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FACE RECOGNIZATION AND TRACKING TO FIND THE MISSING PERSON

P.Hareesh Assistant Professor, Dept. of ECE, Sir C R Reddy College of Engineering, Eluru – 534007 : hareeshpancheti@sircrreng.ac.in
P.Archana, M.Yojitha, N.Venkata Rami Reddy, M.Manoj Kumar, J.Vamsi UG Scholars, Dept. of ECE, Sir C R Reddy College of Engineering, Eluru – 534007

Abstract - Facial recognition technologies have risen in prominence over the previous few decades. Biometric processing involves facial recognition. Hundreds of individuals go missing every day around the world. These people are either kidnapped, sold as slaves, forced to labor as youngsters, forced to beg on train platforms, in small stores, or coerced into prostitution, human trafficking, or other illicit activities. Posts concerning missing individuals can be found in our daily lives on social media platforms, news channels, newspapers, and so on. This study project has been presented to assist them in more readily discovering missing people.The suggested device,"Searchious," on the other hand, tends to reduce the amount of time needed to find the missing individual and enhance the method of locating the missing person. While Searches can look for people who are missing, if a new face, which is not present in the database occurs, a new case can be filed for the same. Search has an both Python-built desktop software for police stations and an Android app for regular folks by also including a face recognition algorithm

Keywords: deep learning, transfer learning, CNN, OpenCV

I. INTRODUCTION

Facial recognition systems have advanced dramatically in the last ten years. Biometrics has become an extremely important part of any legal proceeding. In today's society, when kidnapping and human trafficking are perennially in the headlines, biometrics, particularly face characteristics are now the most crucial methods for tracing a person. This method improves and enables accurate identification and collection areas of facial features around the eyes, nose and mouth[1-3]. The monitored subject is identified by a combination present discriminatory and discriminatory elements through video. It raises doubts in the minds of ordinary individuals about whether the suspects belong to the specified profession when they are found undertaking difficult activities where they shouldn't be.However, due to a lack of resources, regular citizens do not serve as sources or useful methods of learning about the topic from alert national citizens. Each day, the irresponsibility of residents results in the sacrifice of thousands of individuals. The world would be prosperous with every citizen serving in the leadership of every nation if every person had the power or privilege to save these people. Despite numerous efforts by the government police, NGOs and many other social entities, 400 people remain unaccounted for after being reported missing[4-7]. And this is the main problem in a country where children and youth count for half the population. It is vital to put an end to the numerous instances of kidnapping, human trafficking, prostitution, and other unlawful activities in which people are compelled to participate without assistance.. where people are forced to live with no hope of help. When suspicious people are discovered performing laborious tasks in places This would only be possible if these individuals could be located swiftly and securely. However, when such incidents occur, they end up in the hands of the police, who lack the knowledge required to carry out the required procedures. If we as citizens take charge and use our presence of mind to save these people by posting their pictures on social media or other media and communicating with the average citizens of our country and the police force, we can reduce the time it takes to find these innocent lives and reduce the risk of their suffering.the time it takes trace these innocent lives and reduce the burden on the police to start from scratch[8-10].

II. LITERATURE SURVEY

[1]. Review of Shakir F. Kak's Person Recognition Based on FaceModel Firas MahmoodMustafa, and Pedro Valente was published in the Eurasian Journal of Science and Engineering (EAJSE) in 2018.

In recent years, the growth of computerbased applications has seen an increase in interest in the subject of face recognition. This is due to the numerous applications for which it is used. Face identification from database photographs, real data, capture images, and sensor images is a challenging challenge and a restriction owing to the enormous variation of faces. Face recognition is related to image processing, pattern recognition, and computer vision. Building far more robust facial recognition algorithms is a continuing goal of face authentication technology innovation. In this paper, three main feature extraction techniques for identifying faces are discussed.

Appearance-based, modelbased, and hybrid methods are all included as feature extraction strategies. There is also a review available. Relevant topics in the face recognition field include image processing, pattern recognition, and computer vision. Building significantly more powerful face recognition algorithms requires a constant stream of new face authentication technology innovation.In this work, to identify a face.

[2]. A comparative analysis Beecks, Uysal, and Seidl's paper on similarity metrics for content-based multimedia retrieval was presented at the IEEE International Conference on Multimedia and Expo (ICME) in 2010.

