Hostel Attendance Management System Using Face Recognition

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ABSTRACT

In building an attendance system which utilizes facial recognition to mark the presence, time-in, and time-out ofemployees. It covers areas such as facial detection, alignment, and recognition, along with the development of a webapplication to cater to various use cases of the system such as registration of new employees, addition of photos to thetraining dataset, viewing attendance reports, etc. In intends to serve as an efficient substitute for traditional manual attendance systems. It can be used in corporate offices, schools, and organizations where security is essential.

Keywords: Face recognition, Convolutional Neural Network, Student details, Attendance, Database.

I. INTRODUCTION

IMAGE PROCESSING

Image processing is a way to convert an image to a digital aspect and perform certain functionson it, in order to get an enhanced image or extract otheruseful information from it. It is a type of signal time when the input is an image, such as a video frame or image and output can be an image or features associated with that image. Usually, the Image Processing system includes treating images as two equal symbols while using the set methods used. It is one of the fastest growing technologies today, with itsuse in various business sectors. Graphic Design formsthe core of the research space within the engineering and computer science industry as well. Image processing basically involves the following three steps. Importing an image with an optical scanner or digital photography. Analysis and image managementincluding data compression and image enhancement and visual detection patterns such as satellite imagery.It produces the final stage where the result can be changed to an image or report based on image analysis.Image processing is a way by which an individual canenhance the quality of an image or gather alerting insights from an image and feed it to an algorithm to

predict the later things. The growing popularity of digital photography demands every attempt of improvement in terms of quality and speed of the features provided in digital cameras.

COLOR FILTER ARRAY

The heart of a digital still or video camera is its sensor,a 2-D array of photosites that measure the amount of light absorbed during the exposure time. The color information is obtained by means of a color filter array(CFA) overlaid on the sensor, such that each photositeis covered by a color filter sensitive to only a portion of the visible light spectrum. From the mosaicked image acquired by the camera, some processing is required to recover a full color image with three components per pixel, carrying information in the red(R), green (G) and blue (B) spectral bands to which thehuman visual system (HVS) is sensitive. This reconstruction operation is called demosaicking and references therein.The proposed CFA has a natural and simple demosaicking algorithm associated to it,inspired by its characteristics in the Fourier domain. This demosaicking process amounts to separate the frequency content of the mosaicked image into the luminance and chrominance channels of the reconstructed image. Demosaicking by frequency selection was first explained by Dubois, for the BayerCFA . Let us recall his method, with our notations. Demosaicking by frequency selection consists of the following steps, where we denote by the demosaickedimage, which aims at estimating.

II. PROPOSED SYSTEM

The task of the proposed system is to capture the face of each student and to store it in the database for their attendance. The face of the student needs to becaptured in such a manner that all the feature of the students' face needs to be detected, even the seating and the posture of the student need to be recognized. There is no need for the teacher to manuallytake attendance in the class because the system records a video and through further processing steps the face is being recognized and the attendance database isupdated.

ALGORITHM
- Convolutional Neural Network (CNN)operates from a mathematical perspective and is a regularized variant of a class of feed forward artificialnetwork (ANN) known as multilayer perceptron's that generally means fullyconnected networks.
- Convolutional Neural Network is a Deep Learning algorithm Which can take in an input image, assign importance to various aspects object inthe image and be able to differentiate one from each other.

ADVANTAGES:
- ➢ Low cost system is used .
- ➢ No special external hardware is needed.
- ➢ Software based system leading to low chanceof complete system failure.

