ONLINE USERS PERFORMANCE USING GRAPHICAL PATTERN

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ABSTRACT

Online shopping is growing on large scale. People purchase their products via internet. They just have to choose their products and make the payment. Users get their products on doorstep. Online shopping had made people's life easier and faster. As online shopping is increasing, large amount of data on people's online activities have become available on web. Use of such data can benefit a lot of applications. User behaviour, online customer classification can be extracted from these web data. We proposed a system where we can extract the user's online shopping behaviour. System will extract user's online behaviour pattern and will show in graphical format. This graphical format helps the admin during decision making process. We propose a graphical hidden state model based on statistical features and integrate all available information sources to simulate the decision-making process. The proposed system, lead to nearly 30% of improvement on million click datasets. This system will be online web application where many products will be displayed on web page. User can view and purchase the products. User sequential behaviour pattern is tracked by the system and is put in graphical format which helps during decision making process. This system helps the admin to know most frequently purchased products by the customer. Admin will also get to know which products are in demand. So, he can make the decision based on the online behaviour pattern of the customer. As user behaviour pattern is put up in graphical format it will be easier for the admin to view the data and can make decision process faster and can come up with solution quick.

INTRODUCTION

The project documentation targets academic reviewers, particularly professors and external examiners, responsible for assessing its scholarly significance. It begins with a concise executive summary, providing an overview of the project's importance and key findings. Comprehensive project details follow, covering scope, objectives, methodologies, and technology usage. Emphasis is placed on displaying user behavior patterns through graphical representations. The documentation concludes by discussing the project's implications and potential avenues for future research, ensuring that the research's academic value is clear to non-technical reviewers.

Data mining, also known as knowledge discovery, involves analyzing data from various perspectives to extract useful information for revenue increase or cost reduction. It encompasses techniques like Generalized Sequential Pattern (GSP) algorithm, which is crucial in sequence mining from large databases. Data mining works by analyzing relationships and patterns in transaction data, seeking classes, clusters, associations, and sequential patterns.

Major elements include data extraction, transformation, loading, storage, access, analysis, and presentation. Different analytical techniques such as neural networks, genetic algorithms, decision trees, nearest neighbor method, and rule induction are applied, along with data visualization.

In the project, data mining plays a pivotal role in improving user preference modeling by analyzing online shopping behavior. It involves data collection, pattern discovery, predictive modeling, recommendation systems, graph analysis, segmentation, anomaly detection, performance optimization, and user retention prediction. By extracting insights from user behavior data, data mining enables accurate recommendation systems, optimized system performance, and enhanced user satisfaction. The documentation underscores data mining's significance in unlocking valuable insights from online shopping data, empowering the project to offer personalized, trustworthy, and engaging experiences to users.

Importance of User Performance Analysis

Understanding user performance is essential for:

•Optimizing User Experience: By analyzing how users interact with a platform, developers can identify pain points and areas for improvement.

•Personalization: Insights into user behavior allow for the customization of content and services, enhancing user satisfaction.

•Predictive Analysis: Patterns in user performance can help predict future behaviors, enabling proactive measures to retain users and improve engagement.

•Resource Allocation: Identifying which features are most used or where users spend the most time can inform better resource distribution and development focus.

Types of Graphical Patterns

Several graphical patterns are commonly used to analyze and visualize online user performance:

•Heat Maps: Display areas of a webpage or application where users spend the most time or click the most, highlighting hot spots and areas that need attention.

•Time-Series Graphs: Show how user interactions or performance metrics change over time, useful for identifying trends and seasonal variations.

•Flow Charts: Illustrate the pathways users take through a website or app, revealing common routes and potential bottlenecks.

•Scatter Plots: Used to identify correlations between different variables, such as time spent on a site versus conversion rates.

•Bar and Line Graphs: Represent data such as the number of active users, user retention rates, and other key performance indicators (KPIs) over specific periods.

LITERATURE SURVEY

Literature Survey

Title: "Enhancing Online Shopping Experience through Data Mining Techniques" Author: Dr. Sophia Chen

Abstract: This paper explores the application of data mining techniques to improve the online shopping experience for users. By leveraging methods such as pattern discovery, predictive modeling, and recommendation systems, the study aims to enhance user preference modeling and increase user satisfaction. Through the analysis of online shopping behavior data, valuable insights are extracted to create personalized recommendation systems, optimize system performance, and predict user retention. The research emphasizes the significance of data mining in unlocking actionable insights to deliver more tailored from large-scale online shopping datasets, ultimately enabling platforms and engaging experiences to users.