One of the main functions of content-based multimedia retrieval systems is to find similarities between data objects.Multimedia retrieval systems commonly identify commonalities between data objects by applying distance, approximating data object contents using flexible feature representations, such as feature signatures functions. In this work, we assess the effectiveness and usefulness of the most crucial current similarity metrics that are pertinent to flexible feature signatures. We also examine the features of the similarity metrics in order to study their behaviour. Our results can be used to direct the creation of content-based retrieval apps for a variety of fields.

[3]. Lin Lin, Chao Chen, Mei-Ling Shyu, and Shu-Ching Chen's paper, "Weighed Subspace Filtering and Ranking Algorithms for Video Concept Retrieval," was published in the IEEE. Multimedia, Volume:18, Issue:3, 2011.

The exponential rise in the volume of digital data has created a significant challenge for search engines. It is expected to efficiently and effectively filter data and produce related outcomes. Swimming A process that randomly chooses features or instances of data to display data to reduce storage costs, cut redundancy, reduce computing costs, improve model training efficiency, and delivers the media. On the other hand, ranking is an important step to show a lot the result is based on some loss function or similarity measure. To address these issues, this research provides a unique retrieval system that consists of weighted subspacebased filtering and ranking components.It is attractive to apply MCA to explore relationships between feature categories and concept classes. However, existing correlation-based algorithms are weak in capturing semantics through a numeric measure such as conditional entropy to guide the search of features. The relevance of retrieval results is also crucial in multimedia, where effectiveness is measured by the ranking process. Our proposed algorithm is created to get over the drawback of the most popular ranking techniques, which treat all data instances equally within one group during the training step.

Existing system:

The current system is seen the details of specific information about the police department in our country, the existing system is more workload for authorized people but in the proposed system users can register on our site and send missing reports and about cities or people special

Disadvantages:

- More manpower.
- Time-consuming.
- There is no direct role for senior officials.

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- Damage to the machine due to negligence.

III. PROPOSED SYSTEM

Our Proposed system will be using advanced algorithms and use the one which is better for further implementing the system in a project. To make a proper Graphical User Interface based application so that the system can be easily used by anyone. Using all modules, making a missing identification system integrated with human facial detection. The facial detection system can detect the missing person.

Advantages:

- Highest accuracy
- Reduces time complexity.
- Easy to use

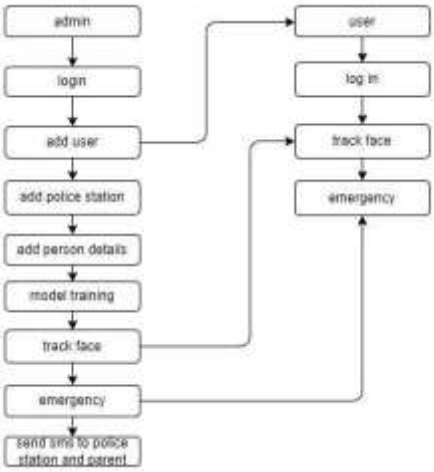

Fig 1: Proposed System

Convolution neural network: A Convolution Neural Network (CNN or Convolution Neural Network) is part of machine learning. This is one of the artificial neural networks used for various applications and data types. CNN is a type of network architecture for deep learning algorithms and is used specifically for tasks involving image recognition and pixel data processing [11-13].

There are other neural networks in deep learning, but CNN is the network architecture of choice for object detection and recognition. This makes them ideal for computer vision (CV) tasks and applications where object recognition is important, such as self-driving cars and face recognition.

Convolution neural network:CNN is a feed-forward neural network used to analyze visual images by processing data with a mesh-like topology. CNN is also known as ConvNet. CNN was created by Yann LeCun. He is the director of Facebook's AI research team and founded the first CNN in 1988, LeNet.