III. SYSTEM ARCHITECTURE
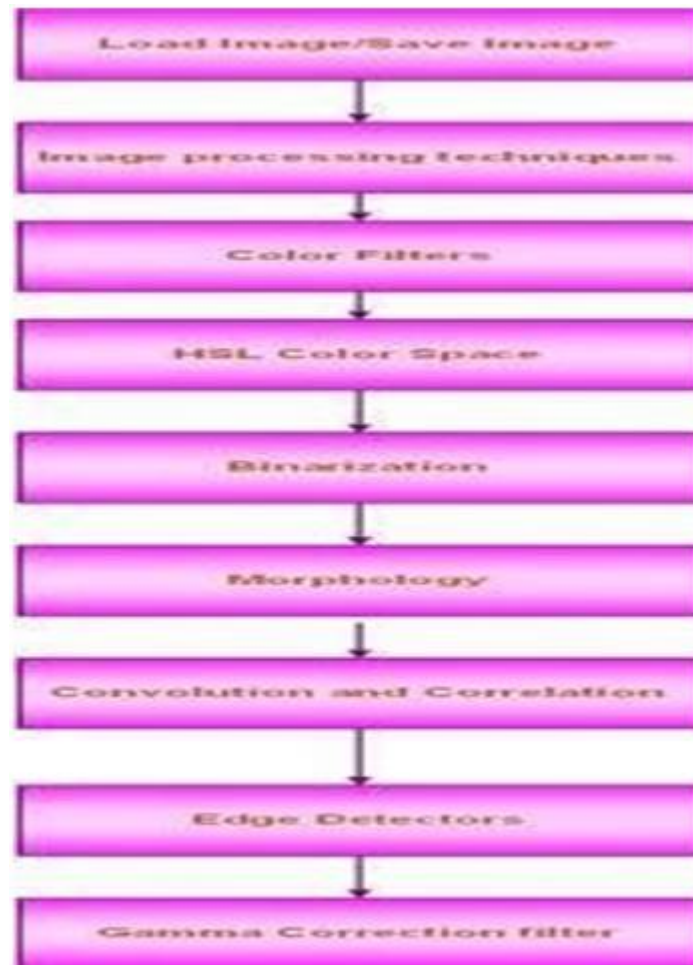
IV. MODULES

LIST OF MODULES
- Manage registration and login
- Manage attendance details
- Manage student details
- Register new student

Mark your attendance-in correct, user will be redirected to the dashboardof the system Exception
- Log-in to the system
- Mark your attendance-in
- Mark your attendance-out
- View my attendance report
- View student attendance report

V. MODULE DESCRIPTION

Manage registration andlogin
- Register new Student
- Log-In to the system

Manage attendance details
- Mark your attendance-in
- Mark your attendance-out
- View my attendance report
- View Students attendance report

Manage student details
- Add photo of the Student
- Train the system

Register new student

Description   : Admin can register new

Input   : Student Details

Output   :Success message displayingthe user has been created.

Log-in to the system

Input   : User credentials

Output : If the credentials are

Input   : User will scan his/her face usingthe external web camera.

Output : system will identify the useruniquely and will mark his/her in-time to the database. The same success message will be transmitted to the user.

Mark your attendance-out

Input   : User will scan his/her face usingthe external web camera.

Output : System will identify the user uniquely and will mark his/her out-time to the database. The same success message will be transmitted to the user.

View my attendance report

Description : Employee may often need to seehis / her attendance record throughout the monthor year. Using this feature one can see his / her attendance record till the date.

Input   : User selection

Output : Statistical analytics of the particular employee who is currently loggedinto the system will be displayed.

View student attendance report

Description : This feature is for admin. Admincan monitor the availability of each employee till the date. i.e., how many employees are present today out of total employees etc. can bemonitored.

Input   : User selection

Output : Attendance record of each employee including how many employees are present today out of total along with the availability graph.

VI. IMPLEMENTATION

Implementation is the stage of the project when the theoretical design is turned out into a working system. Thus it can be considered to be the most critical stage in achieving a successful new system and in giving the user, confidence that thenewsystem will work and be effective. Theimplementation stage involves careful planning, investigation of the existing system and it's constraintson implementation, designing of methods to achieve changeover and evaluation of changeover methods.

VII.   CONCLUSION

As a result of this literature survey we aim to get a more accurate face recognition based attendance system, we aim to get accuracy up-to 95% and also using this attendance system will also help the students to geta safe & touch less entry. And also it will easy to maintain the attendance

VIII.   FUTURE ENHANCEMENT

The project has a very vast scope in future. Theproject can be implemented on intranet in future. Projectcan be updated in near future as and when requirement for the same arises, as it is very flexible in terms of expansion. With the proposed software of database Space Manager ready and fully functional the client is now able to manage and hence run the entire work in a much better, accurate and error free manner. The following are the future scope for the project.

IX. REFERENCES

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