Title: "Exploring User Behavior Patterns in E-commerce: A Data Mining Approach" Author: Dr. James Smith

Abstract: This paper investigates user behavior patterns in e-commerce platforms using data mining techniques. By analyzing transaction data and user interactions, the study aims to identify classes, clusters, associations, and sequential patterns to understand user preferences and behaviors. Through the application of analytical techniques such as neural networks, genetic algorithms, and decision trees, the research seeks to uncover actionable insights for improving recommendation systems, segmentation strategies, and anomaly detection mechanisms. The findings highlight the importance of data mining in revealing underlying patterns in user behavior, providing valuable insights for e-commerce platforms to enhance customer experiences and drive business growth.

Title: "Optimizing Online Retail Performance using Data Mining and Graph Analysis"

Author: Dr. Emily Johnson

Abstract: This paper presents a comprehensive study on optimizing online retail performance through the integration of data mining and graph analysis techniques. By examining transaction data and user interactions within an online retail environment, the research aims to identify patterns, correlations, and trends using methods such as Generalized Sequential Pattern (GSP) algorithm and graph analysis. Through the application of these techniques, the study seeks to optimize system performance, enhance user segmentation strategies, and improve recommendation systems.

Title: "Predicting User Retention in E-commerce: A Data Mining Perspective"

Author: Dr. Michael Wang

Abstract: This paper investigates the prediction of user retention in e-commerce platforms using data mining techniques. By analyzing user behavior data and transaction histories, the study aims to develop predictive models to forecast user churn and retention rates. Through the application of techniques such as machine learning algorithms and predictive modeling, the

research seeks to identify key factors influencing user retention and develop strategies to mitigate churn. The findings underscore the importance of data mining in predicting user behavior and facilitating targeted retention efforts, ultimately helping e-commerce platforms enhance customer loyalty and long-term profitability.

Title: "Unlocking Insights from Online Shopping Data: An Integrated Data Mining Approach"

Author: Dr. Rachel Liu

Abstract: This paper presents an integrated data mining approach to unlocking insights from online shopping data. By combining techniques such as data extraction, transformation, loading, and analysis, the study aims to extract actionable insights from large-scale transaction datasets. Through the application of analytical methods such as nearest neighbor method, rule induction, and data visualization, the research seeks to uncover patterns, correlations, and trends in user behavior. The findings highlight the efficacy of an integrated data mining approach in enabling e-commerce platforms to gain a deeper understanding of user preferences, optimize system performance, and deliver personalized shopping experiences.

SYSTEM ANALYSIS

EXISTING SYSTEM:

Coefficient of reliability is calculated at each step of classification. During classification a coefficient of reliability is changed. Based on this, normal or anomalous user behavior is identified. While classifying the user behavior the system monitors deviations between expected user behavior and current one. Coef ficient of reliability is used to estimate the value of deviation in user behavior. If this value crosses a certain threshold, then it is considered as a case of abnormal behavior. That means the parameters in actions of user are not in admissible intervals. Coef ficient of reliability is measuring the same individual twice and it correlates the 2 sets of measures. Every user action class was characterized by statistic parameters of time distribution – mean and standard deviation. Deviations from current values of sequential and temporal parameters are considered as consequence of abnormal behavior . The tools which are used to classify user behavior are N action classes and a relational matrix. These tools describe the model of user behavior.

DISADVANTAGES:

●Users who don’t have internet connection can’t access the system.

●System does not display products to the user which are purchased frequently.

PROPOSED SYSTEM

In this work, we propose to overcome the limitations of prior works in user preference modeling by exploring local and global user behavior patterns on a user successive behavior graph (SBG), which is constructed by utilizing short-term actions of all users. We then exploit high-order relations in the SBG to capture implicit collaborative patterns and preference signals with an efficient jumping graph convolution and learn enriched product representations for user

preference modeling. Our approach addresses the aforementioned problems in the following two aspects.

ADVANTAGES:

•This system helps to find out products which are more in demand.

•This system provides the data in graphical format.

•As user behaviour pattern is put up in graphical format it will be easier for the admin to view the data and can make decision process faster and can come up with solution quicker.

•This system helps the admin to know most frequently purchased products by the customer.

