INTERNATIONAL RESEARCH JOURNAL IN ADVANCED ENGINEERING AND TECHNOLOGY (IRJAET) E - ISSN: 2454-4752 P - ISSN : 2454-4744
VOL 3 ISSUE 2 (2017) PAGES 1918 - 1925
RECEIVED: 09-03-17 PUBLISHED: 24-03-17.
March 24, 2017

AADHAR BASED ELECTRONIC VOTING SYSTEM AND PROVIDIND AUTHENTICATION ON INTERNET OF THINGS

S.Rajendiran[1], R.Indrakumar[2], S.Iyyappan[3], M.Sudhakaran[4]
[1,2]UG Student, Dept. of EEE, GanadipathyTulis's Jain Engineering College, Vellore, India,
[2]Assistant Professor, Dept. of EEE, GanadipathyTulis's Jain Engineering College, Vellore, India,
[3]Associate Professor, Dept. of EEE, GanadipathyTulis's Jain Engineering College, Vellore, India.

ABSTRACT

The main of this project is to develop a secure Electronic voting machine using Finger print identification method, for finger print accessing we use AADHAR card database. At the time of voting in the elections, the e-voting process authentication can be done using finger vein sensing, which enables the electronic ballot reset for allowing voters to cast their votes. Also the voted data and voters details can be sent to the nearby Database Administration unit by using WIFI System .The finger print scanning is used to ensure the security to avoid fake, repeated voting etc. It also enhances the accuracy and speed of the process. The purpose of such system is to ensure that the voting rights are accessed only by a legitimate user and no one else. During elections, the thumb impression of a voter is entered as input to the system. This is then compared with the available records in the database.

Keywords: Aadhar, WIFI System, Thumb.

1. INTRODUCTION

After getting freedom from British government, Indian Government provide a right to Indian people to elect their interested leader. For conducting and controlling voting in India, a separate commission was introduced. Which was named as Election Commission of India (ECI)? This commission is not favorable or support to any political party. As per rules which have been in law, this commission works. For the persons, who have age of 18 and above are eligible to enroll their vote. All voting systems around the world include the following steps: voter identification and authentication, voting and recording of votes cast, vote counting, publication of election results.

Voter identification is required during two phases of the electoral process: first for voter registration in order to establish the right to vote and afterwards, at voting time, to allow a citizen to exercise their right to vote by verifying if the person satisfies all the requirements needed to vote (authentication). Security is a heart of e-voting process. Therefore the necessity of designing a secure e-voting system is very important. Usually, mechanisms that ensure the security and privacy of an election can be time consuming, expensive for election administrators, and inconvenient for voters. There are different levels of e-voting security. Therefore serious measures must be taken to keep it out of public domain. Also, security must be applied to hide votes from publicity. Firstly the voter will swap his/her Aadhar Card on the Aadhar Card Reader Module. The Aadhar Card Reader Module is connected to the Microcontroller unit hence it will send the data obtained from the card to the Microcontroller.

INTERNATIONAL RESEARCH JOURNAL IN ADVANCED ENGINEERING AND TECHNOLOGY (IRJAET) E - ISSN: 2454-4752 P - ISSN : 2454-4744
VOL 3 ISSUE 2 (2017) PAGES 1918 - 1925
RECEIVED: 09-03-17 PUBLISHED: 24-03-17.
March 24, 2017

