

A software to track and report child missing cases

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Abstract

According to some records, on an average of 174 children go missing every day, half of them remain outtraced. It is a deeply disturbing fact about India. Children go missing due to various reasons like child abduction, runaway and so on. But only 50% of them get recovered and there is no trace behind the others. According to some reports, the child goes missing from one place and is reported to find from other regions or states. Aiming at the increasing security of children, we would like to develop an app which helps the guardians to acquire information about their missing child. So there is a great difficulty and tedious work behind this child recovery cases. In this paper, we demonstrate a software application that simplifies the missing child tracking. The system works by comparing the images and checking for matches.

I. INTRODUCTION

Childhood is a wonderful period in human life but there may be some unexpected situations that can make things worse. Child missing cases reported is increasing at an alarming rate but the numbers of children recovered are very less. This software application aims to help in finding the missing child cases easily and in less time. In this system, the guardians have the provision to take an account. Whenever his/her child goes missing, the guardians can upload the image of the child which are stored in the database. A notification is given to all the registered members of the app when a new missing case is reported. The public is given the provision to take the image of a child in a suspicious condition. This image can then be uploaded in the application. Later, an automatic match checking of the image uploaded by the guardians and the image uploaded by the public takes place in the cloud. When a match in the images is found then, the image is returned with

the percentage of accuracy in matching.

So, when the match is obtained a notification through SMS and email are sent to the guardians registered number and email address with the location where the child is found along with the details of the finder.

II. PROPOSED SYSTEM

The proposed system works in two phases: report a missing case and find a child. In the report phase, a new missing case is reported where the guardians can upload the missing child's image.

In the find phase, the public can upload the image and the matching is checked. The proposed methodology for missing child identification combines facial feature extraction based on deep learning.

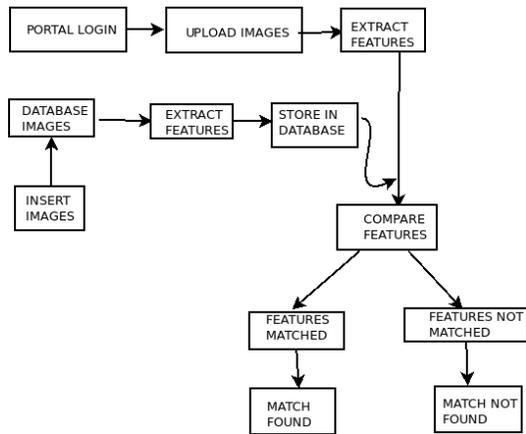


Figure 1: Block Diagram for creating a child missing report

i. Face Recognition Using AWS Services

Amazon Recognition is a service offered by Amazon Web Services that make the face recognition services very easy. It also helps in extracting text, recognizing celebrities and identifying inappropriate content from images and videos. Face Recognition is the process of

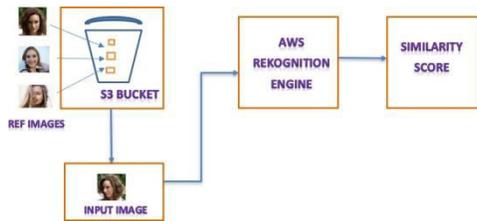


Figure 2: Block Diagram for creating a child missing report

comparing an image with the stored images. In AWS, S3 is the storage service for storing reference face images. Together with Amazon Recognition service, we can make use of S3's storage features to build a face recognition application. Amazon Recognition uses a collection which is a virtual container used to store and index images. Collections can act as a repository of images for a single application to which the images can be added or

deleted. Images are loaded into the collection from S3 buckets and then it is passed through Amazon Recognition engine. Then the image is returned with the percentage with which the input image is matched with the images in the database.

ii. Identify Faces In Images

Here face identification is done using the Azure Cognitive Services. This provides algorithms that detect, recognize, and analyze human faces in images. The ability to process human face information is important in many different software scenarios.

Here we use the Verify API which does an authentication against the two detected faces or from one detected face to one person object. Practically, it evaluates whether two faces belong to the same person. Thus it helps to verify the image uploaded by the guardian and the image taken by the finder both belong to the same person.

Using Find Similar API we can compare a target face with a set of candidate's faces to find a smaller set of faces that look similar to the target face. Two working modes, matchPerson and matchFace, are used. The matchPerson mode returns similar faces after it filters for the same person by using the Verify API. The matchFace mode ignores the same-person filter. It returns a list of similar candidate faces that might or might not belong to the same person.

The steps in face identification using Azure cognitive system are:

- 1) Authorize the API call
- 2) Create the PersonGroup
 - a) Define people for the PersonGroup
 - b) Detect faces and register them to the correct person
- 3) Train the PersonGroup
- 4) Identify a face against a defined PersonGroup



Figure 3: Images to be trained

III. WORKING of the SYSTEM

A set of images is given for training as in (Fig- ure 3). The images get trained by Azure Cogni- tive Service using FaceTdentification API. Then a dataset is produced as in figure 4.

