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SMART EVM USING RASPBERRY PI WITH FACE RECOGNITION AND FINGERPRINT SENSOR.

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ABSTRACT:

It is to eliminate the **fraudulent votes** that are happening during the election procedure and to provide a highly secured data transfer to IOT which produces results who is in the lead for every minute after voting it will show with the help of this smart EVM system. Initially one have to verify their biometrical and they allowed vote in election.

The basic idea of this project is to create an electronic voting machine that will help to eradicated frauding of the manual voting system and prior versions of **electronic voting by using Raspberry**. Here proposes a system that include multiple layers of verification to ensurethereliabilityofthedevicewithincludethefingerprintsensorverificationandfaceverification.Eachvoterisenteredintothesystemonlyafterbeing recognizedandcheckedwiththe given data base of enlist voters, once the corresponding finger print and face is matchedwiththeinformationprovided,thevoterwillbeallowedtoproceedforchoosingtheirpreferredcandidate from the panel of buttons, The final vote is then displayed onto a monitor for the satisfaction of voters. The proposed project displays transparency and also carries the feature of being autonomous during the course of operation.

1. Introduction

An embedded system is some combination of computer hardware and software, either fixed in capability or programmable, that is specifically designed for a particular kind of application device. Industrial machines, automobiles, medical equipment, cameras, household appliances, airplanes, vending machines, and toys (as well as the more obvious cellular phone and PDA)are among the myriad possible hosts of an embedded system. Embedded systems that areprogrammableareprovidedwithaprogramminginterface,andembeddedsystemsprogrammingisaspecializedoccupation.Certainoperatingsystemsorlanguageplatformsaretailored for the embedded market, such as Embedded Java and Windows XP Embedded.However,somelow-endconsumerproductsuseveryinexpensivemicroprocessorsandlimitedstorage, with the application and operating system both part of a single program. The program is written permanently into the system's memory in this case, rather than being loaded into RAM(random access memory),as programs on a personal computer are.

CHARACTERISTICOFEMBEDDEDSYSTEM

- Speed(bytes/sec):Shouldbehigh speed
- Power(watts): Lowpowerdissipation
- Sizeand weight:Asfar aspossiblesmallinsizeandlowweight
- Accuracy(%error):Mustbeveryaccurate
- Adaptability:Highadaptabilityandaccessibility
- Reliability:Mustbe reliableovera longperiodof time

2. Literature Survey

2.1SecuredElectronicVotingMachineUsingBiometricTechniquewithUniqueIdentityNumberandIOT,2020": Elections play an important role in our democratic country as people can select a person as aleader for the government. This paper is about implementation of voting system throughbiometric verification along with it Aadhar id verification. When the verification is valid, itwill send this data to IOT. This proposed system has automatic counting of votes: highly datasecuredsystem,sendingofdataimmediatelyandsafevoting.

2. 2.2 **"AReviewofFaceRecognitionSystemUsingRaspberryPiintheFieldofIoTArihantKumarJain,RichaSharma,AnimaSharma,2018"**

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Inthesedayscircumstance,thesecurityframesthemostessentialsegmentofourlives.Securityofthehouseortheclose what'smore,dear onesiscriticaltoeveryone. Homecomputerizationis an energizing zone for security applications. This field has improved with new advancessuch Internet of things (IoT). In IoT, each device carries on as a little piece of a web hub andeachhubassociateandconvey.Oflate,surveillancecamerasareusedkeepinginmindtheendgoal to construct security spots, homes, and urban communities. Be that as it may, thisinnovation needs a man who recognizes any issue in the edge taken from the camera. In thispaper,theyhaveproposedasystemusingraspberrypithatismountedwithepassiveInfraredsensor to detect motion. When detected it will enable the camera to capture and recognize thefaceofanindividualandvalidate it.Oncevalidateditwillsendhisvotedetailsthrough IOT.

3."A Review paper on biometrics implementation based on internet of things usingraspberrypi TruptiRajendraIngale, 2017"

Biometrics in the cloud communications improves the safety of the scheme. The bodilylettering in biometrics is finger stamp, facial construction, iris model, the tone of voice, etc.Anyoftheseletteringsaregiventorecognizethepeopleandfacial are scan via android cell phone. The enroll and distinguish process are achieve with thehelpofcloudcompute.Raspberry workstationisusedfor dealingoutthetemplate.The prime

target is to realize the top safety to the scheme and trustworthy comparison of correctness iscompleteforboththequalityusingthissystem. Atlast,themoreexactbehaviouriscomplete.

