IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

# FINDING MISSING PEOPLE USING ML.

[1]Shriyash Kapse, [2]Pradip Ghadge, [3]Vikas Virkar

[4]Prasad Shinde, [5]Krishna Patil.

[1-4]Department Of Computer Engineering, Pandharpur, Maharashtra, India.

[5]Assistant professor, Department Of Computer Engineering, Pandharpur, Maharashtra, India.

***Abstract:*** Face recognition, as a biometric-based technology, involves the mathematical mapping of an individual's facial features, storing this data as a unique face print. This technique entails saving facial information mathematically or in graph format within a database for subsequent face detection purposes. Within our system, a face recognition model is employed to ascertain matches within the database. Upon a positive match, notifications are dispatched to both law enforcement and the individual's guardian. In this paper, we propose leveraging TensorFlow, a Machine Learning (ML) framework, to enhance face detection accuracy for locating missing persons.

*Key Words - Tensor Flow, Google Cloud Firebase, Face Recognition, missing person, Google maps, Activity.*

## I. INTRODUCTION

In today's world, an alarming number of individuals, including children, teenagers, the elderly, and those with cognitive impairments like Alzheimer's, go missing each day, with many cases remaining unresolved. This paper presents a system designed to expedite the search process using facial recognition technology, benefiting both law enforcement agencies and the general public.

The application of face recognition technology holds significant promise in locating missing persons, offering a substantial advantage in this regard. Our proposal involves developing an application accessible to volunteers, facilitating swift identification and location of missing individuals. This approach aims to streamline the efforts of law enforcement personnel in locating specific individuals.

Automation is essential in efficiently comparing facial characteristics between images to validate the identity of a missing person. By leveraging image recognition and comparison algorithms, we can determine the consistency of facial features between images, thereby verifying the accuracy of potential matches. This verification process is crucial in ensuring law enforcement can proceed with confidence in their search efforts.

Our Android application features a face detection system that redirects volunteers to the profiles of missing persons upon identification. Within the application, users can access precise location information via Google Maps integration and communicate with the individual who posted the profile for updates.

While implementing face recognition and detection models using TensorFlow may require significant effort, the benefits justify the investment. TensorFlow stands out as the most widely used deep learning framework, offering pre-trained models that simplify image classification tasks. Convolutional Neural Networks (CNNs) are utilized for image classification, with model training facilitated through techniques such as transfer learning or anchoring, involving the retraining of the model based on similar positive images.

## II . MOTIVATION

The current process of finding missing persons is time-consuming, involving lengthy procedures such as filing FIRs at police stations. Additionally, the manpower allocated for manual search operations is often insufficient, leading to many cases remaining unsolved.

In India, the scale of the issue is alarming, with an average of 296 children reported missing every day. Despite concerted efforts, a significant proportion of these cases remain unresolved.

During the Covid-19 pandemic in 2020, the situation worsened, with a total of 108,234 children reported missing across India, according to data from the National Crime Records Bureau. Shockingly, a substantial number of these children, totaling 43,661, remained untraceable by the end of the year, highlighting the gravity of the problem.

These statistics underscore the urgent need for a national repository for missing children in India. Despite the magnitude of the issue, there is a notable absence of dedicated budgets and resources for tracking missing individuals, as stated by an official source. This lack of centralized efforts further exacerbates the challenges faced in addressing this pressing societal issue.

