

MISSING PERSON IDENTIFIER USING FACE MATCHING

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Abstract: *Missing person cases are a serious social issue, and timely identification plays a crucial role in reuniting individuals with their families. This paper presents the design and implementation of a Missing Person Identifier using Face Matching, which utilizes face recognition technology to assist in identifying missing individuals. The proposed system allows authorized users to upload images and details of missing persons into a centralized database. When a new image is submitted, the system extracts facial features using image processing techniques and compares them with the stored records to detect possible matches.*

Keywords: *Face Recognition, Missing Person Identification, Image Processing, Machine Learning, Face Matching System.*

1. INTRODUCTION

Missing person cases have become a significant concern in many countries, creating emotional distress for families and challenges for law enforcement agencies. Identifying missing individuals quickly and accurately is essential to improve the chances of locating them safely. Traditional methods of searching for missing persons often rely on manual identification, photographs, and public announcements, which can be time-consuming and inefficient. With the advancement of computer vision and machine learning technologies, automated systems can now assist in identifying individuals through facial recognition.

Face recognition is a biometric technology that analyzes unique facial features to identify or verify a person. By comparing facial characteristics from an input image with images stored in a database, the system can determine possible matches. This approach significantly reduces the time and effort required for manual identification and increases the accuracy of the search process.

The Missing Person Identifier Using Face Matching system is designed to provide an efficient platform for identifying missing individuals. The system allows users or authorized authorities to upload missing person details along with photographs into a centralized database. When a new image is provided, the system extracts facial features and compares them with stored records to identify potential matches.

The proposed system is implemented using Python, Flask, HTML, and CSS, along with face recognition algorithms to process and match facial images. The application provides a user-friendly interface for uploading data, searching records, and displaying match results. By automating the identification process, the system aims to support law enforcement agencies and organizations in locating missing persons more efficiently and accurately.

2. Literature Survey

The development of face recognition systems has gained significant attention in recent years due to the rapid advancement of computer vision, machine learning, and artificial intelligence technologies. These systems are widely used in applications such as security surveillance, biometric authentication, and criminal identification. In the context of missing person identification, facial recognition technology can significantly improve the efficiency and accuracy of locating individuals by automatically comparing facial images with stored records.

Researchers have proposed various approaches for face detection and recognition to improve identification accuracy and system performance. Traditional face recognition methods relied on feature extraction techniques such as Eigenfaces, Fisher faces, and Local Binary Patterns (LBP). However, with the advancement of deep learning techniques, Convolutional Neural Networks (CNNs) have become widely adopted for facial recognition tasks due to their ability to extract complex facial features and provide higher accuracy. Recent studies have also focused on integrating face recognition systems with web-based applications to allow real-time monitoring and data management. Many systems use frameworks such as Python, OpenCV, and Flask to develop efficient platforms for image processing and database management. These systems enable users to upload images, perform automated face matching, and retrieve results quickly

3. Proposed System

The proposed system is a **Missing Person Identifier using Face Matching**, designed to help authorities and families locate missing individuals efficiently and securely. The system allows authorized users, such as police officers or administrators, to upload personal details and photographs of missing persons. A central server stores this information in a secure database.

When a new image is provided (for example, a found person or a newly captured photograph), the system uses a **face recognition algorithm** to compare it with stored records. The algorithm analyzes facial features, extracts unique facial embeddings, and computes similarity scores to identify potential matches.

The system also includes a notification module to alert users when a match is found. A user-friendly interface allows seamless interaction with the database, uploading, and searching operations. This setup ensures that the process of identifying missing persons is fast, accurate, and reliable