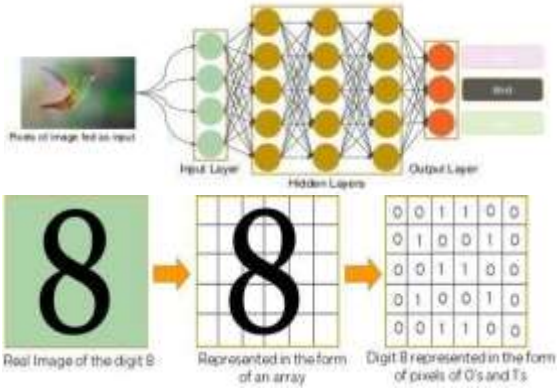

Fig 2: Convolution neural network

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HiddenLayer

Perform special calculations and manipulations to extract features. This part is where the reorganization of pictures is done in multiple ways until we get data easy to read by neural networks. There are multiple hidden layers like

Convolution layer:.This layer uses a matrix filter and performs a convolution operation to find patterns in the image. In machine learning, filters are used in image processing. It can blur the image, blur the image, adjust the edges of the image, etc. used, the filter is generally a 3 x 3 matrix. If the image array is larger than the size of the filter array, move the filter matrix over the image and calculate the dot product to detect patterns.

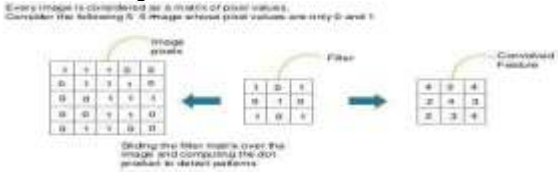

Fig 3: Hidden Layer

Pooling layer: Improved feature map now passes through the pooling layer. It uses different filters to identify different parts of the image like edges, corners, eyes etc.

Fig 4: Pooling Layer

Before sending the pooled featured map to the output layer the flattening process takes place. Flattening is the process of converting all the resulting two dimensional arrays from a pooled feature map into one long linear vector.

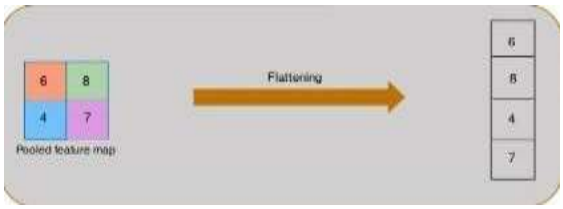

Fig 5: Pooling layer - Linear vector

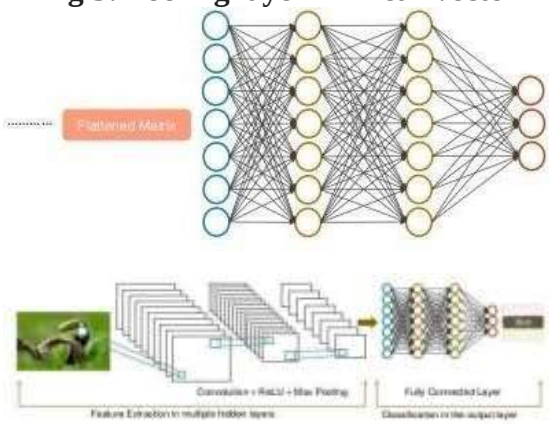

Fig 6: Pooling Layer Arrays

Local Binary Pattern Algorithm:

1. LBP is a simple yet very efficient texture operator that labels the pixels of an image by thresholding the neighborhood of each pixel and treats the result as a binary number. It was first described in 1994 (LBP) and has since been found to be a powerful feature for texture classification. It is further determined that when LBP is combined with Histograms of

Oriented Gradients (HOG) descriptors, it significantly improves detection performance on some datasets.

2. Using LBP combined with a histogram we can represent face images with simple data vectors.
3. Gradually
4. Now that we know a little more about face recognition and LBPH, let's go ahead and look at the algorithm steps.
5. **Parameters**: the LBPH uses 4 parameters:

1. **Radius**: Radius is used to create circular local binary patterns and represents the radius around the central pixel. It is usually set to 1.
2. **Neighbors**: Number of sample points to form a circular local binary pattern.
   Keep in mind: the more sample points you include, the higher the computational cost. It is usually set to 8.
3. **Grid X**: Number of cells in horizontal direction. The more cells, the finer the grid and the higher the dimension of the resulting feature vector. It is usually set to 8.
4. **Grid Y**: Number of cells in vertical direction. The more cells, the finer the grid and the higher the dimension of the resulting feature vector. It is usually set to 8.

6. **Training the Algorithm:**

First, we need to train the algorithm. To do so, we need to use a dataset with facial images of the people we want to recognize. We also need to set an ID (it can be a number or a person's name) for each image, so the algorithm will use this information to identify the input image and give you the output. Images of the same person must have the same ID. With the training set already prepared, let's look at the LBPH computational steps.

