



Research Paper

USE OF ARTIFICIAL NEURAL NETWORK TO IDENTIFY FAKE PROFILES

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ABSTRACT

The rapid growth of social media and online platforms has led to a surge in fake profiles, which are often used for malicious activities such as spreading misinformation, fraud, identity theft, and cyberbullying. Detecting these profiles manually is highly inefficient due to the massive volume of users and the evolving sophistication of fraudulent accounts. This research focuses on leveraging Artificial Neural Networks (ANNs) to automatically identify and classify fake profiles with high accuracy. The proposed approach involves collecting extensive user data, including profile attributes, activity patterns, posting behavior, and social interactions. These features are preprocessed and fed into a multi-layer ANN, which learns complex patterns and relationships that differentiate genuine users from fake accounts. Experimental evaluation demonstrates that the ANN-based system achieves superior detection performance compared to traditional machine learning monitoring tools to proactively prevent the creation and propagation of fraudulent methods, with improved precision, recall, and overall accuracy. The implementation of such intelligent detection models is crucial for enhancing platform security, maintaining user trust, and mitigating the negative social and economic impacts of fake profiles. The study also highlights the potential for integrating this system with real-time accounts.

Keywords:

1. Artificial Neural Network (ANN): A computational model inspired by the human brain, used to learn complex patterns and relationships in data. In this study, ANNs are employed to detect fake profiles automatically.
2. Fake Profile Detection: The process of identifying fraudulent or malicious accounts on social media platforms that may be used for misinformation, spam, or cybercrime.
3. Social Media Security: Measures and technologies designed to protect users and platforms from threats such as fake accounts, cyber-attacks, **and unauthorized data access.**

Received: 18-09-2025

Accepted: 21-10-2025

Published: 28-10-2025

1. INTRODUCTION

With the rapid expansion of social media platforms, online forums, and digital

communication channels, the presence of fake profiles has become a significant challenge for users and platform administrators alike. Fake

profiles, also referred to as fraudulent or spam accounts, are often created to manipulate public opinion, spread misinformation, commit financial fraud, or impersonate real users. These accounts undermine the credibility of online communities, pose serious security risks, and can lead to significant social and economic consequences. Traditional methods for identifying fake profiles, such as manual verification and rule-based detection, are increasingly ineffective due to the sheer volume of users and the sophisticated tactics employed by malicious actors. To address these

challenges, **Artificial Neural Networks (ANNs)** have emerged as a powerful tool for detecting fraudulent accounts. ANNs are capable of learning complex patterns and relationships in large datasets, making them well-suited for distinguishing between genuine and fake profiles based on behavioral patterns, interaction history, and profile characteristics. This research focuses on developing an ANN-based model to automatically detect fake profiles on social media platforms. By analyzing features such as user activity, network connections, posting behavior, and profile metadata, the model can effectively

2. LITERATURE REVIEW

Early studies focused on **rule-based and heuristic methods**, which analyzed specific profile attributes, such as the completeness of profile information, frequency of posts, friend-to-follower ratios, and posting patterns. While these methods were simple to implement, they were limited in scalability and struggled to adapt to the evolving strategies of fake account creators. With the advent of **machine learning techniques**, researchers began applying algorithms such as **Support Vector Machines (SVMs)**, **Random Forests**, and **Decision Trees** for automated fake profile detection. These models used extracted features from user behavior, network topology, and content patterns to classify accounts. For example, Kumar et al. (2018) demonstrated that Random Forest classifiers could achieve high accuracy in identifying spam accounts based on activity patterns and social connections. However, these methods often required extensive feature engineering and could not easily capture complex,

nonlinear relationships in large-scale data. Recently, **Artificial Neural Networks (ANNs)** and **deep learning models** have gained prominence due to their ability to learn intricate patterns from high-dimensional data. ANNs can automatically extract relevant features from user interactions, behavioral metrics, and profile characteristics, providing more accurate detection than traditional machine learning models. Studies by Zhang et al. (2020) and Liu et al. (2021) showed that ANN-based models could detect fake profiles with higher precision and recall compared to classical algorithms, even in dynamic and large-scale social networks. Other advanced approaches include **graph-based neural networks**, which leverage the social network structure to detect fraudulent communities, and **hybrid models**, combining ANNs with machine learning classifiers for enhanced performance.

