

Department of Artificial Intelligence and Data Science

Finance & Banking

Real-time transaction anomaly detection

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Problem Statement and Motivation

□ Problem Statement:

- Rising digital payments make real-time fraud detection increasingly challenging.
- Traditional rule-based systems lack scalability and adaptability to new fraud patterns.
- These limitations cause delayed detection, false alerts, and financial losses.

Motivation:

- The project builds a Big Data–based real-time anomaly detection system using Hadoop, Spark, and Hive.
- It enhances fraud detection accuracy and reduces response time through scalable analytics.
- The system strengthens financial security and customer trust.
- insights.

Existing System



Feature	Existing System	Limitation
Approach	Rule-based detection	Static, not adaptive
Data Handling	Limited data capacity	Not scalable
Detection	Manual or batch	Not real-time
Accuracy	High false positives	Delayed fraud response

Objectives

<div></div>	Objective Area	Goal
	System Design	Build a real-time anomaly detection system using Hadoop, Spark, and Hive.
	Data Handling	Efficiently manage and process large-scale financial transactions.
	Detection	Instantly identify fraudulent or suspicious transactions.
	Accuracy	Minimize false positives and improve system reliability.
	Visualization	Develop dashboards to display KPIs and actionable fraud insights.

Abstract

- • The project develops a real-time transaction anomaly detection system for the finance and banking sector.
- It uses Big Data technologies within the Hadoop ecosystem . HDFS for storage, Spark for processing, and Hive for data management.
- The system efficiently handles massive financial datasets to detect unusual or suspicious transactions in real time.
- It aims to reduce fraud risks and false positives through pattern-based analysis.
- Visual dashboards display key performance indicators and actionable insights to support better financial security and decision-making.

Thank You