IMPLEMENTATION AND RESULTS

•Admin Login: Admin can access the authorized modules by login to the system using his credentials.

•Add Products: Admin can add products by entering product details like product image, cost, and description.

•View User: Admin can view registered user details.

•View Products: Admin can view products which added into the database.

•View User Behaviour in graphical format: User behaviour pattern is fetched by applying effective algorithm and is displayed in graphical format.

•View Feedback: Admin can view feedback of the user.

•User Login: User must register with his details and system will provide him with id and password. He must use this user id and password to login to the system.

•View Products: User can view the products and their cost.

•Products Details: User must select the product of his choice and view further details of that product.

•Add To Cart: User can add products into cart, if he wants to purchase the product.

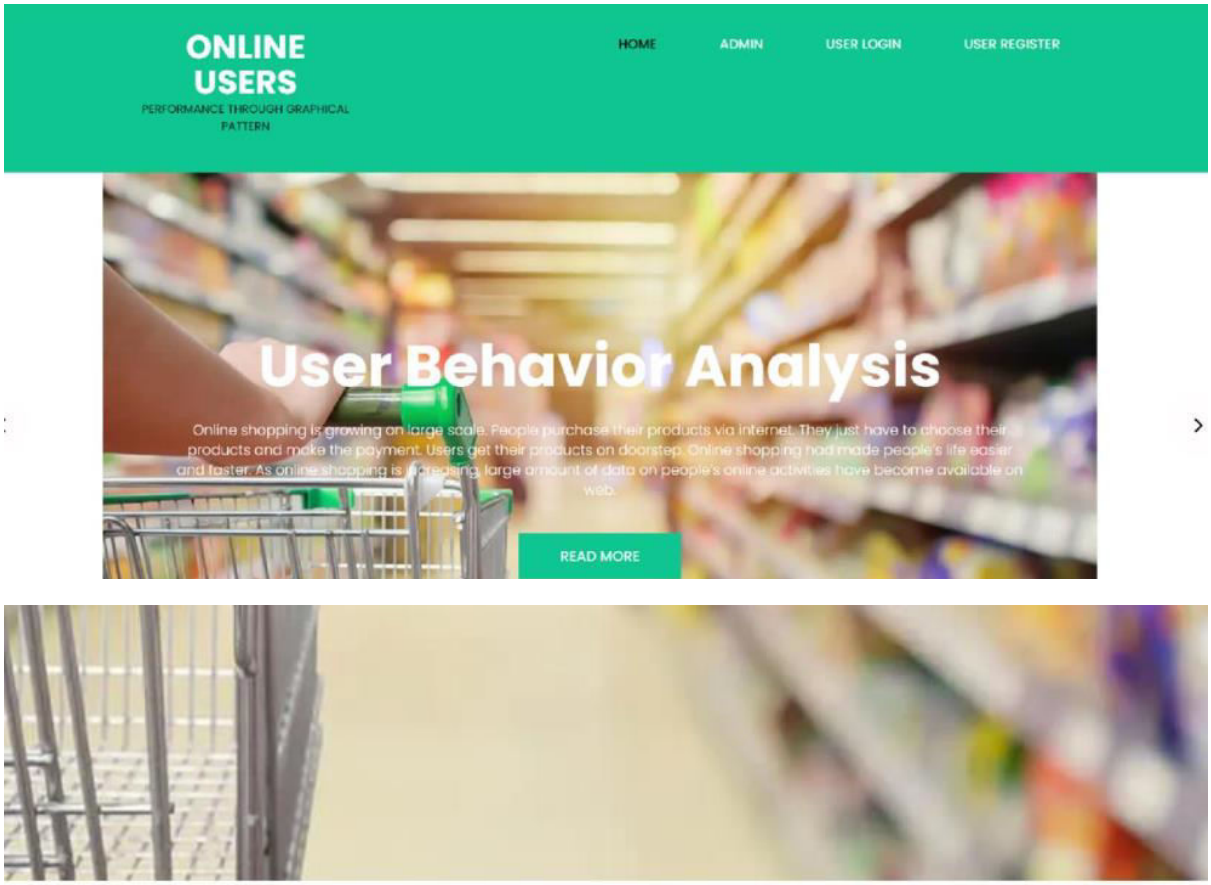
•Make payment: System will display total cost. User can make payment by selecting the mode of payment.

