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Review on Sports Management System Using Machine Learning

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1.INTRODUCTION

The Sports Management System (SMS) objective is to provide which manages the activity of many sports at a time. It also manages the selection activity of students to college and to state level. The users will consume less amount of time when compared to manual paper work through the automated system. The system will take care of all the servicing activity in a quick manner data storing is easier. It will be able to check any report at any time. Paper work and manual work is reduced. The system is user friendly and easy to use.

- Goal oriented.

- Deliberately Structured.

- Deliberately Coordinated.

- Exist as a system of individuals and groups.

- Made up of people with special skills.

IMPORTANCE OF SPORTS MANAGEMENT

Sports management plays a crucial role in the success and efficiency of sports organizations, teams, and events. Integrating machine learning into sports management can enhance various aspects of the sports industry. Here's why sports management using machine learning is important:

Performance Analysis: Machine learning algorithms can analyze vast amounts of player and team performance data to identify patterns, trends, and insights. Coaches and managers can use this information to make data-driven decisions regarding training, tactics, and player selection, ultimately improving performance on the field

Injury Prevention: Machine learning models can predict injury risks by analyzing player biometrics, movement patterns, and workload data. Sports management systems can use these predictions to customize training programs, manage player fatigue, and reduce the likelihood of injuries, thus optimizing player availability and performance.

Fan Engagement: Understanding fan preferences and behavior is crucial for sports organizations to enhance fan engagement and maximize revenue streams. Machine learning algorithms can analyze social media data, ticket sales, and viewing patterns to identify trends and personalize marketing strategies, promotions, and content delivery.

ABOUT THE PROJECT

- The project "Sports Management Using Machine Learning" aims to revolutionize how sports organizations operate and optimize performance through the integration of advanced data analytics techniques.

- By leveraging machine learning algorithms, the project seeks to enhance various aspects of sports management, including player performance analysis, injury prediction and prevention, fan engagement strategies, and player recruitment and scouting.

- Through the collection, preprocessing, and analysis of vast amounts of data, the project aims to provide actionable insights and personalized solutions tailored to the specific needs of sports teams and organizations.

- Ultimately, the goal is to improve decision-making processes, maximize efficiency, and elevate the overall performance and experience within the sports industry.

EXISTING SYSTEM

In the recently proposed existing model called Sports Analysis, In the existing Sports Event Management system, students are not able to get proper information about the games conducted in various colleges.

- The student needs to spend the time to get the information about the game.

- The student should attend the venue to get registered for the game which takes a lot of time

- The registration process and score board process are in table format

DRAWBACKS OF EXISTING SYSTEM

The drawbacks in existing sports management system are

- **Limited functionality**: Some sports management systems may lack certain features or functionalities that could greatly benefit users, such as integrated communication tools, scheduling capabilities, or advanced analytics.

- **Poor user interface/experience**: Complicated or unintuitive interfaces can make it difficult for users to navigate the system efficiently, leading to frustration and decreased productivity.

- **Data security concerns**: Inadequate security measures can put sensitive information at risk of unauthorized access, potentially leading to breaches of privacy or data theft.

- **Scalability issues**: Some systems may struggle to handle large amounts of data or a growing number of users, leading to performance issues or downtime during peak usage periods.

- **Lack of customization options**: Users may find themselves limited in their ability to customize the system to meet their specific needs or preferences, leading to inefficiencies and suboptimal workflows.

- **Integration challenges**: Difficulty integrating with other software or systems can hinder the effectiveness of a sports management system, particularly if it cannot easily share data with other tools used by the organization

- **High cost**: The upfront and ongoing costs associated with some sports management systems may be prohibitive for smaller organizations or teams with limited budgets.

- **Limited support/resources**: Inadequate customer support or training materials can make it challenging for users to fully utilize the features of the system, leading to underutilization and dissatisfaction.

- **Outdated technology**: Some sports management systems may be built on outdated technology stacks, making them less reliable, less secure, and more difficult to maintain or update over time.

- **Inflexibility**: Lack of flexibility in terms of adapting to changing needs or requirements can limit the long-term viability of a sports management system, especially in a dynamic and evolving industry like sports management

PROPOSED SYSTEM

A proposed system in sports management leveraging machine learning could offer numerous benefits, including enhanced performance analysis, predictive modeling for player/team success, personalized training recommendations, and improved fan engagement. Here's an outline of such a system:

- **Player Performance Analysis**: Utilize machine learning algorithms to analyze player performance based on various metrics such as physical attributes, gameplay statistics, and historical data. This analysis can provide insights into player strengths, weaknesses, and areas for improvement.