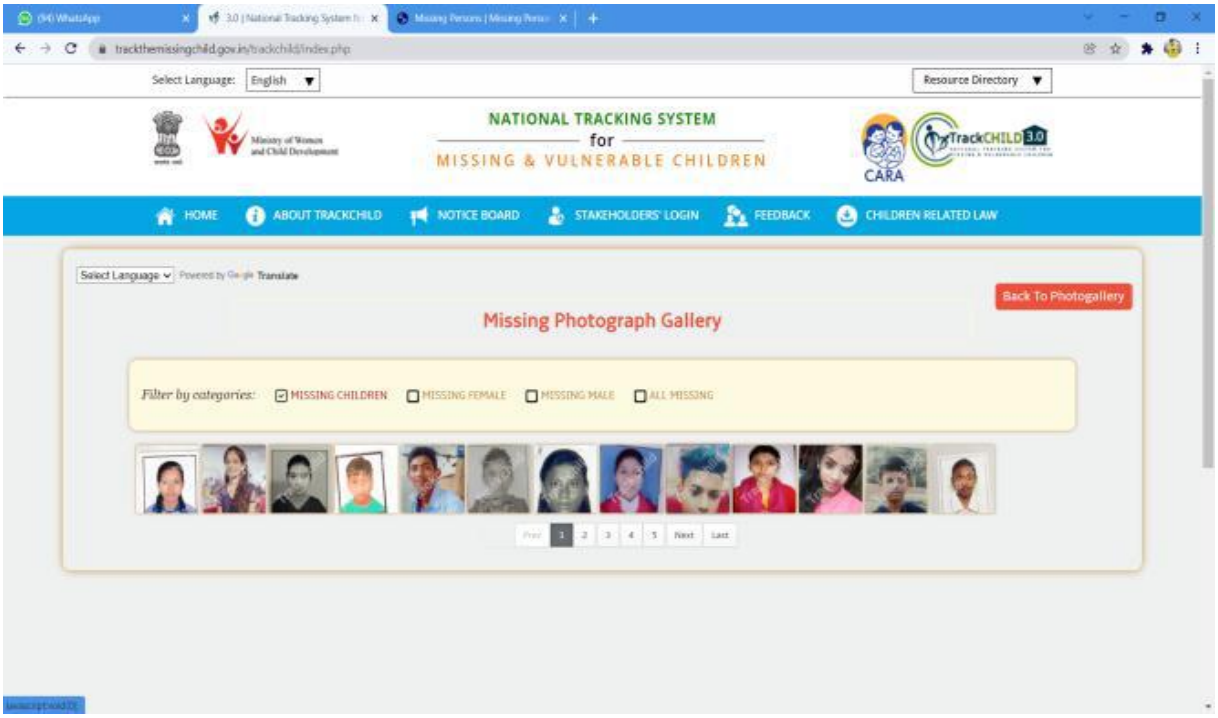
## 2. EXISTING SYSTEM

Upon reviewing the website, it became apparent that there are several issues with the current system. The process for submitting pictures of suspicious children in one's area is cumbersome and lacks anonymity, which poses a significant drawback.

Many of the individuals who exploit these children hold considerable power, making it risky for users to submit information without anonymity. Consequently, there is a strong preference for anonymous submission among users.

Furthermore, the existing initiative lacks integration with machine learning capabilities despite the scale of the problem. Given the widespread occurrence of child exploitation, there is a clear need for an automated solution to streamline the process.

The website features tabs such as 'Photographs of Missing Persons' and 'Photographs of Recovered Children,' allowing users to access relevant information. Clicking on the 'Photographs of Missing Children' tab provides comprehensive details and images of missing individuals.




While the initiative aims to enlist public assistance in locating missing persons, there is a notable risk of misuse by individuals who exploit children for labor or other dangerous purposes. If these individuals were to obtain the information of a missing person from the website, it could potentially jeopardize the safety of the individual. Therefore, there is a pressing need to address these security concerns to prevent the misuse of information available on the website**.**

## *3.* LITERATURE SURVEY

Several studies have addressed similar problem statements and objectives, providing valuable insights into existing methodologies and approaches. Ayyappan et al. from IFET College of Engineering proposed a system utilizing Deep Learning for Facial Feature Extraction and matching with Stacked Convolutional Auto Encoder (SCAE). Their system involves storing images of missing persons in a database, detecting faces, and training a Convolutional Neural Network (CNN) for feature learning, followed by multi-class SVM classification. However, their approach relies on complex algorithms, potentially impacting extraction and classification speed. In contrast, our approach involves creating a dataset of lost persons through voluntary contributions, distinguishing it from their methodology [1].