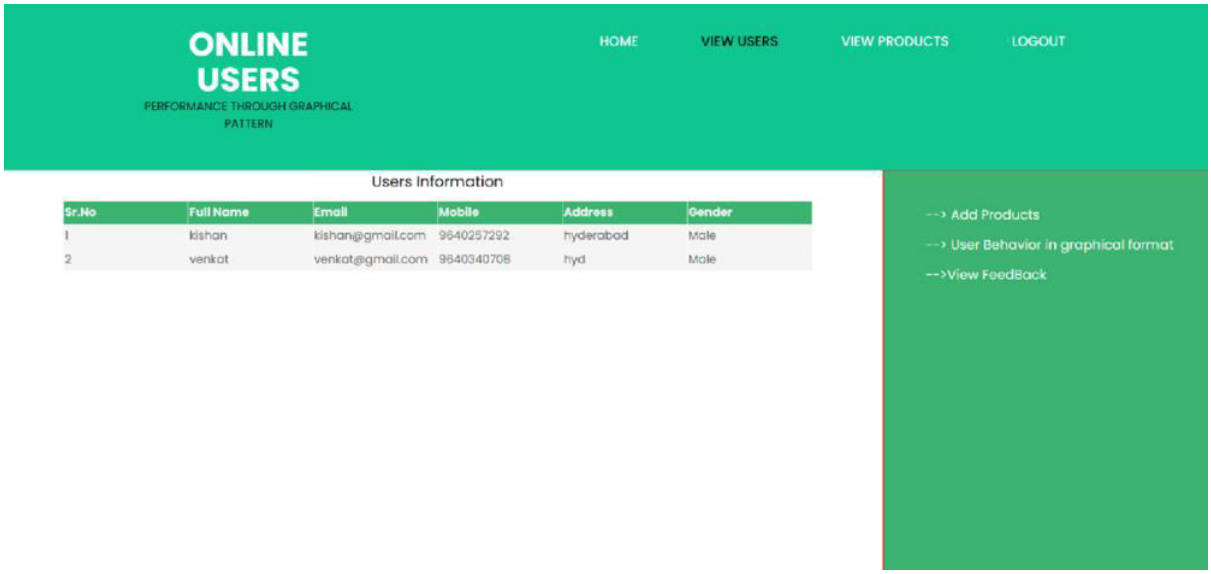
•Add Feedback: Customer can add feedback about any product.

RESULTS

The purpose of testing is to discover errors. Testing is the process of trying to discover every conceivable fault or weakness in a work product. It provides a way to check the functionality of components, sub-assemblies, assemblies and/or a finished product It is the process of exercising software with the intent of ensuring that the Software system meets its requirements

and user expectations and does not fail in an unacceptable manner. There are various types of test. Each test type addresses a specific testing requirement.