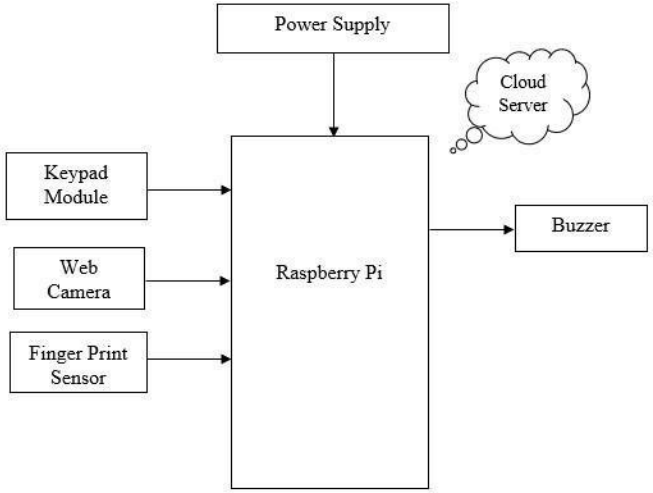


figure1:blockdiagramofsmartevmusingraspberrypi

4."Aliteraturesurveyonmicro-controllerbasedsmartelectronicvotingmachinesystemS.V.Prasath,R.MekalaM.E.(Ph.D.),2014"

:

A voting system provides rules and regulations to ensure valid selection of leader by people.This survey describes a new scheme called Smart Electronic Voting Machine based on PICMicrocontroller.Theworkingprocessofthis

[5] "A study of smart EVM using face recognition and Aadhar verification with IoT , KSrikrishnaswetha,Skumar ,MDMahmood-Innovationsin Electronics…,2019

Votingisanimportantprocessinwhichpeoplecanchoosetheirownleaderforthegovernment.The device which we use for the voting process is an electronic voting machine with highlysecuredstepssuchashavinguniquenumberAadharcard,biometricrecognitionwithIOT.Thishad a secured database saved system. Voting was an important role in our democratic systemaswehavetherighttoselectourleader forthegovernment.

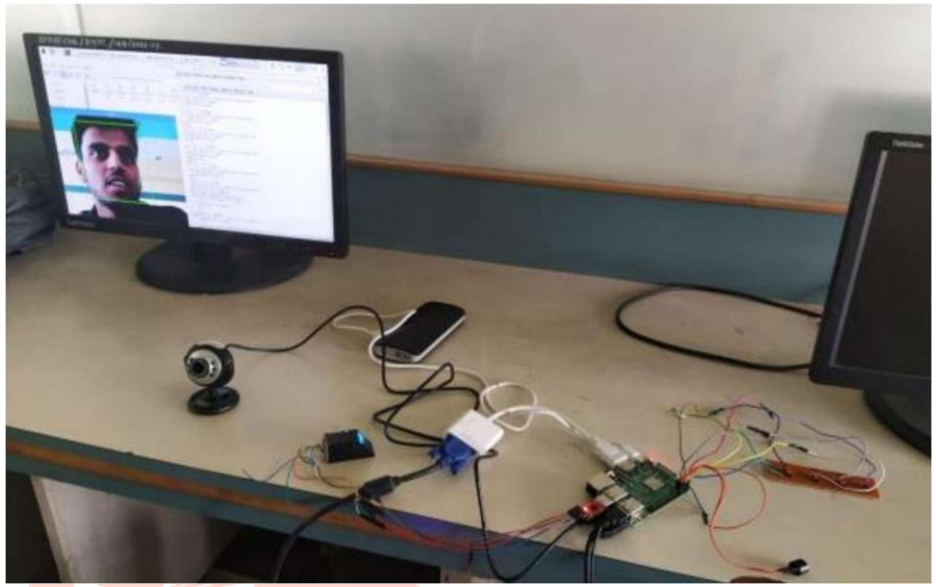


figure2:circuitconnectionsofEVM

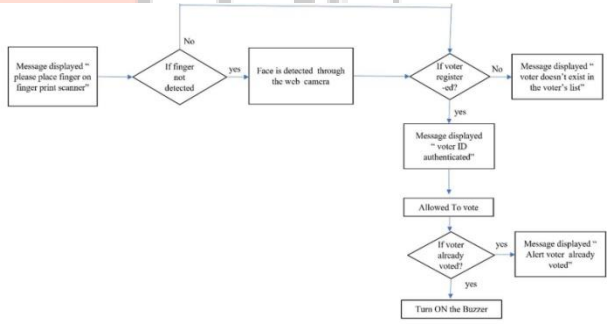
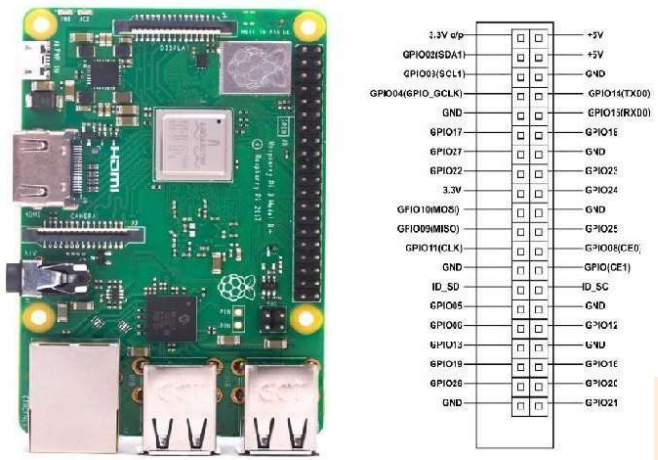


