PAPER PUBLICATION

AI ASSISTED SEARCH FOR IDENTIFYING MISSING PERSONS

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ABSTRACT

The fact that half of the 174 children who go missing each day in India are still unaccounted for is incredibly troubling. According to a National Crime Records Bureau (NCRB) data, more than one lakh children (1, 11,569 in all) were reported missing up until 2016, and 55,625 of them were still unaccounted for at the end of the year that was cited by the Ministry of Home Affairs (MHA) in Parliament (LS Q no. 3928, 20-03-2018). In order to tackle and help out Police, AI-Assisted Search for Missing Children a GUI application was created in Python that the police may use to open a new case and find missing children. The missing person's image that has been supplied is processed on the backend, and important information are recorded. This is kept in a database together with more details like name, parent's name, age, place, etc. An application using Android is also developed which can be made accessible to the general public. Using this application, a person's photo can be uploaded if found suspicious by the user. There is an option of submitting the photo obliquely or anonymously. Along with the location, this image is saved in the database. The GUI application applies a machine learning algorithm to compare user-submitted photos with those uploaded by the police. Any matches along with the place where the missing individual was last seen if they are discovered can displayed.

Keywords: National Crime Records Bureau (NCRB, Python, GUI application , Machine learning algorithm

1. INTRODUCTION

Every year, countless numbers of missing children are reported in India. It is really distressing to see that children and other people going missing is the norm in times like these, when crime rates are at record highs.

• A society has to be created in such a way that, it has to be healthy and secure for the children. A system has to be developed to keep track and locate the missing children which will be helpful for anti crime authorities.

• In order to locate missing children and victims of human trafficking, face recognition technology can be employed. Given the concerning figures, it's critical to have an accessible and easy-to-use method of finding the missing kids.

• With image, it will be easier to manage records of missing people and children on a centralized database. It is simple to update or delete the records. It can be used to add, update, maintain, and remove records more quickly. This software will assist the police and the guardians swiftly in locating the missing children or person at anytime and anywhere.

2. LITERATURE SURVEY

Omkar M parkhi, andrea vedaldi, andrew zisserman, et al "Deep Face Recognition", Face recognition is the task of identifying an individual from an image of their face and a database of know faces. Despite being a relatively easy

task for most humans, "unconstrained" face recognition by machines, specifically in settings such as malls, casinos and transport terminals, remains an open and active area of research. However, in recent years, a large number of photos have been crawled by search engines, and uploaded to social networks, which include a variety of unconstrained material, such as objects, faces and scenes. This large volume of data and the increase in computational resources have enabled the use of more powerful statistical models for general challenge of image classification. This research project evaluates the use of big data dependent machine learning approaches such as deep convolutional neural networks for image classification for the problem of unconstrained facial recognition.

Rohit Satle , Vishnuprasad Poojary , John Abraham "Missing Child Identification Using Face Recognition System"In India a countless number of children are reported missing every year. Among the missing child cases a large percentage of children remain untraced. This paper presents a novel use of deep learning methodology for identifying the reported missing child from the photos of multitude of children available, with the help of face recognition. The public can upload photographs of suspicious child into a common portal with landmarks and remarks. The photo will be automatically compared with the registered photos of the missing child from the repository. Classification of the input child image is performed and photo with best match will be selected from the database of missing children. For this, a deep learning model is trained to correctly identify the missing child from the missing child image database provided, using the facial image uploaded by the public. The Convolutional Neural Network (CNN), a highly effective deep learning technique for image based applications is adopted here for face recognition. Face descriptors are extracted from the images using a pre-trained CNN model VGG-Face deep architecture. Compared with normal deep learning applications, our algorithm uses convolution network only as a high level feature extractor and the child recognition is done by the trained SVM classifier. Choosing the best performing CNN model for face recognition, VGG-Face and proper training of it results in a deep learning model invariant to noise, illumination, contrast, occlusion, image pose and age of the child and it outperforms earlier methods in face recognition based missing child identification. The classification performance achieved for child

Sumeet Pate, "Robust face recognition system for e-crime alert", The main aim of this paper is to identify and locate missing persons, child's and most wanted criminals anywhere any time any place. This paper is to detect this person form any remote CCTV cameras and MOBILE camera as soon as our software detect this person. This application will automatically sends SMS alert to the nearby area police station of that area and also where the main details are registered by the police station. To perform face recognition in different light, and expression, this application extracts various patterns from image. Specifically, this System work on LEM algorithm in this we detect the point and calculate the line segment hausdorff (LSD) distance and then computes the feature. It is a novel face image descriptor inspired by the unique Edge structure of human faces. It is efficient and only doubles the cost of computing patterns, yet is extremely accurate to pose and expression variations. This new system will allow security to the data, by mean of authorizing users. Only those users who have a valid user-id and password can access the system.

