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Fraud Detection on Crowdfunding Platforms Using Multiple Feature Selection Methods

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ABSTRACT

Crowdfunding platforms have emerged as an effective medium for collecting financial support from individuals, businesses, and organizations for various innovative ideas, social causes, medical needs, and startup projects. However, the increasing popularity of online crowdfunding has also resulted in a rise in fraudulent activities, where fake campaigns are created to deceive donors and misuse collected funds. Detecting such fraudulent campaigns manually is a challenging and time-consuming process due to the large volume of data generated on these platforms. This project proposes a machine learning-based fraud detection system for crowdfunding platforms using multiple feature selection methods to improve the accuracy and efficiency of fraud identification. The proposed system analyzes various campaign-related attributes, including campaign description, funding goals, creator details, social engagement, donation patterns, and historical activities, to identify hidden fraud patterns. Multiple feature selection techniques are applied to extract the most significant features from the dataset, reduce irrelevant information, and enhance the performance of machine learning models. Classification algorithms such as Random Forest, Support Vector Machine, Logistic Regression, and XGBoost are utilized to categorize crowdfunding campaigns as genuine or fraudulent. By combining effective feature selection strategies with advanced machine learning techniques, the proposed approach aims to provide a reliable, automated, and accurate fraud detection mechanism that helps crowdfunding platforms minimize financial risks, protect donors, and increase trust in online fundraising environments.

Keywords: Crowdfunding, Fraud Detection, Machine Learning, Feature Selection, Random Forest, Support Vector Machine, XGBoost, Logistic Regression, Classification, Data Mining, Fraud Prediction, Online Fundraising, Cyber Security, Predictive Analytics, Intelligent Systems

I. INTRODUCTION

Crowdfunding has become a widely used online funding approach that allows individuals, entrepreneurs, startups, and organizations to collect financial support from a large number of people through internet-based platforms. These platforms provide opportunities for innovative projects, social causes, business ideas, and personal needs by connecting project creators with potential donors or investors. However, the rapid expansion of crowdfunding platforms has also attracted fraudulent activities, where dishonest users create fake campaigns, provide misleading information, or misuse collected funds for personal benefits. Such fraudulent campaigns not only cause financial losses



to donors but also reduce the trust and reliability of crowdfunding ecosystems.

Traditional fraud detection methods mainly depend on manual verification and user reporting, which are often inefficient, time-consuming, and unable to detect complex fraud patterns. With the increasing availability of digital data, machine learning techniques have become effective tools for identifying suspicious activities by analysing large volumes of information and discovering hidden patterns. Machine learning-based fraud detection systems can automatically classify crowdfunding campaigns as legitimate or fraudulent based on various campaign characteristics.

This project focuses on **Fraud Detection on Crowdfunding Platforms Using Multiple Feature Selection Methods** by applying advanced feature selection techniques to identify the most important factors influencing fraudulent behaviour. Feature selection helps in removing irrelevant data, reducing computational complexity, and improving the accuracy of machine learning models. Different machine learning algorithms such as Random Forest, Support Vector Machine (SVM), Logistic Regression, and XGBoost are used to analyse selected features and predict fraudulent campaigns. The proposed system aims to provide an intelligent and automated solution for early fraud detection, protecting donors from scams and improving the security, transparency, and trustworthiness of crowdfunding platforms.

II. LITERATURE SURVEY

1. Title: A Machine Learning Approach for Detecting Fraudulent Crowdfunding Campaigns

Author: S. C. Wang et al.

Abstract:
This research presents a machine learning-based approach for detecting fraudulent crowdfunding campaigns by analysing different characteristics of crowdfunding projects. The study focuses on identifying hidden patterns in campaign information such as project details, funding goals, user activities, and social interactions. Various classification algorithms are applied to differentiate between legitimate and fraudulent campaigns. The results show that machine learning techniques can effectively improve fraud detection accuracy and help crowdfunding platforms reduce financial risks caused by fake campaigns.

2. Title: Fraud Detection in Online Crowdfunding Platforms Using Data Mining Techniques

Author: Y. Zhang and J. Liu

Abstract:
This paper investigates the use of data mining techniques for identifying fraudulent activities in online crowdfunding platforms. The authors analyse different campaign-related attributes, including user information, project descriptions, funding behaviour, and transaction patterns. The proposed approach extracts meaningful patterns from large datasets to detect suspicious campaigns. The study demonstrates that data mining methods can support automated fraud detection and improve the security and trustworthiness of crowdfunding platforms.