figure3:flowchartofproposedsystem

4

4.1HARDWARE DESCRIPTION



:figure4:raspberrypi3

RASPBERRY PI 3 is a development board in PI series. It can be considered as a single boardcomputer that works on LINUX operating system. The board not only has tons of features italso has terrific processing speed making it suitable for advanced applications. PI board isspecifically designed for hobbyist and engineers who are interested in LINUX systems andIOT(Internet ofThings).

Features:

- CPU:BroadcomBCM283764bit QuadCoreProcessorclockedat1.2GHz
- GPU:400MHzVideo CoreIVmultimedia
- Memory:1GBLPDDR2-900SDRAM(i.e.900MHz)
- USBports:4
- Videooutputs:HDMI,compositevideo(PALandNTSC)via 3.5mmjack
- Network:10/100MbpsEthernetand802.11nWirelessLAN
- Peripherals:17GPIOplusspecificfunctions,andHATIDbus
- Bluetooth:4.1
- Powersource:5VviaMicroUSBorGPIOheader
- Size:85.60mm×56.5mm
- Weight:45g(1.6oz)
-

4.2KEYPADMODULE

3X4 KEYPAD MODULES are available in different sizes and shapes. But they all have samepin configuration. Itis easy to make 4X4 KEYPAD by arranging 16 buttons in matrixformationby yourself.

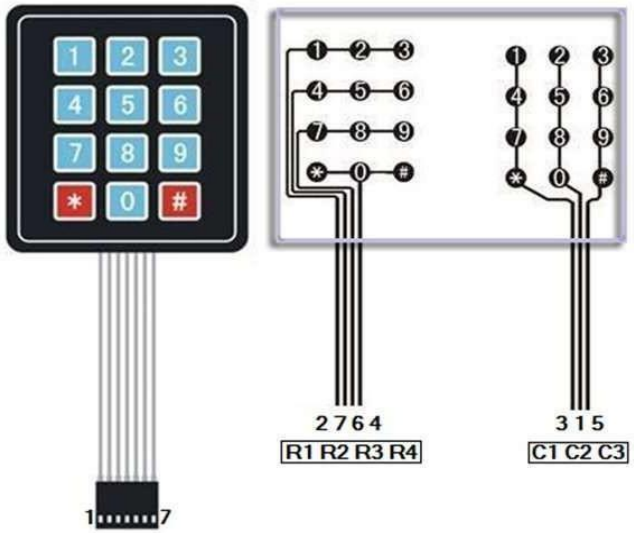


figure5:keypadmodule

Keypadmodulefeature:

- Contactrating:20mA,24VDC
- Contactresistance:200ohmmax
- Life:1,000,000 cycles perkey
- OperatingTemperature: -20to+60•StorageTemperature:-

40to+65PINdescription

- Pinnumberrow1– PIN1istakenoutfrom1st ROW
- Pinnumberrow2– PIN2istakenoutfrom2st ROW
- Pinnumberrow3– PIN3istakenoutfrom3st ROW
- Pinnumbercolumn1– PIN1istakenoutfrom1st COLUMN
- Pinnumbercolumn2– PIN1istakenoutfrom2st COLUMN
- Pinnumbercolumn3– PIN1istakenoutfrom3st COLUMN
- Pinnumbercolumn4– PIN1istakenoutfrom4st COLUMN

4.3FINGERPRINTSENSOR

Figure:6 fingerprint sensor

This is a figure print sensor module with TTL UART interface. The user can store the fingerprintdata inthemoduleandcanconfigureitin1:1 or1:Nmodeforidentifyingtheperson.

The FP module can directly interface with 3v3 or 5v Microcontroller. A level converter (likeMAX232)is required forinterfacing with PC.

Fingerprintprocessingincludestwoparts:fingerprintenrolment and fingerprint matching (the matching can be 1:1 or 1:N). When enrolling, userneeds to enter the finger two times. The system will process the two time finger images,generate a template of the finger based on processing results and store the template. Whenmatching, user enters the finger through optical sensor and system will generate a template ofthe finger and compare it with templates of the finger library. For 1:1 matching, system willcompare the live finger with specific template designated in the Module; for 1:N matching, orsearching,systemwillsearchthewholefingerlibraryforthematchingfinger.Inbothcircumstances,systemwillreturnthematching result,success orfailure.

