

# Missing Children Identification using Face Recognition

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**Abstract**—In India a limitless wide variety of kids are pronounced lacking each year. Among the lacking baby instances a huge percent of kids continue to be untraced. This approach gives a unique technique for figuring out the pronounced lacking baby from the images of kids available, with the assist of face popularity. The public is able to upload the suspicious baby image into a web portal with landmarks and location. From the repository the registered image can be compared with the lacking baby. Classification of the enter baby picture graph is finished and image with pleasant in shape may be decided on from the database of lacking kids. For this, a deep getting to know version is skilled to effectively discover the lacking baby from the lacking baby picture graph database provided, the usage of the facial picture graph uploaded with the aid of using the public. The Convolutional Neural Network (CNN) is an enormously powerful deep getting to know tech for picture graph primarily based totally packages is followed for recognition of face. The descriptors of face are extracted from the snapshots the usage of a pre-skilled CNN version. Compared with regular deep getting to know packages, our set of rules makes use of convolution community simplest as an excessive stage function extractor and the kid popularity is achieved with the aid of using the KNN classifier.

**Keywords**—KNN classifier, CNN model, Search method, Face recognition

## I. INTRODUCTION

Every country's greatest asset is its children. The right rearing of its children determines the fate of any nation. But regrettably, a countable number of children is missing in India every year for a various reasons, including kidnapping, runaway children, trafficking children, and lost children. In spite of the fact that on average 174 children go missing each day in India, 50% of them are still unaccounted for. Lacking children are vulnerable to exploitation and abuse for a variety of reasons.

Children are the missing from one place can be found in another place or state. A digital platform is provided, such that parents can able to upload the recent photo of missing children in to the portal for easy identification and quick rescue. The public has the option to freely capture photos of children in allegedly dangerous settings and post them to a webpage.

Many of the missing infant case photos that are missing from this picture graph can be supplied inside the application automatically. The police may now locate the child anywhere in India thanks to this. Recent improvements in image processing methods have greatly advanced a variety of applications, such as computer vision, medical applications, biometric verification, and facial recognition systems [1-3].

When it comes to judicial processes, biometrics are now a crucial component. In the modern world, when kidnapping and human trafficking are perennially in the news, biometrics, particularly a person's face features, become the most important resources for tracing a person. When suspicious individuals are observed carrying out difficult activities where they shouldn't be, it raises questions about whether they are employed in that profession. However, owing to a lack of resources or effective ways to learn about such matters, the average person is unable to become a diligent member of society.

Due to the inhabitants' blatant carelessness, hundreds of individuals are sacrificed every day as a result. If everyone had been given the authority or privilege to inspire every country to save these individuals, the world would have prospered [4]. Despite the countless surveys which are conducted by the Police officials, government authorities, various NGO's, and many other societal institutions, 400 persons have not been found despite being reported missing. And in a nation where children and youngsters make up 50% of the population, this is a significant concern.

It is imperative to put an end to the numerous incidents of illegal activities where the persons are being forced to submit without any hope of release. This would only be possible way to find these people quickly and safely. However, in these kinds of circumstances, the police are left in control since they lack the expertise to carry out the required investigations [5-6].

The initiative to save these people by using social media or other channels to reach out to the general public and the police force in our country[7-9]. Most cases of missing infants are reported to the police. For a variety of causes, the newborn missing from one location can be found in every other area or state. Therefore, it will be challenging to

identify a newborn among the missing children, even if one is discovered.

This paper defines a structure and method for developing an aid for locating a missing child. A portal is for to put forwards, in which the most recent photograph of missing children is uploaded by their relatives at the instance of reporting missing instances is preserved in a repository. The public is having the access to freely snap photos of children in allegedly dangerous settings and post them to that web. Some of the newborn case photographs that are missing from this picture graph may be provided inside the programme automatically. The police officials may easily locate the child.

## II. PROPOSED SYSTEM

This approach for locating a missing toddler's identity combines facial feature extraction based entirely on deep learning and matching based entirely on KNN. The suggested device relies on the face's reputation for having a young child's identity. This is to aid the government, parents, and any toddler investigations that may be lacking. We outline the device's precise architecture. With improved face recognition criteria that are totally based on KNN, Searchious integrates both a computer programme for police stations and an Android app for those who live in public spaces [10-12]. The system of tracking and monitoring is made feasible by this hybrid method.

