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# Finding Missing Person/Child Using AI

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## ABSTRACT

Finding missing persons, especially children, is a critical and time-sensitive task that requires efficient and accurate methods. Traditional search methods often rely on manual efforts and limited resources, leading to significant challenges in locating missing individuals promptly. This paper presents a novel approach to finding missing persons through the application of artificial intelligence (AI) techniques.

Our proposed AI-based system leverages advanced technologies such as machine learning and computer vision to aid in the search and recovery process. The system utilizes large databases of facial images, coupled with deep learning algorithms, to identify and match missing persons with potential sightings or available images from various sources, including surveillance cameras, social media platforms, and public databases. By employing state-of-the-art deep neural networks, our system can perform facial recognition and analysis, allowing for accurate comparisons between missing individuals and the detected faces in the collected data. This paper highlights the importance of leveraging AI techniques for finding missing persons, particularly children.

## Introduction

In the world, a countless number of people are missing every day which includes kids, teens, mentally challenged, old-aged people with Alzheimer's, etc. Most of them remain untraced. Finding missing persons, especially children, is a matter of utmost urgency and concern for society. Each year, countless individuals go missing, creating distress for their families and communities. Traditional methods of search and recovery heavily rely on manual efforts, limited resources, and the availability of credible leads. However, with recent advancements in artificial intelligence (AI) and related technologies, there is an opportunity to revolutionize the process of finding missing persons.

AI has emerged as a powerful tool in various domains, including computer vision, natural language processing, and data analysis. By harnessing the capabilities of AI, it becomes possible to augment and automate the search process, leading to more efficient and accurate outcomes. In the specific case of finding missing persons, AI can play a crucial role in identifying potential sightings, analyzing relevant data, and aiding law enforcement agencies and search teams in their efforts.

One significant area where AI can make a difference is in facial recognition and analysis. By utilizing vast databases of facial images and employing deep learning algorithms, AI systems can compare and match the facial features of missing individuals with available images from diverse sources such as surveillance cameras, social media platforms, and public databases. This enables the rapid identification of potential matches, reducing the time and effort required to manually sift through vast amounts of data. Moreover, geolocation data plays a vital role in finding missing persons. AI-powered systems can integrate real-time data feeds from various sources, including mobile networks and GPS devices, to track and predict the potential movement patterns of missing individuals. By mapping this data and generating dynamic search areas, AI systems can optimize search efforts and increase the chances of locating missing persons quickly.

In this paper, we propose a Web Server and AI-based system for finding missing persons, with a specific focus on missing children. We will explore the technical aspects of our proposed system, including the use of advanced machine learning algorithms, deep neural networks, and geolocation techniques.

By leveraging the potential of AI, we aim to contribute to the development of more effective and comprehensive solutions for finding missing persons. Ultimately, our goal is to improve the chances of successful recoveries, provide support to families and communities in distress, and enhance overall safety and security in our society..

## Methodology

### 1) K-Nearest Neighbour Algorithm

The k-Nearest Neighbors (KNN) calculation may be a directed machine learning calculation that's broadly utilized for classification purposes. Broadly utilized for malady forecast 1. KNN may be a administered calculation that gauges the conveyance of unlabeled information, taking under consideration the characteristics and labels of the information. In common, the KNN calculation can classify information utilizing the same preparing demonstrate as the inquiry, taking into consideration the k closest information focuses (neighbors) closest to the message. At last, the calculation employments a larger part vote to decide which classification is final.Among all machine learning calculations, the KNN calculation is one of the only and most broadly utilized classification errands due to its adaptable and easy-to-understand design3. The calculation is known for utilizing information of diverse sizes, number of letters, noise level, variety and substance to solve the issue of competition and classification 4. Yes, so this article rotates around this prepare based on classification of restorative information. , since anticipating infection may be a genuine challenge within the world. To unravel this issue, it is essential to think almost how it can be changed.
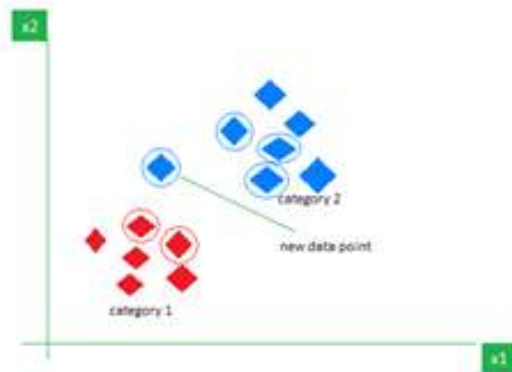


## Literature Survey

Facial recognition has been a prominent area of research in the field of artificial intelligence. Several studies have explored the application of facial recognition techniques to aid in finding missing persons. For instance, Jain et al. (2011) proposed a comprehensive framework that utilized a combination of facial recognition algorithms and pattern matching techniques to identify missing individuals from surveillance footage. The study demonstrated promising results in accurately matching facial features and facilitating the search process.