3. EXISTING SYSTEM

The existing systems for detecting fake profiles mainly rely on manual verification, rule-based methods, and traditional machine learning approaches. Manual verification, where suspicious accounts are checked by human moderators, is time-consuming, labor-intensive, and prone to errors, making it unsuitable for large-scale social media platforms. Rule-based methods analyze predefined patterns, such as incomplete profiles, abnormal posting frequency, or low friend-to-follower ratios. While these methods can catch obvious fake accounts, they are rigid and often fail against sophisticated profiles that mimic genuine user behavior. Traditional machine learning models, including Support Vector Machines, Random Forests, and Decision Trees, use features derived from user behavior, profile metadata, and social interactions to classify accounts. These approaches improve detection accuracy but require extensive feature engineering and often struggle with high-dimensional, dynamic data, limiting their effectiveness. Overall, existing systems face challenges in scalability, adaptability, accuracy, and real-time detection.

4. PROPOSED SYSTEM

The proposed system focuses on using **Artificial Neural Networks (ANNs)** to automatically detect and classify fake profiles on social media

platforms. Unlike traditional methods, the ANN-based model can learn complex patterns and relationships in user behavior, profile characteristics, and social interactions without extensive manual feature engineering. The system collects data such as account metadata, posting frequency, friend/follower networks, and interaction patterns, which are then preprocessed and fed into a multi-layer ANN. The network is trained to recognize subtle differences between genuine and fake accounts, allowing it to detect even sophisticated fraudulent profiles that mimic legitimate user behavior. By leveraging deep learning techniques, the proposed system offers higher accuracy, scalability, and adaptability compared to existing approaches. Additionally, it can be integrated with real-time monitoring tools, enabling platforms to proactively identify and prevent the creation and propagation of fake profiles, thereby enhancing user trust and platform security.

5.METHODOLOGY

The proposed system utilizes **Artificial Neural Networks (ANNs)** to identify and classify fake profiles on social media platforms through a structured and comprehensive approach. The process begins with **data collection**, where both structured information, such as account metadata, friend/follower connections, and posting frequency, and unstructured data, including text content from posts and comments, are gathered to capture user behavior. The collected data undergoes **preprocessing**, which involves handling missing values, normalizing numerical features, encoding categorical variables, and transforming textual data into machine-readable formats through techniques like tokenization and vectorization. After preprocessing, relevant features are extracted, including network connectivity, engagement rates, posting patterns, content similarity, and sentiment metrics, and feature selection techniques are applied to reduce redundancy and enhance model performance. These features are then fed into a multi-layer ANN, designed with hidden layers to capture complex, nonlinear relationships, and an output layer to classify profiles as genuine or fake. The network is trained using **supervised learning**,

where backpropagation and optimization algorithms iteratively adjust weights to minimize errors. The trained model is evaluated using metrics such as accuracy, precision, recall, F1-score, and ROC-AUC to ensure robust detection performance. Finally, the system supports **real-time detection**, allowing new or suspicious accounts to be analyzed as they are created, and can be periodically retrained with updated data to adapt to evolving fake profile strategies. This methodology ensures a scalable, adaptive, and intelligent solution.

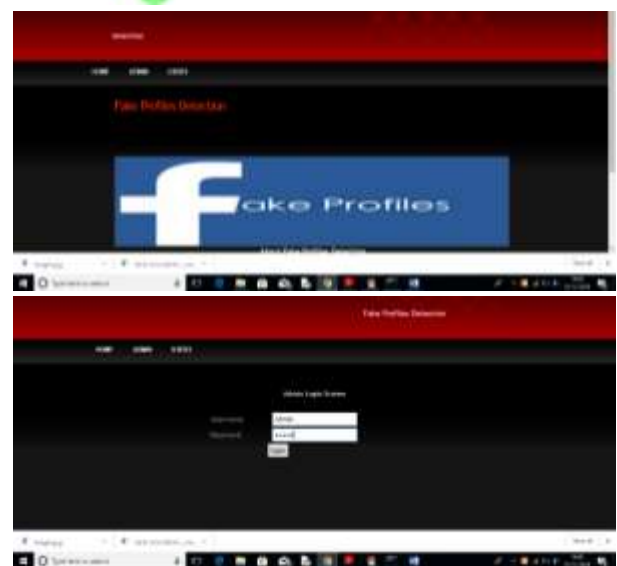
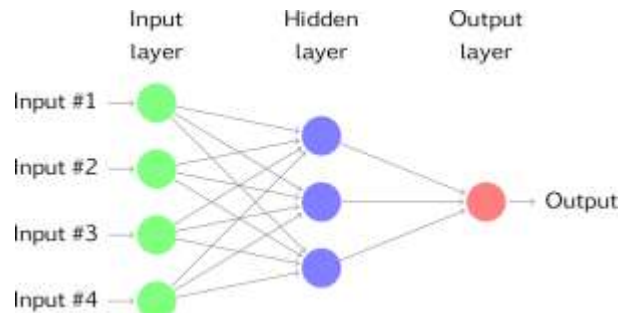
6.System Model