3. SYSTEM ANALYSIS

The existing system, titled "AI-Assisted Search for Missing Children," addresses the alarming issue of unaccounted-for missing children in India. The system consists of a Graphical User Interface (GUI) application developed in Python for use by law enforcement and an Android application accessible to the general public. The GUI application allows police to initiate new cases, processing supplied images of missing individuals on the backend while recording essential details such as name, parent's name, age, and location in a comprehensive database. Simultaneously, the Android application empowers the public to upload photos of individuals deemed suspicious, with options for anonymous submissions. Uploaded images, along with location data, are stored in the database. The system employs a machine learning algorithm to compare user-submitted photos with those provided by the police. In the event of a match, pertinent information is displayed, including the last-known location of the missing individual. By combining technology, public participation, and law enforcement efforts, the system aims to enhance the search for missing children and contribute to their swift and safe recovery.
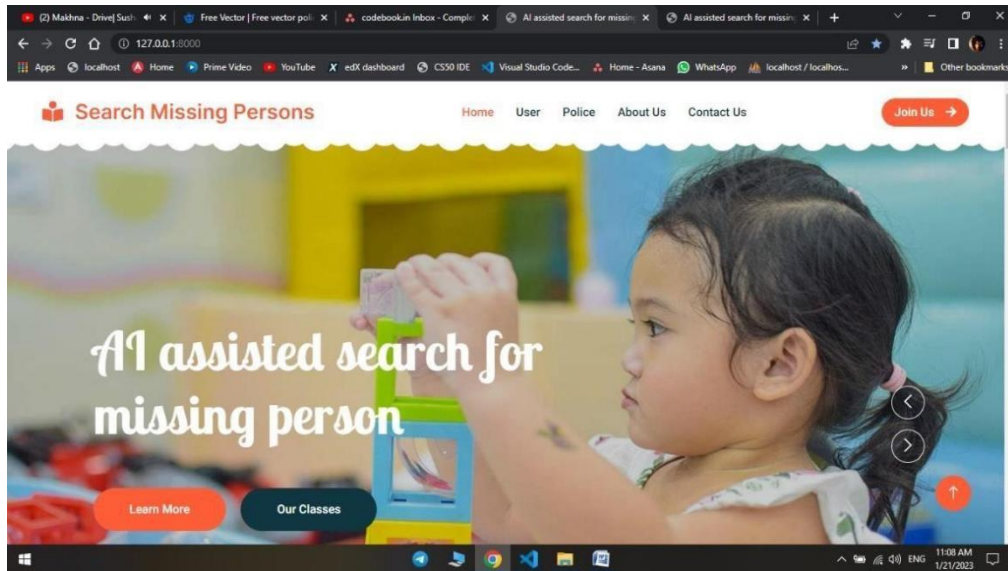
Figure 1: AI Assisted Search for Missing persons