WhentheFPmodulecommunicateswithuserdevice,definition of J1 is as follows: Pin Number Name Type Function Description 1 Vin in Powerinput 2 GND – Signal ground. Connected to power ground (colour: black） 3 TD in Dataoutput.TTLlogicallevel4 RDout Datainput. TTLlogicallevel.

4.4CAMERA

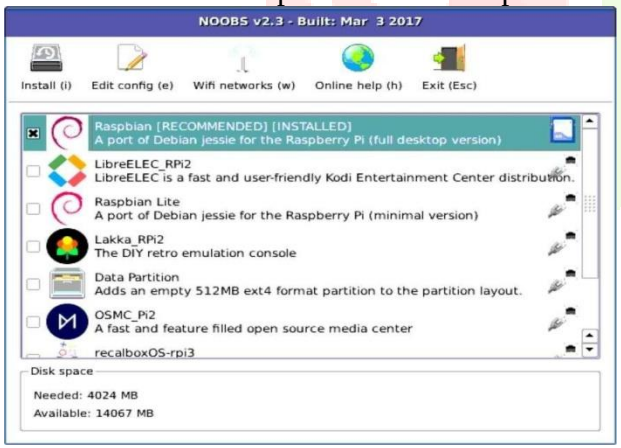
A USB webcam is a camera that connects to a computer, usually through plugging it in to aUSBportonthemachine.Thevideoisfedtothecomputerwhere a softwareapplicationletsyouviewthepicturesand alsotransferthemto theInternet.

The software you choose can be set to upload images on atime interval using FTP (file transfer protocol) to a website, or it can be set to provide a livefeed for displaying on a remote machine or again in a website. When FTP is used the pictureon the website is a static one which is updated regularly at intervals minute by minute, hourby hour or even longer. This is very easy to set up but the image delay means they are nowhere nearasinterestingtowatchasalivefeed.

CHAPTER 5SOFTWARE DESCRIPTION

5.1 NOOBS

NOOBSisa waytomake settingupa RaspberryPifor thefirsttimemuch,mucheasier.Youwon't need network access, and you won't need to download any special imaging software.Just head to the download page, grab a copy of the NOOBS zip file, and unpack it onto afreshly formatted 4GB (or larger) SD card. When you boot up for the first time, you'll see amenu prompting you to install one of several operating systems into the free space on thecard. The choice means you can boot the Pi with a regular operating system like Raspbian, orwithamedia-centrespecificOSlikeRaspBMC.



PythonIDE

i. Anakonda

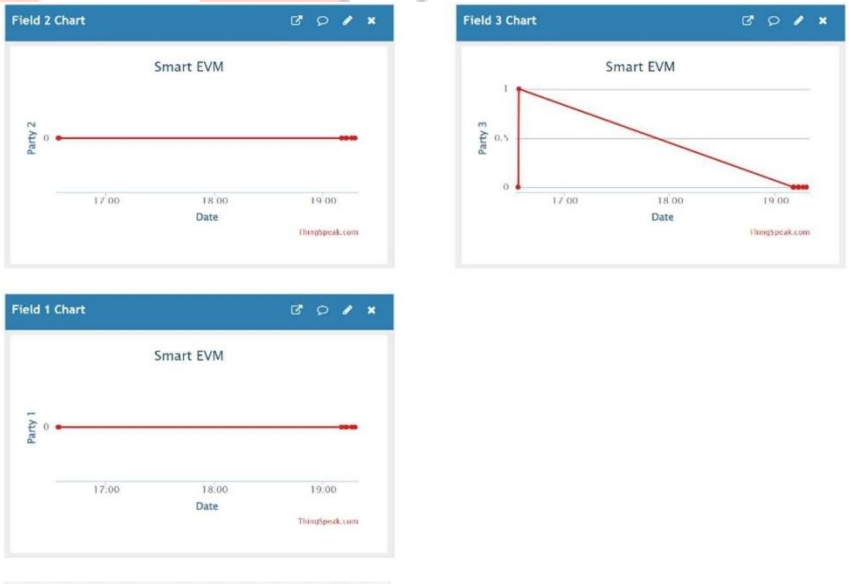
ii. Visualstudiocode

3. APPLICATIONS

- This system can widely be used in the time of elections which can be helpful for thepurpose of finding fraudulent voters and to count the votes of every party and displaysinaserver.
- It can beusedinselectingmonitororleaderfora community.

EXCEPTION RESULTS

- Belowchartsshowsthevotingcountofdifferentparties
- Field1chartshowsnovotesfor theparty1.
- Field2chartshowsnovotesfor theparty2.
- Field3chartshowsvotesfortheparty3.



4.

figure9:Differentpartiesvotesthrough graphicalrepresentation

[1] "Object Tracking Robot by Using Raspberry PI with open

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