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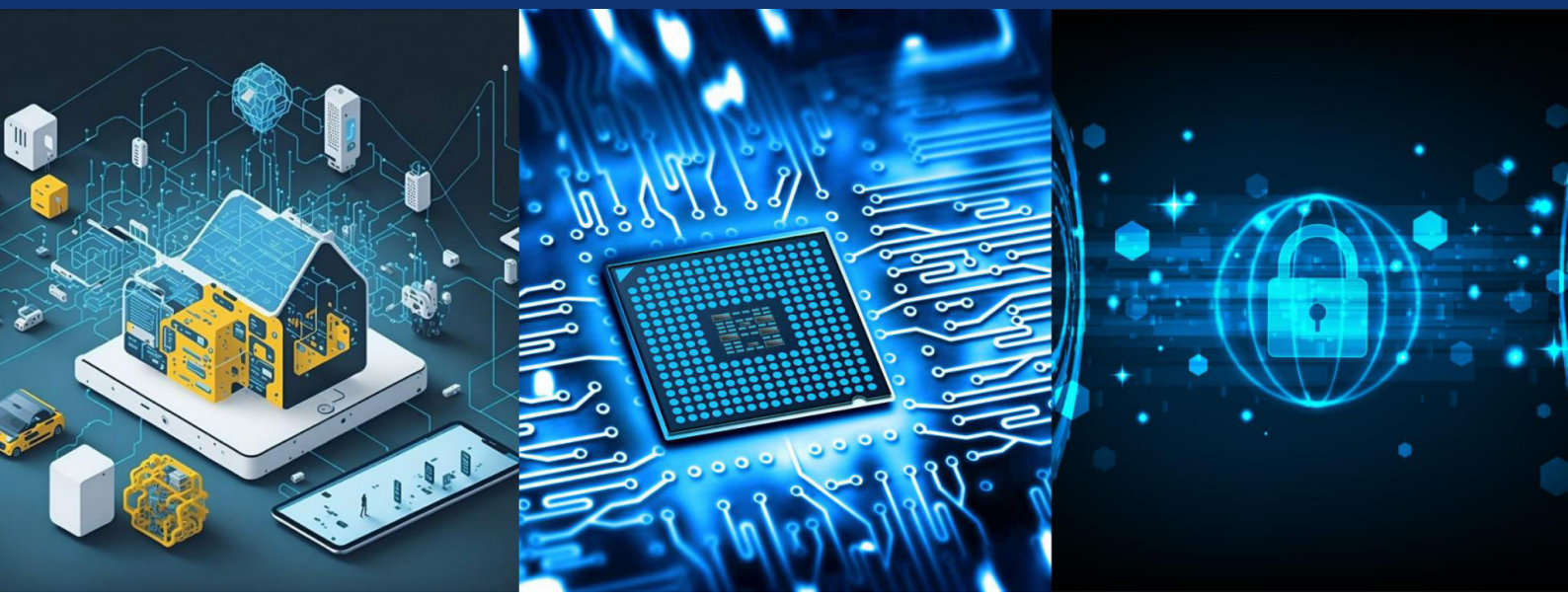

International Journal of Innovative Research in Computer and Communication Engineering

