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AI-Powered Online Match Fest for Personalized Sports Event Recommendation Using Classification and Clustering

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ABSTRACT: The project aims to develop an intelligent online Match Fest platform that uses machine learning techniques like OPTICS clustering and Decision Tree classification to enhance sports event management. The system automates event posting, recommends personalized events, and groups participants based on shared interests. It also sends real-time notifications to users about relevant events, improving user engagement and system efficiency. This platform provides a seamless experience for both event organizers and participants, increasing participation and satisfaction.

KEYWORDS: Machine Learning, Sports Event Management, Personalized Recommendation, OPTICS Clustering, Decision Tree Classification .

I. INTRODUCTION

Sport is a form of physical activity or game. Often competitive and organized, sports use, maintain, or improve physical ability and skills. They also provide enjoyment to participants and, in some cases, entertainment to spectators. Many sports exist, with different participant numbers, some are done by a single person with others being done by hundreds. Most sports take place either in teams or competing as individuals. Some sports allow a "tie" or "draw", in which there is no single winner; others provide tie-breaking methods to ensure one winner. A number of contests may be arranged in a tournament format, producing a champion. Many sports leagues make an annual champion by arranging games in a regular sports season, followed in some cases by playoffs.

Sports event means any individual or team sport, athletic contest, or athletic event not prohibited by the Director, including all professional electronic sports and competitive video game events that are not sponsored by high schools, and do not include high school teams, and do not include a majority of participants that are under the age of 18 years. A sporting event is an experience for the organisers, the athletes, the fans and the sponsorship partners. Hardly any other type of event has the power to peacefully unite people and nations. Event technology and event dramaturgy play an important role here because they have an impact on the entire customer experience: from the entry into the event site, to the staging of the sporting competition and the presentation of your sponsorship partners, to leaving the location.

II. SYSTEM MODEL AND ASSUMPTION

System Model:

Let the system be defined as: $S = \{U, E, M, R, C, N\}$ Where: $U \rightarrow Set of users \{u_1, u_2, ..., u_n\}$ $E \rightarrow Set of events \{e_1, e_2, ..., e_k\}$ $M \rightarrow Machine Learning models {OPTICS, DT}$ $R \rightarrow Recommendation function:$ $R(u_i) = \{e_j \mid match(u_i, e_j) \ge \theta\}$ $C \rightarrow Clustering function using OPTICS:$ $C: U \rightarrow Clusters \{C_1, C_2, ..., C_m\}, based on interest vector I(u)$ ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 8.206| ESTD Year: 2018|



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 $N \rightarrow Notification engine:$ $N(u_i) = notify(R(u_i))$

Assumptions:

1. $\forall u \in U$, location L(u) and interest I(u) are provided and valid.

2. Internet(u) = stable

3. $\forall e \in E$, verified(e) = true

4. ML Accuracy(M) $\geq 85\%$

5. System Load \leq Max Capacity

6. Data_Security = ensured(U, E)

III.PROPOSED METHODOLOGY

The proposed system introduces an intelligent online Match Fest platform that enhances sports event management using machine learning algorithms.

Event Management: Event organizers can easily post and manage events through a user-friendly interface. They can provide details such as event type, location, time, and descriptions. The system allows real-time updates and enables automated notifications to keep participants informed about upcoming events.

Personalization with Machine Learning: The system utilizes the OPTICS clustering algorithm to group participants based on their sports interests and preferences. It then employs the Decision Tree classification algorithm to match these participants with relevant events. This ensures that users receive tailored event recommendations, enhancing engagement and participation.

IV. SCOPE OF THE PROJECT

The scope of the system defines the boundaries and extent of the software project, outlining what functionalities and features are included within its scope and what are excluded. Here's how you might define the scope of a sports event management system:

Event Management: The system will facilitate the management of various sports events, including tournaments, matches, training sessions, and other related activities.

User Management: Users will be able to register, create profiles, and interact with the system. User roles may include event organizers, participants, and administrators.

Event Posting and Discovery: Event organizers can post details about upcoming events, such as event type, date, time, location, and registration requirements. Users can discover and browse through available sports events based on their preferences and interests.

Recommendation and Matching:The system will utilize algorithms such as OPTICS and Decision Tree to recommend relevant sports events to users based on their profiles, preferences, and past interactions.

Users will be matched with events that align with their interests, skill levels, and geographic location.

Notification Management: Users will receive personalized notifications about upcoming sports events, event updates, and reminders via email, push notifications, and in-app alerts.

Users can customize their notification preferences based on their preferred channels and frequency.

