Face Recognition Based Smart Attendance System Using IOT

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Abstract— **Nowadays education system going smart, the learning system is going advance for improving the student education level and developing practical knowledge. For that student present is must in schools and colleges. The main objective of our project is face recognition attendance in student's using IOT based attendance system. We are verifying attendance using face recognition using python; the project 'Real time attendance maintenance system using face recognition' is mainly used to maintain the attendance details of the student this is done with the help of image processing. The individual student details are stored in Arduino microcontroller. The python based smart attendance and put present for that student and teacher also monitor student daily, monthly attendance details is stored IOT server. It will produce a real time attendance monitoring systemthat can be accessed by various parties, such as lecturer, campus administration and parents. With this monitoring system if there are students who are not present can be immediately discovered and can be taken immediate action andthe learning process can run smoothly.**

Keywords: Digital attendance monitoring, secure attendance maintenance system.

1. INTRODUCTION

One of the factors that support the success of the learning system is the presence of students, because if students are often absent then the material they received becomes less and can't understand the material that has been taught, one that causes the absence of students is they ditch, so the attendance monitoring system becomes very important because with this process the attendance of students can be monitored properly. Various kinds of presences can be used from manual way to automatic way using electronic equipment, if the monitoring system. attendance using electronic equipment so the recording of attendance data becomes easier, fast and accurate. In this research, attendance monitoring system using face recognition technology and with the application of Internet of Things (IoT) and cloud technology will be obtained a presence system that can run and monitored in real time, sothat all parties who need information such as lecturers, parents, and energy the administration can immediately find out if there are students who skip classroom, it can immediately be prevented so that the next meeting does not ditch again.

2. EXISTING SYSTEM

The security system is basically an embedded one. Embedded stands for hardware controller by software. Here software using microcontroller controls all the hardware components. The microcontroller plays an important role inthe system. The main objective of the system is to uniquely identify and to make security fora person. This requires a unique product, which has the capability of distinguishing different person. This is possible by the new technology called RFID. The main parts of the RFID system are RFID tag and RFID reader. In this system the RFID reader and RFID tag used are operating at 125KHz. The microcontroller internal memory is used for storing the details. This report provides aclear picture of hardware and software used in the system. Italso provides an overall view with detailed discussion of theoperation of the system. The followings are draw backs of the existing system.

3. PROPOSED SYSTEM

The main objective of our project is face recognition attendance in student's using IOT based attendance system proposed system tries to address the problem

of attendance management when face images are taken in different head pose conditions. Facerecognition-based attendance monitoring system used the photograph of the entire classroom to identify and verify the faces of the individual student. It increases the security and accuracy ofattendance management because of secure authentication.
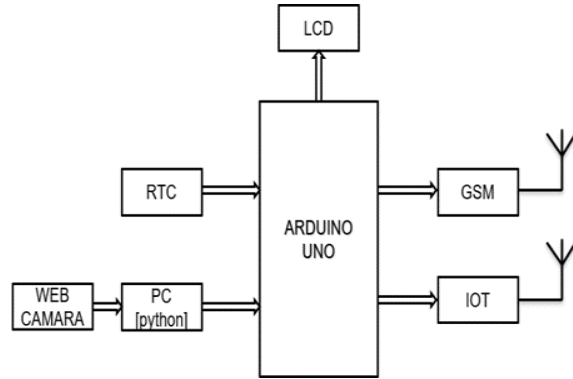

Figure 1: Proposed System Block Diagram.

4. HARDWARE USED

- Arduino Uno
- LCD display
- GPS
- WIFI

5. ARDUINO UNO

Arduino/Genuino Uno is a microcontroller boardbased on the ATmega328P. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button.

Figure 4: Arduino board

6. LCD Display

Figure 2: LCD display with Reading

A liquid crystal display (LCD) is a thin, flat electronic visual display that uses the light modulating properties of liquid crystals (LCs). LCs does not emit light directly. They are used in a wide range of applications including computer monitors, television, instrument panels, aircraft cockpit displays, signage, etc.

7. GPS

We're interested in designing, building, and testing a GPS antenna that would be implemented on the body or inside ofa vehicle. This antenna would be different than others on themarket in that it would not only utilize the L1 frequency (1575.42 MHz), but also the L5 frequency (1176.45 MHz) tobe introduced in the future. Our goal is to also make it interoperable with the European counterpart to GPS, Galileowhich uses 1164–1214 MHz and 1563–1591 MHz bands.

8. WIFI

A Wi-Fi-enabled device as shown in Figure 4.4, such as a personal computer, video game console, smartphone or digital audio player, can connect to the Internet when within range of a wireless network connected tothe Internet. The coverage of one or more (interconnected)access points called hotspots comprises an area as small as a few rooms

Figure 3: WIFI

Routers that incorporate a digital subscriber line modem or a cable modem and a Wi-Fi access point, often set up in homes and other buildings, provide Internet access and internetworking to all devices

tuned into them, wirelessly or via cable. With the emergence of MiFi and WiBro (a portable Wi-Fi router) people can easily create their own Wi-Fi hotspots that connect to Internet via cellular networks. Now iPhone, Android, Bada and Symbian phones can create wireless connections. One can also connect Wi-Fi devices in ad-hoc mode for client-to-client connections without a router. Wi-Fi also connects places normally without network access, such as kitchens and garden sheds.

9. INTERNET OF THINGS

The Internet of things (IoT) is the network of physical devices, vehicles, home appliances, and other items embedded with electronics, software, sensors, actuators, and connectivity which enables these things to connect, collect and exchange data. IoT involves extending Internet connectivity beyond standard devices, such as desktops, laptops, smartphones and tablets, to any range of traditionally *dumb* or non-internet-enabled physical devices and everyday objects. Embedded with technology, these devices can communicate and interact over the Internet, and they can be remotely monitored and controlled. With the arrival of driverless vehicles, a branch of IoT, i.e. the Internet of Vehicle starts to gain more attention. The definition of the Internet of things has evolved due to convergence of multiple technologies, real-time analytics, machine learning, commodity sensors, and embedded systems.

Figure 4: Internet of things

10. SOFTWARE REQUIRMENTS

The Arduino Uno can be programmed with the Arduino Select "Arduino Uno from the Tools > Board menu (according to the microcontroller on your board). For details, see the reference and tutorials. The ATmega328 on the Arduino Uno comes

preburned with a bootloader that allows you to upload new code to it without the use of an external hardware programmer. It communicates using the original STK500 protocol You can also bypass the bootloader and program the microcontroller through the ICSP.

Figure 5: A screenshot of the Arduino IDE

11. RESULT AND DISCUSSION

Figure 5: result

The traditional process of manually taking and maintaining student attendance is highly inefficient and time consuming. The attendance monitoring system based on face authentication has a potential to streamline the whole process. An Internet of Things (IoT) based portable attendance system can prove to be of great value to educational institutions in this regard as it proves to be highly efficient and secure as shown in Figure 5.

12. CONCLUSION AND FUTURE ENHANCEMENT

In conclusion we see the system is working properly and the facial recognition of the students are done properly and the output is verified. This system can be operated in anywhere. In future we have the idea to addthe artificial intelligence to keep monitor the full system. Due to this, the whole system will work automatically without human needs.

13.FUTURE ENHANCEMENT

Artificial Intelligence is added in the place of using IoT. It can monitor the system Automatically and store the all data by itself.

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