- **Predictive Modeling for Team Success**: Develop machine learning models to predict team success based on factors such as player performance, team dynamics, opponent analysis, and environmental conditions. These predictions can assist coaches and managers in making strategic decisions, such as team selection and game tactics.

- **Injury Prevention and Management**: Implement machine learning algorithms to analyze player biometrics, training load, and injury history to identify injury risk factors and prevent injuries. Additionally, the system can provide recommendations for personalized training programs and recovery strategies to minimize injury risk.

- **Fan Engagement and Personalization**: Utilize machine learning to analyze fan preferences, behavior, and engagement patterns to deliver personalized content, such as tailored game highlights, merchandise recommendations, and targeted marketing campaigns. This can enhance fan satisfaction and loyalty.

- **Scouting and Recruitment**: Utilize machine learning algorithms to analyze player performance data from various sources, such as game footage, statistics, and scouting reports, to identify talented players and prospects for recruitment. This can streamline the scouting process and improve the quality of player acquisitions

- **Performance Benchmarking and Comparison**: Develop machine learning models to benchmark player and team performance against historical data, league averages, and elite standards. This can provide valuable insights into areas of improvement and competitive positioning.

ADVANTAGES OF PROPOSED SYSTEM

- By analyzing individual player data, machine learning can generate personalized training programs tailored to each player's specific needs and objectives, optimizing their development and performance potential.

- In this system, students can get all the information of various games and the venue.

- The student can get registered from anywhere and at any time .They no nee to go to the spot for the registration purpose

- By this method , the students cand players can save a lot of time and effort.

- By this method, they can also view their score and their performance in each sport visually.

HARDWARE SPECIFICATION

System	: Intel3core
Hard Disk	: 8 GB.
Monitor	: 14'ColorMonitor
Compact Disk	: 650 Mb.
Input device	: Standard Keyboard and Mouse.
Mother Board	: Intel
Speed	: 1 GHZ
System Bus	: 64 bit

SOFTWARE SPECIFICATION

Operating System	: Windows 10 Pro
Front End	: Java using servlet
Visualization	: Power Bi
Back End	: Oracle

FRONTEND

JAVA USING SERVLET

History of Java using Servlet

- The Java Servlet API was first publicly announced at the inaugural JavaOne conference in May 1996.

- About two months after the announcements at the conference, the first public implementation was made available on the JavaSoft website.

- This was the first alpha of the Java Web Server (JWS; then known by its codename *Jeeves*)

which would eventually be shipped as a product on June 5, 1997

- In his blog on java.net, Sun veteran and GlassFish lead Jim Driscoll details the history of servlet technology. James Gosling first thought of servlets in the early days of Java, but the concept did not become a product until December 1996 when Sun shipped JWS. This was before what is now the Jakarta EE was made into a specification.

Uses of Java Using Servlet

Java Servlet is used in the following fields:

- Web Application Development

- Enterprise Integration

- Middleware Components

- Content Management Systems (CMS)

- Online Gaming Platforms

- Educational Platforms

- Financial Services

Visualization

Power Bi

- Power BI is a powerful business analytics tool developed by Microsoft, widely used for data visualization and business intelligence purposes. It allows users to connect to various data sources, such as databases, spreadsheets, and cloud services, to import and transform data into interactive reports and dashboards.

- The visualization capabilities of Power BI enable users to create compelling visual representations of data through a wide range of chart types, graphs, maps, and other visual elements. Users can customize these visualizations to suit their specific needs, adjusting colors, formatting, and layouts to enhance clarity and insight

BACKEND

ORACLE

- Oracle Corporation is a multinational technology firm best known for its flagship product, Oracle Database, and a diverse portfolio of corporate software products. Larry Ellison, Bob Miner, and Ed Oates founded Oracle in 1977, and it has since evolved to become one of the world's largest software firms

- The Oracle Database, also known as Oracle, is a relational database management system (RDBMS) that provides powerful data management and processing capabilities. It offers SQL (Structured Query Language) for querying and manipulating data, and it includes high availability, scalability, security, and advanced analytics capabilities.

Features of Oracle

- Oracle Database is one of the world's most popular RDBMS platforms, renowned for its scalability, security, and stability. It supports SQL for accessing and managing data and includes capabilities like ACID compliance, data integrity, and multi-version concurrency management.

- **Scalability**: Oracle solutions are designed to scale efficiently to meet growing demands. Oracle RAC allows for horizontal scaling of databases across clusters of servers, while Oracle Exadata and Oracle Exalogic provide integrated hardware and software solutions optimized for performance and scalability.