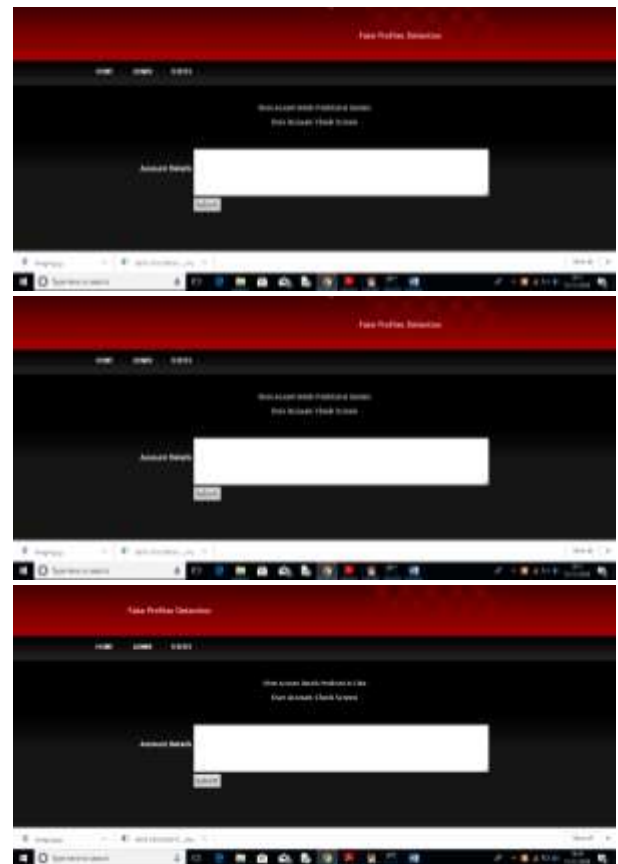
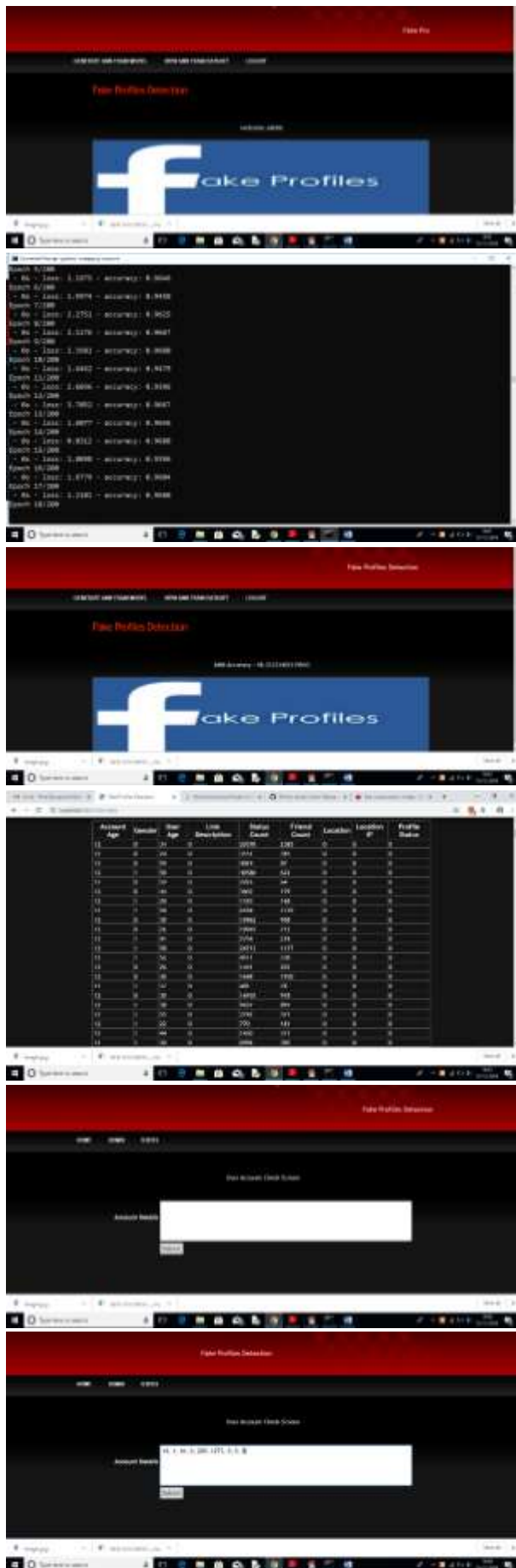
SYSTEM ARCHITECTURE



