

# Track A Missing Child Using Local Binary Pattern Histogram Based Face Recognition Method

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## ABSTRACT

In our society, a countless number of children are missing every-day. Even though missing cases are getting filed against them in nearby police stations but it is complicated to trace them through investigation as it requires lot of efforts and it is time consuming also it becomes quite challenging for police to find them and it's really getting impossible to find them in most cases. So to make it convenient we planned to design a website for "Tracking the missing child using Face Recognition", which makes the task quite simpler. The main intention of this project is to reunite the missing children with their parents, so we are going to design a web page where one can be able to upload the missing child details and store it in database. If the child who is missing is identified on road by any random person, then he/she will upload the photo of that child on web page then our system can be able to detect that lost child using face recognition algorithms. Whenever the system confirms the matching then it will set up custom alerts along with location and send them directly to family members and concerned investigation officers. And if the match is not found, then the person will be provided with the option of registering child photo as a new entry to our database with the location they found. So, in this way we can find the lost children in more easy and convenient way. In this model, an automated facial recognition system for Missing Child database was proposed using known Haar feature-based cascade classifier. This system will be able to detect face and recognize face automatically in real time. In our model we are going to use Face Recognition module of python.

**Keywords :** Face-recognition, Haar-cascade, Encoding, Feature extraction, Face detection, Faces, Training

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## I. INTRODUCTION

Children are the greatest asset of each nation. The future of any country depends upon the right upbringing of its children. But unfortunately a large

number of children go missing every year in India due to various reasons including abduction or kidnapping, run-away children, trafficked children and lost children. A deeply disturbing fact about India's missing children is that while on an average 174 children go

missing every day, half of them remain untraced. Children who go missing may be exploited and abused for various purposes. Many NGOs claim that estimates of missing children are much higher than reported. The missing from one region may be found in another region or another state, for various reasons. So even if a child is found, it is difficult to identify him/her from the reported missing cases. A framework and methodology for developing an assistive tool for tracing missing child is described in this paper. An idea for maintaining a virtual space is proposed, such that the recent photographs of children given by parents at the time of reporting missing cases is saved in a repository. The public is given provision to voluntarily take photographs of children in suspected situations and uploaded in that portal. Automatic searching of this photo among the missing child case images will be provided in the application. This supports the police officials to locate the child anywhere in India. Facial recognition is a type of bio-metric software application that can identify a specific image in a digital image by analyzing and comparing patterns. Facial recognition system are commonly used for security purposes but are increasingly being used in a variety of application.

## II. LITERATURE SURVEY

A. Statistics Multiple independent surveys by the Government and the non-governmental organizations have reported the number of missing children in India and the numbers are not very pleasing. As per the annual report "Crime in India" 2019 by the National Crime Records Bureau (NCRB), a total of 73,138 children were reported missing last year and the growth is exponential.

1. Every eight minutes, a child goes missing in India.[3] 7~8 in an hour, 180 in a day and 65,700 a year.
2. ~9% per annum increase.[2] In 2018, the total number of 67,134 children were reported missing and it had increased by 8.9% in 2019.
3. World's second largest population and fourth longest railway network. [4][5]Railway Children an

International Organization that creates a sustainable environment for children of the streets stated that every 5 minutes a child lands up unaccompanied on railway stations who might have run from home or lost from his/her parents.

4. "Thousands of missing children kidnapped from India's railway network annually" [6] Sealdah Railway Station, Kolkata has one of the highest records of child abduction numbers. In 2015, the total child abduction record reached up to 41,893.[7]

5. Lockdown- Covid and Children On 24th March 2020, Prime Minister Modi had declared the first pandemic lockdown and since then till the lockdown upliftment up to 1 August 2020, there have been 3376 missing children's cases.

### B. Existing Databases

The majority of the police enforcements in India have their websites created for common people to avail information and features of online complaints, accident compensation, lost/found, and much more. Along with this they also have a missing person page. On this page, there is a photo and general information about the missing person. The database information is available only to the police enforcement of that province. © 2021 JETIR May 2021, Volume 8, Issue 5 www.jetir.org (ISSN-2349-5162) JETIR2105418 Journal of Emerging Technologies and Innovative Research (JETIR) www.jetir.org d240

#### 1) Mumbai Police

Along with the picture of the missing person, Mumbai police provides some essential details of the missing person such as Gender, Age, Place of Missing, description, the complaint registration no. and the corresponding police station on this webpage. With Direct call-line numbers to get in touch with the Mumbai City Police Control Room.