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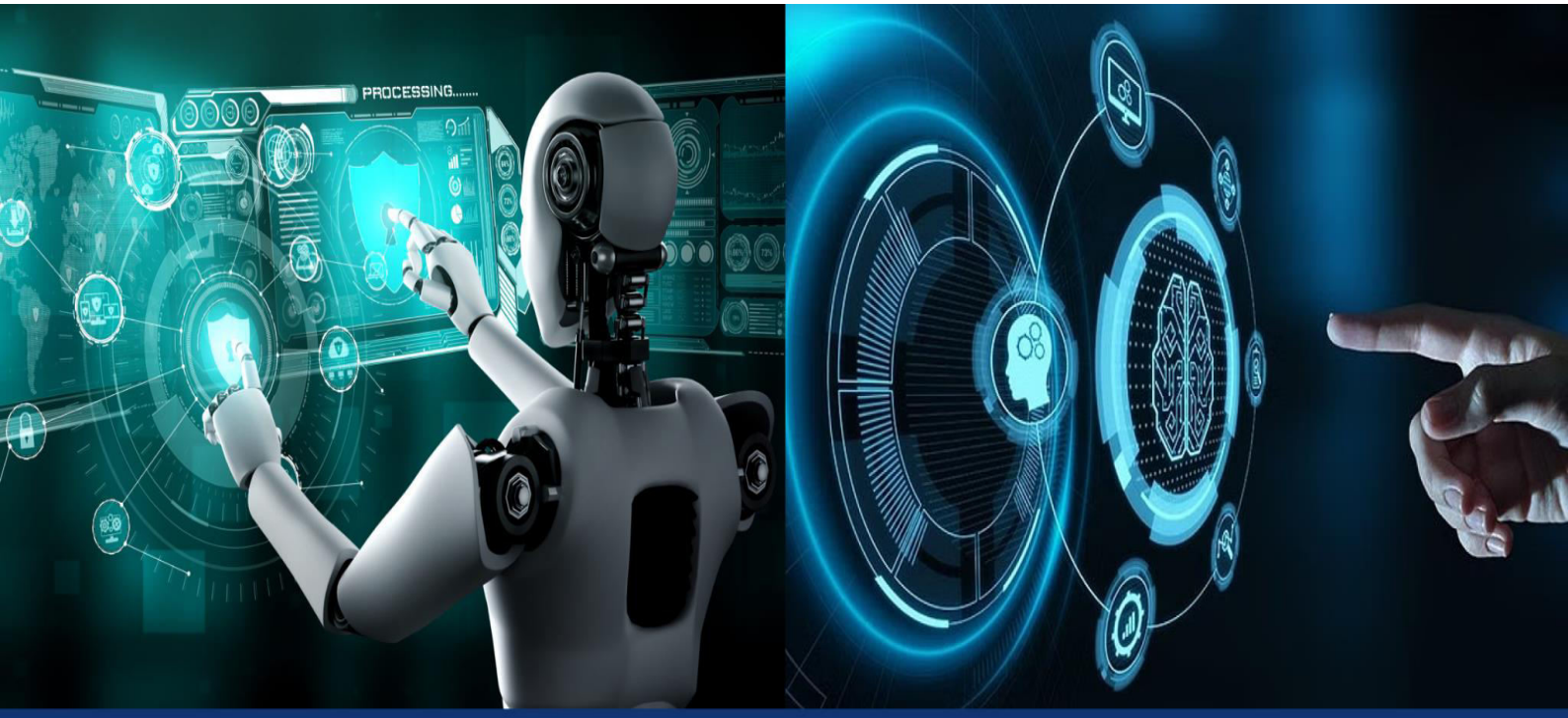

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AI-SportsHub: Centralized Sports Management System

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ABSTRACT: AI SportsHub is an innovative, AI-enabled platform developed on Django that aims to transform sports development in India. It acts as a connecting bridge between players, coaches, and institutions with the help of real-time performance monitoring, interactive learning modules, and a socializing platform. The platform has a dynamic environment comprising educational materials, media-enhanced player and coach profiles, scorecard automation, and an exclusive e-commerce store for sporting gear and equipment. By empowering district-to-national level rankings, it encourages transparent talent discovery and merit-based progression. With a scalable system and user-friendly interface, the platform aims to create a digitally interconnected and performance-driven sports network throughout the country.

KEYWORDS: Artificial Intelligence (AI), Sports Management System, Performance Analytics, Django Web Application, Athlete-Coach Interaction, SOS emergency feature, Sports E-commerce Integration, E-Learning, AI Chatbot.

I. INTRODUCTION

With the rise of the digital revolution, the sports industry is undergoing a significant transformation toward data-driven decision-making, integrated talent management, and AI-powered collaboration. Traditional systems often lack the flexibility and scope to address the diverse needs of athletes, coaches, sponsors, and sports bodies, creating a gap in streamlined sports governance. AI Sportshub, a sophisticated web-based platform developed using Django, addresses this challenge by offering a centralized ecosystem that unifies athlete profiling, performance tracking, e-learning modules, social connectivity. Athletes can share progress and achievements through structured profiles and media-rich posts, while coaches manage scorecards and upload educational resources. The platform also integrates an e-commerce module for equipment access and a district-to-national-level ranking system to encourage healthy competition. By bridging the gap between grassroots and professional levels, AI Sportshub promotes inclusive sports development and enhances transparency, collaboration, and growth using modern web technologies and AI-driven capabilities.