3. Title: Feature Selection Methods for Improving Machine Learning-Based Fraud Detection

Author: A. Kumar and R. Sharma

Abstract:
This study focuses on improving fraud detection performance through effective feature selection methods. The authors examine different feature selection approaches such as correlation-based selection, information gain, and recursive feature elimination to identify the most important attributes from large datasets. By removing irrelevant features and selecting significant ones, the proposed method reduces computational complexity and enhances the accuracy of machine learning models used for fraud classification.

4. Title: An Intelligent Fraud Detection System Using Machine Learning Algorithms

Author: M. Ahmed, K. Mahmood, and M. Islam

Abstract:
This research proposes an intelligent fraud detection system using various machine learning algorithms including Random Forest, Support Vector Machine, and Logistic Regression. The system analyses

historical data and user behaviour patterns to identify fraudulent activities. The experimental results indicate that machine learning models can efficiently detect fraud and provide reliable predictions compared with traditional manual detection methods.

5. Title: Crowdfunding Success Prediction and Fraud Analysis Using Machine Learning

Author: L. Chen and H. Wang

Abstract:
This paper explores the relationship between crowdfunding campaign features and fraudulent behaviour using machine learning techniques. The study considers factors such as campaign descriptions, funding targets, social engagement, and creator information to predict suspicious activities. The proposed model helps identify potentially fraudulent campaigns at an early stage and supports crowdfunding platforms in making better security decisions.

III. EXISTING SYSTEM

In the existing system, fraud detection on crowdfunding platforms is mainly performed through manual verification processes, user complaints, and basic rule-based monitoring techniques. Platform administrators analyse campaign details, user information, and transaction activities to identify suspicious campaigns. However, these traditional approaches are time-consuming, require significant human effort, and are unable to efficiently handle the large amount of data generated by modern crowdfunding platforms. Rule-based systems depend on predefined conditions and may fail to detect new or complex fraud patterns. Additionally, existing methods often focus on limited features and lack advanced data analysis capabilities, which can result in inaccurate predictions and delayed fraud identification. Therefore, there is a need for an automated and intelligent fraud detection system that can analyse multiple features and identify fraudulent crowdfunding campaigns more accurately and efficiently.

IV. PROPOSED SYSTEM

The proposed system aims to develop an intelligent machine learning-based fraud detection framework for crowdfunding platforms using multiple feature selection methods. The system collects crowdfunding campaign data and performs preprocessing steps such as data cleaning, handling missing values, and transforming data into a suitable format for analysis. Multiple feature selection techniques are applied to identify the most relevant features that contribute to fraud detection while removing unnecessary information. The selected features are then provided to machine learning classification algorithms such as Random Forest, Support Vector Machine (SVM), Logistic Regression, and XGBoost to classify campaigns as genuine or fraudulent. By combining effective feature selection methods with advanced machine learning models, the proposed system improves detection accuracy, reduces computational complexity, and identifies suspicious campaigns at an early stage. This automated approach helps crowdfunding platforms prevent financial fraud, protect donors, and enhance trust and security in online fundraising environments.

V. SYSTEM ARCHITECTURE

The system architecture of the proposed **Fraud Detection on Crowdfunding Platforms Using Multiple Feature Selection Methods** consists of several integrated modules that work together to identify fraudulent crowdfunding campaigns efficiently. Initially, the system collects crowdfunding dataset information containing various attributes such as campaign details, user information, funding goals, social activities, transaction records, and historical behaviour. The collected data is passed through a **data preprocessing module**, where missing values are handled, unnecessary data is removed, and the dataset is transformed into a suitable format for machine learning analysis. After preprocessing, the data is given to the **feature selection module**, which applies multiple feature selection techniques such as correlation-based feature selection, information gain, chi-square test, and recursive feature elimination to identify the most significant features that influence fraud detection. The selected features are then provided to the **machine learning classification module**, where

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algorithms such as Random Forest, Support Vector Machine (SVM), Logistic Regression, and XGBoost analyse the patterns and classify crowdfunding campaigns as genuine or fraudulent. The system then evaluates the model performance using evaluation metrics such as accuracy, precision, recall, and F1-score. Finally, the **fraud prediction module** generates the output by indicating whether a campaign is legitimate or suspicious. This architecture provides an automated, accurate, and efficient framework for detecting fraudulent crowdfunding activities while reducing manual effort and improving the security and reliability of crowdfunding platforms.