- **Security**: Oracle prioritizes security across its products, offering features such as encryption, access controls, auditing, and compliance management. Oracle Database includes advanced security capabilities like Transparent Data Encryption (TDE), Oracle Label Security, and fine-grained access controls.

- **Data Management**: Oracle offers a range of data management solutions, including Oracle Autonomous Database, Oracle NoSQL Database, Oracle Big Data Appliance, and Oracle Data

- **Integration**. These technologies enable organizations to store, process, and analyze large volumes of structured and unstructured data efficiently.

FILE DESIGN

The file design manages access to the data and the metadata of the files, and manages the available space of the device(s) which contain it. Ensuring reliability is a major responsibility of a file system. A file design organizes data in an efficient manner, and may be tuned to the characteristics of the backing device.

Some file design are used on data storage devices, to maintain the locations of the files on the device. Others provide access to files residing on a server, by acting as clients for a network protocol. Others provide access to data that is not stored on a persistent device, and/or may be computed on request. This is distinguished from a directory service and registry
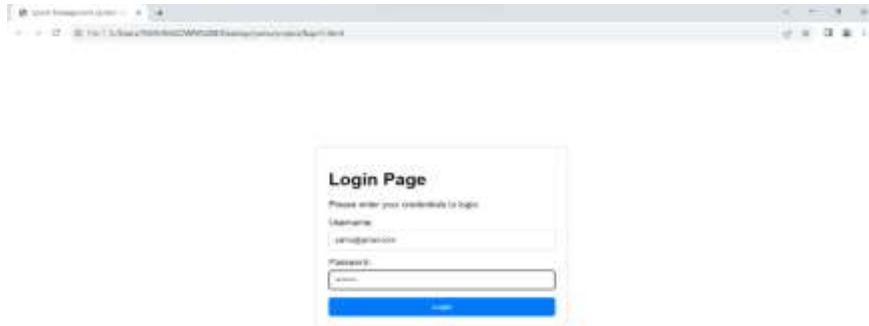

Login page
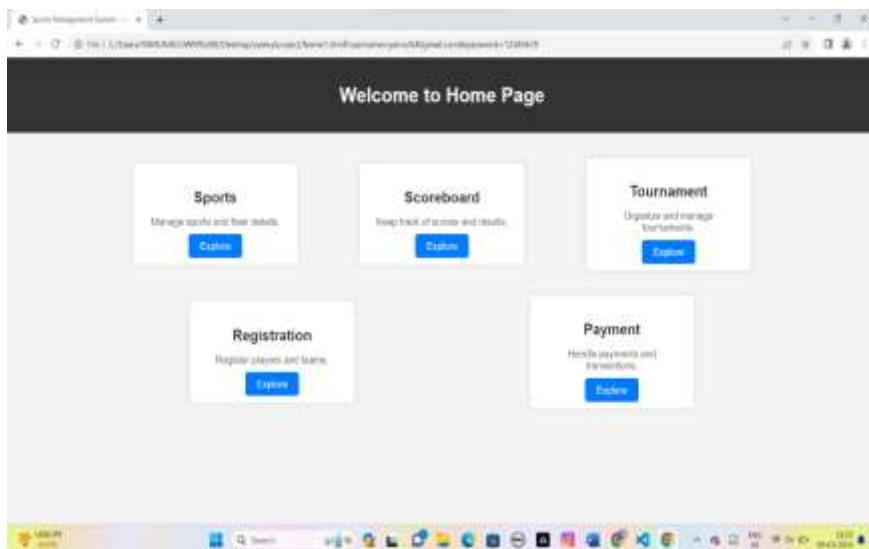
Home page

INPUT DESIGN

- It is the process of converting the user oriented input to computer based format. In the system design phase the expanded dataflow diagram identifies logical data flow, data stores destination. Input data is collected and organized into groups of similar data.

- The goal begin designing input data is to make the data entry easy, and make it free from logical errors ,the input entry to all customer user name , password .only if the are valid the user is allowed to enter in to the software.