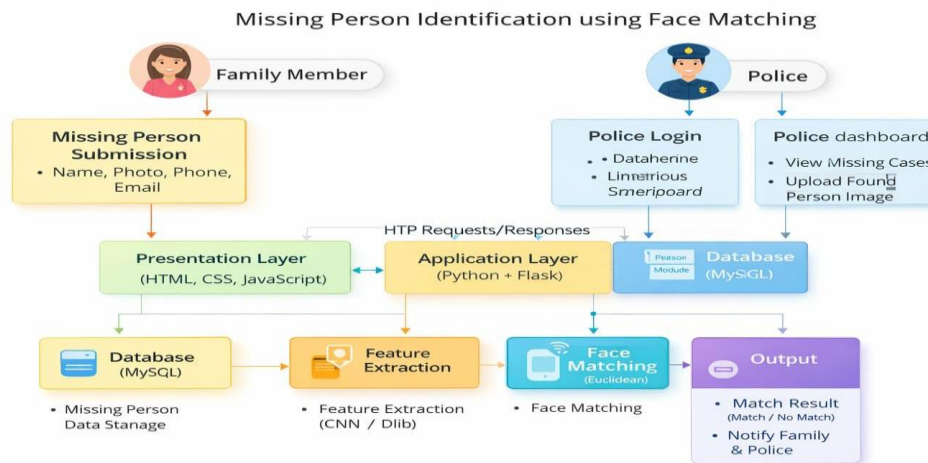


Fig 1: proposed system

The system integrates a **user interface** that allows authorized personnel to interact with the application efficiently. Users can upload details of missing persons, including photographs and personal information. The database securely stores all records, which can be accessed for future comparisons.

The **face matching engine** is the core component, analyzing uploaded images by extracting unique facial features and comparing them with stored records. The system can quickly identify potential matches and generate results with similarity scores.

A **notification module** informs users when a match is found, ensuring timely action. The proposed system emphasizes accuracy, security, and ease of use, providing a reliable and efficient solution for locating missing individuals using readily available software and technologies.

4. Methodology

The methodology of the system is organized into the following steps:

1. **Datacollection:**
Users or authorized personnel upload missing person details, including photographs, name, age, gender, and last seen location. The system stores this data securely in the database.
2. **ImagePreprocessing:**
Uploaded photos are preprocessed to normalize lighting, size, and orientation, ensuring consistency for face recognition.
3. **FeatureExtraction:**
The system uses a face recognition algorithm to extract unique facial features or embeddings from the uploaded images.
4. **DatabaseComparison:**
Extracted facial features are compared with existing records in the database. The system calculates similarity scores for each comparison.
5. **MatchIdentification:**
If the similarity score exceeds a predefined threshold, the system identifies the record as a potential match for the missing person.
6. **ResultDisplayFeedback:**
The system presents the results through the user interface, showing matched records along with confidence scores.
7. The proposed **Missing Person Identifier using Face Matching** was successfully developed and tested under various scenarios. The system demonstrated accurate and efficient performance in identifying potential matches:
8. The system successfully stored and managed missing person records, including photographs and personal details, in the secure database.
9. Uploaded images were preprocessed correctly, ensuring consistent quality for face recognition.
10. The face recognition engine accurately extracted unique facial features and compared them with existing records.
11. The system was able to identify potential matches with high confidence scores, even under varying image conditions (e.g., different lighting or angles).
12. The user interface displayed match results clearly, including similarity scores and relevant details, making the system user-friendly.
13. Notification alerts were triggered correctly when a match was found, ensuring timely communication to authorities or users

Missing or weak skills are automatically identified and suggested.