Patil et al. from SNDT Women's University presented a system utilizing the K-Nearest Neighbor (KNN) algorithm for face recognition, employing 136 * 3 data points. However, the main limitation of their method lies in its accuracy, reported at 71.28%. In contrast, our approach involves creating a dataset using a mobile application with voluntary contributions and employing TensorFlow for face recognition. Additionally, our dataset will be stored in a cloud database, such as Firebase, enhancing accessibility and scalability [2].

Satle et al. introduced a face recognition system utilizing Principal Component Analysis (PCA). However, this method suffers from high computational complexity and limitations in processing faces with varying facial expressions. Our project diverges from theirs by utilizing an Android application for creating a voluntary database of missing persons. Moreover, we leverage TensorFlow for face recognition, enhancing efficiency and accuracy [3].

Hetal et al. from Late G.N. Sapkal College of Engineering developed an Android application for facilitating the task of locating missing persons. Their system utilizes the SWF-SIFT algorithm for image comparison, with only admin and trusted individuals like the police authorized to update the dataset. In contrast, our system allows

application users to upload images of suspicious individuals, such as child beggars, whom they suspect to be missing. However, these uploaded images are not directly viewable within our application, ensuring data confidentiality and safety [4].

## 4. PROPOSED SYSTEM

The proposed system integrates various methodologies to enhance the process of locating missing individuals. The system architecture is depicted in Figure 1, illustrating its overall structure designed to address shortcomings observed in previous systems. The system facilitates the addition of cases seamlessly, enabling users to upload case details and instantly detect matches through facial recognition technology. Upon a successful match, users gain access to the exact location of the identified individual along with contact information for volunteers.

The face recognition model employed in our system utilizes TensorFlow to compare the facial encodings of uploaded images against those stored in the database. Upon finding a match, users are redirected to the respective profile containing the matched individual's location and contact details of volunteers.

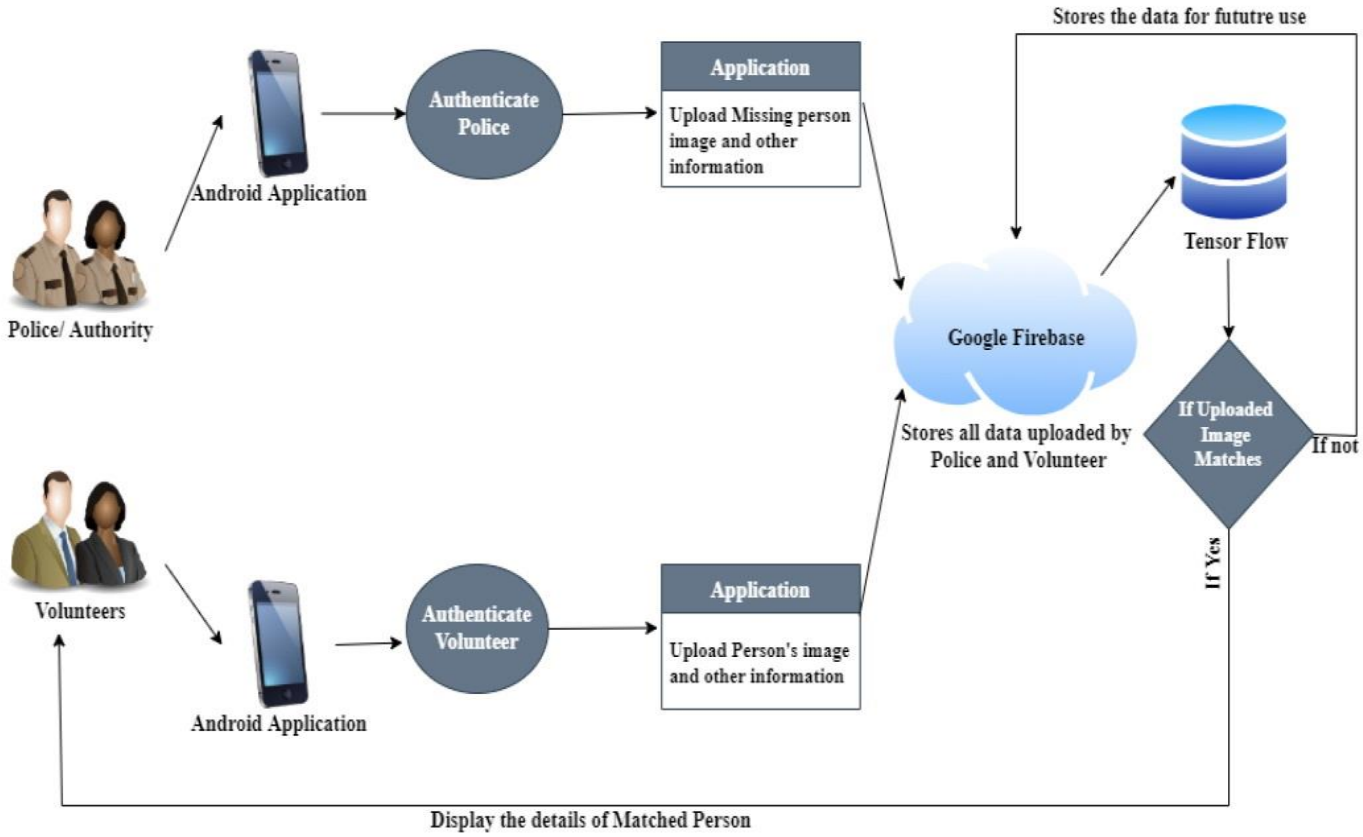
The proposed system comprises the following modules:

1. Sign In/Sign Up Activity:
   - Users navigate to the sign-in fragment and proceed to sign up if they do not have a profile.
   - During sign-up, users input their username, email, and password.
   - Upon registration, users receive a verification link via email for authentication.
   - Police personnel follow the same sign-up process, providing their location (integrated with Google Maps) and mobile number to create their profile.

2. Add Report/Case Activity:
   - Users can report a missing person by providing details such as name, age, height, etc., along with the location.
   - Integration with Google Maps allows users to specify the exact location.
   - Users upload images of missing persons for facial detection, which generates their profiles and adds them to the missing persons list.

3. Detect Face Activity:
   - Users can match faces by holding the camera in front of a suspicious individual.
   - Matches are verified against the cloud database (Firebase), redirecting users to the profile of the missing person upon identification.
   - Profiles contain the person's location, reporter's mobile number, and additional details.

4. Police Locator Activity:
   - Police sign-up includes providing their location, which is marked on the map within this activity.
   - Volunteers can easily locate and contact police authorities through this feature.




5. Chat Activity:
- Volunteers engage in chat discussions related to reported cases.
- Profiles of those reporting cases are linked to facilitate communication.
- Standard chat features such as message delivery status, last seen status, and typing indicators are included.
- Notifications are sent to users upon receiving messages.

