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Online Crime File Management System

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ABSTRACT

Crimes are at rise and becoming difficult for police to identify and catch the criminals. This increasing crime rate can be reduced by giving alert to the person before its occurrence. Our Proposed System will use Face Recognition Algorithms to detect Criminals and will also use face expressions detection to detect expressions of the person. Face Recognition and Face Expression begins with extracting the coordinates of features such as width of mouth, width of eyes, pupil, and compare the result with the measurements stored in the database and return the closest record (facial metrics).The system will be running in detection mode [i.e scanning] .If a person is feeling uncomfortable with people surrounded by him/her, can scan their face and find out whether that particular person has any crime record or not. If the person is having a crime record then the word criminal is displayed on the screen. If the person is not having any crime record but still he/she is feeling uncomfortable then they can use the emergency button, click on the emergency button then the location of user, image of the suspect and user, and a message for rescue is sent to the volunteers of the system. Here volunteers are the persons, who will register into the system in order to help the people in need.

Keywords : Criminal dataset, Face recognition, Detection.

I. INTRODUCTION

Crimes are at rise and becoming difficult for police to identify and catch the criminals. This increasing crime rate can be reduced by using face recognition algorithm and by giving alert message to the person before its occurrence. Our Proposed System will use Face Recognition Algorithms to detect Criminals and will also use facial expressions to detect bad intent. Face Recognition and Face Expression begins with extracting the coordinates of features such as width of mouth, width of eyes, pupil, and compare the result with the measurements stored in the database and return the closest record (facial metrics).If a person is feeling uncomfortable with people surrounded by him/her, can scan their face and find out whether that

particular person is having any crime record or not. If the person is having crime record then the alert message is displayed. If the person is not having any crime record but still he/she is feeling uncomfortable then they can sharethe images and other details.

II. RELATED WORKS

Mayuri S.Takore & Pallavi R.Wankhade , Criminal Face Identification System, International Journal for research in applied science and engineering technology, June 2018.

In practice, identification of criminal in Malaysia is done through thumbprint identification. However, this type of identification is constrained as most of criminal nowadays getting cleverer not to leave their thumbprint on the scene. With the advent of security technology, cameras especially CCTV have been installed in many public and private areas to provide surveillance activities. The footage of the CCTV can be used to identify suspects on scene. However, because of limited software developed to automatically detect the similarity between photo in the footage and recorded photo of criminals, the law enforce thumbprint identification. In this project, an automated facial recognition system for criminal database was proposed using known python programming language. This system will be able to detect face and recognize face automatically. This will help the law enforcements to detect or recognize suspect of the case if no thumbprint present on the scene.

Yang Yang, Zheng-Jun Zha, Heng Tao Shen and TatSeng Chua, "Robust Semantic Video Indexing by HarvestingWeb Images", S. Li et al. (Eds.): MMM 2013.

Semantic video indexing, also known as video annotation, video concept detection in literatures, has attracted significant attentions recently. Due to the scarcity of training videos, most existing approaches can scarcely achieve satisfactory performances. This paper proposes a robust semantic video indexing framework, which exploits user-tagged web images to assist learning robust semantic video indexing classifiers. The following two challenges are well studied: (a) domain difference between images and videos; and (b) noisy web images with incorrect tags. Specifically, we first estimate the probabilities of images being correctly tagged as confidence scores and filter out the images with low confidence scores. We then develop a robust image-to-video indexing approach to learn reliable classifiers from a limited number of training videos together with abundant user-tagged images. A robust loss function weighted by the confidence scores of images is used to further alleviate the influence of noisy samples. An optimal kernel space, in which the domain difference between images and videos is minimal, is automatically discovered by the approach to tackle the domain difference problem. Experiments on NUS-WIDE web image dataset and Kodak consumer video corpus demonstrate the effectiveness of the proposed robust semantic video indexing framework.

Chih-Chin Lai; Ying-Chuan Chen, "A User-Oriented Image Retrieval System Based on Interactive Genetic Algorithm", IEEE Transactions on Instrumentation and Measurement, Volume: 60 , Issue: 10, 2011

Digital image libraries and other multimedia databases have been dramatically expanded in

recent years. In order to effectively and precisely retrieve the desired images from a large image database, the development of a content-based image retrieval (CBIR) system has become an important research issue. However, most of the proposed approaches emphasize on finding the best representation for different image features. Furthermore, very few of the representative works well consider the user's subjectivity and preferences in the retrieval process. In this paper, a user-oriented mechanism for CBIR method based on an interactive genetic algorithm (IGA) is proposed. Color attributes like the mean value, the standard deviation, and the image bitmap of a color image are used as the features for retrieval. In addition, the entropy based on the gray level co-occurrence matrix and the edge histogram of an image are also considered as the texture features. Furthermore, to reduce the gap between the retrieval results and the users' expectation, the IGA is employed to help the users identify the images that are most satisfied to the users' need. Experimental results and comparisons demonstrate the feasibility of the proposed approach.