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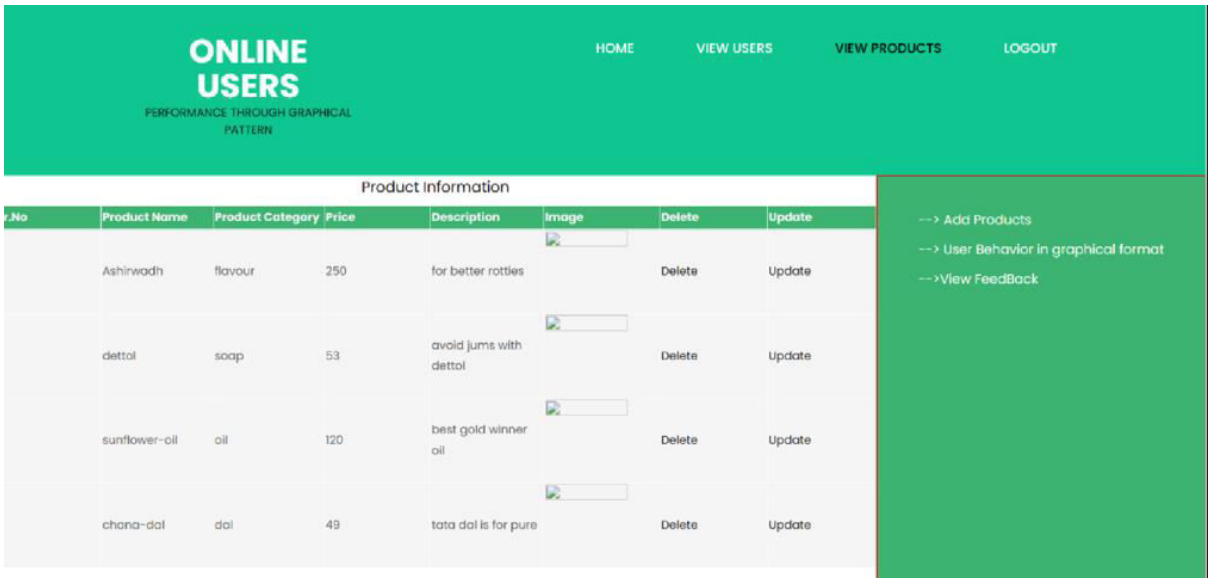
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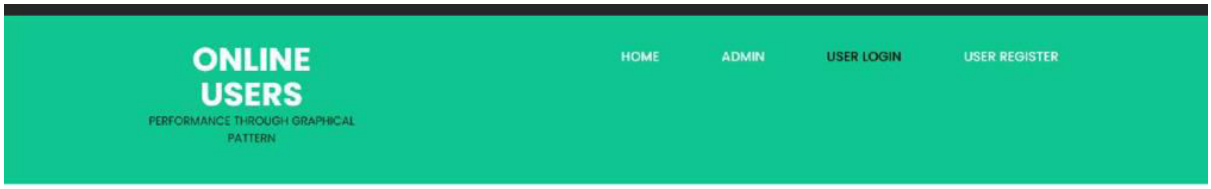
ONLINE USERS
PERFORMANCE THROUGH GRAPHICAL PATTERN
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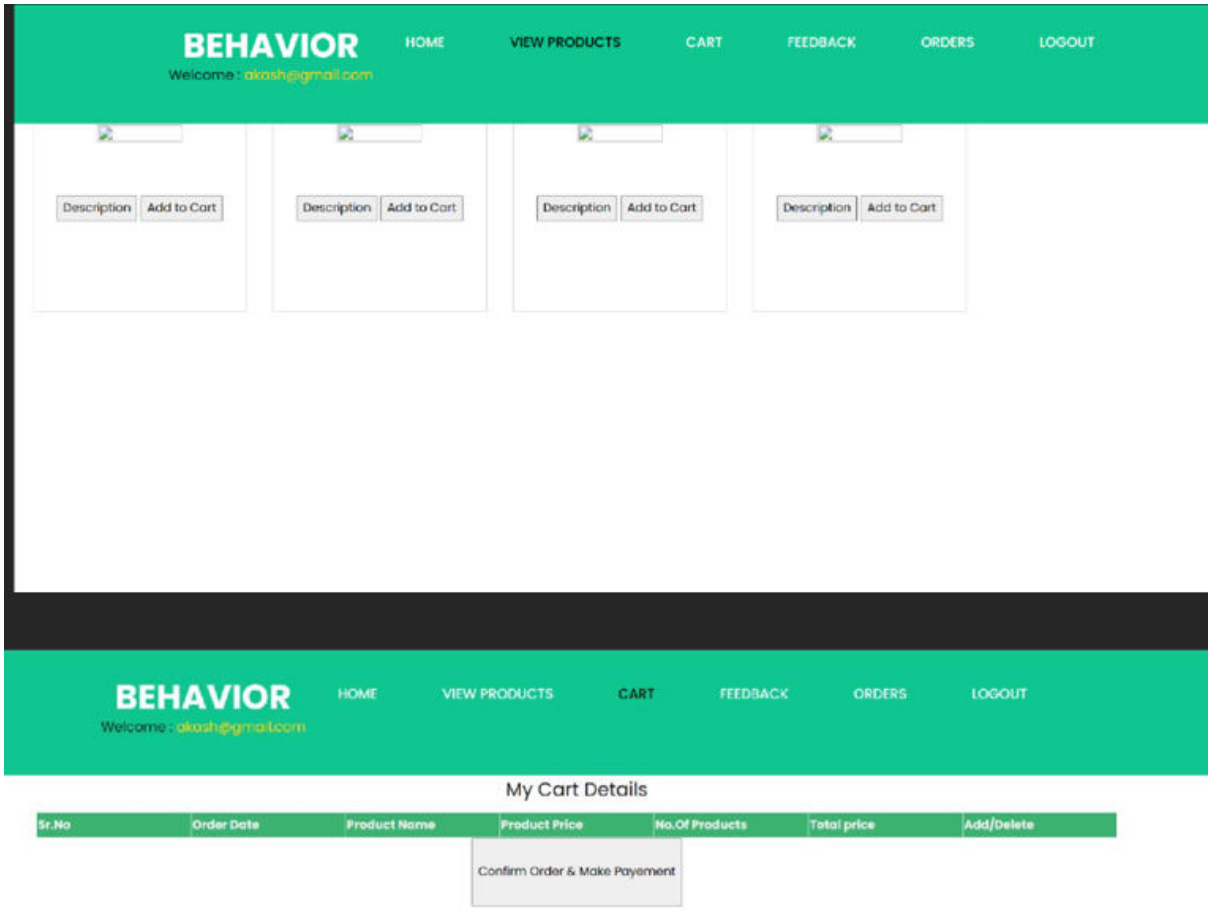
ADMIN
USER LOGIN
USER REGISTER