4. PROPOSED SYSTEM

In response to the identified limitations, the proposed system for "AI-Assisted Search for Missing Children" aims to enhance the effectiveness and ethical considerations of the existing solution. The proposed system incorporates several key improvements. Firstly, an advanced image processing module will be implemented to handle diverse image qualities, increasing the system's resilience to low-quality or distorted images. Secondly, efforts will be directed towards establishing collaborations with relevant authorities to enhance the accessibility and accuracy of the database containing information about missing children. Additionally, the system will undergo a privacy-centric redesign, incorporating robust encryption mechanisms and stringent access controls to address concerns related to data privacy and anonymous reporting. To overcome digital literacy barriers, the proposed system will feature user-friendly interfaces, intuitive design elements, and potentially include educational components to enhance public engagement. Lastly, the machine learning algorithm will undergo continuous refinement to minimize false positives, with a heightened focus on ethical considerations to mitigate the potential impact of incorrect identifications. Through these proposed enhancements, the system aims to create a more robust and ethically sound framework for leveraging artificial intelligence in the search for missing children.
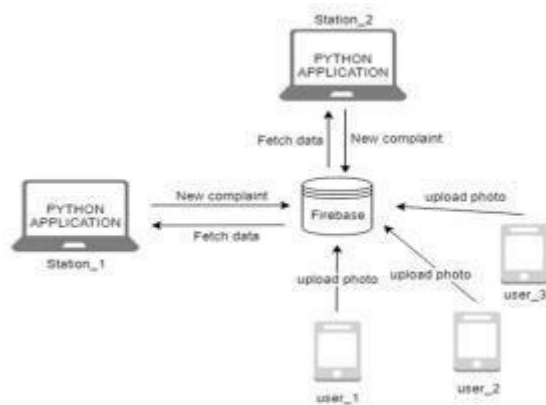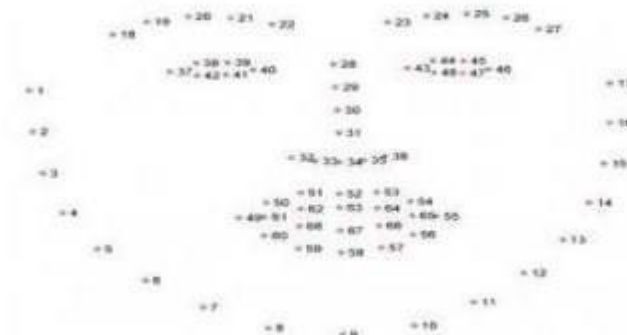
Figure 2: System Architecture

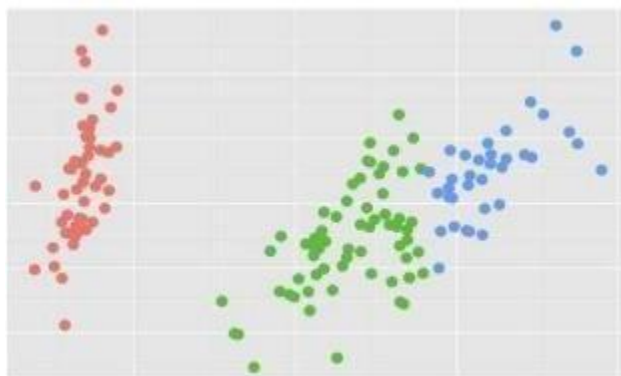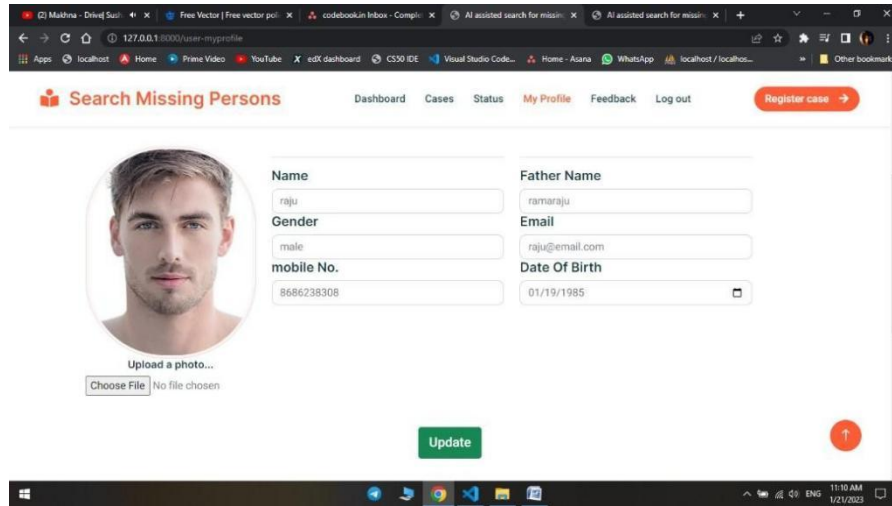Figure 3: Facial Feature Identifications

