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# Data Mining based Hybrid Latent Representation Induced Ensemble Model Towards Fraud Prediction

Publisher: IEEE

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J. Anita Smiles ; T. Kamalakannan All Authors ...



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### Abstract

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The increasing growth of e-commerce and mobile payments has contributed to a rise in the effects of financial payment services fraud over the last few years. "At 2025, th... [View more](#)

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#### Abstract:

The increasing growth of e-commerce and mobile payments has contributed to a rise in the effects of financial payment services fraud over the last few years. "At 2025, the losses in fraud around the world could amount to about \$44 billion, according to McKinsey." Every year, trillions of dollars are lost from fraudulent card transactions. An efficient fraud detection system based on advanced machine learning techniques have gained excellent value in all Financial Institutions to reduce these losses. The proposed algorithm SLREnsemble (Stochastic Latent Representation Ensemble) is a hybrid model that uses deep neural network Autoencoders to obtain the latent representation of genuine and fraudulent transactions and these representations are given as an input to the balanced ensemble model. The technique is tested against other existing methods, i.e., Isolation Forest, Random Forest, and XGBoost algorithms, by various performance metrics such as accuracy, precision, and recall. The results prove that the SLREnsemble model is highly efficient in Fraud detection and performs well with minimal training data and yields good precision, recall and f1-score with high computational speed values.

**Published in:** 2020 3rd International Conference on Intelligent Sustainable Systems (ICISS)

**Date of Conference:** 03-05 December 2020

**DOI:** 10.1109/ICISS49785.2020.9316080

**Date Added to IEEE Xplore:** 18 January 2021

**Publisher:** IEEE



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ISBN Information:

Conference Location: Thoothukudi, India

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#### 1. INTRODUCTION

The world is in the midst of digital revolution .Due to Covid 19 with lockdown restrictions people have stopped moving out from home and a large population has noted to adopt online transactions. Large Number of users in urban countries such as India are digitally influenced to use e banking applications and to buy financial products. Apart from banking there is also an increase in fake websites that resemble shop and home delivery services which traps users to do online transactions. With the increase in the use of IoT, criminals can easily get inside the system and collect various consumer data which creates privacy risks. Due to this there is an increase in fraud with cybercriminals targeting people with fake activations of debit and credit cards,online bookings,free coronavirus tests and job offers have led to adoption of fraud detection and prevention system. As the Fraudsters are searching for innovative techniques to commit fraud at every second, the traditional rule-based methods are not sufficient for this problem [6]. Financial Institutions must focus on fraud detection in real time so that it can protect companies from insider fraud and can also identify any anomalies in individuals who might leak data. This is where a deep learning technique presents a unique solution. Banks will facilitate data analytics to recognize fraud cases and assist with immediate response and recovery steps, such as blocking suspicious transactions before the authorization of payments. Banks are adopting innovative technological methods to promote their growth, which leads to cybercrimes. Fig. 1 shows different kinds of technology based banking frauds committed through Online Payment Channel and Card transactions links [13]. During the financial year, 2020 Fraud cases at banks and financial institutions are 28% increased in volume and 50.7% of the cases were from the public sector banks.

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