Beecks, C.; Uysal, M.S.; Seidl, T., "A comparative study of similarity measures for content-based multimedia retrieval", IEEE International Conference on Multimedia and Expo (ICME), 2010.

Determining similarities among data objects is a core task of content-based multimedia retrieval systems. Approximating data object contents via flexible feature representations, such as feature signatures, multimedia retrieval systems frequently determine similarities among data objects by applying distance functions. In this paper, we compare major state-of-the-art similarity measures applicable to flexible feature signatures with respect to their qualities of effectiveness and efficiency. Furthermore, we study the behavior of the similarity measures by discussing their properties. Our findings can be used in guiding the development of content-based retrieval applications for numerous domains.

Existing System:

In the existing system, we can see the details of particular information about the police stations in our state, the existing system has more workload for the authorized person, but in the case of Proposed System, the user can register in our site and send the crime report and complaint about a particular city or person.

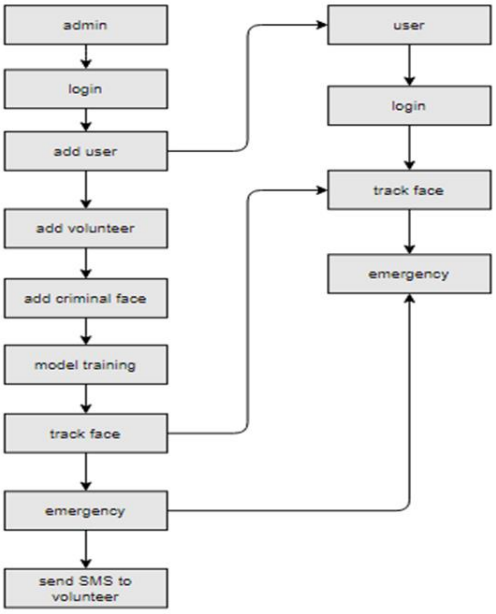
Disadvantages:

- More man power.
- Time consuming.
- No direct role for the higher officials.
- Damage of machines due to lack of attention.

Proposed Method:

Our Proposed system will be using advanced algorithms and use the one which is better 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 criminal identification system integrated with human facial expression recognition. The facial recognition system can detect the expression of a person in camera view and displays the expression on the screen. In case of emergency, the user can sharethe images, location and other details

Block diagram:



Algorithms:

We have used two algorithms in our system. They are convolutional neural networks and local binary patterns.

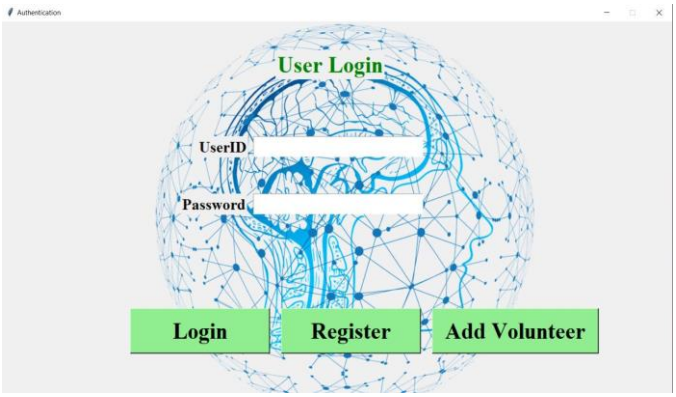
Convolutional neural network:

CNN is a feed forward neural network that is generally used to analyze visual images by processing data with a grid like topology.

CNN is also known as "ConvNet".

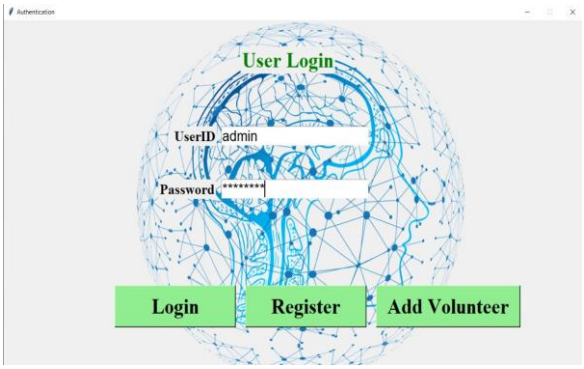
CNN was invented by "Yann LeCun". He was the director of Facebook's AI research group and built the first CNN called LeNet in 1988.

