

# Fraud Detection in Banking using Key Agreement and Face Authentication

**Mr. Ankit Sangale<sup>1</sup>, Miss. Rutuja Dhanwate<sup>2</sup>, Miss. Divya Jadhav<sup>3</sup>, Prof. Miss. Pawar. T. S<sup>4</sup>**  
Student, Department of Computer Engineering<sup>1,2,3</sup>  
Guide, Department of Computer Engineering<sup>4</sup>  
Sanjivani Pratistan Institute of Technology Polytechnic, Kurund, India

**Abstract:** *Fraud detection in banking is a critical domain for financial security, driven by the rising frequency and sophistication of cyber-attacks. This paper introduces a dual-layered fraud detection framework combining key agreement protocols and face authentication. The system ensures secure communication through cryptographic techniques, such as Diffie-Hellman and Elliptic Curve Cryptography, while leveraging real-time facial recognition powered by TensorFlow and OpenCV for biometric authentication. These technologies collectively address identity theft, unauthorized access, and data breaches in banking operations. Implementation results demonstrate a high accuracy rate in user verification, efficient transaction processing, and robust protection against cyber threats. This paper outlines the system's architecture, implementation, and performance while addressing associated challenges such as privacy concerns, algorithmic biases, and scalability. The findings highlight the transformative potential of integrating cryptography and biometric authentication for modern banking security.*

**Keywords:** Fraud Detection, Banking Security, Key Agreement, Face Authentication, Python, Cryptography, Computer Vision, Deep Learning, Secure Transactions, Identity Verification