UPI Fraud Detection Using Machine Learning

Srinidhi M N[1] and Prof. Raghavendra T K[2]

Student, Computer Science and Engineering[1]

Associate Professor, Department of Computer Science and Engineering[2]

Kalpataru Institute of Technology, Tiptur, India

Abstract: *Unified Payments Interface (UPI) has significantly transformed the digital payment ecosystem in India by enabling instant and secure fund transfers. However, the rapid expansion of UPI usage has also led to a rise in fraudulent activities, posing serious challenges to financial security. This paper explores the application of data-driven learning approaches to identify suspicious UPI transactions. Transaction records are analyzed to detect abnormal patterns using adaptive learning models capable of responding to evolving fraud behaviors. Feature transformation and selective attribute extraction play a crucial role in improving prediction accuracy and system efficiency. In addition, the integration of anomaly identification mechanisms with continuous monitoring enhances the reliability of detection outcomes. The proposed framework is designed to handle large-scale transaction volumes with minimal delay while maintaining consistent performance. Experimental observations indicate a reduction in false alerts and improved identification of illegitimate transactions. Overall, the approach strengthens transaction safety, supports faster responses to emerging threats, and helps financial institutions preserve trust and operational integrity within the UPI ecosystem.*

Keywords: UPI transactions, fraud analysis, machine learning models, anomaly detection, digital payment security