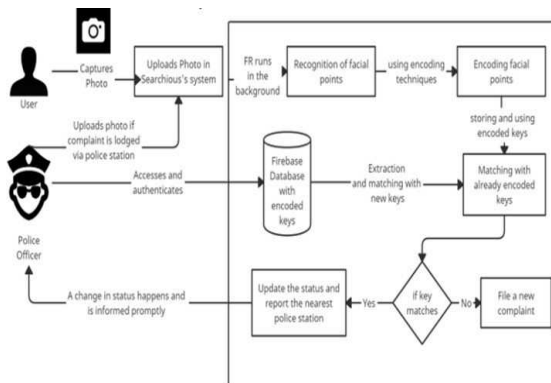


Fig.1 Proposed flow diagram

As a result, the people would become more aware of the crime going on around them and the police would be forced to act more rapidly. The citizen's ability to submit a photo of the individual while using Searching, which instantly employs facial recognition to cross-verify the person's identification with the database, greatly aids in the tracing process. The person's details will be used to build a new case if the information is not already in the police repository. A curious figure is the first thing that stands out in a bystander's photo. The 68 facial points are registered as the image moves towards the face recognition step, and an encoded string of letters is produced.

Each participant will receive a replica of this key. As of now, this key has been used to match every image in the database. The user and the police officer are both informed if a match is found. KNN is a form of event-based total mastery where all computations are postponed until classification and the characteristic is best envisioned at home.

In KNN, an item is categorized by a majority vote of its neighbors, and is then positioned in the position with the highest popularity among its permissible nearest neighbors. To map the 128-dimension vectors, which may alternatively be divided into 68 facial points on a face in an image, Searchious employs dlib [13-15]. In order to determine if the new faces match any faces already on file, a KNN method is utilized to compare these vectors with all of the database entries using Euclidean distance. To make it easier to find the whereabouts of the lost and boost the effectiveness of the identification process, Searchious frequently integrates many modules.

At first, the civilians take images of persons who appear suspicious and are working in places where they shouldn't be. Given that all the facts are provided, this process is relatively concise (if available). Families who have members who have died in certain conditions may also use this tool. The pairs of facial local points that can be recognized are being encoded. This encoded text material is utilized for similar processing. Once the encoded key has been created, it must now be compared to the keys of the other images. As is clear, each separate individual shot will have a different key. This key matching can also be thought of as a matching of facial characteristics. If a match is established in a portal then, it is presented; else, a new record appears in the repository [16-19].

## III. IMPLEMENTATION

It includes a countrywide portal for storing information of lacking toddler along side the photo. In order to determine if the new faces match any faces already on file, a KNN method is utilized to compare these vectors. To make it easier to find the whereabouts of the lost and boost the effectiveness of the identification process, Searchious frequently integrates many modules.

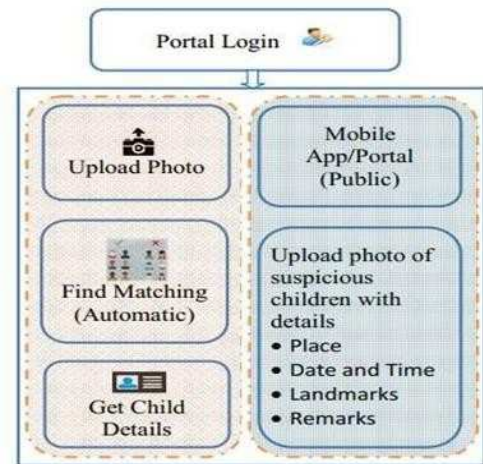


Fig.2 System Architecture

### A. Data processing

In the domain of face recognition, the preprocessing takes the face region extraction from raw into a format that is compatible with the CNN structure in use. There is an unusual entry length requirement for each CNN. For the purpose of expanding the face reputation system's database, missing toddler images shot with a virtual camera are captured and divided into different chronological periods. For the purpose of purchasing the input face images, the face position in each image is recognized and cropped.

### B. Uploading of information

It includes a nationwide webpage for recording information about a missing kid in addition to the photo. Every time a baby goes missing and a FIR is filed, the responsible officer posts the missing child's picture on the website. Anyone with access to the website is free to upload any time a picture of a suspicious infant along with location, date, time, landmarks, and comments. Customers' uploaded images may be regularly compared to pictures of children who have been reported missing, and if a similar image with a high enough rating is found, immediately an alert email may reach to the appropriate authorities. The alert message can also be visible on the appropriate officers' login screen inside the message box.

### C. Searching Information

Whenever a public submits a picture of a suspected child, the system can build a template vector of child's facial competence from the given input image graph. If a match is discovered in the repository, the device shows the closest-related photo graph and alerts the worried officer portal through email or text message about the matched youngster. In a similar manner, the officer may at any time verify if the indicated device is being used and determine whether the database has any matches.

### D. Face Detection

Principal component analysis are frequently used by Python OpenCV to recognize faces. Based only on information extracted from a picture, these approaches are used to separate portions of images into face and non-facial regions. For this challenge, the classifier has to be trained with both positive and negative face pictures in order to identify the faces in the supplied image.