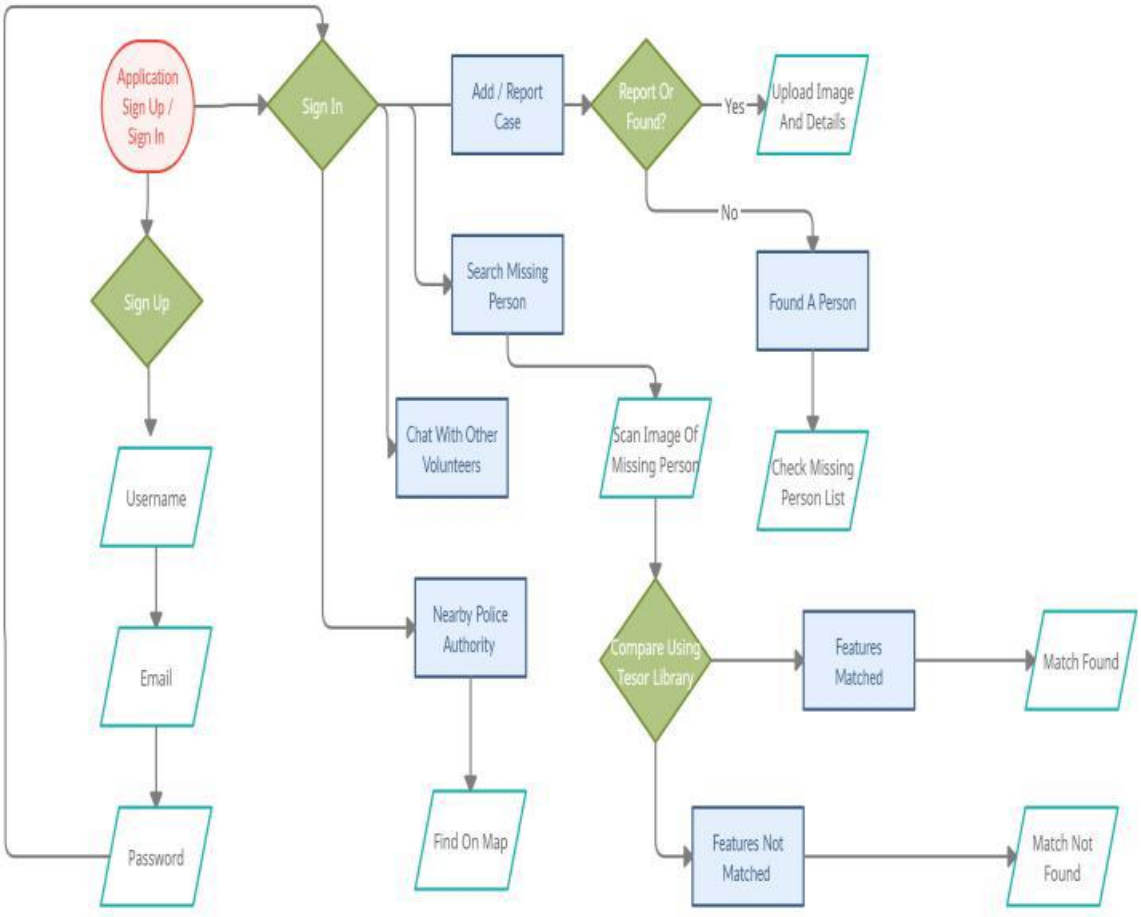



Fig 2 :- Structure Of System.