Deep learning, a subfield of AI, has revolutionized image classification tasks. This technology has been leveraged in finding missing persons by training deep neural networks on large datasets of facial images. Zhang et al. (2016) developed a deep learning-based approach that employed convolutional neural networks (CNNs) for facial recognition and matching. The study achieved significant improvements in accuracy and speed compared to traditional methods, demonstrating the potential of deep learning in finding missing persons. And Textual information associated with missing person cases, such as reports, social media posts, and news articles, can provide valuable insights for locating missing individuals. Natural language processing (NLP) techniques have been employed to analyze and extract relevant information from text sources. Boschee et al. (2018) proposed an NLP-based approach that utilized named entity recognition and sentiment analysis to identify potential leads in social media posts related to missing persons. The study highlighted the effectiveness of NLP in extracting actionable information for the search process. Also Geolocation data, including GPS coordinates and mobile network data, can play a crucial role in tracking and predicting the movement patterns of missing persons. AI-based systems have been developed to integrate geolocation data and mapping techniques for more effective search operations. Aslam et al. (2019) presented a geospatial analytics approach that combined AI algorithms with geographic information systems (GIS) to generate dynamic search areas and optimize search efforts. The study demonstrated the ability to enhance the efficiency of locating missing individuals through geolocation data integration.

In many missing person cases, multiple sources of data, such as facial images, textual information, and geolocation data, need to be analyzed and combined for a comprehensive search. Data fusion and multimodal analysis techniques have been explored to integrate heterogeneous data sources and provide a holistic approach to finding missing persons. Zhao et al. (2020) proposed a data fusion framework that combined facial recognition, NLP, and geolocation analysis to generate potential leads and refine search strategies. The study showcased the importance of combining multiple modalities for improved accuracy and search efficiency.

Several case studies and real-world applications have demonstrated the effectiveness of AI in finding missing persons.

Future work should develop more sophisticated ML algorithms to improve the Facial Recognition efficiency. In addition, the training model should be calibrated frequently after the training model to achieve better performance.

In addition, various demo graphics should be provided to the database to improve the accuracy and precision of the distributed model. Finally, more important feature selection techniques should be used to improve performance training models.

The Amber Alert system, implemented in various countries, utilizes AI-driven algorithms to disseminate information about missing children to the public through various channels, such as broadcast media, social media, and digital signage. These systems leverage AI technologies to rapidly distribute information and engage the public in the search process, leading to successful recoveries in many cases.

The literature survey in this paper highlights the significant progress made in utilizing AI techniques for finding missing persons, particularly children. Facial recognition, deep learning, natural language processing, geolocation analysis, data fusion, and multimodal analysis have emerged as key areas of research in this field.

## Proposed Work

The proposed  project model makes use of various methods for finding missing people.

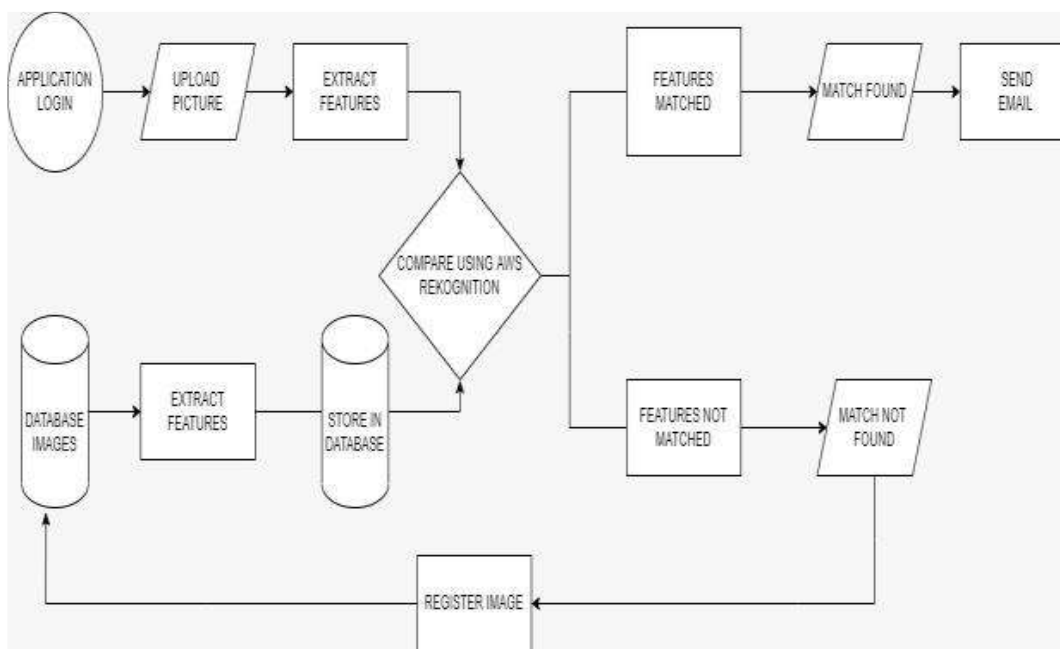 The system structure of the model is presented in Fig.1.1.



