to support multiple tournaments and seasons, enabling long-term data analysis and broader adoption across regions.

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