ISSN 2455 – 9091
IJCSET NOVEMBER Volume 7 Issue 11

International Journal of Computer Science Engineering and Technology (IJCSET)

https://www.doi.org/10.5281/zenodo.5675627

RASPBERRY PI BASED FACE IDENTIFICATION ATTENDANCE SYSTEM

[1] Sathish Kumar P, [2] Mrs Marrynal S Eastaff
[1] PG Student, [2] Assistant Professor,
[1, 2] Department of Information Technology,
[1, 2] Hindusthan College of Arts and Science (Autonomous),
[1, 2] Coimbatore, Tamil Nadu, India.

ABSTRACT - currently, industries, organisations are using personal identification strategies such as RFID, Iris recognition, Fingerprint identification is used for taking attendance. Among of all these personalidentification strategies including face recognition is most natural, less time is taken and highly efficient one despite being difficult to implement, a continuous observation for overcoming it. It has sever al applications in at ten dance management system sand security systems. In this work, a system is implemented that takes attendance for students during lecture, employees in industries and etc. using face detection and recognitiontechnology. A time period is set for taking attendance and the data baseis automatically uploaded into the web server through the internet connectivity. This process is donewithout any human intervention. In the system a Raspberry Pi installed with Open CV library and a Rasp berry Pi Camera module is connected for facial detection and Recognition. The data is stored in the memory card connected to Raspberry Pi and it can be accessed through the internet. The results show that acontinuousobservationincreasesaccuracy and maximizes the output.

Keywords – [RFID, Face Recognition, Detection, Accuracy, Open CV.]

1. Introduction

The current systems that are used for updating attendance automati call yare usually RFID based, Bio- metric based and MATLAB based. Usually, the manual method of taking attendance is difficult and a time consuming process. Henceitisimportanttoconstructanefficientmethodformanaging atten dance automatically. Another advantage of the setypes is that in clusion of fakeattendancecanbeprevented. Open Command Visualization (Open-CV) is an open source library in which the source code is openanditisusefulinvisualfieldsuchasimage processing. The mainmot to of this work is to takeandmanage attendanceusingface recognition

2. LITERATURE SURVEY

Manyorganisations, companies and in stitutions aretaking periodic attendance using [1] RFID methods, [2] Biometric Fingerprint method and Registers. These methods generally take moretime for calculation. RFID (RadiofrequencyIdentification) [1] useselectromagnetic fields toautomatically identifyand track tags attached to persons. RFID canviolatetheprivacyandsecurity of humanbeings. RFID strategiesultimatelyeffect software that allowseachperson to beanalysed by the primary data base. This environmentcanbeeasilyaffected by hackers. If RFID readerandreceiverarenotproperly matched then lessread rate occurs. Biometricfingerprintidentification, [2] system semployfingerprintasauniqueidentity. It is one of the most accurate systems running effectively today. But recognition of an in dividualfinger print from a set of enrolledfingerprintsisadifficult process. The fing reprint system does not reveal any in form ationregarding the originalfinger print. This may have been proved to befalse asmany algorithms [3] reveal that afingerprintcan bereconstructed with minutetemplates. Iris Recognition [4] is another type of implementation where the iris of people isscanned, stored and then retrieved for the comparison and attendance is managed automatically in the server. But thereis difficulty incapturingiris of the student soremployeesandhencea fast implementation of face recognition [4] with decreased illuminationeffectcanbeused.

3. PROPOSED MODEL

The proposed system is used for taking at ten dance by using face recognition and managing the attendance nsuitableenvironmentssuchascolleges and offices. The system architectureisshown in Figure. Raspberry Pi Camera Module V2 attachedtoRaspberryPi3 and it is placedwherethepeopleenter the office.

ISSN 2455 – 9091
IJCSET NOVEMBER Volume 7 Issue 11

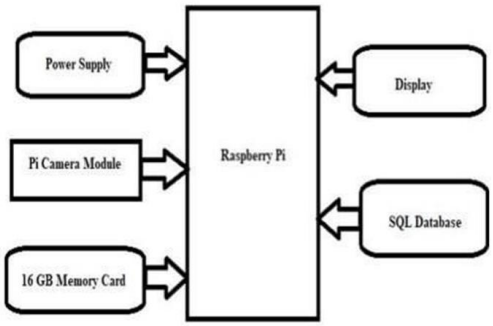

Figure.1: Block diagram

Figure.2: Raspberry-pikit

Figure.3: LCD Display

Figure.4: Raspberry-piCameraModule

Camera Module is usedto capture video formwhich images of human faces is extracted? Then facerecognition takes place and it automatically verifieswiththeexistingdatabasethroughlibraryfilespresent in OpenCV.Face Recognition is generallymore advanced and efficient than other systems. Thestepsinvolvedaregivenasfollows.

A. Capturingtheimage

The camera module is placedina regionwherethe people enter into college or office and video istakenwithinthedistancelessthan5meters.Acameraisusedforta kingvideowhichcontainsmanyframesfromwhichany oneoftheframescanbeusedfor face recognition and markingtheattendance.

B. Creatingdatabase

Asabiometricmethodhasbeenchosen for implementation, it is crucial for enrolment of every in dividual whoseattendanceneedstobetaken Here face of every individual is captured and stored in a suitable database which in cludes the person's name and other credentials. Heremultiplesamplesaretakenforasingleindividualwithdiffere nt lighting conditions. Adatabase of 5 studentsalong with 10 images of eachindividualpersons.