Fig. 1.1 Structure of System

Overall Structure of the proposed model is to prevail over the drawbacks of previous systems for finding missing persons. In which you can add the case easily and detect the face on your fingertips and get the result if the match found. You will get exact location of the matched person with volunteers contact details. The face recognition model in our system will try to find a match in the database with the help of KNN classifier. It is performed by comparing the face encodings of the uploaded image to the face encodings of the images in the database. If a match is found, it will redirect user to that person's profile where location and volunteer mobile no is mentioned to contact.

The proposed model contains the following Modules:

Sign In/Sign Up Activity:

 • User will first go to sign in fragment if he/she has not created profile then user will go to sign up.

 • In Sign Up user will have to enter username, email and password.

 • After entering this user will receive verification link on email and user will have to click on that link to get verified.

• After authentication user's profile will get created.

 • Police also sign up using same method just they need to enter their location (Googlemap integrated) with mobile number so that their profile will get created to that specific location on Google map.

Add Report/Case Activity:

• Here anybody will be able report the missing person.

• User need to enter missing persons details like name, age, height etc. with the location

• User can select exact location with Google map integration.

• Also need to upload image of missing person for face detection.

• This will create missing persons profile and it will get added in missing persons list.

Detect Face Activity:

• In this activity user will be able to match the faces.

• User needs to upload the photo of suspicious person who he thinks that is missing.

• If the match found in cloud database that is firebase then that user will be redirected to profile of that missing person.

• On profile there is location of that person with reporter's mobile number and other details.

## TECHNICAL PROPOSTION

First, the data for the project is collected and which includes all available information about the missing person, including their physical description, photographs, last known location, relevant social media profiles, and any other pertinent details. then divided into two parts. 80% training and 20% testing. And after this an AI-powered facial recognition algorithms is used to compare the facial features of the missing person with available images from various sources, such as surveillance cameras, social media platforms, and public databases, then after it Matches the facial features of the missing person with potential sightings or detected faces in the collected data. It uses deep learning techniques to identify matches and rank them based on similarity. Then it incorporate with the geolocation data, such as GPS coordinates and mobile network information, to track and predict the potential movement patterns of the missing person. It utilizes mapping techniques to generate dynamic search areas based on the available geolocation data. If the missing person is located, then the system proceeds with necessary actions for their safe recovery and if it gets any new information surfaces, then it updates the system database and repeat the process to continue the search.

*Advantages:*

- It is very useful in local police Stations

- Reduce workload of police staff.

- Easy to use. Anyone can use it.

- It predicts strong and accurate results.

- It takes less time to find the location of lost person, if there details is available in Database

- Cost savings.

## RESULT ANALYSIS

In our Project we have made an Web server based Application that consists of the features like Face recognition that will be used for finding the missing person,  and Mobile application for getting the information of lost person or child, Some of the Screenshots of our applications are -:
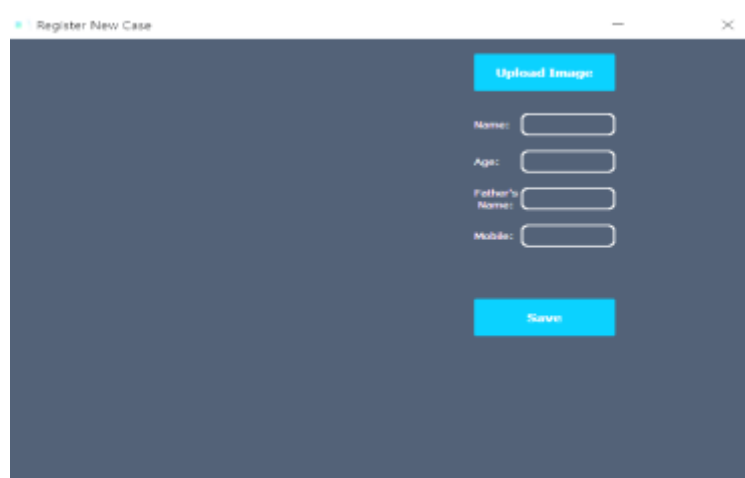