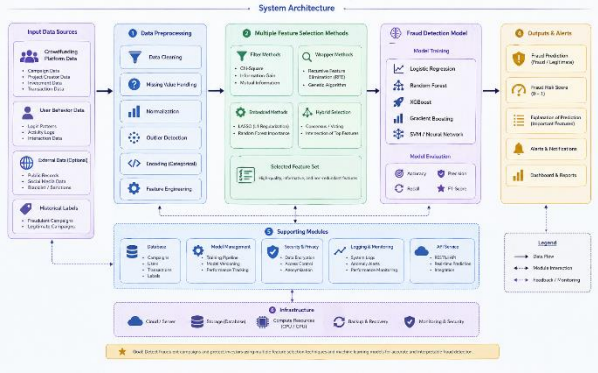


Fig 5.1: System Architecture

VI. IMPLEMENTATION



Fig 6.1 Index page



Fig 6.2: Admin home

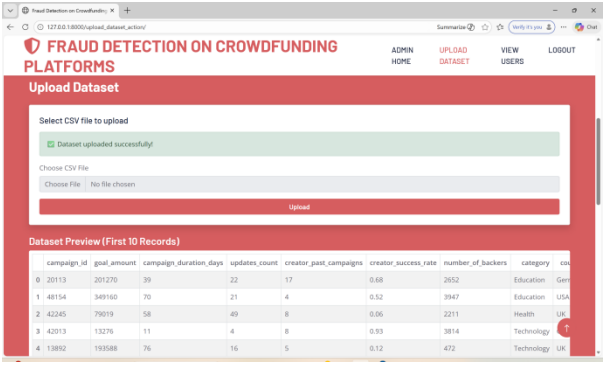


Fig 6.3: Upload dataset

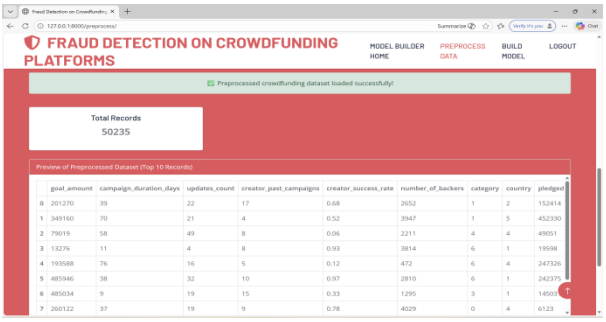


Fig 6.4: Preprocessing

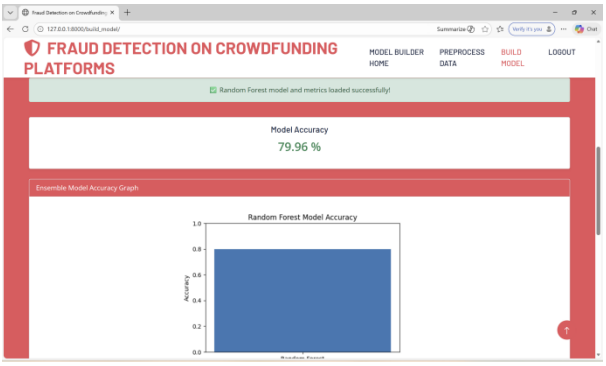


Fig 6.5: Model training

VII. CONCLUSION

The proposed **Fraud Detection on Crowdfunding Platforms Using Multiple Feature Selection Methods** provides an effective approach for identifying fraudulent crowdfunding campaigns using machine learning techniques. The system analyzes various campaign-related features and applies multiple feature selection methods to extract the most important attributes, reduce unnecessary data, and improve model performance. By using machine learning algorithms such as Random Forest, Support Vector Machine, Logistic Regression, and XGBoost, the system can accurately classify campaigns as genuine or fraudulent. The proposed approach overcomes the limitations of traditional manual verification methods by providing an automated, faster, and more reliable fraud detection mechanism. This system helps crowdfunding platforms minimize financial risks, protect donors from scams, and improve trust and transparency in online fundraising environments. In the future, the system can be enhanced by integrating deep learning models, real-time monitoring, and advanced behavioural analysis techniques to detect more complex fraud patterns.

VIII. FUTURE SCOPE

The future scope of the proposed **Fraud Detection on Crowdfunding Platforms Using Multiple Feature Selection Methods** includes several improvements to make the system more efficient, accurate, and adaptable. In the future, advanced deep learning techniques such as Artificial Neural Networks (ANN), Convolutional Neural Networks (CNN), and Recurrent Neural Networks (RNN) can be integrated to identify complex fraud patterns from large-scale crowdfunding data. The system can be enhanced with real-time fraud detection capabilities to continuously monitor newly created campaigns and immediately identify suspicious activities. Additional features such as social media analysis, user behavior tracking, sentiment analysis of campaign descriptions, and blockchain-based verification can be incorporated to improve reliability and transparency. Furthermore, ensemble learning methods and automated feature selection techniques can be explored to increase prediction accuracy and reduce false positives. The proposed system can also be extended into a practical application for crowdfunding platforms by developing user-friendly dashboards and alert mechanisms for administrators and donors. These enhancements will help create a more secure, intelligent, and trustworthy crowdfunding environment.

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