- Thus careful design of input stages has taken place by giving attention to error handling, controls, batching and validation procedures. In the project, The input design is made in web application form with various technique. For example, in the movie reviews dataset, the empty movie reviews attributes is not allowed.
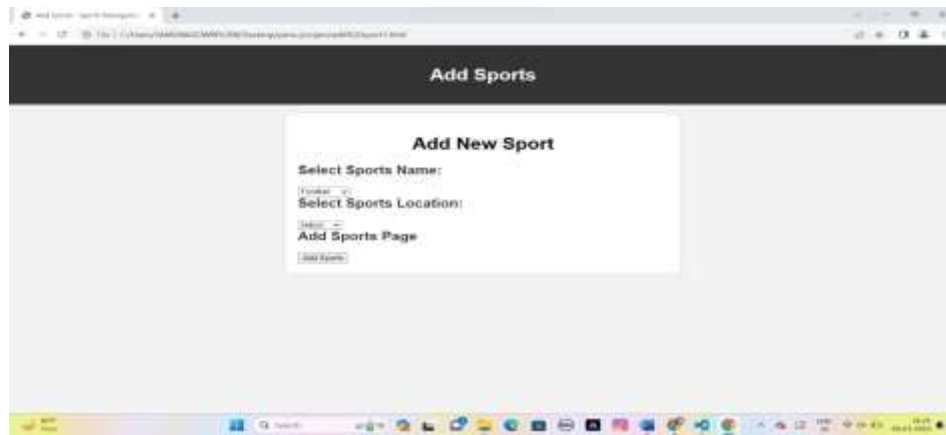
Add Sports
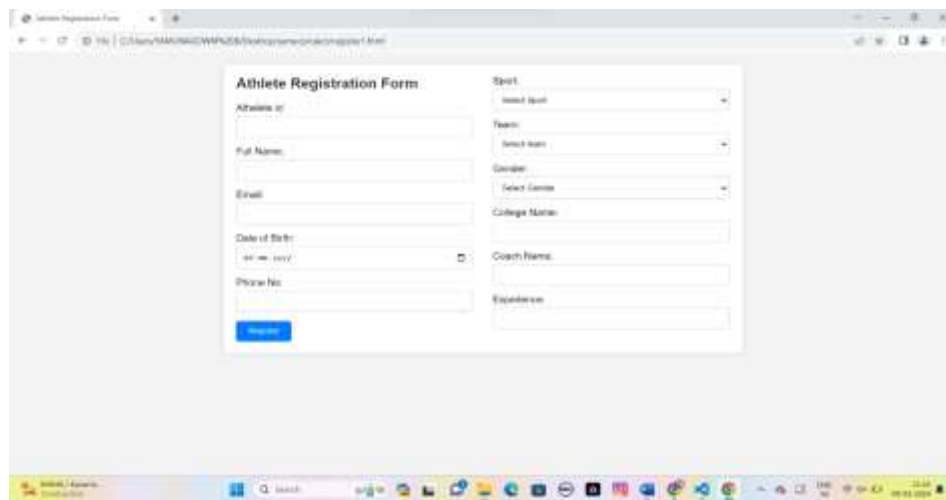
Registration Page

OUTPUT DESIGN

Compute Output is the most important and direct source of information to the user efficient intelligible output design should improve system's relationship with the user and health in decision making. Output design generally refers to the results generated by the system. For many end users on the base of the output . the evaluate the usefulness of the applications.

An efficient software must be able to produce efficient and effective reports. The reports may be of two kinds:

a.   Administrator side report

b.   User side report

In the project output forms are containing reports format like user review in sports management analysis

DATABASE DESIGN

Database is to make information access easy , quick ,inexpensive and flexible for the user .In database design several specific object is are considered: A General theme begin a database is to handle information as an integrated whole .A database is a collection of inter related data stored with minimum redundancy to serve many users quickly and efficiently
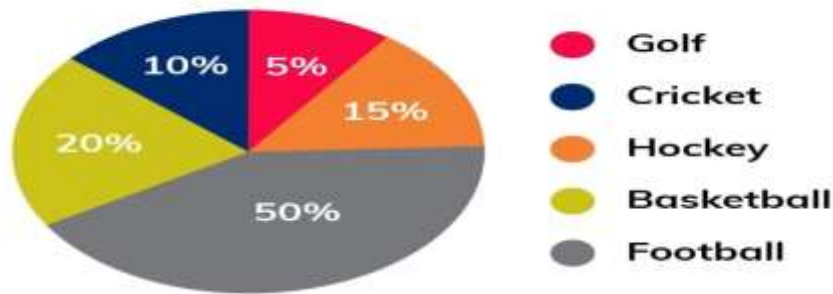
Pie Chart for Sports Visualization

Dashboard for individual team

CONCLUSION

- In conclusion, there has been significant research conducted on the integration of machine learning and optimization algorithms for energy management in sports events. The use of these technologies has the potential to significantly reduce the environmental footprint of sports events while improving their financial and reputational benefits.

- The system can give individualized training regimens for players, anticipate player performance, avoid injuries, maximize game strategies, and customize spectator experiences by incorporating machine learning algorithms. Real-time sentiment analysis at live events allows for dynamic adjustments to content, advertising, and engagement methods, resulting in a more engaged and responsive fan experience

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