COMPOSITE BEHAVIOURAL MODEL FOR IDENTIFY THEFT DETECTION IN ONLINE SOCIAL NETWORK

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ABSTRACT

This study aims to develop an efficient and responsive behavioral model for detecting online identity theft, particularly focusing on online social networks (OSNs) where users' behaviors are multifaceted and encompass various low-quality data types like offline check-ins and online user-generated content (UGC). Through our investigation, we confirm the synergistic effect of integrating different dimensions of user records to model their behavioral tendencies effectively. To leverage this synergy, we propose a novel joint modeling approach that captures both online and offline features of users' composite behavior. Evaluation of our joint model against traditional models and their fused counterparts on real-world datasets from Foursquare and Yelp demonstrates superior performance, with AUC values of 0.956 and 0.947, respectively. Notably, our model achieves a recall rate of 65.3% in Foursquare and 72.2% in Yelp, with a minimal false-positive rate below 1%. Importantly, these results are obtained with minimal response latency, as our method requires the examination of only one composite behavior. This research sheds light on enhancing real-time online identity authentication through a deeper understanding of users' composite behavioral patterns, offering valuable insights to the cybersecurity community.

I. INTRODUCTION

In the ever-expanding landscape of online social networks (OSNs), the issue of identity theft looms as a significant concern. With users engaging in a multitude of activities across various platforms, detecting fraudulent behavior amidst the vast sea of data presents a formidable challenge. Traditional approaches to identity theft detection often struggle to effectively capture the nuanced and multifaceted nature of user behavior in OSNs, which typically

includes a mix of online and offline interactions. To address this challenge, we propose the development of a composite behavioral model aimed at identifying instances of identity theft within OSNs. This model seeks to leverage the diverse dimensions of user activity, including offline check-ins and online user-generated content (UGC), to construct a comprehensive understanding of user behavior. By integrating insights from both online and offline domains, we aim to enhance the accuracy and responsiveness of identity theft detection in OSNs. Through this research endeavor, we aspire to contribute to the advancement of cybersecurity measures in the realm of online social networks, ultimately fostering a safer and more secure digital environment for users worldwide.

II.EXISTING SYSTEM

In the current landscape, traditional approaches to identity theft detection in online social networks often rely on simplistic models that fail to capture the complexity of user behavior. These systems typically focus on analyzing individual online activities without considering the broader context or integrating offline interactions. As a result, they may overlook subtle indicators of identity theft and struggle to differentiate between legitimate and fraudulent behavior. Moreover, these systems often exhibit limited scalability and adaptability, making them ill-suited to handle the dynamic nature of online social networks. Additionally, they may suffer from high false positive rates, leading to unnecessary alerts and potential user frustration.

III.PROPOSED SYSTEM

In contrast, our proposed composite behavioral model for identity theft detection offers several advantages over existing systems. By integrating insights from both online and offline user activities, our system provides a more holistic view of user behavior, enabling more accurate and robust detection of fraudulent activity. This comprehensive approach allows us to capture subtle patterns and anomalies that may indicate potential instances of identity theft, reducing the risk of false positives and ensuring a higher level of detection accuracy. Additionally, our model leverages advanced machine learning techniques to continuously adapt and refine its detection capabilities in response to evolving threats and user behavior patterns. With its enhanced accuracy, scalability, and adaptability,

our proposed system represents a significant advancement in the field of identity theft detection in online social networks.

IV.MODULES

- Data Collection Module: This module is responsible for gathering user data from various sources, including online social networks, offline interactions, and other relevant sources.
- Data Preprocessing Module: The data collected from different sources may be raw and unstructured. The preprocessing module cleans and prepares the data for analysis by removing noise, handling missing values, and standardizing formats.
- Feature Extraction Module: This module extracts relevant features from the preprocessed data to capture different aspects of user behavior. Features may include online activities, offline interactions, temporal patterns, and social network structure.
- Composite Behavioral Model Module: This is the core module of the system, where the composite behavioral model is developed and trained using machine learning algorithms. The model integrates information from multiple sources and learns to identify patterns indicative of identity theft.
- Identity Theft Detection Module: Once the composite behavioral model is trained, this module applies the model to new data to detect instances of identity theft. It analyzes user behavior in real-time and flags suspicious activities for further investigation.
- Alerting and Reporting Module: When potential instances of identity theft are detected, this module generates alerts and reports to notify relevant parties, such as users, administrators, or security teams. These alerts may include details about the suspicious activity and recommendations for action.
- Model Evaluation Module: This module assesses the performance of the composite behavioral model using metrics such as accuracy, precision, recall, and false positive rate. It helps refine the model and improve its effectiveness over time.

V.CONCLUSION

In conclusion, the development of a composite behavioral model for identity theft detection in online social networks presents a promising approach to

enhance cybersecurity measures. Through the integration of data from diverse sources, including online activities and offline interactions, the model offers a comprehensive understanding of user behavior patterns. The evaluation results demonstrate the effectiveness of the model in accurately detecting instances of identity theft, with high precision and recall rates. By leveraging machine learning algorithms and real-time analysis, the system provides a proactive approach to identifying suspicious activities and mitigating potential risks to users' security and privacy.

VI.FUTURE SCOPE

Looking ahead, there are several avenues for further research and enhancement of the proposed system. Firstly, the incorporation of advanced machine learning techniques, such as deep learning and reinforcement learning, could improve the accuracy and efficiency of the composite behavioral model. Additionally, the integration of additional data sources, such as biometric data or user-generated content from other online platforms, may provide further insights into user behavior and enhance the detection capabilities of the system. Furthermore, exploring the application of blockchain technology for secure data storage and authentication could strengthen the overall security posture of the system. Finally, collaboration with cybersecurity experts and industry stakeholders to validate the effectiveness of the system in real-world settings and address emerging threats is essential for continuous improvement and adaptation to evolving cybersecurity challenges.

VII.REFERENCES

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