#### 2) Maharashtra Police

Some states have merged the database of the missing people in their state and made them available to the public. For example, Govt. of Maharashtra has a website made available for the citizens so that they can

find the status of any missing person whose complaint has been registered in the police station inside Maharashtra.

### 3) Government of India – Khoya Paya Scheme

Khoya-Paya Citizen's Corner for tracking children is a national-level government website wherein a person can register a complaint about a missing child or inform the whereabouts of a missing child. The website allows a person to view missing child complaints in any state. However, there are some restrictions on making a minor's image publicly available, so not all missing children's images would be available.

4) National Centre for Missing Children A non-governmental initiative for creation of a national database for missing children, but seems inoperative. The complaints of missing children are piling up on the law enforcement's desks and the resources available at their hands are very limited. Even if the government has launched various database systems that store the missing people and children's data, they still lack efficiency. It is a tedious and unpractical job for a person to cross-reference a missing child's image and data manually against their database. Not only this method is slow but it is subjected to human error as well. And for a country like India, with a very high population and decently developed connectivity in terms of transport infrastructure, it turns out to be nearly impossible for monitoring and manually matching each missing person with each person found across the country.

### C. The Eye-Opener Delhi Police Initiative

In the month of September, Delhi Police was given special permissions and resources help from the government. Delhi Police conducted a Facial Recognition Trial on around 45,000 missing children and out of the total children scanned 2,390 children could be identified between 6th to 10th April. The ministry later provided 7 lakh missing children's data along with their photos for the system. The police

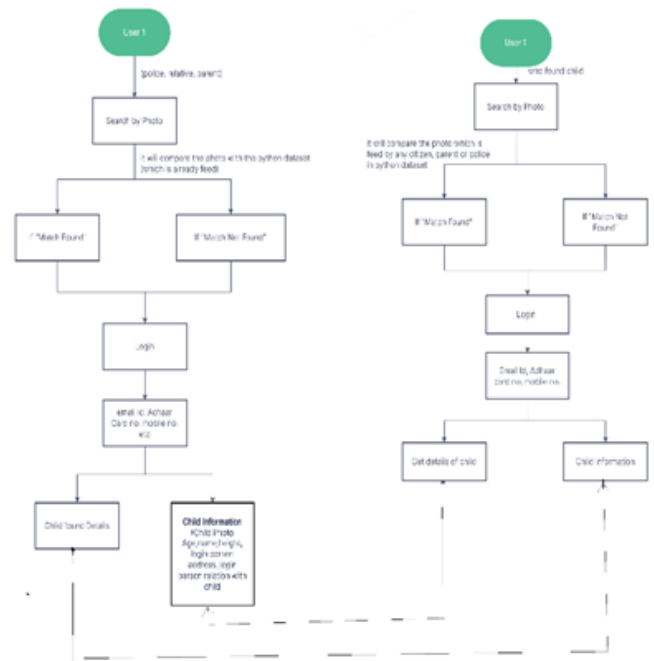
traced 1440 missing children and in the same time period, 1222 children went missing. The efficiency of the

Facial Recognition System was quite good and its outcomes were amazing. The recovery rate for the above time period was 117.83%. With this achievement, Delhi Police received the backing of many organizations such as the National Commission for Protection and Child Rights (NCPR), Bachpan Bachao Andolan, Women and Child Development Ministry. There have also been some cases where parents of the missing child do not report to the police station when the missing child had been found. This may complicate things for the police themselves who might waste their resources on finding the child when it already has been found. Before the facial recognition system was implemented, the police officers themselves had to manually cross-reference the photo registered in the FIR and the photos of children who were found but were unaware of their place of residence or too young to speak. There were thousands of photos to be matched and this process would take weeks and months, till then more complaints would add up. Delhi Police has also launched an android application for Missing Person Registration, thus, providing an ease for the citizens to report a missing person in no time from a handheld device. With so many missing children returned to their safe haven, it supports the need for more systems like the one Delhi Police has implemented. Although the achievements of Delhi Police's Facial Recognition System proved to be successful, there is still the problem of missing children. The solution to the problem of missing children is not to track them, but to prevent these tragedies and abduction/kidnapping from happening.

