



# A SURVEY OF AI ON FINANCIAL FRAUD DETECTION

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## ABSTRACT

*In the banking industry, artificial intelligence (AI) tools for fraud detection and prevention are becoming more and more common. This paper provides a comprehensive examination of the impact of artificial intelligence (AI) on financial fraud detection. It makes clear the limitations of traditional methods for detecting financial fraud and highlights how difficult it is to handle the growing complexity of fraudulent activities. The various applications of artificial intelligence (AI) methods, such as machine learning, deep learning, natural language processing, and anomaly detection, to enhance fraud detection abilities are then covered.*

**KEYWORDS:** Financial fraud detection, Fraud prevention, Data Privacy, Artificial Intelligence

## INTRODUCTION

The financial industry has dynamic nature of fraudulent conduct and technological advancements, the financial industry is continually changing. In an ever-changing environment, financial institutions need to identify and stop financial fraud in order to safeguard their assets and maintain customer confidence. Conventional approaches to detecting fraud are often less successful than the sophisticated techniques employed by con artists, notwithstanding their occasional successes. However, the way financial fraud is identified and combated has fundamentally changed as a result of the advancements in artificial intelligence (AI).

## OBJECTIVE OF THE STUDY

- Analyze comparison to traditional methods, artificial intelligence (AI) tools such as machine learning, natural language processing, and anomaly detection might improve the accuracy of detecting fraudulent activity in financial transactions.
- Reduce the time and resources needed for fraud detection by streamlining the process of finding fraudulent patterns by evaluating massive volumes of data in real-time.
- Helps financial organizations keep ahead of growing dangers by continuously learning from fresh data and adapting to evolving fraud methods and patterns.

## LITERATURE REVIEW

	Title of the paper	Author	Objectives	Observations
1	Impact of Artificial Intelligence on Fraud Detection	Ramana, S. V., Katta, A. K., Rao, P. S., Rao, S. S., & Raja, R. (2022)	To focus on how human consciousness affects the ability to recognize deception and reduce false upsides in retail banking products To dissect the practicality of human reasoning in order to determine a financial evaluation and the kinds of facts that go into To examine how AI enhances customer experience and reduces	Artificial intelligence, also referred to as machine intelligence, is the replication of human knowledge in machines. It is the knowledge that machines exhibit as opposed to the typical knowledge that people do. Around the world, artificial intelligence is rapidly innovating. One of the key sectors embracing man-made consciousness is the banking industry. Machines interpret human thought processes as information. Bank financial transactions are examined for machine learning, automated reasoning, and automated decision-making.



			expenses associated with client support	
2	Role of Artificial Intelligence in Financial Fraud Detection.	Mohanty, B., & Mishra,S.(2023)	To recognize fraud detection software as well as techniques that are used in the financial and banking sector. To examine the role of the Artificial Intelligence based solution on the overall performance of the financial and banking sector.	Artificial Intelligence (AI) has transformed the way we conduct business and has undoubtedly become an indisputable and compelling aspect of modern life. Technology has impacted every industry and has been essential to the provision of services. Thanks to technological improvements, the banking and financial services are exploiting a variety of perspectives and tools that provide them a competitive advantage in the fiercely competitive business scene.
3	Reviewing the role of AI in fraud detection and prevention in financial services	Odeyemi, O., Mhlongo, N. Z., Nwankwo, E. E., & Soyombo, O. T. (2024).	To determine which tools and techniques are employed by the banking and financial sectors to detect fraud. to evaluate the impact of the AI-based solution on the overall performance of the banking and financial sector.	The present analysis delves into the significant contribution of Artificial Intelligence (AI) to the advancement of fraud detection and prevention in the financial services industry. The sophistication of financial crimes is causing traditional methods of detection to become inadequate, thus calling for the incorporation of innovative technologies. AI becomes a revolutionary tool that strengthens the barriers against fraudulent activity by using machine learning algorithms, predictive analytics, and anomaly detection. The article offers a thorough analysis of the historical background, following the development of fraud detection from manual techniques to the modern AI-driven solutions.
4	Strategy of Artificial Intelligence in Banking Sector	Arora, A., & Dhahiya, M. (2023)	To learn what studies have been conducted on the idea and application of artificial intelligence in the banking industry. To examine how AI is currently being used in India's banking industry	Currently, banks offer a wide range of services and products, most of which are connected to automation and technology. The most common of these are the ATMs, which are located all over the place. As we enter the next stage of the industry 4.0 revolution, the financial services sector is getting ready to use cutting-edge digital technology to carry out its plans. This is being done to ensure that transactions for clients are completed quickly and safely.
5	Use of artificial intelligence algorithms to enhance fraud detection in the Banking Industry	Shihembetsa, E. (2021)	To ascertain which data attributes are best suited for machine learning algorithms that are employed in the detection of fraud in mobile banking. To assess the effectiveness of machine learning algorithms in identifying fraudulent activity in mobile banking transactions.	With the rise in health problems, health insurance has become a vital aspect of peoples' lives in the modern era. Emergency medical care might be problematic for those unable to pay large costs. In the event of a medical emergency, health insurance helps people pay for medical services and offers financial security against the risk of debt. Numerous security, privacy, and fraud concerns may arise with health insurance and its various benefits.