Customer Login
UserName UserName
Password Password
Login
Reset
Don't Have An Account ? Register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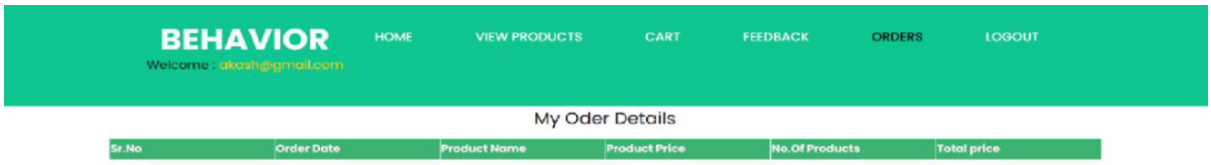
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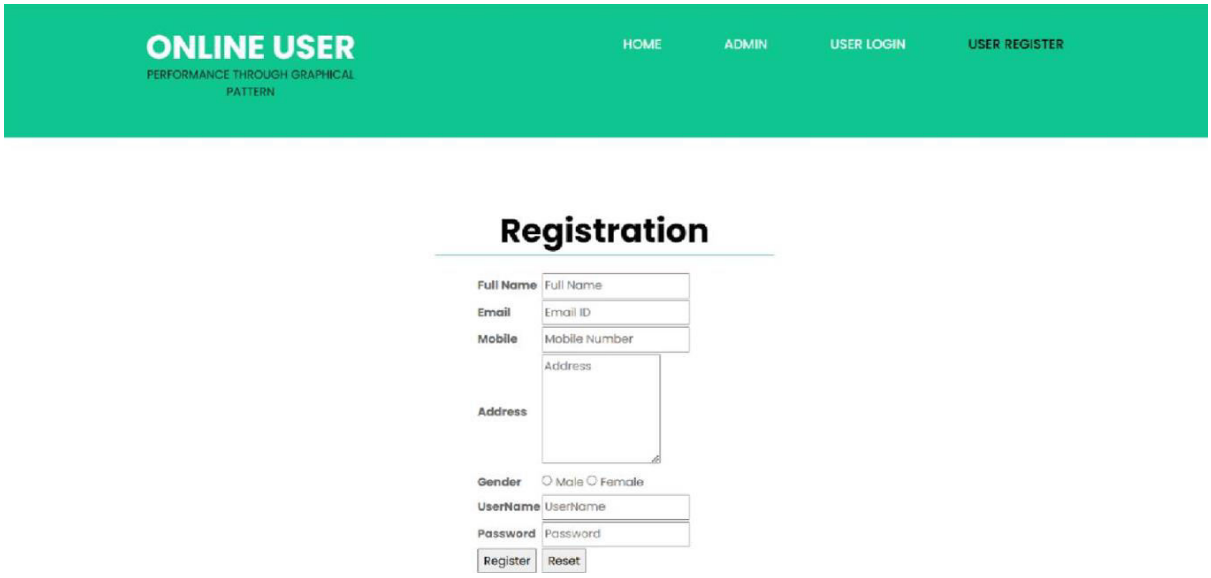

CONCLUSION

This comprehensive analytical study delves into the multifaceted landscape of online user behaviour models, employing a diverse array of methods and algorithms. It spans various domains, focusing on the identification of both normal and anomalous online user behaviour. The research scrutinizes the characteristics of Intrusion Detection Systems (IDS) as a tool for classifying user behaviour, shedding light on their role in bolstering online security.