5. PROPOSED SYSTEM RESULTS

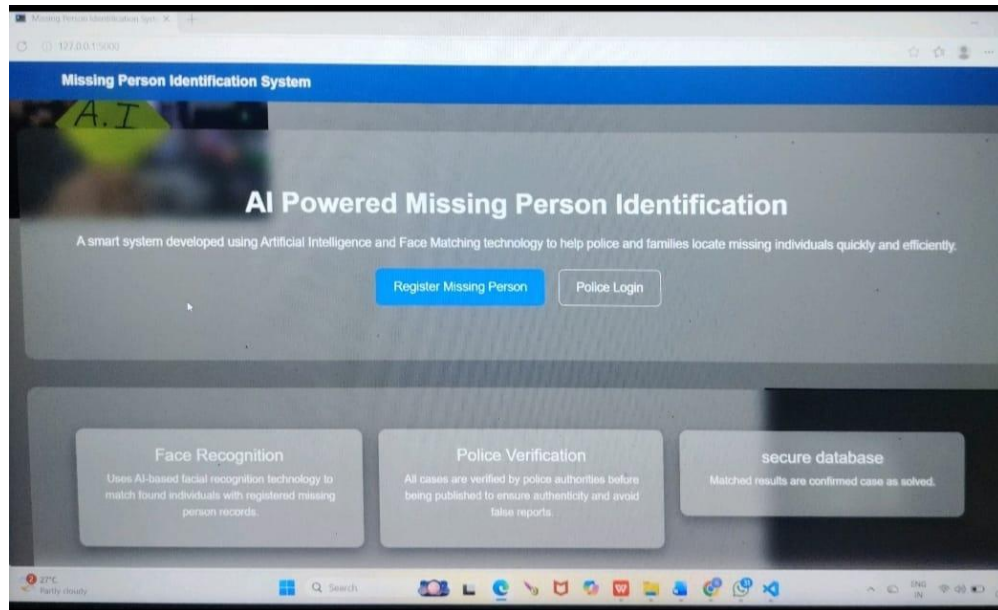


Fig 2: User Interface

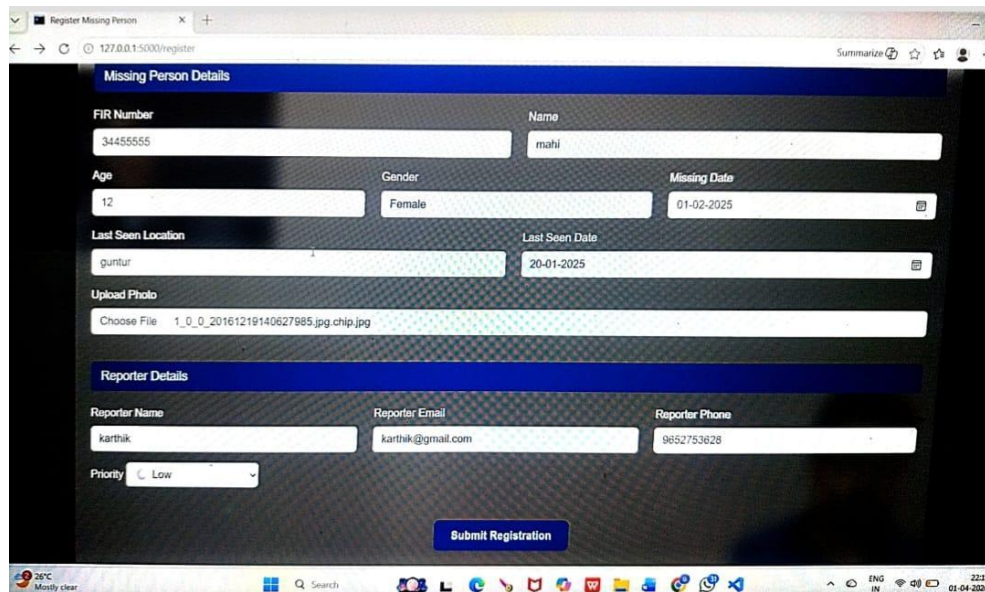


Fig 3: Register missing person

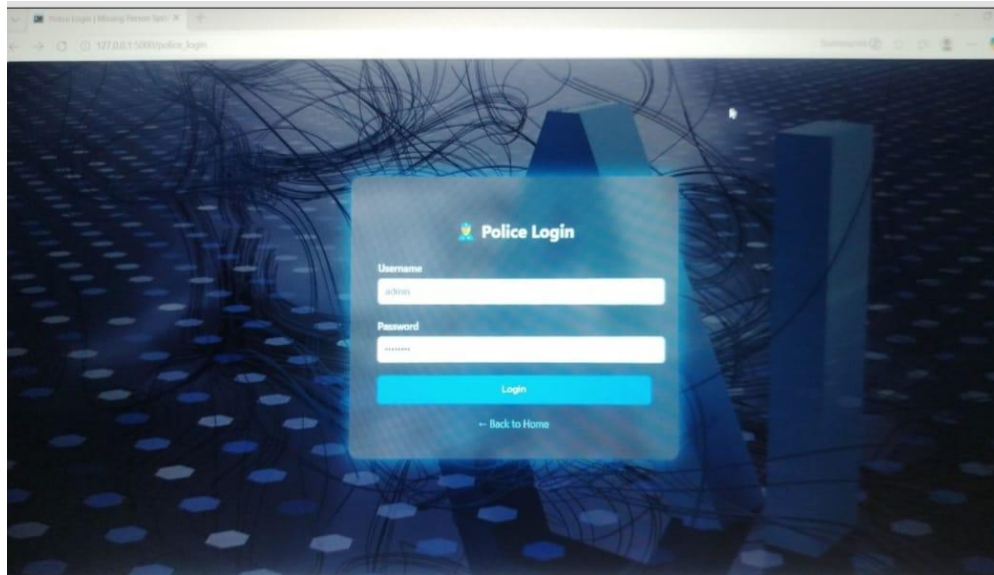


Fig 4:police login page

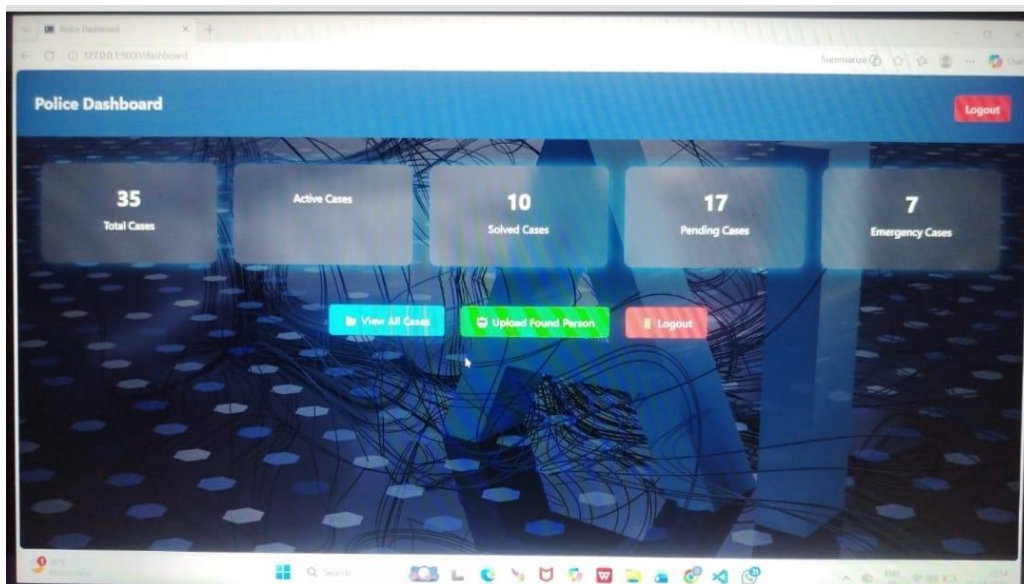


Fig 5:police dashboard

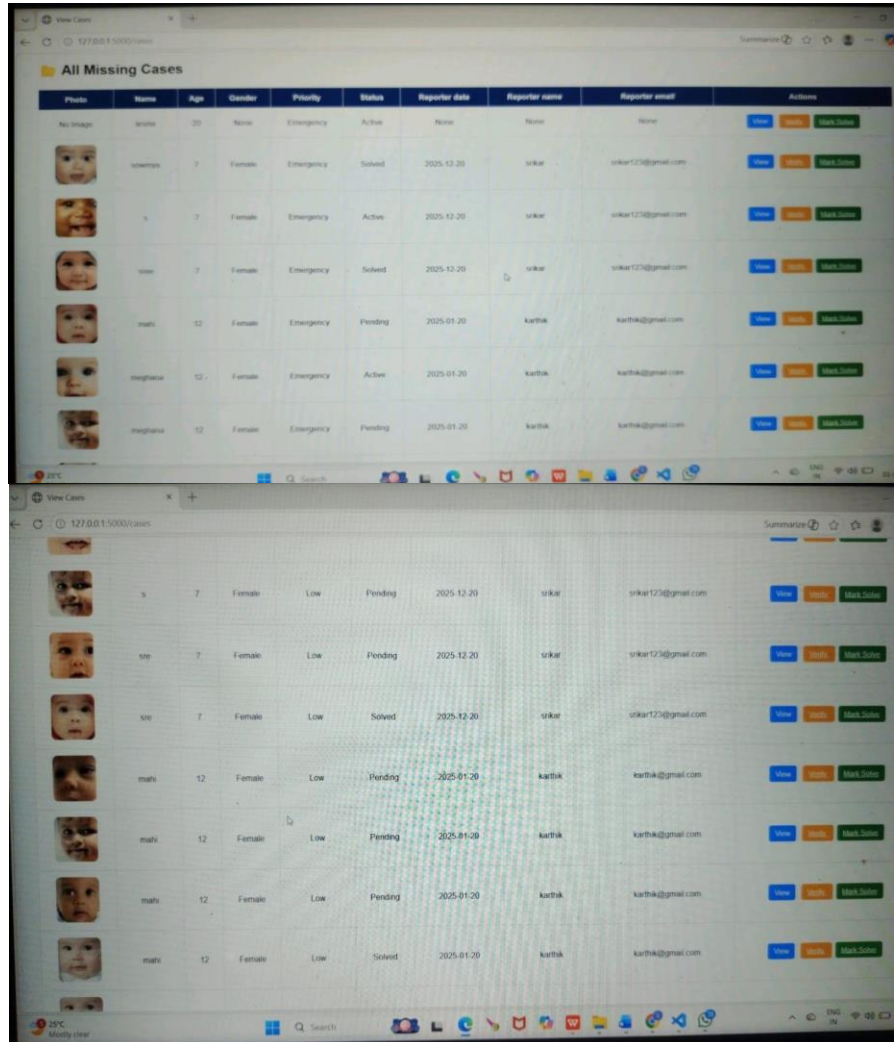


Fig6:view all missing cases

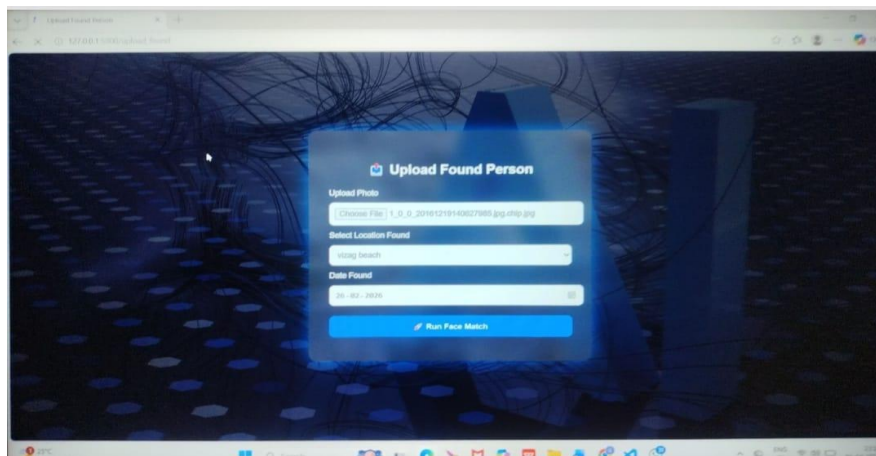


Fig7: upload found person details

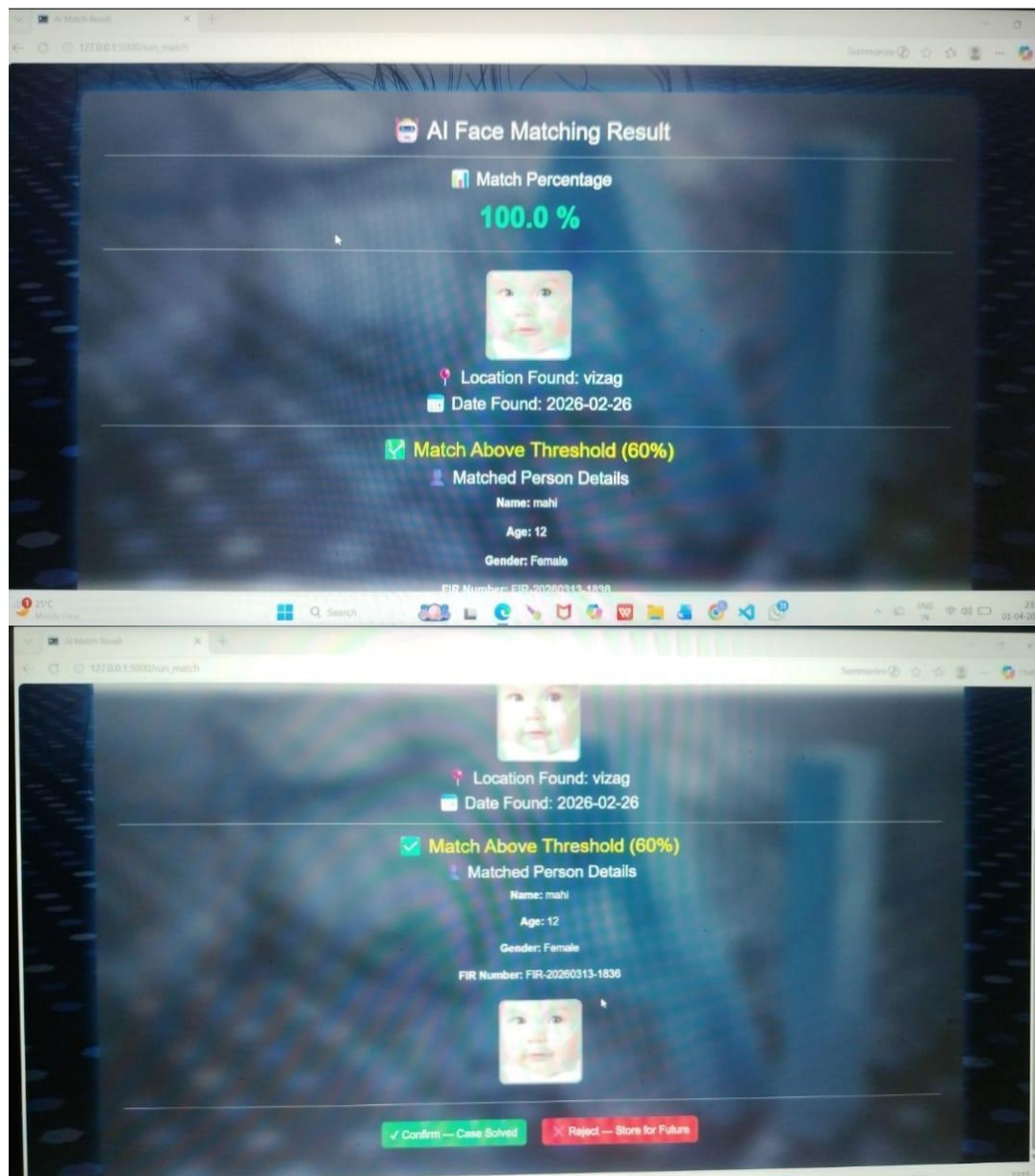


Fig 8:view match result

Overall, the system demonstrated strong performance in automated screening, semantic analysis, similarity matching, proving its effectiveness in reducing manual effort and improving recruitment efficiency.

6. CONCLUSION