6	Artificial intelligence and fraud detection of deposit money banks	Eneh, O. M. R., Okeke, F. C., & Amahalu, N. N. (2023)	Assesses the effect of facial recognition technology in artificial intelligence on the oversight of deposit money bank activities.	The impact of artificial intelligence on deposit money institutions' ability to detect fraudulent activity. Despite the obvious and financial advantages, artificial intelligence has a number of flaws and issues that prevent widespread implementation. Automation may make it more difficult to detect malicious activities like phishing and the distribution of viruses to software.
7	The Transformative Impact of AI on Financial Institutions, with a Focus on Banking	Rahmani, F. M., & Zohuri, B. (2023).	Evaluating the potential applications of AI and blockchain in financial accounting. The primary objective is to demonstrate the ways in which AI integration has enhanced financial accounting and to identify the factors that support the use of blockchain and AI in accounting procedures.	Blockchain technology, artificial intelligence (AI), and machine learning (ML) are three of the disruptive forces that stand out the most. The purpose of this study is to assess how blockchain, AI, and ML are incorporated into financial accounting procedures. Through the use of blockchain technology and machine learning, it proposes a potentially revolutionary impact on financial accounting, offering lower accounting costs, increased precision, real-time financial reporting capabilities, and quicker auditing procedures.
8	A Novel Approach to Detect Face Fraud Detection Using Artificial Intelligence	Monesh, M. S., & Lingesh, B. (2024)	It determines if the person in the picture is a genuine person or an artificial intelligence creation.	The primary goal of this research is to detect and stop fraudulent activities that can be carried out using artificial intelligence in relation to facial recognition systems. Facial recognition technology is widely used these days, and fraudsters are employing AI bots rather than people in their schemes, which has led to an upsurge in scams. Finding instances of facial recognition technology misuse is the primary goal of this study. The suggested approach, which makes use of CNNs (Convolutional Neural Networks), safeguards people's personal information. It determines if the person in the picture is a genuine person or an artificial intelligence creation. This makes it possible for their information to be used by authorized individuals only.

## METHODOLOGY

Secondary data for this study came from books, newspapers, internet, and academic journals. Other researchers acquired and analysed secondary data. Reviews of relevant literature are used to identify areas where the field of research needs to be improved. A thorough literature analysis was conducted using websites, newspapers, abstract and reference databases to look into research objectives. Researchers used qualitative data from numerous databases, cross-checked facts, and evaluated research publications to perform in-depth analysis in a real-life setting. This examination looks at India's AI capabilities and state at the moment.

## FINDINGS

1. **Technological Progress:** Artificial intelligence (AI) technologies such as natural language processing, deep learning, and machine learning have revolutionized the detection of financial fraud. These solutions enable firms to identify irregularities quickly, evaluate massive amounts of transactional data, and identify complex patterns of fraudulent activity. AI represents a paradigm shift away from traditional rule-based systems and toward more intelligent and adaptable ones.

2. **Efficiency in Fraud Detection:** Systems powered by artificial intelligence (AI) are more effective than conventional techniques at identifying fraudulent activity. Machine learning algorithms provide the capability to



detect patterns of fraudulent activity that have never been observed previously, acquire knowledge from past data, and adjust to changing fraud strategies. Artificial Intelligence (AI) technologies enhance the precision, velocity, and expandability of fraud detection procedures, hence diminishing monetary losses and mitigating the effect on clients.

**3.Operational Efficiencies :** Artificial intelligence (AI) solutions streamline the fraud detection process by providing real-time transaction monitoring, automating repetitive tasks, and reducing the need for human interaction. Machine learning models are capable of accurately and quickly analyzing large amounts of data, which enhances the effectiveness of identifying suspicious activity. Businesses may increase operational effectiveness, handle increasing transaction volumes, react to potential fraud situations more quickly, and allocate resources more prudently by integrating AI.

### SUGGESTION

Financial institutions have to invest in cutting-edge artificial intelligence (AI) technology including natural language processing, deep learning, and machine learning. Budget for research and development to keep up with the most recent developments in AI and to continuously enhance fraud detection techniques. Develop and implement AI-powered fraud detection solutions that satisfy particular organizational goals in partnership with data scientists, artificial intelligence specialists, and technology partners. Establish alliances with AI startups and IT companies to have access to specialized knowledge and cutting-edge solutions in financial fraud detection. To spot fraudulent activity as it happens and reduce risks quickly, use AI-powered real-time monitoring and detection solutions. Use event-driven systems and streaming analytics to identify anomalies fast.

### CONCLUSION

In conclusion, artificial intelligence has a profound and revolutionary effect on financial fraud detection, changing the way that companies recognize, thwart, and address fraudulent conduct. The effectiveness, efficiency, and accuracy of fraud detection initiatives have significantly increased with the adoption of AI technologies. Natural language processing, deep learning, and machine learning are some of these technologies. By using advanced algorithms and analytics, financial institutions may detect complex fraud patterns, analyze massive amounts of transactional data in real-time, and spot abnormalities with previously unheard-of speed and precision. In conclusion, the financial fraud detection industry is changing dramatically as a result of the use of AI, which offers opportunities for collaboration, creativity, and growth. Financial organizations can make full use of AI to combat financial crime and advance a dependable and safe financial environment.

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