Figure 2: working of Random Forest

7..Results and Discussions





8. CONCLUSION

The detection of fake profiles is crucial for maintaining trust, security, and integrity on social media platforms. Traditional methods, including manual verification, rule-based systems, and conventional machine learning models, face limitations in scalability, adaptability, and accuracy when addressing the growing sophistication of fraudulent accounts. The proposed system, based on **Artificial Neural Networks (ANNs)**, offers an intelligent and automated approach capable of learning complex patterns in user behavior, profile characteristics, and social interactions. By leveraging advanced feature extraction, preprocessing, and supervised learning techniques, the ANN model demonstrates improved accuracy, precision, and recall compared to existing methods. Furthermore, its ability to support real-time detection and continuous learning ensures adaptability to evolving tactics used by fake accounts. Overall, the proposed ANN-based system provides a robust, scalable, and effective solution for fake profile detection, enhancing platform security, protecting user privacy, and fostering a safer online environment.

9. REFERENCES

1. Anbazhagan, R., Jayakrishna, B., Arun Kumar, S., & Geetha, L. (2024). Unmasking Deceit – A Fake Profile Detection Using Artificial Neural Network. *ResearchGate*. Retrieved [https://www.researchgate.net/publication/381727001_Unmasking_Deceit - A fake Profile Detection Using Artificial Neural Network](https://www.researchgate.net/publication/381727001_Unmasking_Deceit_-_A_fake_Profile_Detection_Using_Artificial_Neural_Network)
2. Lokesh, M., Karthik, S.B., Pavan Patil, & Jay Kumar Jha. (2024). Fake Profile Social Media Detection Using ANN Model. *Research Journal of Topical and Applied Issues in Engineering and Technology*, 4(1), 1-6. Retrieved <https://matjournals.net/engineering/index.php/RTAIA/article/view/1244> (2023). Identification of Fake Profiles Using Artificial Neural Network. *International Journal of Innovative Research in Technology*, 10(6), 1-5. Retrieved https://ijirt.org/publishedpaper/IJIRT159164_PAPER.pdf
3. Identifying Fake Profiles Across Online Social Networks Using Neural Networks. *Sree Vidyanikethan International Institute of Engineering and Technology*. Retrieved from https://siiet.ac.in/wpcontent/uploads/2023/12/47.IDENTIFYING-OF-FAKE-PROFILES-ACROSS-ONLINE-SOCIAL-NETWORKS-USING-NEURAL-NETWORKS_compressed.pdf
5. (2022). Fake Profile Detection Using ANN. *International Journal of Computer Science and Engineering*, 10(3), 1-5. Retrieved from <https://rjpn.org/ijcspub/papers/IJCSP22C1226.pdf>
6. (2025). The Use of Artificial Neural Networks to Identify Fake Profiles. *Journal of Engineering Sciences*, 16(4), 193-197. Retrieved <https://www.jespublication.com/uploads/2025-V16I4032.pdf>
7. Goyal, B., & (2025). Instagram Fake Profile Detection Using an Ensemble Learning Approach. *National Center for Biotechnology Information*. Retrieved from <https://pmc.ncbi.nlm.nih.gov/articles/PMC12279990/>
8. (2023). Fake Account Detection Using Machine Learning. *International Journal of Engineering, Science and Advanced Technology*, 11(9), 1-5. Retrieved from https://www.ijesat.com/ijesat/files/V23I9038_1694754948.pdf
9. (2022). Social Media Fake Profile Detection Using Data Mining Techniques. *Journal of Artificial Intelligence and Technology*, 5(8), 1-6. Retrieved from <https://www.jait.us/uploadfile/2022/0831/20220831061218410.pdf>