2. PROPOSED SYSTEM

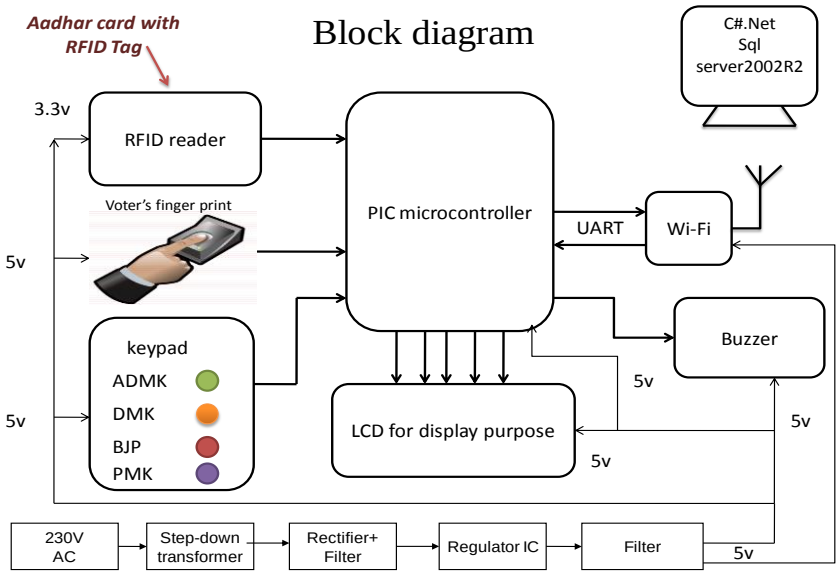


Fig.1. Block Diagram

To overcome above stated problems we are proposing a voting system which is more secure, time saving and provide two level of authentication by electronic means based on individual biometric traits of voters. the new system will use biometric traits of the voter as authentication by which at the time of election if scanned biometric data of the voter matches with that of saved in the system then he is allowed to vote otherwise he is rejected a reported as fake voter and law breaker. Biometric properties of any individual are unique universally, which cannot be matched with anybody like finger print.Out of these, fingerprints face images and iris samples are saved in national Aadhar database of Indian government. So, there is no need to create an extra database which contains only biometric data. The proposed approach is time saving and provides much better authentication from paper based authentication.

3. HARDWARE IMPLEMENTATION

A. FINGER PRINT SCANNER:

Fingerprint identification is the method of identification based on the different patterns of human fingers, which is actually unique among each person. It is the most popular way of acquiring details of any person and is the most easy and convenient way of identifying a person. An advantage of fingerprint identification method is that the fingerprints pattern remains same for a person throughout his/her life, making it an infallible method of human identification.

B. CIRCUIT DIAGRAM

The use of multiple tags at one time will cause tag collisions and confuse the reader. The tags available with us have a read distance of approximately 7 cm. Actual distance may vary slightly depending on the size of the transponder tag and environmental conditions of the application.

INTERNATIONAL RESEARCH JOURNAL IN ADVANCED ENGINEERING AND TECHNOLOGY (IRJAET) E - ISSN: 2454-4752 P - ISSN : 2454-4744
VOL 3 ISSUE 2 (2017) PAGES 1918 - 1925
RECEIVED: 09-03-17 PUBLISHED: 24-03-17.
March 24, 2017

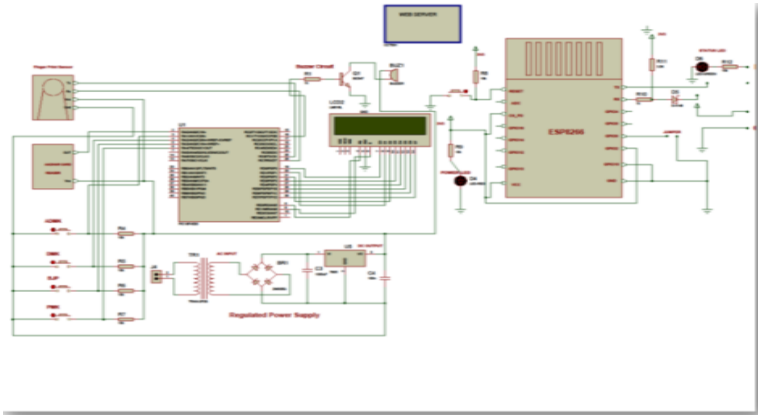


Fig.2. Circuit diagram

C. USING RFID READER

When powered on the RFID reader will activate a RF field waiting for a tag to come into its range. Once tag is detected, its unique ID number is read and data is sent via serial interface. The valid tag detecting is indicated by LED blink and Buzzer beep. The face of the RFID tag should be held parallel tot he front of the antenna (where the majority of RF energy is focused). If the tag is held sideways (perpendicular to the antenna) you may have difficulty getting the tag to be read. Only one transponder tag should be held up to the antenna at any time.

Fig.3. RFID Reader

D. FINGERPRINT SCANNERS:

Fingerprint scanners are security systems of biometrics. They are now used in police stations, security industries and most recently, on computers Finger scanning, also called fingerprint scanning, is the process of electronically obtaining and storing human fingerprints. The digital image obtained by such scanning is called a finger image. In some texts, the terms fingerprinting and fingerprint are used, but technically, these terms refer to traditional ink-and-paper processes and images Everyone has marks on their fingers. They cannot be removed or changed. These marks have a pattern and this pattern is called the fingerprint. Every fingerprint is special, and different from any other in the world. Because there are countless combinations, finger prints have become an ideal means of identification.