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```
8003 5d71 0028 636e 756d 7079 2e63 6f72
652e 6d75 6c74 6961 7272 6179 0a5f 7265
636f 6e73 7472 7563 740a 7101 636e 756d
7079 0a6e 6461 7272 6179 0a71 024b 0085
```



Figure 4: Test image

We have to provide an image as a test image(Figure 5), which gets compared with the training images.

After checking for a match between the image uploaded by the parents and the finder. Finally if there is a match, the confidence level of match is also obtained.

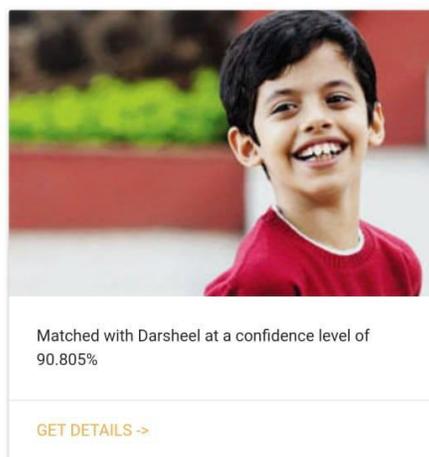
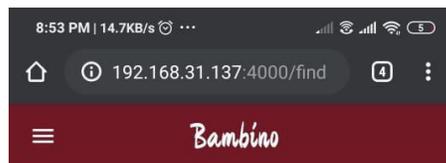


Figure 5: Match found with at a confidence level of 90.805%

As soon as the match was found,a mes- sage is sent to the parent’s phone with the geo- location where the child is found(Figure 6).The message is sent using the Twilio account.To send an outgoing SMS message from your Twilio account, need to make an HTTP POST request to Twilio’s Message resource. Twilio’s helper library for Node.js helps you create a

new instance of the Message resource, specifying the To, From, and Body parameters of your message. We have tell Twilio which phone number to use to send this message by replacing the from number with the Twilio phone number we purchased earlier. Next, specify yourself as the message recipient by replacing the to number with your mobile phone number. Both the from and to parameters must use E.164 formatting ("+" and a country code, e.g., +16175551212). We also include the body parameter, which contains the content of the SMS we're going to send.

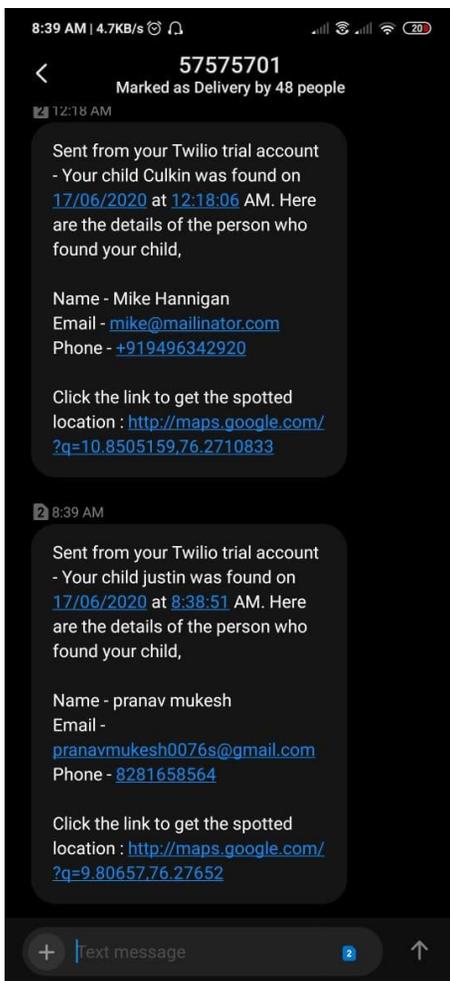


Figure 6: Notification sent to the parents%

IV. RESULTS

The proposed system is implemented in both web-based and android based applications. The matching takes place between the reference images and the images stored in the database. On matching a set of encoding values are produced based on which the percentage or accuracy of matching is performed by the training algorithm.

The model worked well with high accuracy on the training images and helps in finding the matches within a short time. It also worked well on all sort of images and for images taken from different views and angles.

V. CONCLUSION

In India, a large number of children are reported missing every year. Among the missing child cases a large percentage of children remain outraced and there is no information about them. This paper demonstrates a software application that helps in finding out the reported child missing cases. This system is effective in recognising the images in very difficult situations and have high acceptance. By this system, the process of finding the missing children gets fastened and it also helps to replace the manual method of checking each image in the database for a match, which is really time consuming that an intelligent system can do in seconds. The system is implemented in such a way that reduces the cost and is effective in nature. This system proves to be helpful for parents as it helps them to find their child without losing their time.

VI. FUTURE Work

The future work of this paper is to help the users to compare the images of a missing child within 0 and 5 years with more accuracy. As the images are taken all at a sudden and unexpectedly we have to improve the accuracy of comparison of such images captured at all

lighting conditions and in different frame position. To improve the accuracy when a side view of the image is obtained or with less facial features. To incorporate the proposed system with the police investigation teams so that it will be beneficial to a number of people and the society.

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