Input Layer: Accepts the pixels of images as input in the form of arrays.

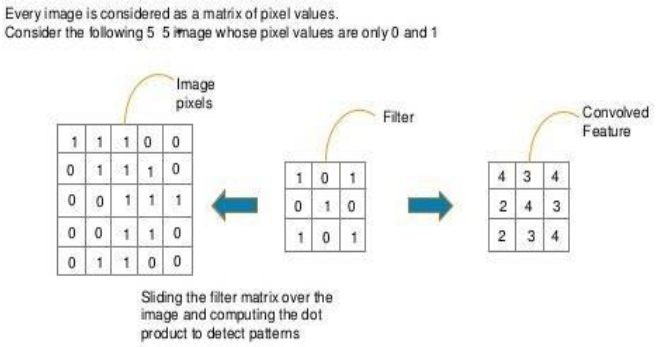


Hidden Layer: Carry out feature extraction by performing certain calculation and manipulation. This part where the reorganization of pictures is done in multiple ways until we get data easy to read by neural networks. There are multiple hidden layers like

Convolution layer: This layer uses a matrix filter and performs convolution operation to detect patterns in the image. In machine learning, filters are used in image processing. They are used to blur the image,



sharpen the image, make the edges of images etc. generally filters are 3 x 3 matrices. If the image array is greater than the filter array size then slide the filter matrix over the image and compute the dot product to detect patterns.



ReLu layer : Activation function is applied to the convolution layer to get a rectified feature

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

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

Output Layer: it is also known as fully connected layer. After the flattening process the flattened matrix is fed as input to the fully connected layer to classify image.

III. Results

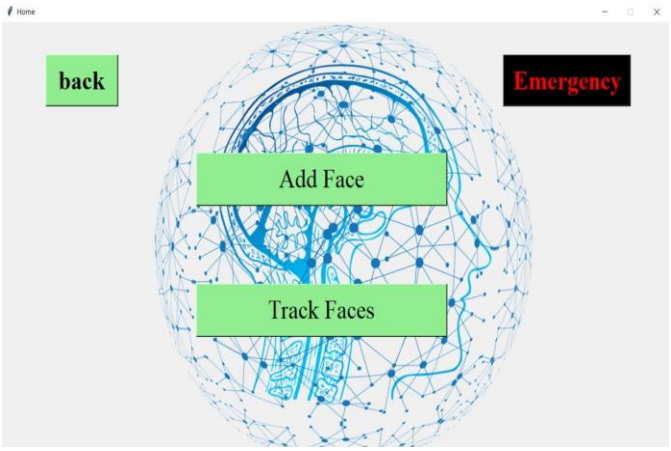
Screenshot, sometimes referred to as a screengrab, is an image that shows the contents ofa computer display.

1) **HOME PAGE:**

The user login is a page where the user and admin can login. This is the common page for all the users before login. This page consists of login. Register, add volunteer buttons. Click on Register, the registration form for user is opened. Click on Add volunteer, the registration form for volunteer is opened

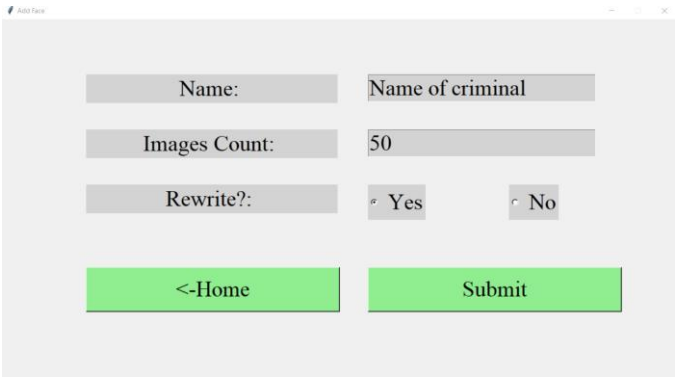
After entering the admin user id and password the below page is opened