INTERNATIONAL RESEARCH JOURNAL IN ADVANCED ENGINEERING AND TECHNOLOGY (IRJAET) E - ISSN: 2454-4752 P - ISSN : 2454-4744
VOL 3 ISSUE 2 (2017) PAGES 1918 - 1925
RECEIVED: 09-03-17 PUBLISHED: 24-03-17.
March 24, 2017

E. Buzzer:

Magnetic buzzers are available in transducer and indicator configurations. In a magnetic buzzer, the transistor acts as the driving circuit. Indicators include the transistor, creating a tone when a dc voltage is applied. Transducers lack this transistor, requiring a square wave signal to operate properly. On the other hand, a magnetic buzzer can be driven to generate 85 dB by only 1.5V, but the consumption of the current will be much higher than Pezos one. Compare the two types of buzzers; the magnetic type can have lower frequency response with the same dimension. Though being limited by the dimension, the SPL of a magnetic buzzer can only reach to 90 Db .Narrow operating voltage: 1–16V higher current consumption: 30–100mA Lower rated frequency .Smaller footprint. Lower sound pressure level.

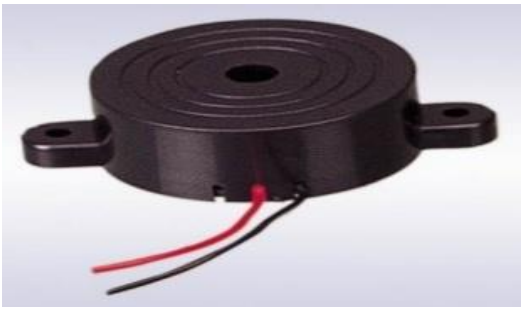


Fig.4. Buzzer

F.APPLICATION FOR BUZZERS:

Alarm devices, Timer, Confirmation of user input (ex: mouse click or keystroke), Electronic metronomes. Household Appliances.

G.GSM:

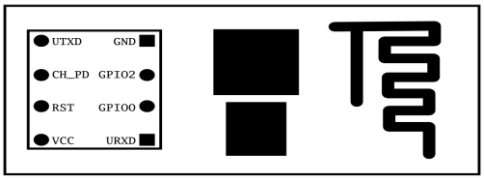
A GSM modem is a specialized type of modem which accepts a SIM card, and operates over a subscription to a mobile operator, just like a mobile phone. From the mobile operator perspective, a GSM modem looks just like a mobile phone. When a GSM modem is connected to a computer, this allows the computer to use the GSM modem to communicate over the mobile network. While these GSM modems are most frequently used to provide mobile internet connectivity, many of them can also be used for sending and receiving SMS and MMS messages. A GSM modem can be a dedicated modem device with a serial, USB or Bluetooth connection, or it can be a mobile phone that provides GSM modem capabilities. For the purpose of this document, the term GSM modem is used as a generic term to refer to any modem that supports one or more of the protocols in the GSM evolutionary family, including the 2.5G technologies GPRS and EDGE, as well as the 3G technologies WCDMA, UMTS, HSDPA and HSUPA.A GSM modem exposes an interface that allows applications such as Now SMS to send and receive messages over the modem interface. The mobile operator charges for this message sending and receiving as if it was performed directly on a mobile phone. To perform these tasks, a GSM modem must support an “extended AT command set” for sending/receiving SMS messages.