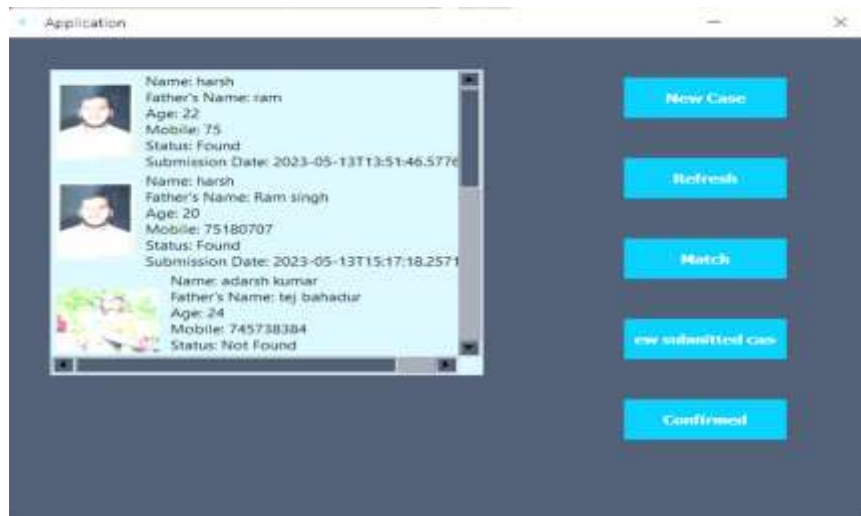Fig 4.1 Register New Cases Window

Fig 4.2 Web Application Window
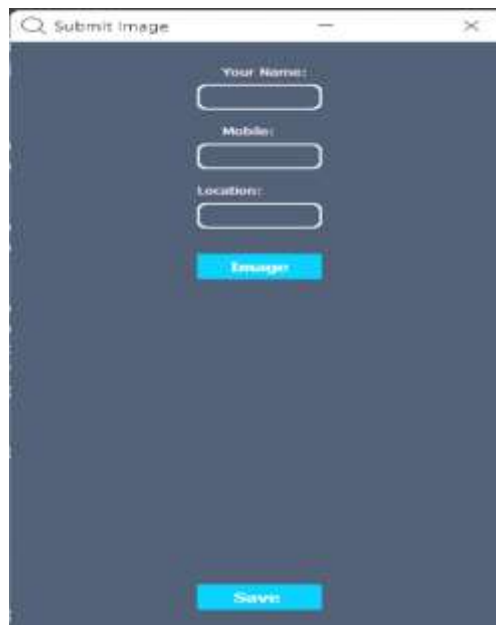
Fig 4.5 Match Found Window

Fig 4.8 Mobile App Window

## CONCLUSION

The main goal of this project is to develop a system that is used for finding lost person or child fast, and with high accuracy. and This project saves people time from browsing different web pages either Nation or Internal Sites in search of the lost loved once. If the person is detected early, without wasting so much time then it can save you from problems. For this purpose, we use some machine learning algorithms Like Nearest Neighbor (KNN) and Deep learning to achieve the highest accuracy of the system.

## FUTURE SCOPE

Image recognition with the use of one-shot learning has become very powerful. This technology when put into good use, can be beneficial. It can even be used in Hotels, Hospitals, etc., to find criminals instantly. Process of identifying the missing people is fastened. Our system replaces the manual scanning process through the databases for each picture to check the match, by an efficient face recognition method which finishes the work in no time. It will be useful to get exact location of the person if match detected with the Google maps integration which also makes police job easy. it will be helpful to contact police quickly as well. In the future, there is a scope to extend this system further by connecting our system to public cameras and detect faces real-time. The frames will be continuously sent by the public cameras to our system where our system will be continually monitoring the frames. When a lost person is identified in any of the frames, It will notify the concerned authorities, the method that finishes the work in no time.

The future work on which we are focusing now is to implement and measure the performance of our proposed system so that we can justify that our proposed system is better in Finding Missing Person than all the previous proposed system.

Also we are going to add following features in future to improve functionality of our system.

1. SMS Alert Service

2. Automatically periodic report generation and

3. Automatic Data Backup.

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