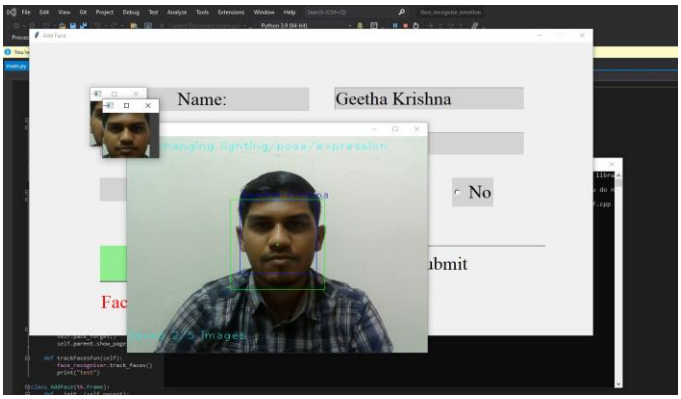
Admin Home Page:



The admin page consists of back option, which returns admin to the login page. Add face option, is used to add the criminals into the system. Track faces option, is used to scan the suspect face and know whether the particular person is criminal or not. Click on emergency button, the admin location is sent to the volunteer

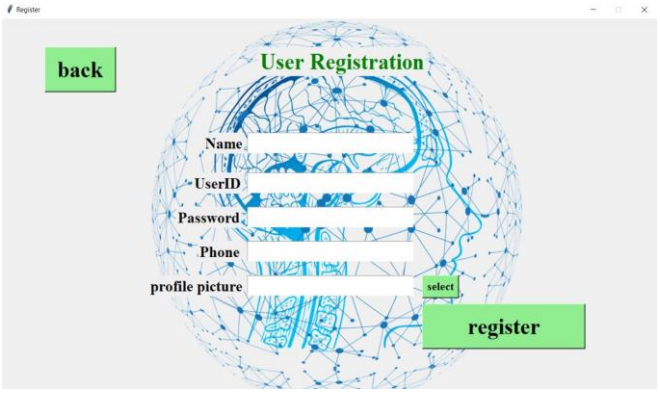
Add Face:



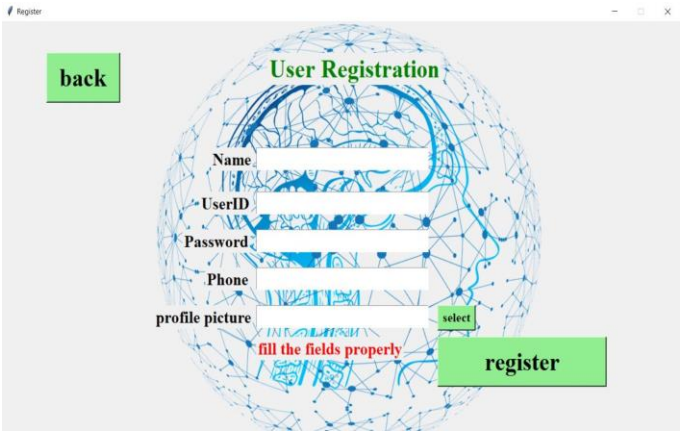


When admin clicks on add face option ,the above form is opened. This form consists of name and image count fields. Rewrite option. Home and submit button. Click on submit button the camera is opened and the image of criminal is taken with different angles. If the similarity is found between any two images then the window will display to change the position of the face.

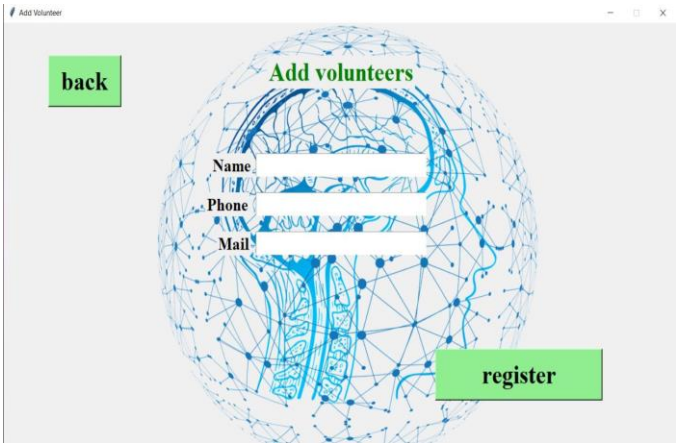
User Registration:



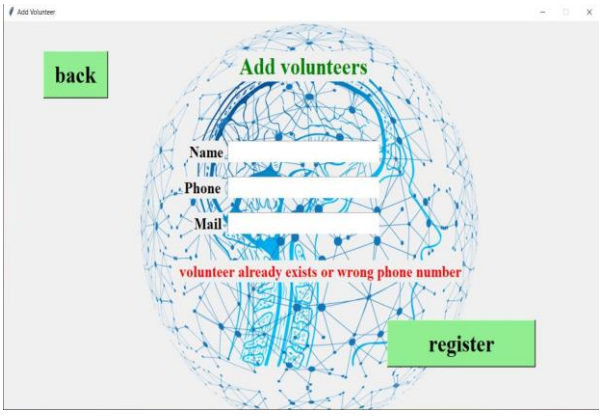
The user registration from consist of the above fields. If field is left empty then the below window will be opened with message.