H. ESP8266 WIFI MODULE:

ESP8266 is an impressive, low cost WIFI module suitable for adding WIFI functionality to an existing microcontroller project via a UART serial connection. The module can even be reprogrammed to act as a standalone WIFI connected device–just add power! The feature list is impressive and includes: 802.11 b/g/n

INTERNATIONAL RESEARCH JOURNAL IN ADVANCED ENGINEERING AND TECHNOLOGY (IRJAET) E - ISSN: 2454-4752 P - ISSN : 2454-4744
VOL 3 ISSUE 2 (2017) PAGES 1918 - 1925
RECEIVED: 09-03-17 PUBLISHED: 24-03-17.
March 24, 2017

protocol Wi-Fi Direct (P2P), soft-AP Integrated TCP/IP protocol stack. This guide is designed to help you get started with your new WIFI module so let's start! The hardware connections required to connect to the ESP8266 module are fairly straight-forward but there are a couple of important items to note related to power: The ESP8266 requires 3.3V power–do not power it with 5 volts. The ESP8266 needs to communicate via serial at 3.3V and does not have 5V tolerant inputs.ESP8266 on-board processing and storage capabilities allow it to be integrated with the sensors and other application specific devices through its GPIOs with minimal development up-front and minimal loading during runtime. With its high degree of on-chip integration, which includes the antenna switch balun, power management converters, it requires minimal external circuitry, and the entire solution, including front-end module, is designed to occupy minimal PCB area.



ESP8266 WiFi Pinout
Top View (Not to scale)

Fig.5. Pin Diagram

I.ESP8266 PIN DESCRIPTION

ESP8266 has 8 pins, 4 in the row of 2. The first pin on the top left is GND. The two pins right from the GND are GPIO 2 and 0. The pin on the top right side is the RX pin and the pin on the lower left is TX. These are the pins for communication. The middle pins on the bottom are CH_PD (chip power-down) and RST (reset).The main thing to remember is, that this device works with 3.3V; Even the RX and TX pins. Controller or many USB to serial converters work with 5V .

J. INTERNET ACCESS

Wi-Fi technology may be used to provide Internet access to devices that are within the range of a wireless network that is connected to the Internet. The coverage of one or more interconnected access points (*hotspots*) can extend from an area as small as a few rooms to as large as many square kilometers. Coverage in the larger area may require a group of access points with overlapping coverage. For example, public outdoor Wi-Fi technologyS has been used successfully in wireless mesh networks in London, UK. An international example is FON Wi-Fi provides service in private homes, businesses, as well as in public spaces at Wi-Fi hotspots set up either free-of-charge or commercially, often using a captive portal webpage for access. Organizations and businesses, such as airports, hotels, and restaurants, often provide free-use hotspots to attract customers. Enthusiasts or authorities who wish to provide services or even to promote business in selected areas sometimes provide free Wi-Fi access. 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 connected to them, wirelessly or via

K. UART:

A UART (Universal Asynchronous Receiver/Transmitter) is the microchip with Programming that controls a computer's interface to its attached serial devices. Specifically, it provides the computer with the RS-232C Data Terminal Equipment

INTERNATIONAL RESEARCH JOURNAL IN ADVANCED ENGINEERING AND TECHNOLOGY (IRJAET) E - ISSN: 2454-4752 P - ISSN : 2454-4744
VOL 3 ISSUE 2 (2017) PAGES 1918 - 1925
RECEIVED: 09-03-17 PUBLISHED: 24-03-17.
March 24, 2017

L. LCD:

LCD (Liquid Crystal Display) screen is an electronic display module and find a wide range of applications. A 16x2 LCD display is very basic module and is very commonly used in various devices and circuits. These modules are preferred over seven segments and other multi segment LEDs.

The reasons being: LCDs are economical; easily programmable; have no limitation of displaying special & even custom characters (unlike in seven segments), animations and so on.

A **16x2 LCD** means it can display 16 characters per line and there are 2 such lines. In this LCD each character is displayed in 5x7 pixel matrix. This LCD has two registers, namely, Command and Data.

The command register stores the command instructions given to the LCD. A command is an instruction given to LCD to do a predefined task like initializing it, clearing its screen, setting the cursor position, controlling display etc.