7. **Applying the LBP operation**: The first computational step of LBPH is to create an intermediate image that better describes the original image, highlighting facial features. To do so, the algorithm uses the concept of a sliding window, based on the radius and neighbors of the parameter.

8. **DATABASE TABLES:**

Missing child table

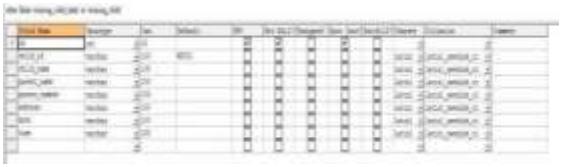

Fig 7: Missing Child Table

Police station Table:

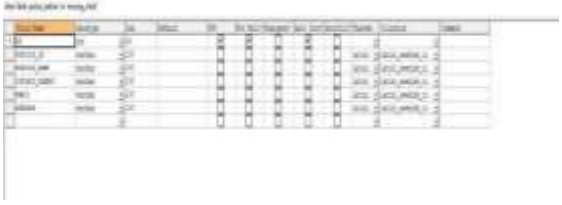

Fig 8: Police Station Table

Missing Child Identification Details Table:

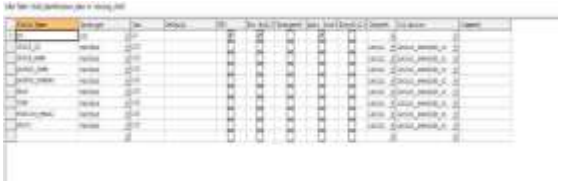

Fig 9: Child Identification Table

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IV. RESULTS

Home page:

Fig 10: Home Page

About page:

Fig 11: About Page

Admin LoginR Page:

Fig 12: Admin Login Page

Add Police Station Details:

Fig 13: Add Police Station Page

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Add and Train the Missing Child Data Page:

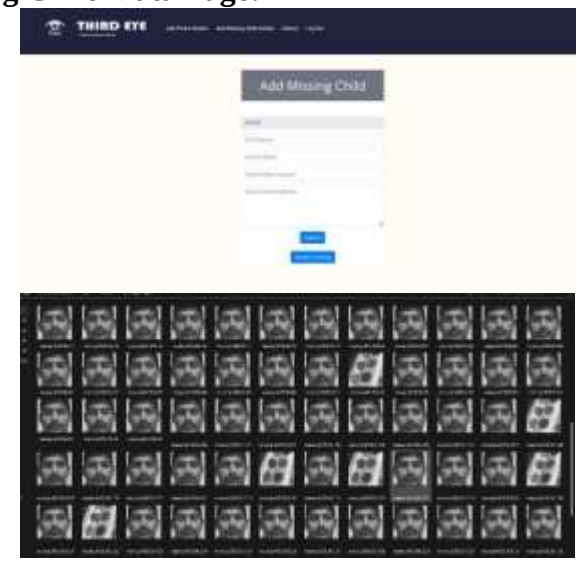

Fig 14: Add and Train missing child Page

Recognizing the missing person:

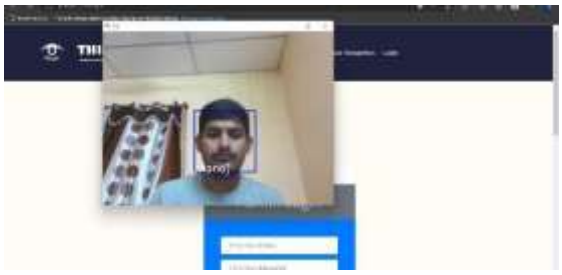

Fig 15: Recurring the Missing Person Page

Receiving SMS in parent mobile:

Fig 16: SMS Received in Mobile

V. CONCLUSION

Overall the project is being developed to help the citizens as well as police to solve the missing or prevent it before its occurrence. Here only the admin can add the faces to the system. When a person is in an emergency there are two possible chances, they are having time to scan the image of the suspect then they can scan and press the emergency button then the image of the sushi ect along with the user, location, and user details are sent to volunteers. Second, the user is not having time to scan the image of the suspect then can directly click on the emergency button then the image of the user, location, and user details, along with the image of the things which is present in front of the camera at the click on the emergency button

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