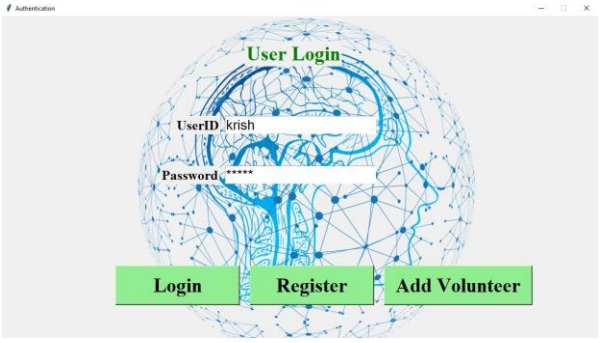
Volunteer Registration:



The volunteer registration from consist of the above fields. If field is left empty then the below window will be opened with message

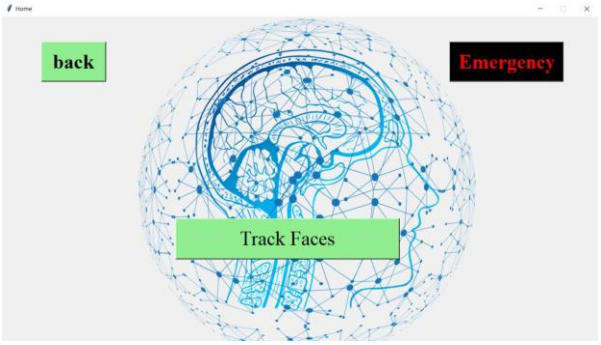


User Login:



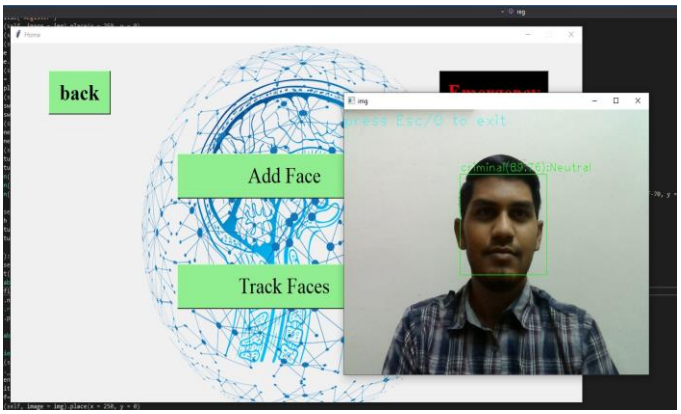
When the user enters valid user details and login then the below window will be opened.

User Home Page:



The User page consists of back option, which returns admin to the login page. Track faces option, is used to scan the suspect face and know whether the particular person is criminal or not. Click on emergency button, the user location is sent to the volunteer

Track Faces:



When the user clicks on track face option then the camera window will be opend as shown in above screen shot. This is used to scan the image of the suspect. If the suspect has the crime record then the suspect will be labelled as criminal as shown in the above screen shot. or else the expression of the suspect is detected and labelled.

Emergency Button:

When the emergency button is clicked then the emergency button turns to white colour. After the mail is sent to the volunteers the emergency button turns back to black. The above is the mail screenshot sent to the volunteers.

The email body consists of message " Emergency please help 'user name' with phone number 'xxxxxxxxxx' " .

The email also conists of image of user and also image that is present in front of camera when the emergency button is pressed.

This system send the sms to all the volunteers from the user mobile. This sms consists of general message and location details of user.

IV. CONCLUSION

Overall the project is being developed to help the citizens as well as police to solve the crime or prevent it before its occurrence. Here only the admin can add the criminals into the system. When a person is in emergency there are two possible chances, one they are having time to scan the image of the suspect then they can scan and press the emergency button then the image of suspect along with 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 user, location and user details, along with the image of the things which is present in front of the camera at the click on emergency button.

V. FUTURE SCOPE

There can be many enhancements in the crime prevention system to take it to the next level. In this system we are using CNN algorithm but if in future there can be many algorithms which can give the better accuracy and takes less time then this can be replaced. In this system when user gets panic and click on emergency button and then they realize that there no need to get panic they cannot recollect the call for help and stopthe unnecessary panic situation

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