4. SIMULATION RESULT:

a. Starting on process to the kit

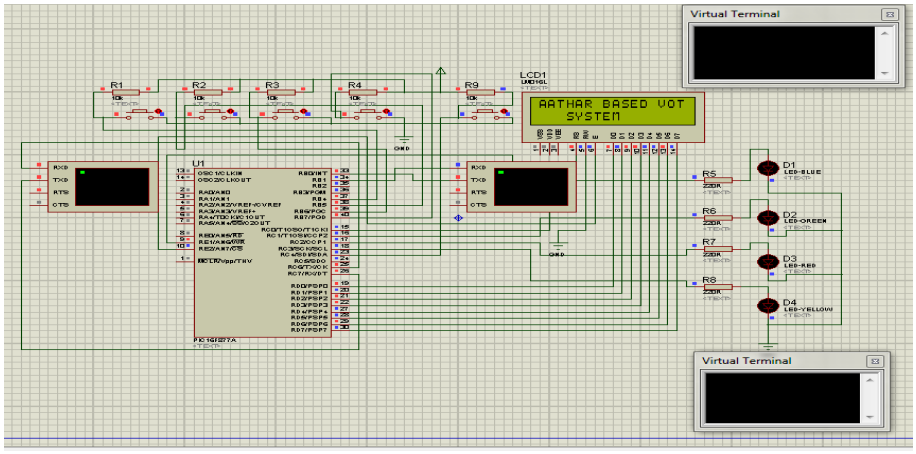


Fig.6. starting on process to the kit

b. Vote plotted to a voting machine

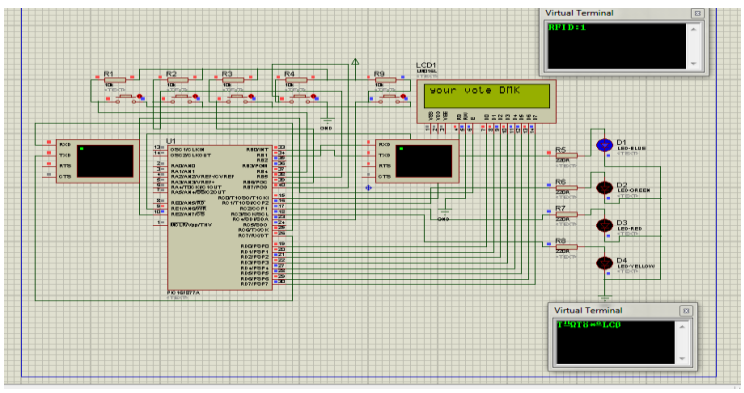


Fig.7. Vote plotted to a voting machine

INTERNATIONAL RESEARCH JOURNAL IN ADVANCED ENGINEERING AND TECHNOLOGY (IRJAET) E - ISSN: 2454-4752 P - ISSN : 2454-4744
VOL 3 ISSUE 2 (2017) PAGES 1918 - 1925
RECEIVED: 09-03-17 PUBLISHED: 24-03-17.
March 24, 2017