### E. Preprocessing

The impressive image is cropped and stored as a Numpy exhibit. To reduce the quantity of math required, the recognized photo is preprocessed for you to eliminate any unfavorable capabilities. It provides a three-dimensional view of the face that is inspired by a face picture. It tops off the areas on the face by using sophisticated convolutional networks.

### F. Feature Extraction

By using deep learning, it extracts facial characteristics such as the color, breadth, and height of the face, as well as the color of the hair, the presence of eyewear, facial hair, and more. These characteristics may be described as an array of integers that are specific to each face and are recorded in JSON format.

### G. Template Matching

The face's separated components are referred to as a face print, component vector, or essentially a format. It will evaluate the faces using a way to look for similarities in their constituent parts. The confidence phase of matching is established based on likenesses. The image will be regarded as matching one if the certainty level exceeds the boundary value. By selecting the best matching benefit, which increases the exactness level of the test by decomposing the results, the limit value is physically set. The final decision on the suspect's criminality is reached in light of the outcome of the layout matching process.

## IV. RESULTS

The step by step of the entire process is illustrated in Fig 3- Fig. 13. The portal has two modules for Police and user. The Police login portal, using the credentials the concerned authority uploads the data. After uploading the complaints box will be updating the details. From the user module, the user uploads the picture of the missing children and search using the search module. If the missing child picture matches the picture of the database, then the details of the child will be displayed with contact information. Then the authority message module will be updated with status as resolved the case. For validating the results, poor resolution images were uploaded.



Fig.3 Home Screen



Fig.4 Data Upload



Fig.5. Authority Complaints Box



Fig.6 User Login

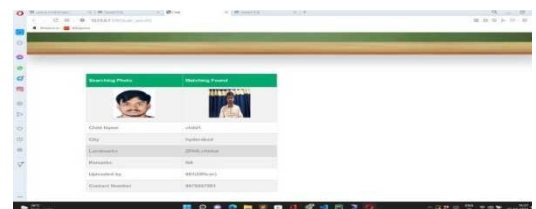


Fig.7 Search Module Result



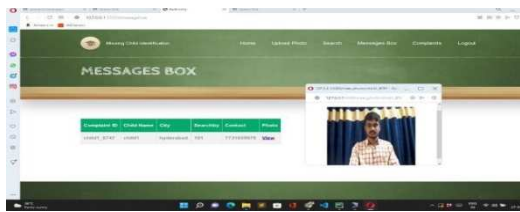


Fig.8.AuthorityMessageBox



Fig.9UpdatedAuthorityComplaintsBox



Fig.10.User Search not found

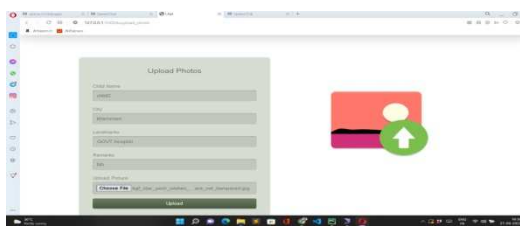


Fig.11 User registering complaint

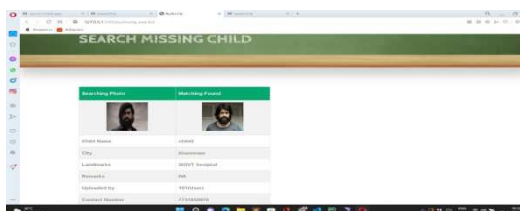


Fig.12 Police search found

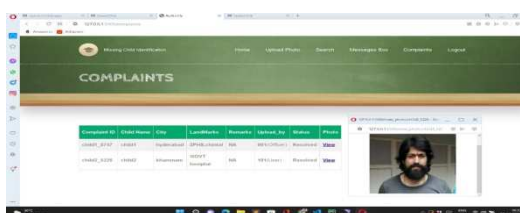


Fig.13Updated complaints box

## V. CONCLUSION

A missing children identity device is suggested that combines a guiding vector device classifier for categorization of multiple children categories with an efficient deep learning approach which based on CNN for feature extraction. The deep mastering version of this device, which is proficient with function representations of children's faces, is used to assess it. By discarding the softmax of the VGG-Face version and extracting CNN

picture capabilities to educate a multi elegance KNN. The excellence of the proposed device is justified the use of the photos of youngsters with distinct lighting fixtures conditions, noises and additionally images at distinct a longtime of youngsters. The type accomplished a better accuracy percentage which indicates that the proposed technique of face reputation may be used for dependable lacking youngster's identification.

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