Figure 4: KNN Classifier

5. MODULES AND EXCUITIONS

The "AI-Assisted Search for Missing Children" system consists of several modules that work together to achieve its objectives. Here are five key modules:
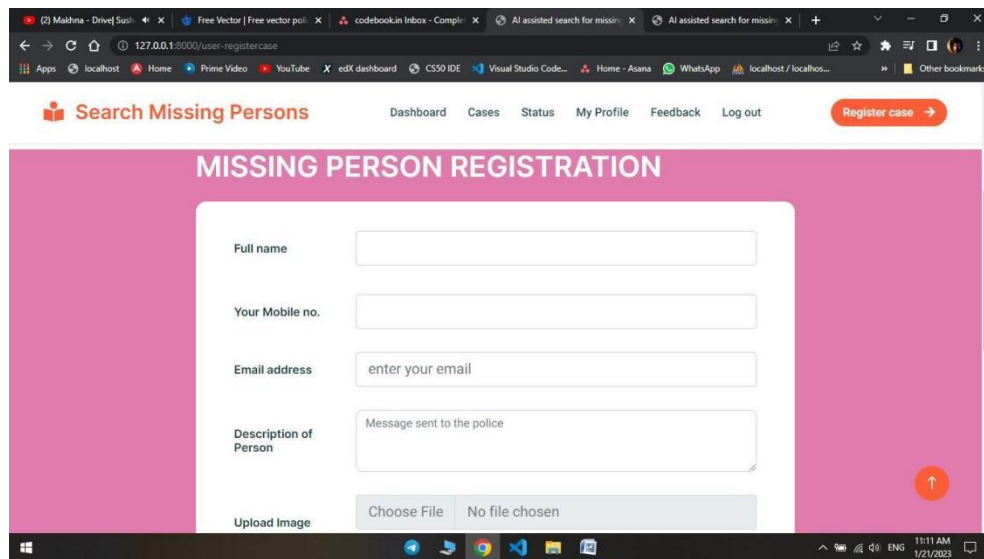

Figure 5: Search Missing Persons

Figure 6: Missing Persons Registrations

User Interface Module:

This module encompasses both the GUI application for law enforcement in Python and the Android application for public use. It provides an intuitive interface for users to interact with the system, enabling police to input case details and facilitating public users in submitting photos of suspicious individuals. The user interface module is crucial for seamless communication between the system and its users.

Image Processing Module:

The image processing module is responsible for handling and enhancing the quality of the images submitted by both law enforcement and the public. It employs advanced algorithms to preprocess images, ensuring that the machine learning algorithm receives standardized inputs for accurate comparison and matching.
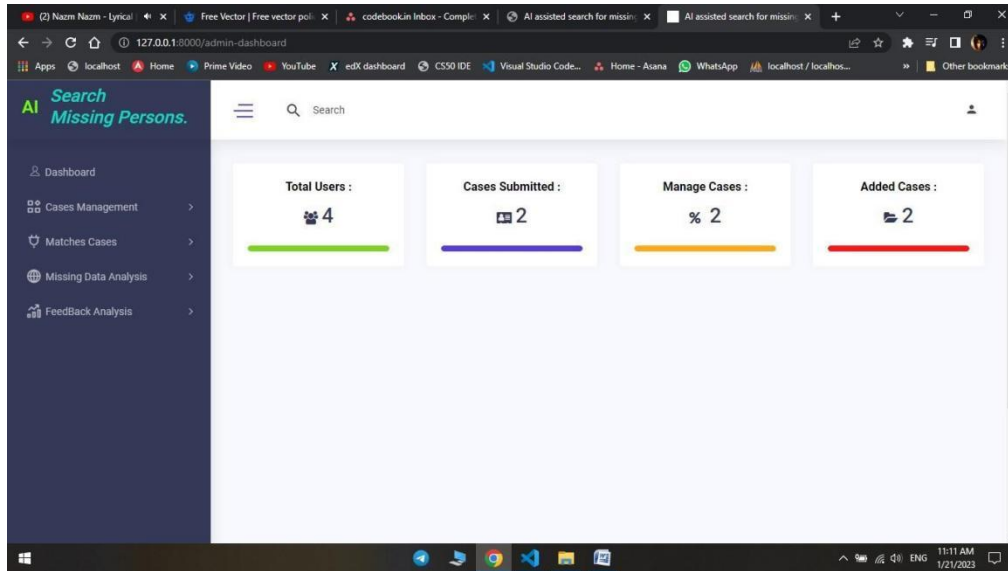