The study also places a magnifying glass on Target Vue, a visualization system, exploring its utility in understanding and dissecting different facets of user behaviour communication. It integrates feature extraction techniques such as Principal Component Analysis (PCA) to unearth anomalies in user behaviour, thereby enhancing the ability to detect and address potentially harmful or suspicious activities.

A pivotal aspect of this research is the evaluation of classification algorithms, with Restreet emerging as the most promising contender after undergoing a rigorous examination with various parameters. Furthermore, the study presents a comparative analysis of different neural network algorithms, assessing their applicability in precise sales prediction tasks.

In addition to algorithmic considerations, this study delves into the world of metrics, scrutinizing those used to evaluate user behaviour across two Online Social Networking (OSN) platforms. Moreover, the research investigates the possibilities of enhancing search engine services by dissecting and analysing user queries. This holistic examination of user behaviour models, detection systems, visualization tools, and predictive algorithms provides a rich and diverse understanding of this multifaceted domain, offering valuable insights into both security and user experience optimization.

FUTURE SCOPE

The future scope of analyzing online users' performance through graphical patterns includes several promising directions:

•Advanced Analytics: Incorporating advanced analytics techniques such as machine learning and artificial intelligence can provide deeper insights into user behavior and performance. Predictive analytics can help anticipate user needs and improve the design of online platforms.

•Real-Time Analysis: Developing systems for real-time analysis of graphical patterns can offer immediate feedback on user performance. This can be particularly useful for adaptive interfaces that change based on user interactions.

•Integration with Wearable Technology: Combining graphical pattern analysis with data from wearable technology can offer a more comprehensive view of user performance. This can include physiological data such as eye movement, heart rate, and other biometric indicators.

•Cross-Platform Analysis: Extending the analysis to include multiple platforms (e.g., mobile, desktop, virtual reality) can provide a holistic understanding of user performance across different devices and environments.

•User-Centric Design: Focusing on user-centric design principles, future research can explore how different demographic groups interact with graphical patterns. This can help create more inclusive and accessible online environments.

REFERENCES

[1]Alexandr Seleznyov, Finland, “A methodology to detect temporal regularities in user behaviour for anomaly detection”, Network Security and Intrusion Detection, part 9, pp. 339-352, 2016.

[2]Nan Cao, Conglei Shi, Sabrina Lin, Jie Lu, Yu-Ru Lin, Ching-Yung Lin, “TargetVue: Visual Analysis of Anomalous User Behaviors in Online Communication Systems”, IEEE Transactions on Visualization and Computer Graphics, vol. 22, pp. 280-289, 1 January 2016.

[3]P V Bindua, P Santhi Thilagama, India, “Mining Social Networks for Anomalies: Methods and Challenges”, Journal of Network and Computer Applications, Elsevier, pp. 1-22, 25 Feb 2016.

[4]Meng Bi, Jian Xu, Mo Wang, Fucai Zhou, “Anomaly detection model of user behavior based on principal component analysis”, Springer, 21 January 2016.

[5]Guirong Chen, Ning Wang, Fengqin Zhang, Hua Jiang, China, “Understanding the Time Characteristic of User Behavior on Online Forums”, IEEE International Conference on Big Data (Big Data), 978-1-4799-9926-2/15,pp. 2300-2306, 2015.

[6]Pran Dev, Dr. Kulvinder Singh, Dr. Sanjeev Dhawan, India, “Classification of Malicious and Legitimate Nodes for Analyzing the Users’ Behavior in Heterogeneous Online Social

Networks", 1st International conference on futuristic trend in computational analysis and knowledge management, 978-1-4799-8433-6/15, pp. 359-363, ABLAZE 2015.

[7]Hui Yuan, Wei Xu, Mingming Wang, China, "Can Online User Behavior Improve the Performance of Sales Prediction in E-commerce?", IEEE International Conference on Systems, Man, and Cybernetics, 978-1-4799-3840-7/14, pp. 2347-2352, October 5-8, 2014.

[8]Francesco Buccafurri, Gianluca Lax, Serena Nicolazzo, Antonino Nocera, "Comparing Twitter and Facebook user behavior: Privacy and other aspects", Computers in Human Behavior , Elsevier, 0747-5632, pp. 87-95, 10 June 2015.

[9]Mona Gupta , Happy Mittal , Parag Singla , Amitabha Bagchi, "Characterizing comparison shopping behavior: A case study", ICDE Workshops, IEEE, 978-1-4799-3481- 2/14, pp. 115-122, 2014.