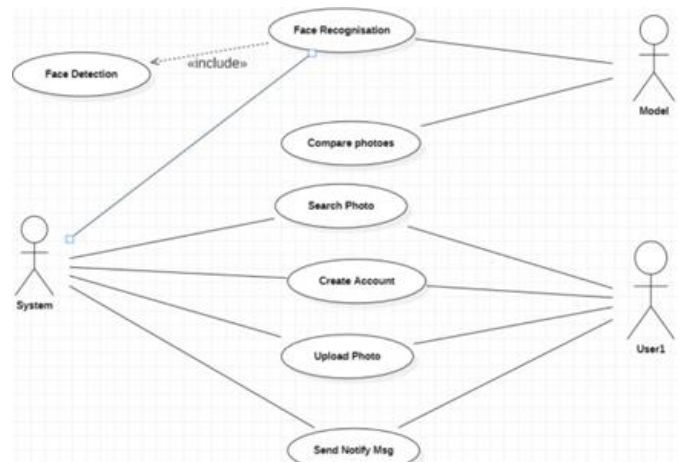
### III. PROPOSED WORK

There are 2 users i.e user1 and user2 . user1 can be police, relative of missing child, parent of missing child and user2 can be police, or any citizen who found the child. At 1st user1 will visit our system, and can take a picture by camera or by uploading child photo from

device and will search photo . The website will compare the photo with the python model dataset (which is already feed). it will compare photos after comparing it will show the message on the screen whether 'match found' or 'match not found' by face recognition. 1st case if 'match not found' then if the user wants to feed the lost child data so he/she should create account by login in the website by providing information like email id, adhaar card number, mobile n number and after that the user have to 5 provide the missing child information such as child photo, age, name, height,gender, last location of child found and login person relation with child. no the data is feed in python data set. Now by other side the user2 who found the lost child will try to find the child information by visiting our website and will search by photo . it will compare the photo which is feed in python data-set .then it will display the message of 'match found' or 'match not found'. If it displays the message of 'match found', then if the user2 wants the information then he/she should login in the website by providing information like email-id, adhaar card number, mobile number and will get the child details which was feed by user1 As soon as user2 get access to the child information at that time user1 will be notified about the child access and user2 gets the lost child parents information and will directly contact to user1 and in this way the child is safely reached to there parents. 2nd case, if user2 got 'match not found' message and want to feed the lost child information then he/she should login in the website and after that the user have to provide the missing child information such as child photo, age, name, height , gender, last location of child found and login person relation with child. no the data is feed in python data set. when user1 searches the lost child and gets message of 'match found' then have to login and will get access to the chlid information and the users information who found the lost child and the user2 will be notified and in this way the user1 will contact user2 and the child is safely reached to there parents.

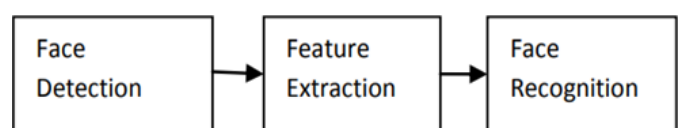


USE CASE DIAGRAM



#### IV. ARCHITECTURE

Face recognition system consist of three major steps, acquisition of face data, extracting face feature and recognition of face[5]. Fig. 1 shows typical structure of face recognition system. The subject under consideration is given to the system for the recognition. Later on feature is extracted from the image and finally it is given for the recognition purpose.



