

SECUREGUARD: INNOVATING ATM SECURITY WITH AUTOMATED FACE RECOGNITION

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This paper introduces an innovative "Automated Face Recognition-Based Access Control System for Enhanced ATM Security," aiming to improve safety at ATMs. To address security worries, the project combines traditional methods with the YOLO (You Only Look Once) model, a modern approach for quick face detection. The system undergoes thorough training on a dataset of 6000 images, divided into two categories—covered faces and uncovered faces. It alerts only when someone with a covered face tries to enter, ensuring a smooth process for those without face coverings. The project focuses on detailed dataset collection and training to refine the YOLO model, resulting in good performance metrics like a 70.8% mean Average Precision (mAP), 92.3% precision, and 76.5% recall, showcasing its ability to accurately identify faces, even with different coverings. Once a covered face is detected, the system promptly notifies nearby ATMs of potential security threats. It sends alert to nearby security station in order to improve overall security. Real-world tests confirm the system's effectiveness in various scenarios, highlighting its adaptability to different facial coverings. The project's discussion considers its strengths and limitations, emphasizing ethical considerations, contributing not only to enhanced ATM security but also paving the way for responsible research in facial recognition technology for secure ATMs.