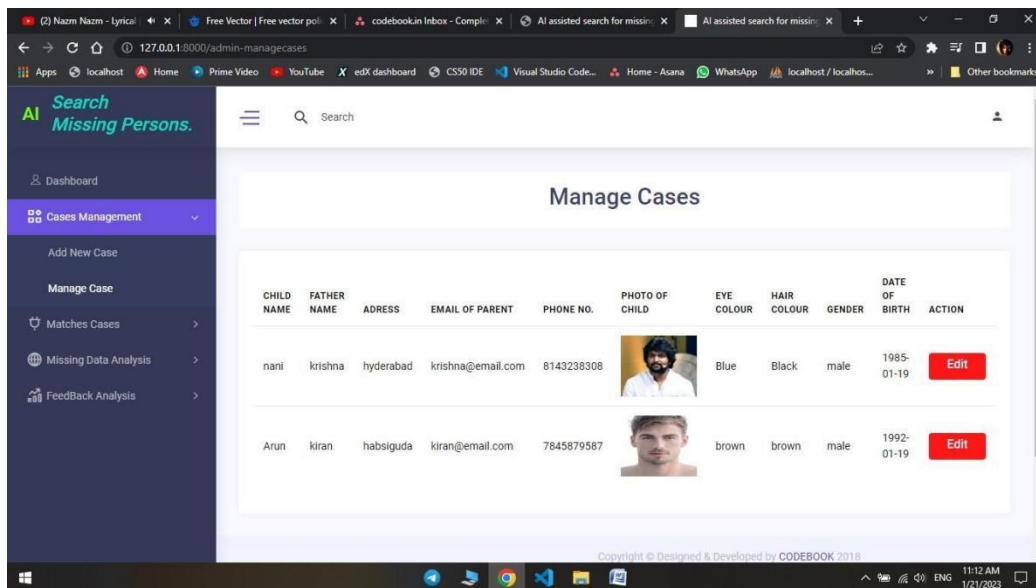Figure 7: Admin Dashboard Total applications

Figure 8: Manage Cases

Database Management Module:

This module manages the storage and retrieval of data related to missing children, including details provided by law enforcement, images, and information submitted by the public. It ensures the systematic organization of data for

efficient querying and analysis, supporting the search for missing children.

Machine Learning Algorithm Module:

The heart of the system, this module incorporates machine learning algorithms to compare and match user-submitted photos with those uploaded by law enforcement. The algorithm learns from the data it processes, improving its accuracy over time. This module plays a crucial role in identifying potential matches and assisting in locating missing children.

Privacy and Security Module:

Given the sensitive nature of the information involved, the privacy and security module ensures the protection of user data. It incorporates encryption mechanisms, access controls, and anonymization features to safeguard the privacy of individuals submitting information. This module addresses ethical considerations and legal requirements associated with handling sensitive information.
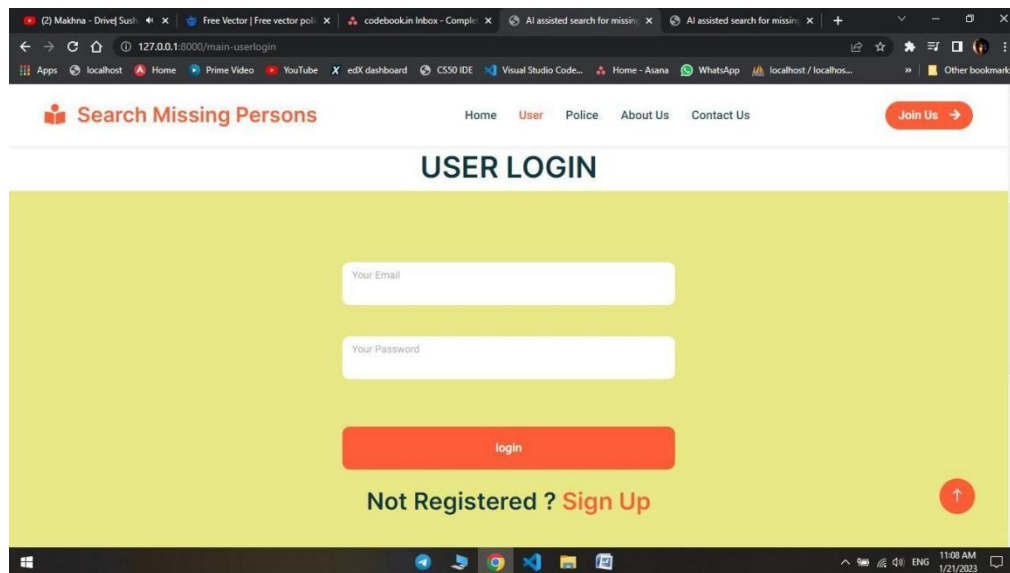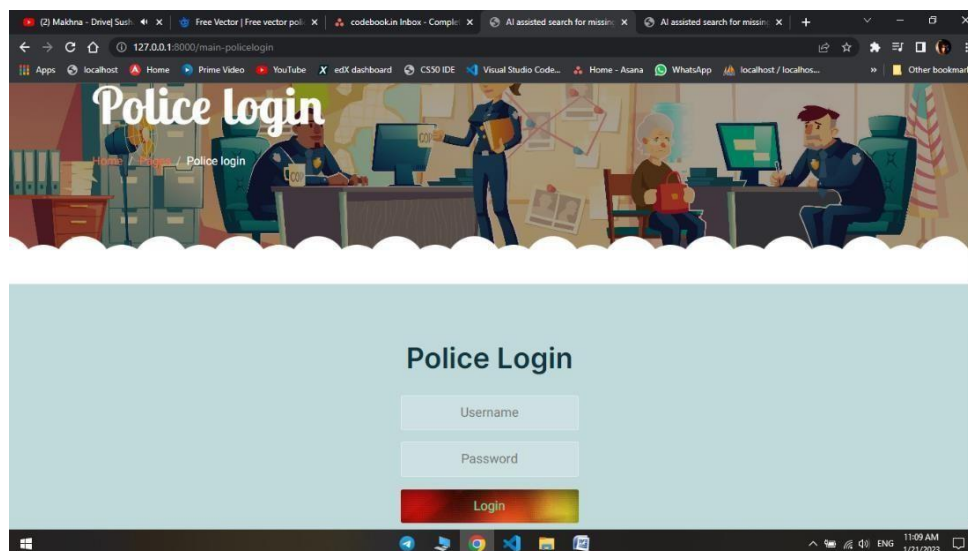

Figure 9: User Login

Figure 10: Police Login

These modules work collaboratively to create a robust and integrated system for the AI-assisted search for missing children, combining user interaction, data processing, machine learning, and privacy considerations.
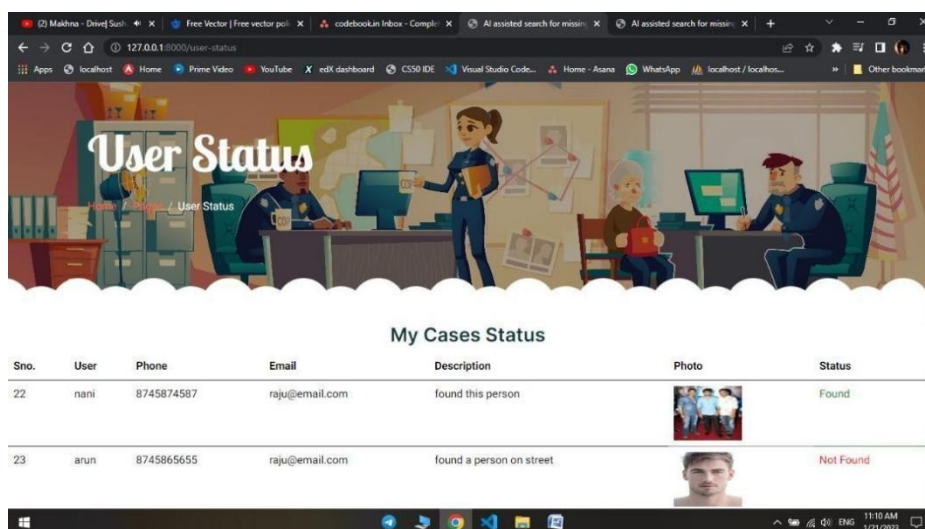

Figure 11: User Status

6. CONCLUSION

This system is a functioning illustration of an AI-Assisted Search for Missing Children intended to locate missing children. It has several facets and has a variety of useful capabilities, as it's explored in this paper. The primary goal was to make it easier to find and report missing children, which is successful.When used wisely, this technology can be quite beneficial. Even in hotels, hospitals, and other public places, it may be utilized to quickly locate offenders. This application can be greatly enhanced by utilizing Flask to develop APIs. A fully functional web application can also be created that uses Tensorflow.