These steps are elaborated as follow:

**A. Acquisition of Face Data:**

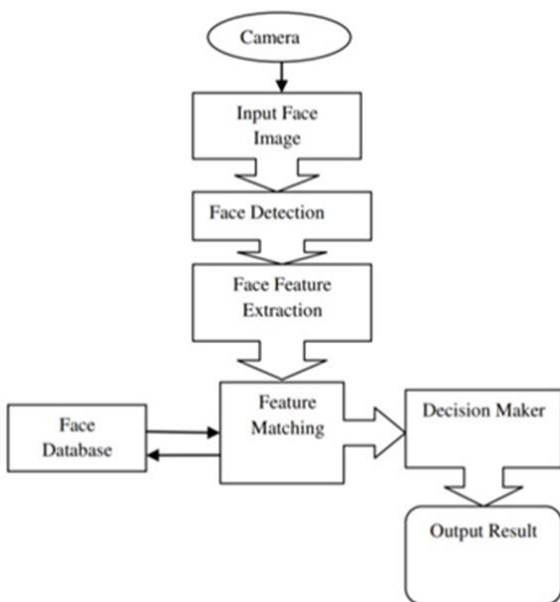
First step in the face recognition system is Acquisition and Processing of Face Data. In this step face images is collected from different sources. The sources may be camera or readily available face image database on the website. Illumination condition, background, lighting conditions, camera distance, the size and orientation of the head causes serious effect on the performance of face recognition systems.

**B. Extracting Face Feature**

Feature extraction process is defined as the process of extracting relevant information from a face image. In feature extraction, a mathematical representation of original image called a biometric template or biometric reference is generated, which is stored in the database and will form the basis (vector) of any recognition task. Later these extracted features used in recognition.

**C. Recognition of Face**

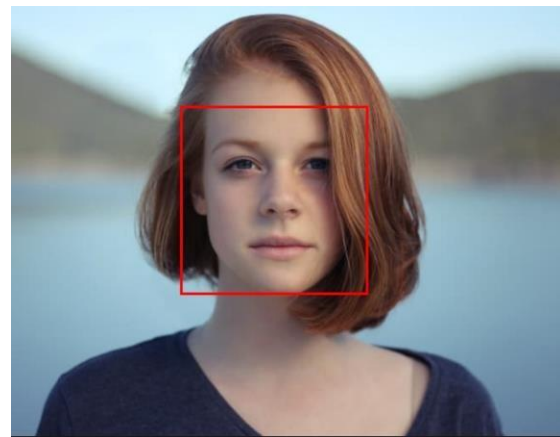
Once the features are extracted and selected, the next step is to classify the image. Appearance-based face recognition algorithms use a wide variety of classification methods Such as PCA, LDA. In classification the similarity between faces from the same individual and different individuals after all the face images in database are represented with relevant features. Sometimes feature extraction & recognition process done simultaneously.



**V. RESULTS**

The result we got from this project is after giving images to module the image is being recognize and identified. In conclusion, facial detection and recognition technologies can be valuable tools for a missing child website, which can scan and analyze images and videos uploaded by the public, and identify potential matches with missing children’s photos in their database. Facial recognition can further enhance the accuracy of the matching process by using advanced algorithms to compare the features of the faces.

Input:  
39



Output

**VI. DISCUSSION**

Tracking a missing child is a critical and urgent task. The use of technology, such as computer vision algorithms, GPS tracking, and social media monitoring,



can significantly enhance the effectiveness of the search effort.

However, it is important to recognize that the use of technology in tracking missing children also raises concerns about privacy and security.

The collection and use of personal information, such as images and location data, must be done with the utmost care to avoid infringing on the privacy rights of the missing child and their family.

## VII. CONCLUSION

The paper presents a simple approach for face recognition which minimizes computation time while achieves high detection accuracy. The test results show that the algorithm works very well for most of the challenges including background variations, illumination problem, pose variations and number of faces in the dataset. In future work related to prediction based good quality face recognition system can be done.

## VIII. FUTURE SCOPE

The project is currently being limited to children but can be scaled up to all categories of people with certain changes in the database and python script. The face recognition model used in the project is a model which is a bit heavy for processing, so switching to a light face recognition model can be a choice in the future.

Age Progression [24] plays a vital role in facial recognition as it helps in facial matching when both the images belong to different time periods. Age progression is the process of predicting the future facial appearance of a person. To achieve better accuracy, family members' images can be used to produce an age-progressed facial image. Improved accuracy in identifying missing children Faster response times Integration with other technologies such as geo-location and surveillance cameras Increased public awareness.

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