c. All Members total vote

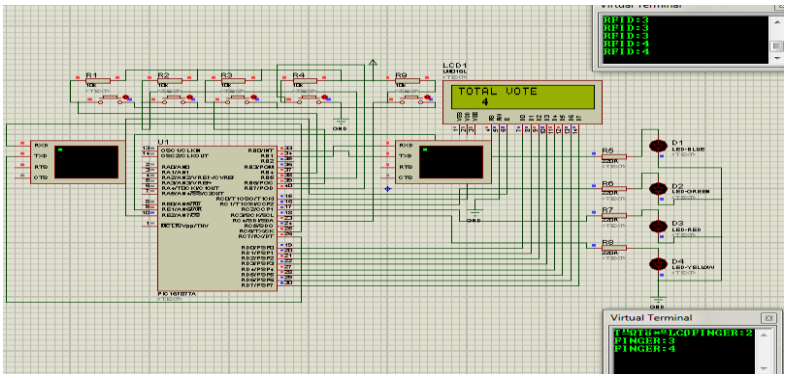


Fig.8. All Members total vote

d. Already vote plotted

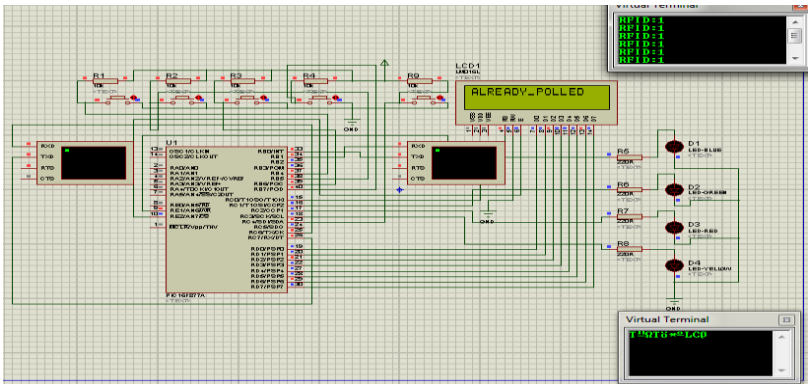


Fig.9. Already vote plotted

e. Finger print mismatch

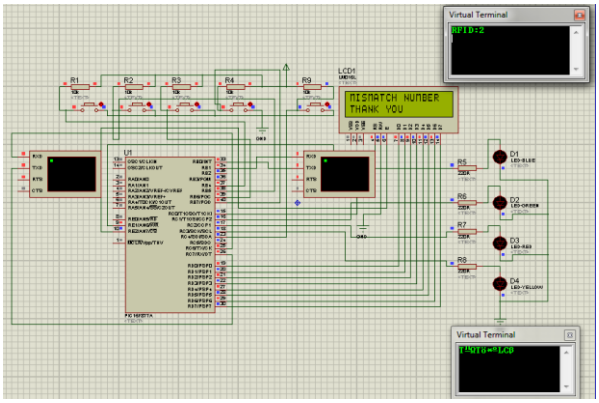


Fig.10. Finger print mismatch

INTERNATIONAL RESEARCH JOURNAL IN ADVANCED ENGINEERING AND TECHNOLOGY (IRJAET) E - ISSN: 2454-4752 P - ISSN : 2454-4744
VOL 3 ISSUE 2 (2017) PAGES 1918 - 1925
RECEIVED: 09-03-17 PUBLISHED: 24-03-17.
March 24, 2017

5. HARDWARE RESULT

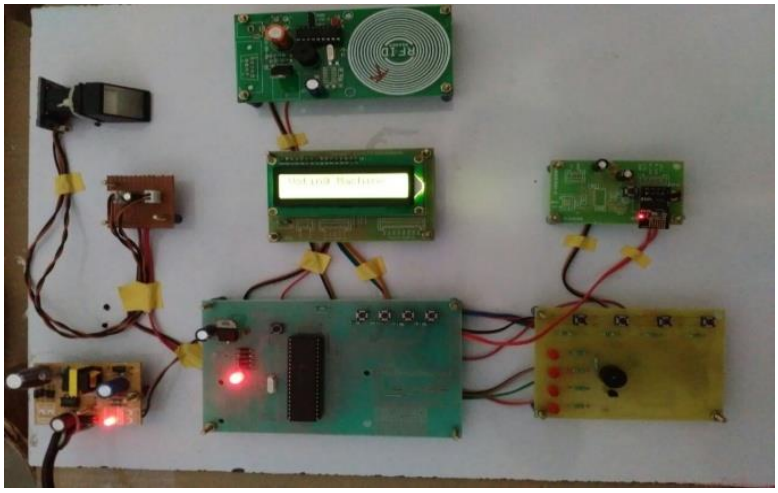


Fig.11. Hardware Result

CONCLUSION

In this paper, we have proposed an online voting system which is better and faster than previous systems. The new system prevents access to illegal voters, provides ease of use, transparency and maintains integrity of the voting process. The system also prevents multiple votes by the same person and checks eligibility of the voter. It also allows a person to vote from anywhere provided that the voter is within electoral limits.

REFERENCES

1 Diponkar Paul and Sobuj Kumar Ray, Member, IACSIT, A Preview on Microcontroller Based Electronic Voting Machine, International Journal of Information and Electronics Engineering, Vol. 3, No. 2, March 2013.

2 . D. Balzarotti, G. Banks, M. Cova, V. Felmetsger, R. A. Kemmerer, W. Robertson, F. Valeur, and G. Vigna, "An Experience in Testing the Security of Real-World Electronic Voting Systems," IEEE Transactions on Software Engineering, vol. 36, no. 4, 2010.

3 A.Villafiorita and K. Weldemariam, and R. Tiella, "Development, Formal Verification, and Evaluation of an E-Voting System with VVPAT," IEEE Transactions on Information Forensics and Security, vol. 4, no. 4, 2009.

4 llink: http://www.bravenewballot.org/e-voting-in-india.html.

5 Anil K. Jain, Arun Ross and SalilPrabhakar, "An Introduction to Biometric Recognition", IEEE Transactions on Circuits and Systems for Video Technology, Special Issue on Image- and Video-Based Biometrics, Vol. 14, No. 1, January 2004.