C. Detecting Faces

Choosing an efficient algorithm for face recognition is critical in this proposed work. The reare many face detection algorithms available in Open CV suchas Eigen faces, Fisher faces and Local Binary Pattern Histograms. Considering the need for the real timere cognition an algorithm which has been opted is the Has Cascade Algorithm For face detection and recognition. It is available in Open CV source library and has proved to berobust

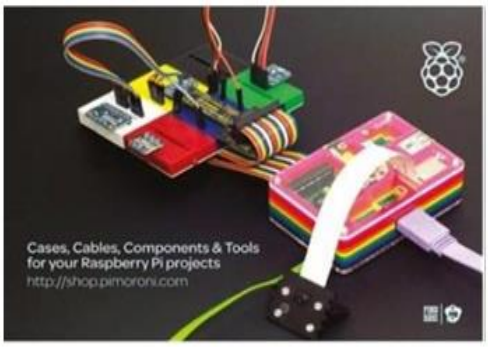

Figure. 5. Project Image

Advantages

- Easiestmethodtokeeptrackofattendance.
- Providesaccurateattendanceofthestudents.
- Proxyattendanceiscompletelyeradicatedbythissyst em.
- Therearenophysicalinteractionswiththesystem

Applications

- Smartindustrialapplication.
- Itis usedincollegelevelattendance.
- Itused inschoolattendancesystem

Hardware

- Raspberry-Pikit
- Pi-Camera
- LCDDisplay
- IOTModule
- Transformer

Software

- LinuxOS

Programminglanguage: Python

CONCLUSION

Face recognitionattendance systemscanthus be proved to be secure and efficient. It gives a better recognition rate with a low falserate. Using Raspberry Piindependently improves the mobility of the work and it actsasstandalone hardware. The work can be furtherdevelopedbyimproving recognition rate and by using Raspberry PiInfra-Redcamera module this system canbe used as asecuritysurveillance system.

REFERENCES

[1]. Mahesh, R. and Vinod, A.P. (2006), "A New CommonSubexpressionEliminationAlgorithmForimplementi ng Low Complexity FIR Filters in SoftwareDefined Radio Receivers", Proceedings of theIEEEInternationalSymposiumonCircuitsandSystems,Vol.4 ,pp.4515-4518.

[2]. Punam K. Jadhav1, Shivani S. Deshmukh2, Prerana N.Khairnar3 (2019)," SURVEY PAPER ON AgRo-BotAUTONOMOUSROBOT",InternationalResearchJournal ofEngineeringandTechnology(IRJET),Volume:06Issue:12,pp .434-441.

[3]. 1P.N.Khairnar,2N.Khairnar,(2018)"Implementation of Effective Integrated On-Chip ESDProtectioninNanoscaleCMOSregimeforRFIC",Proceedin gsofWRFERInternationalConference,29thApril,2018,Hydera bad,India,pp-5-9.

[4]. Prof.P.N.kKhairnar1, ShrutiPBadhan2, ShitalBNimse3, AnkitaVMalve4, (2018), AGROBOTS, International Journal of Advance Research and Innovative Ideas in Education (IJARIIE), Vol-4 Issue-2, pp-3399-3404.'

[5]. Khairnar Prerana, Pankaj Gopal, PoojaJadhav, (2018), ELECTRONICTICKETINGMACHINEWITHSMART CARD,InternationalJournalofComputerEngineering andApplications, VolumeXII,SpecialIssue.

[6]. Prof.Khairnar P.N., Prof. Khairnar N.K., (2018)," The presen to perating system and the irfuturewithreconfigurablearchitecture"Proceedingfornational conferenceAdvancedesignandOptimizationtechniquesin Engineeringapplications,ISBN978-5291-276-6.

[7]. Prof.P.N.Khairnar,"FutureTrendsinFiber Optics Communication", International Journal of Engineering, Education and Technology (ARDIJEET),ISSN2320-883X,Volume05Issue02,01/04/2017.

[8]. Prof. P.N. Khairnar, KokaneHarichandra J., NarkhedeAmolA.,NarkhedeKunalA,(2017), Industrial Device ControlUsingAndroid Mobile & Bluetoothtechnology,Vol-3Issue-2,PP-2470-2479.

[9]. Prof. P.N. Khairnar1,Akshay R. Pagare2,Sagar R.Sonawane3, Pravin K. Walzade, (2017), Smart StreetLight on Controlled System, International Journal ofAdvanceResearchandInnovativeIdeasinEducation, Vol-3Issue-2,PP-1200-1204.

[10]. Prof. Autade P. P1, Prof.Gaikar M. R2, Prof.KhairnarN.K., (2016)" A Survey on Public Auditing for SharedData with EfficientUserRevocation in the Cloud",InternationalJournalofInnovativeResearchinComputer and Communication Engineering,VOL-4,ISSUE-2.

[11]. Prof.S.G.GalandeandP.P.Autade,(2015)"AnEmbedded 1/3 Phase Automatic Transfer Switch withIntelligent Energy Management" International Journalof Computer Engineering and Applications, VolumeIX,IssueV,P9-14.