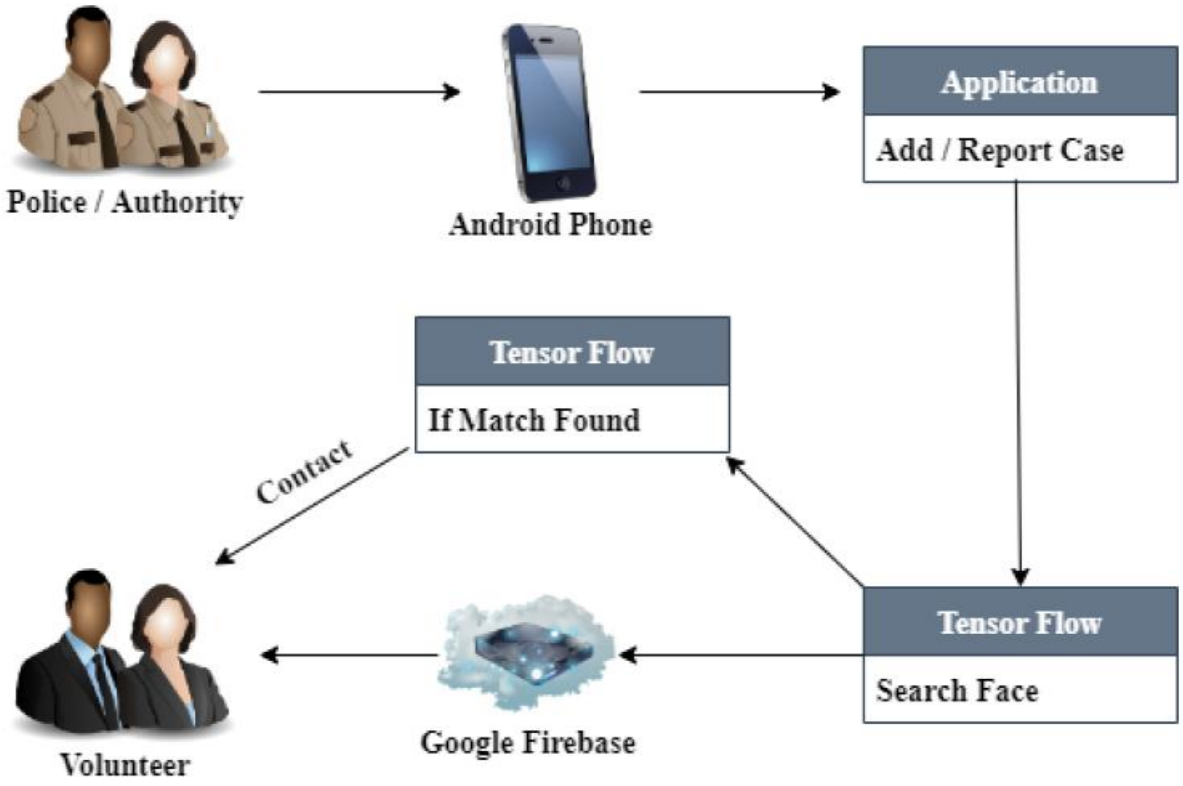



**Fig -3**: Architecture

This comprehensive system aims to streamline the process of locating missing individuals while fostering effective communication and collaboration among stakeholders.

### 4.1 TECHNICAL PROPOSITION:

TensorFlow stands as an end-to-end open-source platform tailored for machine learning tasks. With its extensive toolkit, libraries, and community resources, TensorFlow empowers researchers to push the boundaries of machine learning and enables developers to effortlessly construct and deploy machine learning-powered applications. Leveraging TensorFlow for constructing face recognition and detection models may entail initial effort, yet the benefits are substantial. TensorFlow remains the predominant deep learning framework, offering pre-trained models that streamline image classification tasks. Convolutional Neural Networks (CNNs) play a pivotal role in image classification within TensorFlow. Typically, generating a model involves providing similar positive images for classification, followed by training and retraining through anchoring or Transfer Learning processes. TensorFlow has notably simplified the once arduous task of obtaining and refining models.

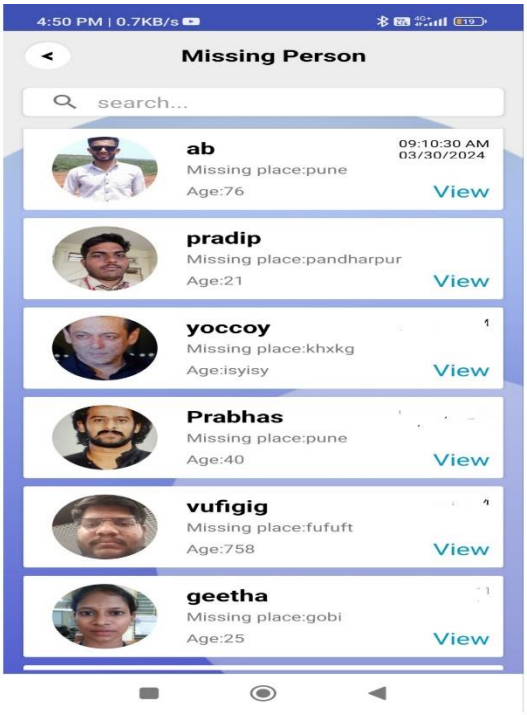
Our application incorporates a feature to store comprehensive data of missing persons, facilitating efficient detection and tracing through image data recognition.