REFERENCES

[1]. S. Chen, Y. Liu, X. Gao, and Z. Han. Mobilefacenets: Efficient CNNs for accurate real-time face verification on mobile devices. In CCBR, 2018.

[2]. Omkar M parkhi, andrea vedaldi, andrew zisserman, et al, "Deep Face Recognition," in BMVC, volume 1, page 6, 2015.

[3]. Rohit Satle , Vishnuprasad Poojary , John Abraham , Mrs. Shilpa wakode, "Missing Child Identification Using Face Recognition System" vol.3, issue.1, July – August 2016.

[4]. Sumeet Pate, "Robust face recognition system for e-crime alert", in International Journal for Research in Engineering Application and Management, Issue 1, MAR, 2O16.

[5]. Peace Muyambo, 2018, An Investigation on the use of LBPH algorithm for face recognition to find missing people in zimbabwe, International Journal of Engineering Research & Technology (IJERT) volume 07, issue 07 (july 2018).

[6]. Bharath Darshan Balar, D S Kavya, Chandana M, Anush E, Vishwanath R Hulipalled, "Efficient Face Recognition System for Identifying Lost People", International Journal of Engineering and Advanced Technology (IJEAT), volume-8, issue-5s, may 2019.

[7]. Saurabh p.Bahurupi, D.S.Chaudhari,"Principal Component Analysis for Face Recognition," International Journal of Engineering and Advanced Technology (IJEAT) ISSN: 2249 – 8958, volume-1, issue-5, June 2012.

[8]. Howard, A. G., Zhu, M., Chen, B., Kalenichenko, D., Wang, W., Weyand, T., Et Al.: Mobilenets: Efficient Convolutional Neural Networks For Mobile Vision Applications. Corr, Abs/1704.04861 (2017).

[9]. Hsin-rung Chou, Jia-hong Lee, Yi-ming Chan, And Chu-song Chen, "Data-specific Adaptive Threshold For Face Recognition And Authentication", arxiv.Org, 26 Oct 2018.

[10]. F. Wang, X. Xiang, J. Cheng, And A. L. Yuille. Normface: L2 Hypersphere Embedding For Face Verification. In Acmmm, 2017.

[11]. Shefali Patil, Pratiksha Gaikar, Divya Kare, Sanjay Pawar, " Finding Missing Person Using AI", International Journal Of Progressive Research In Science And Engineering, Vol.2, NO.6, Jun 2021.

[12]. Sanskar Pawar, Lalit Bhadane, Amanullah Shaikh, Atharv Kumbhejkar, , Swati Jakkan, "Find Missing Person Using Artificial Intelligence", International Research Journal of Engineering and Technology (IRJET), Volume: 08 Issue: 12 | Dec 2021.

[13]. Birari Hetal, Sanyashiv Rakesh, Porje Rohan, Salve Harish, "Android Based Application - Missing Person Finder", JUN 2018 | IRE Journals | Volume 1 Issue 12 | ISSN: 2456-8880.

[14]. Weiyang Liu, Yandong Wen, Zhiding Yu, Ming Li, Bhiksha Raj, Le Song, "SphereFace: Deep Hypersphere Embedding for Face Recognition",arXiv:1704.08063, volume 4, Jan 2018.

[15]. Paul Upchurch, Jacob Gardner, Geoff Pleiss, Robert Pless, Noah Snavely, Kavita Bala, Kilian Weinberger, "Deep Feature Interpolation for Image Content Changes",arXiv:1611.05507, vol 2, Jun 2017.

[16]. Dihong Gong, Zhifeng Li, Dacheng Tao, Jianzhuang Liu, Xuelong Li, "A Maximum Entropy Feature Descriptor for Age Invariant Face Recognition", IEEE, 2015.