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FUTURISTIC DESIGN THINKING-BASED HOSTEL CHECK-IN SYSTEM

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ABSTRACT

In this digital era, face recognition system plays a vital role in almost every sector. Face recognition is one of the mostly used biometrics. It can used for security, authentication, identification, and has got many more advantages. Despite of having low accuracy when compared to iris recognition and fingerprint recognition, it is being widely used due to its contactless and non-invasive process. Furthermore, face recognition system can also be used for attendance marking in schools, colleges, offices, etc. This system aims to build a class attendance system which uses the concept of face recognition as existing manual attendance system is time consuming and cumbersome to maintain.

Consequently, preliminary segmentation of images into regions that contain "non-face" objects and regions that may contain "face" candidates can greatly accelerate the process of human face detection. In our project we have implemented to check whether a person is hosteller or dayscholor and automatically marking attendance system for hosteller using facial detection. The system is developed for deploying an easy and a secure way of taking down attendance and security purpose for hostel students.

KEYWORDS: Python, Visual studio.

INTRODUCTION

OVERVIEW

Facial recognition technology is a set of algorithms that work together to identify people in a video or a static image. This technology has existed for decades, but it has become much more prevalent and innovative in recent years. One such innovation is the integration of **artificial intelligence** (AI) within facial recognition systems. Intelligent, AI-based software can instantaneously search databases of faces and compare them to one or multiple faces that are detected in a scene.Everyday actions are increasingly being handled electronically, instead of pencil and paper or face to face. This growth in electronic transactions results in great demand for fast and accurate user identification and authentication.Face recognition technology can solve this problem since a face is undeniably connected to its owner expect in the case of identical twins.

PROBLEM DESCRIPTION

Hostel check-in and Automated Attendance System for hostel using Face Recognition proposes that the system is based on face detection and recognition algorithms, which is used to automatically detects the student face when he/she enters the hostel and the system is capable to marks the attendance by recognizing him.When it is compared to traditional attendance marking and identifying the person whether he/she is hosteller or not we have introduced this system which saves the time and also helps to monitor the students and security of the students.

PURPOSE AND IMPORTANCE

Use of face recognition for the purpose of Hostel check-in and attendance marking is the smart way of security for hostel students and hostel attendance management system. Face recognition is more accurate and faster technique among other techniques and reduces chance of proxy attendance. Face recognition provide passive identification that is a person which is to be identified does not to need to take any action for its identity.Face recognition involves two steps, first step involves the detection of faces and second step consist of identification of those detected face images with the existing database.There are number of face detection and recognition methods introduced. Face recognition works either in form of appearance based which covers the

features of whole face or feature based which covers the geometric feature like eyes, nose, eye brows, and cheeks to recognize the face.

DOMAIN OVERVIEW

Artificial Intelligence (AI) is a vast subset of computer science revolving around the development of smart machines that can perform tasks that typically need some semblance of human intelligence. It is a multi-faceted, interdisciplinary science, but modern advancements in deep learning and machine learning are bringing it into nearly every area of the tech industry.The basic way that AI in facial recognition works is that you begin with a tagged feature set. Essentially, you are starting with photos that have existing, hand-matched correlations to the people involved. There needs to be an initial, manual correlation between a person's face and the rest of their identity. And once that gets started, it becomes steadily easier to identify faces in pictures of people "in the wild" – so to speak, in which pictures that aren't as clear are matched to that data set.

PYTHON

Python is an interpreted high-level general-purpose programming language. Its design philosophy emphasizes code readability with its use of significant indentation. Its language constructs as well as its object-oriented approach aim to help programmers write clear, logical code for small and large-scale projects.Python is dynamically-typed and garbage collector. It supports multiple programming paradigms, including structured (particularly, procedural), object-oriented and functional programming. It is often described as a "batteries included" language due to its comprehensive standard library.

OPENCV

OpenCV (Open-Source Computer Vision Library) is a library of programming functions mainly aimed at real-time computer vision. Originally developed by Intel, it was later supported by Willow Garage then Itseez (which was later acquired by Intel). The library is cross-platform and free for use under the open-source Apache 2 License. Starting with 2011, OpenCV features GPU acceleration for real-time operations.

EXISTING SYSTEM

The existing system describes the evolution of traditional check-in system that the data will be carried out in the handwritten registers it will be a tedious job to maintain the record for the user. The human effort is more here. The retrieval of the information is not as easy as the records are maintained in the handwritten registers.This application requires correct feed on input into the respective field. Suppose the wrong inputs are entered the application resist to work. So the user finds it difficult to use.

PROPOSED SYSTEM

To overcome the drawbacks of the existing system the proposed system has been evolved. This project aims to reduce the paper work and saves time to generate accurate results from the student's database. The system provide with the best user interface. This project proposes an AI based Hostel check-in and attendance system using facial recognition. The main feature of this project is to identify the hostel students and mark their attendance which provides more security for Hostel students and automatically mark their attendance in hostel. Here an Arduino is used to control the movements of the camera for capturing the images and a Buzzer is used to produce sound when a dayscholor student tries to enter the hostel.