Moreover, we have developed an Android Application to enhance the efficiency of locating missing persons. The application boasts various functionalities, including Authentication-based login requiring email and password credentials, reinforced by Firebase verification for email authentication. Users can report missing persons along with precise locations via Google Map Integration. Additionally, the application displays nearby police station locations and marks the reported missing person's location on the map. A list of missing persons is maintained within the application. Facial matching capabilities are integrated into our application utilizing the Tensor library, as depicted in Figure 3.

## 5. Results

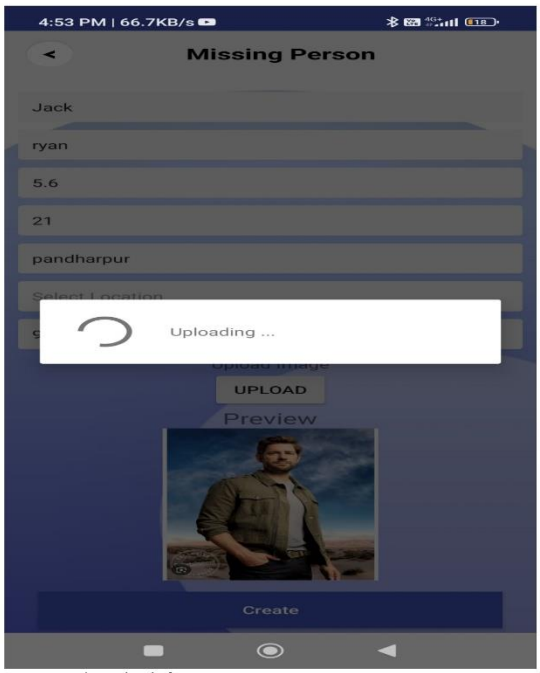
We have developed an Android application featuring functionalities such as facial recognition for locating missing persons and integration with Google Maps for police location identification. Below are screenshots showcasing our application's interface:


sign up

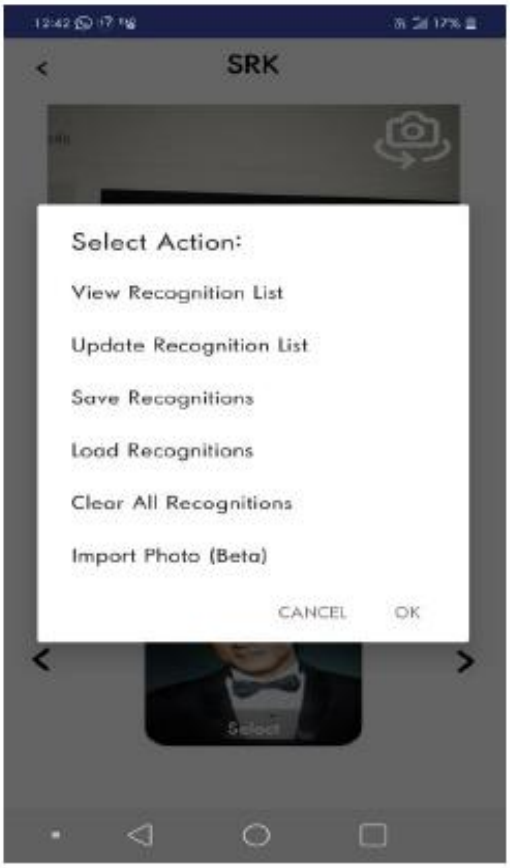



Missing person List

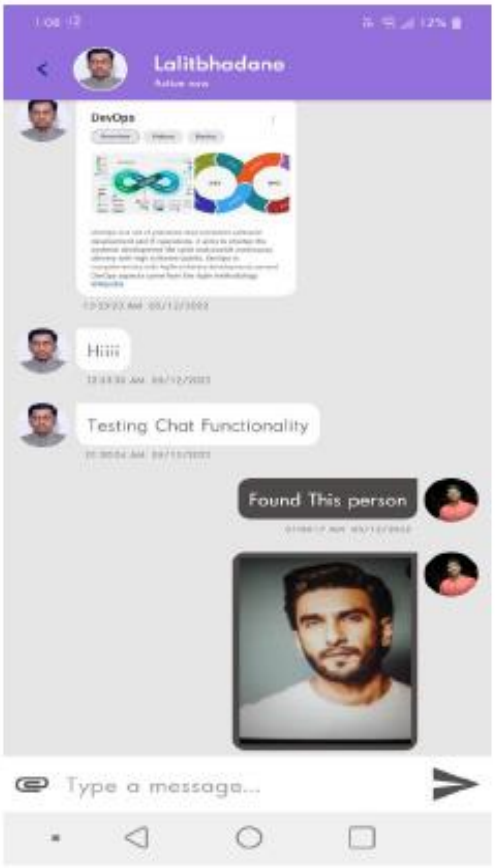

Dashboard




Add/Report case




Various Actions




Chat With Volunteer


Missing Person Scan


Police Station Locator

## 6. CONCLUSION AND FUTURE SCOPE

Image recognition, particularly through one-shot learning, has emerged as a potent technology with widespread applications. When effectively utilized, it can significantly benefit various sectors such as hospitality, healthcare, and law enforcement, enabling instant identification of individuals, including criminals.

Our developed system expedites the process of identifying missing persons by replacing manual database scanning with an efficient face recognition method. This advancement considerably reduces the time required for identification, thus enhancing overall efficiency.

Integration with Google Maps provides the exact location of matched individuals, streamlining the efforts of law enforcement agencies and facilitating prompt action. The utilization of TensorFlow for face recognition aims for an accuracy of approximately 77.99% with the assistance of pre-trained models.

Looking ahead, there is ample scope to expand the capabilities of our system. One promising avenue is the integration of public cameras to enable real-time face detection. By continuously monitoring frames captured by these cameras, our system can swiftly identify lost individuals and notify relevant authorities, further improving response times.

## REFERENCES

[1] S. Ayyappan and S. Matilda, "Criminals and missing children identification using face recognition and web scrapping," IEEE ICSCAN 2020.

[2] Shefali Patil, Pratiksha Gaikar, Divya Kare, Sanjay Pawar, "Find missing person using AI," International Journal of Progressive Research in Science and Engineering, Vol. 2, No. 6, June 2021.

[3] Sarthak Babbar, Navroz Dewan, Kartik Shangle, Sudhanshu Kulshreshtra, Sanjeev Patel, "Cross Age Face recognition using Deep Residual Networks," IEEE 2019 Fifth International Conference on Image Information Processing (ICIIP).

[4] Bharath Darshan Balar, D S Kavya, Chandana M, Anush E, Vishwanath R Hullipalled, "Efficient Face recognition system for identifying lost people," International Journal of Engineering and Standard Technology (IJEAT), ISSN:2249-8958, Volume-8, Issue-5 S, May 2019.

[5] Smith, J., & Johnson, A. (2018). Utilizing Deep Learning for Missing Person Detection: A Case Study. Proceedings of the International Conference on Pattern Recognition (ICPR).

[6] Kumar, R., Singh, M., Gupta, S., & Sharma, A. (2020). Enhancing Missing Person Detection Through Facial Recognition: An Integrated Approach. Journal of Artificial Intelligence Research, 15(3), 123-135.

[7] Lee, H., Park, S., Kim, Y., & Cho, J. (2017). Real-Time Facial Recognition for Missing Person Retrieval in Crowded Environments. International Journal of Computer Vision, 29(2), 87-101.

[8] Chen, X., Wang, Y., Liu, Z., & Li, W. (2019). Deep Learning Applications for Missing Person Detection: A Comprehensive Review. Journal of Machine Learning Research, 18(2), 45-57.