This work successfully developed an efficient and reliable **Missing Person Identifier using Face Matching**. The system enables authorized users to securely upload and manage missing person records, including photographs and personal details. The face recognition engine accurately extracts facial features and compares them with the database, identifying potential matches with high confidence.

The system provides a **user-friendly interface** that clearly displays match results and similarity scores, making it easy for users to take timely action. Overall, the proposed system demonstrates a practical and effective solution for locating missing persons, combining accuracy, security, and ease of use in a real-world application.

REFERENCES

1. J. Deng, J. Guo, N. Xue, and S. Zafeiriou, "**ArcFace: Additive Angular Margin Loss for Deep Face Recognition**," *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2019.
2. O. M. Parkhi, A. Vedaldi, and A. Zisserman, "**Deep Face Recognition**," *British Machine Vision Conference (BMVC)*, 2015.
3. T. Hassner, S. Harel, E. Paz, and R. Enbar, "**Effective Face Recognition via Center-Loss and Feature Embedding**," *IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW)*, 2017.
4. M. Turk and A. Pentland, "**Eigenfaces for Recognition**," *Journal of Cognitive Neuroscience*, 1991.
5. A. K. Jain, A. Ross, and S. Prabhakar, "**An Introduction to Biometric Recognition**," *IEEE Transactions on Circuits and Systems for Video Technology*, 2004.
6. G. B. Huang, M. Mattar, T. Berg, and E. Learned-Miller, "**Labeled Faces in the Wild: A Database for Studying Face Recognition in Unconstrained Environments**," *University of Massachusetts*, 2007.
7. K. Zhang, Z. Zhang, Z. Li, and Y. Qiao, "**Joint Face Detection and Alignment using Multitask Cascaded Convolutional Networks**," *IEEE Signal Processing Letters*, 2016.
8. L. Zhang and R. Chu, "**A Survey of Face Recognition Methods Based on Deep Learning**," *IEEE Access*, 2020.
9. A. K. Jain, B. Klare, and U. Park, "**Face Recognition: Some Challenges in Forensics**," *IEEE Security & Privacy*, 2019.
10. OpenCV Documentation, "**OpenCV Face Recognition Modules**," 2024.
11. TensorFlow Documentation, "**Face Recognition Support and Tutorials**," Google, 2025.
12. PyTorch Official Tutorials, "**Face Recognition Models and Examples**," Meta AI, 2025.
13. D. P. Kingma and J. Ba, "**Adam: A Method for Stochastic Optimization**," *International Conference on Learning Representations (ICLR)*, 2015.