Event Participation and Engagement: Users can RSVP to events, express interest, and interact with event organizers and other participants. Features for event discussion, feedback submission, and social sharing will enhance user engagement and community interaction.

Admin Dashboard and Management Tools: Administrators will have access to a dashboard for managing user accounts, monitoring platform activity, and moderating event listings. Features for content moderation, analytics reporting, and performance optimization will ensure smooth platform operation

V.OPTICS ALGORITHM

OPTICS Clustering is a powerful tool for data analysis as it is a density-based clustering algorithm that can extract clusters of different densities and shapes in large, high-dimensional datasets. One of the key advantages of OPTICS clustering is that it requires minimal input from the user. The algorithm was designed to address one of the major weaknesses of the DBSCAN algorithm, which is the problem of detecting meaningful clusters in data of varying density.

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Reachability Dollarer Vuter

OPTICS algorithm works:

The OPTICS algorithm works by creating a reachability plot, which is a plot of the reachability distance of each point in the dataset. The reachability distance is a measure of the distance between a point and its nearest neighbor that has a higher density. The reachability plot is used to identify the clusters in the dataset. To create the reachability plot, the OPTICS algorithm first orders the points in the dataset based on their reachability distance.

The ordering process is done by starting with a random point and finding its nearest neighbor. The algorithm then finds the reachability distance between the two points and adds the point with the highest reachability distance to the ordering list. The process is then repeated for the next point in the list until all the points have been ordered. Once the points have been ordered, the algorithm creates a reachability distance plot. The reachability distance plot is a plot of the reachability distance of each point in the dataset. The reachability distance plot is used to identify the clusters in the dataset.

VI. DECISION TREE ALGORITHM

A decision tree is a non-parametric supervised learning algorithm, which is utilized for both classification and regression tasks. It has a hierarchical, tree structure, which consists of a root node, branches, internal nodes and leaf nodes. Unlike other supervised learning algorithms, the decision tree algorithm can be used for solving regression and classification problems too. The goal of using a Decision Tree is to create a training model that can use to predict the class or value of the target variable by learning simple decision rules inferred from prior data (training data). In Decision Trees, for predicting a class label for a record we start from the root of the tree. Compare the values of the root attribute with the record's attribute. Decision trees classify the examples by sorting them down the tree from the root to some leaf/terminal node, with the leaf/terminal node providing the classification of the example. Each node in the tree acts as a test case for some attribute, and each edge descending from the node corresponds to the possible answers to the test case. This process is recursive in nature and is repeated for every subtree rooted at the new node.

VII. PERFORMANCES

The proposed intelligent online Match Fest platform enhances sports event management by leveraging machine learning techniques, such as the OPTICS clustering algorithm and the Decision Tree classification algorithm. The OPTICS algorithm analyzes user preferences and behavior, grouping participants with similar sports interests for improved networking and matchmaking. The Decision Tree algorithm classifies sports events based on user clusters, providing personalized and relevant event recommendations. This system offers a seamless, user-friendly experience with functionalities like event posting, automated notifications, user authentication, and real-time updates. Event organizers can efficiently manage events, while participants receive targeted notifications for events that match their interests. Automated notifications ensure users are consistently informed without manual intervention. The system addresses challenges in traditional sports event management, improving engagement, participating in sports events.

VIII. RESULT AND DISCUSSION

The intelligent online Match Fest platform successfully enhances sports event management by utilizing machine learning techniques, improving user experience through personalized event recommendations. The integration of the OPTICS clustering algorithm and Decision Tree classification ensures accurate matchmaking and targeted notifications, boosting participant engagement. As a result, the system increases event participation, streamlines event management, and fosters better communication between organizers and participants.



The proposed Match Fest platform demonstrates significant improvements in sports event management by leveraging machine learning techniques to enhance personalization and user engagement. The use of OPTICS clustering and Decision Tree algorithms allows for accurate participant matchmaking and tailored event recommendations, addressing key issues like inefficient communication and limited audience reach. While the system has the potential to streamline event organization and increase participation, further enhancements in data analysis and real-time interactions could further optimize its effectiveness in diverse event settings.



Figure.1.Home Page.

Agonio Rame =		Press 111 to exit full screen	Home	Admin	Unor	
	Login					
	Password	сови				

Figure .2.Admin Login Page

SportsRest	Morris Add point My print Loggetuit	-
	And and Angelene Angelene • Wordsholm (193) • Foundsholm (193) • Foundsholm (193) • Randweitschell (193) • Angelene (193) • Angelene	

Figure. 3.Event posting

SportsFest		Home	Add post	My post	Logout	-
	Post Sports Event Using Optics Algorithm	m				- 1
	Sports Event name					
	Place of Event Conducting					
	Eligibility Criticia					
	Choose File No file chosen Date of Event					
	Lattude					- 1
	Longitude					
	GET CURRENT LOCATION POST		~			

Figure. 4. Using OPTICS Algorithm.