ADVANTAGES OF PROPOSED SYSTEM

- The efficient reports can be generated by this system.
- It requires no physical interaction on behalf of the user.
- It is accurate and allows for high enrollment and verification rates.

TOOLS & TECHNOLOGIES

Development Tools

- Visual Studio
- Database Management System
- MySQL
- Operating System
- Windows 7 or latest
- Other Tools/Technologies
- HTML
- CSS

- JavaScript
- jQuery

TESTING

OBJECTIVE

Testing is the way towards executing a program by removing the bugs. This section includes detection of errors in any case, not the accuracy of a program. Testing is the significant quality measure utilized during software development. After coding phase, computer programs are available for testing purpose. An essential part of a test case is a definition of the expected output or conclusions. A programmer should avoid trying to test his or own program. A programming company should not test its own program. Test cases must be composed unexpected, expected, valid and invalid conditions. The probability of the errors in a program is proportional to the number of bugs found. System testing is really a series of various tests whose main role is to completely practice the computer-based system and the reason for each test is different.

During testing we confirm that the product is doing exactly according to our demand. Testing is the last verification and validation action. In the testing phase we attempt to accomplish the following objectives to ensure the quality of the product, to find and eliminated the bugs, to detect functionalities of the product, to approximate the accuracy of the system.

UNIT TESTING

In this section module examination and integration of overall system is included. Unit testing focuses on verification efforts deeply. This is also known as “Module Testing”. Each module of the system is tested separately. In this testing each module is focused to work and the testing process is done in programming style. Each module should be work like that as the developer expected.

INTEGRATION TESTING

Data can be lost across an interface. In the parallel integration of modules chances of errors enhanced. The objective is to take unit tested modules and to combine them and test it as a whole.

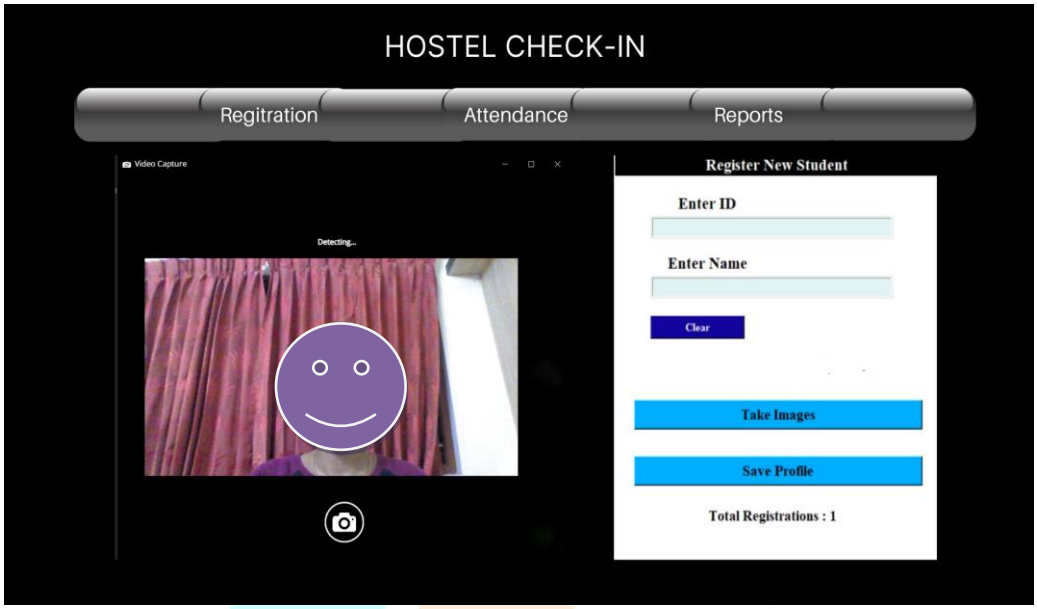
VALIDATION TESTING

Validation describes the process of using software in a real environment to reduce the chances of errors. The feedback in the validation process generally describes the change in the software to find errors and failures for the betterment of the software. Validation may continue for several months. During the course of validating the system, failure may occur and the software will be changed. Continuously usage may cause additional failures and requirements of some more changes.

RESULTS AND DISCUSSION

Hostel check-in and Automated Attendance System for hostel using Face Recognition proposes that the system is based on face detection and recognition algorithms, which is used to automatically detects the student face when he/she enters the hostel and the system is capable to marks the attendance by recognizing him. When it is compared to traditional attendance marking and identifying the person whether he/she is hosteller or not we have introduced this system which saves the time and also helps to monitor the students and security of the students. The efficient reports can be generated in this system and it requires no physical interaction on behalf of the user. This system is accurate and allows for high enrollment and verification rates and it can use your existing hardware infrastructure, existing cameras and image capture Devices will work with no problems.

FINAL OUTPUT



CONCLUSION

Face detection plays an important role in applications such as human computer interface, face recognition video surveillance and face image database management. This project aims to reduce the paper work and saves time to generate accurate results from the student's database. The system provides with the best user interface. This project proposes an AI based Hostel check-in and attendance system using facial recognition. The main feature of this project is to identify the hostel students and mark their attendance which provides more security for Hostel students and automatically mark their attendance in hostel.

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