II. RELATED WORK

Existing research in sports management has mostly brought forth digital platforms for general functionalities such as player profiles, game scheduling, and performance tracking. TeamSnap and Hudl streamlined coach-athlete communication and tracked statistics, but did not have AI incorporation for deeper analytics or real-time decision-making. Recent studies have utilized artificial intelligence and deep learning for performance prediction, prevention of injury, and skills analysis have aided automated feedback and content generation. Edge computing and reinforcement learning for real-time adaptive training have also been investigated between 2021 and 2024.These systems tend to solve individual needs in isolation. AI Sportshub fills this void by providing a centralized, AI-powered web platform that integrates athlete tracking, e-commerce and e-learning.

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III. PROPOSED SYSTEM

- Input Data: The system receives sports-related information, e.g., athlete performance measures, event data, or video. The information may be noisy or unstructured and might need to be cleaned and processed.
- Pre-processing: The data is subjected to pre-processing tasks like normalization, handling missing values, and scaling features to render the data consistent. This further involves preparing data for model training, e.g., data augmentation in the event of video-based analysis or time-series alignment in the event of performance data.
- Model Training: A machine or deep learning model is trained to recognize patterns within the data, including performance abnormalities or at-risk-of-injury conditions. The model is trained on a labeled dataset of athlete movements, performance history, or injury reports to establish the relationship between training intensity and injury occurrence.
- Prediction and Decision-Making: The model trained is employed to forecast future results, for example, risk of injury or best training loads. It can also be utilized in making real-time decisions during sporting events, offering tactical recommendations or performance predictions from existing player information.

The Main Objectives of Our Proposal Are:

- To Attain Precise Performance Prediction and Injury Risk Evaluation.
- To Apply Real-Time Tactical Decision Making.
- To Improve Sports Data Utilization for Training and Rehabilitation.

IV. PSEUDO CODE

Step 1: User clicks SignUp or Login

Step 2: If SignUp
→ Get username, email, password, sport, location, profile type
→ Create user and user profile
→ Redirect to login page

Step 3: If Login
→ If valid, redirect to user dashboard
→ Else, display "Invalid Credentials"

Step 4: Upon login, retrieve user information
→ Display username, profile picture, bio
→ Display posts, videos, resume
→ Display profile type: Player or Coach

Step 5: User uploads post
→ Upload image + caption
→ Save to Post model
→ Display on profile and social feed

Step 6: Coach loads training video
→ Load video file + caption
→ Display in "Learn and Grow" area

Step 7: User goes to shop
→ See product cards (jerseys, bats, shoes)
→ Choose item and click "Buy"

Step 8: User opens AI Chatbot from Navbar
→ User types a message
→ Prompt sent to Gemini AI backend

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→ Process response using Gemini API
→ Render AI-generated reply in chat window

Step 9: User clicks Logout
→ End the session
→ Send the user back to the Home or Login page

V. SIMULATION RESULTS

The AI SportsHub platform was validated by simulated interactions by athletes, sponsors, and community users. Posts and videos were successfully uploaded by athletes, and the uploaded videos were automatically displayed on their profiles. The e-learning module enabled users to watch training content, and the e-commerce module operated effectively for sports gear visibility. The integrated AI chatbot, fueled by the Gemini API, replied correctly to user queries, improving interaction and accessibility. Overall, the system demonstrated robust usability, stable performance, and efficient AI-based communication features, making it viable for real-world deployment in centralized sports management.

VI. CONCLUSION AND FUTURE WORK

AI SportsHub is an end-to-end sports management platform that overhauls how athletes, coaches, and sponsors engage and develop together within an integrated digital community. Through making it possible for athletes to share performance updates, enabling coaches to upload learning materials and handle scorecards, and incorporating social and learning content, the platform enables a cooperative environment with the primary goal of enhancing sports development. In the future, AI SportsHub can be even enhanced by using wearable device information for real-time health monitoring, developing its AI chatbot to become a tailored coaching assistant, and adding gamified elements for increasing engagement. Further developments in the form of multilingual assistance, AI video analytics for review of performance, and mobile application creation can help the system to become more interactive, inclusive, and scalable to users nationwide.

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