Figure 5. Map.

SportsFest		Home	Admin	user	<u>م</u>
Home >					
	Login				
	Userame				
	Password				
	LOSIN				
	Create Account				

Figure 6.User Login Page.

SportsFest		Home	Admin	User	~
Home >					
	Create Account				
	Name				
	Address				
	Mobile				
	Email				
	Area of Interested Sport				
	Userame				
	P DESIREO M				
	REGISTER				

Figure. 7. User Create Account.

	* 6 6 6 8	
SportsFest		
Classify Post using Decision Tree Algorithm		
14 RIVER PARK JAN	Search Q	
	Categories	
	Cricket (16)	
1 BARBART	► Volleyball (16)	
0°0000	► Football (19)	
YOUR FITNESS PRESENT	 Running (22) 	
	 Basketball (25) 	
A A A A A A A A A A A A A A A A A A A	Archives	
PERFORM	Search archives	

Figure.8.Classify Post Using Decision Tree Algorithm.



Figure.9. User Choose And Post The Event.

IX. CONCLUSION

In conclusion, the project represents a significant achievement in the realm of sports event management. The journey from inception to implementation has been characterized by innovation, collaboration, and dedication. The development of a comprehensive web application has provided a platform that seamlessly connects sports event organizers with enthusiastic participants. Through the integration of advanced algorithms such as Decision Tree for classification and OPTICS for clustering, personalized event recommendations have been made possible, enhancing user engagement and satisfaction. A robust notification system ensures users are promptly informed about relevant events, fostering active participation and attendance. The user-centric design prioritizes user privacy, security, and customization through effective authentication and profile management functionalities. While challenges were encountered, including algorithm optimization and community building, each obstacle served as an opportunity for learning and growth. Looking ahead, continuous innovation, global expansion, strategic partnerships, and mobile optimization are key areas for further development to elevate Match Fest and shape the future of sports event experiences worldwide.

REFERENCES

- 1. J. A. L. Ludvigsen, J. Rookwood and D. Parnell, "The sport mega-events of the 2020s: governance impacts
- 2. and controversies", Sport in Society, vol. 25, no. 4, pp. 705-711, 2022.
- 3. M Wallstam and K. Kronenberg, "The role of major sports events in regional communities: A spatial approach to the analysis of social impacts", *Event Management*, vol. 26, no. 5, pp. 1025-1039, 2022.
- 4. A. Khan and J. Shao, "SPNet: A deep network for broadcast sports video highlight generation", *Comput. Electr. Eng.*, vol. 99, no. 107779, pp. 107779, 2022.
- 5. Guntuboina, A. Porwal, P. Jain and H. Shingrakhia, "Video summarization for multiple sports using deep learning", *ELCVIA Electron. Lett. Comput. Vis. Image Anal.*, vol. 20, no. 1, pp. 99-116, 2021.
- J. Rookwood and K. Adeosun, "Nation Branding and Public Diplomacy: Examining Japan's 2019 Rugby World Cup and 2020(21) Olympic Games in the Midst of a Global Economic Downturn and the COVID-19 Pandemic", *Journal of Global Sport Management*, pp. 1-21, 2021.
- 7. H. Li, "Analysis on the construction of sports match prediction model using neural network", *Soft Computing*, vol. 24, no. 11, pp. 8343-8353, 2020.
- 8. T. Arai and V. Bhatia, Social Media Sports and Fan Engagement: An Overview, In The Routledge Handbook of Sport and New Media, 2019.
- Lakshmi Narasimha Raju Mudunuri, Vivekchowdary Attaluri, "Urban Development Challenges and the Role of Cloud AI-Powered Blue-Green Solutions," in Integrating Blue-Green Infrastructure Into Urban Development, IGI Global, USA, pp. 507-522, 2025.
- 10. A Thomson, G Cuskelly, K Toohey et al., "Sport event legacy: A systematic quantitative review of literature", Sport management review, vol. 22, no. 3, pp. 295-321, 2019.
- 11. Groll, C. Ley, G. Schauberger and H. van Eetvelde, *Prediction of the FIFA World Cup 2018 A random forest approach with an emphasis on estimated team ability parameters*, 2018.
- 12. C. Zhang, "Sports performance prediction model based on glowworm algorithm optimizing neural network", *Modern Electronics Technique*, vol. 8, no. 40, pp. 94-100, 2017.





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