

# Face Detection using Image Processing

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**Abstract:** *This research presents the development of a face recognition system using image processing techniques, specifically tailored for home security applications. The proposed system captures facial images through a camera, processes the input using feature extraction methods, and compares it against a pre-stored database to verify the identity of individuals. By integrating algorithms such as Haar Cascades for face detection and deep learning-based models for face recognition, the system ensures accurate and real-time identification. The implementation aims to enhance home security by allowing access only to authorized individuals while alerting homeowners to any unauthorized attempts. This approach offers a contactless, efficient, and automated security solution, making it both practical and scalable for modern smart homes.*

**Keywords:** Face Recognition, Image Processing, Python, OpenCV, Haar Cascade, Real-Time Detection, Automated Access Control

