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Friendly Arm Based Robust Kernel

[1]Sonti. Sowjanya & [2]Ms. Neeharika R
[1]B-TECH (E.C.E) M-TECH (EMBEDDED SYSTEMS), (PERSUING)
Vignana Bharathi Institute of Technology (2013-2015) Affiliated To Jntu Hyderabad,
[2]M.Tech Assistant Professor B.Tech (JNTUH) M.Tech (JNTUH)

Abstract—

Face Recognition is the process of identification of a person by their facial image. This technique makes it possible to use the facial images of a person to authenticate him into a secure system, for criminal identification, for passport verification... Face recognition approaches for still images can be broadly categorized into holistic methods and feature based methods. Holistic methods use the entire raw face image as an input, whereas feature based methods extract local facial features and use their geometric and appearance properties. This project describes how to build a simple, yet a complete face recognition system using Principal Component Analysis, a Holistic approach. This method applies linear projection to the original image space to achieve dimensionality reduction. The system functions by projecting face images onto a feature space that spans the significant variations among known face images. The significant features known as eigen faces do not necessarily correspond to features such as ears, eyes and noses. It provides for the ability to learn and later recognize new faces in an unsupervised manner. This method is found to be fast, relatively simple, and works well in a constrained environment. Face recognition is a widely used biological recognition technology. In comparison with other identification methods, this type of recognition has direct, friendly and convenient features. The embedded face recognition system is based on arm 9 development board, using Windows operating system, detecting face by using HAAR feature, and then recognizing face by using LBP features.

1.Introduction:

Face Recognition technology developed in the 80's and it has rapidly developed, especially in the 90's. Automatic face recognition is a widely used biological recognition technology. One of the key challenges of face recognition is finding efficient and discriminative facial appearance descriptors that can counteract large variations in illumination, pose, facial expression, ageing, partial occlusions and other changes [19] .In comparison with other identification methods, face recognition has more convenient features. Human can visually identify people by human face. People can be fairly identified even in the very serious visual stimulated situation. The embedded face recognition in this approach is based on LPC ARM 2148 on windows operating systems. Our approach is similar to [14] in that his approach is on ARM 9 using Linux operating system. For Linux based operating systems ARM 9 supports. In our approach we have used windows as operating system. For windows operating systems Microsoft has made several advancements and changes that have made it a much easier to use Operating System, and although arguably it may not be the easiest Operating System, it is still easier than Linux. Because of the large amount of Microsoft Windows users, there is a much larger selection of available software programs, utilities, Windows. Microsoft Windows includes its own help section, has vast amount of available online documentation and help, as well as books on each of the versions of Windows.

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2 RELATED WORK:

The problem is more interesting from the viewpoints of basic research aiming to efficient descriptors for facial images and of applications such as surveillance and human-computer interaction [2].A key issue in face analysis are finding efficient de-scriptors for face appearance. Given the low inter-person variation in\ face images, ideal descriptors should be very discriminative. Still, they should be robust to different perturbations and changes such as illumination and pose changes, aging of the subjects, etc. for displaying the image of output for convenient and for more user options purpose code is written in matlab as front end. Because Matlab is a high performance language for technical computing It integrates computation visualization and programming in an easy to use environment. And processing of image and recognition of image is done by using ARM processor that runs at backend. This paper is organized as follows. In section II we overview about some of the prior face recognition related research that led to our research. In section III we present the details of our face recognition system and in section IV about the results and followed by experiment analysis and conclusion. II.RELATED WORK In this section, we briefly describe some other techniques for face recognition. Fei zuo, with Eindhoven [26] proposed Real-time embedded face recognition for smart home in which he proposed a near real-time face recognition system for embedding in consumer applications. Their aim is to design and build a face recognition system that is robust for natural consumer environments and can be executed on low-cost hardware.FA007 is an embedded facial recognition system with the latest version of leading "Dual Sensor™" Algorithm Ver 3.0, which applied for high level access control application. Its classic slope and industrial design is good for market like Government, Civil ID. It is also good for commercial market like Enterprise, Bank, and building automation and so on. Chin-Shu Chang; Teh-Lu Liao; Po-Yun Hsu; Kuo-Kuang Chen proposed human face recognition system using modified PCA algorithm and ARM platform [27]. They used the human face as the main subject for authentication. Because the ARM system provides strong computation ability, various interfaces such as camera, mass storage, etc. Their study includes recognizer algorithm-Principal Component Analysis (PCA) is completely accomplished on the ARM system. Finally, an ARM-based human face recognition platform is implemented in this study.Vikram kulkarni, k.Laxminarashima rao proposed Embedded car security system on face detection [28]. In this proposal embedded car security system, FDS (Face Detection System) is used to detect the face of the driver and compare it with the predefined face. In case any theft to car information is sent to the owner through MMS. So now owner can obtain the image of the thief in his mobile as well as he can trace the location through GPS.

3.PROPOSED METHOD:

In this project I am using camera to recognize the face of a person .this project mainly concentrates on recognizing the face it will recognize the human face… after recognizing the human face we must enter the name of a particular person and after the eigen faces will be created for the saved picture….this is the first part of the project

Coming to the second par this concentrates on comparison. In this it first it captures the face and create the eigen face and compares with the stored images if it matches it displays the name of a person

In the third process this conformation will be done by using gsm modem.. the message will be sent to mobile if the identified person is correct if not it will send un authorized person ….

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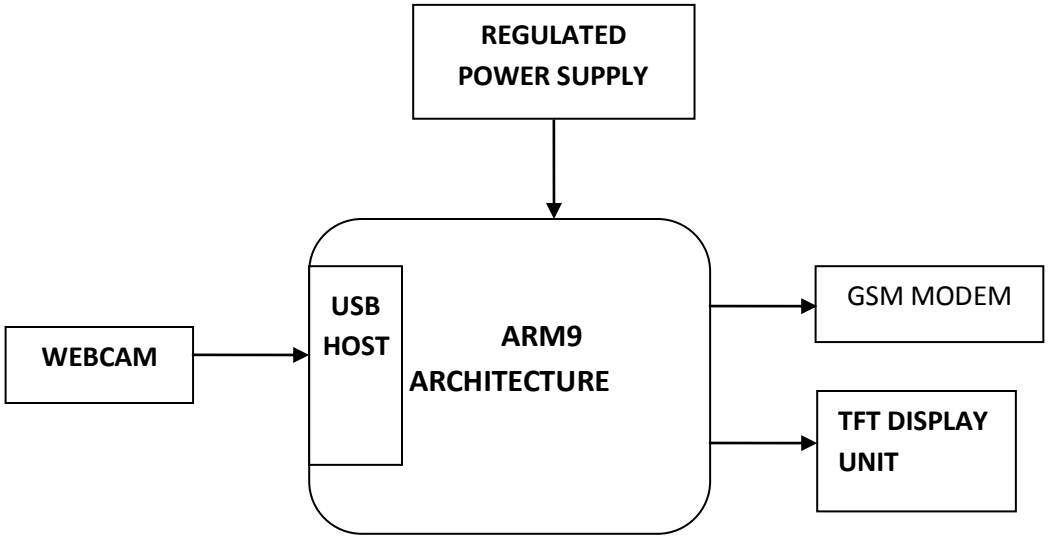
BLOCK DIAGRAM:



3.1.Power supply:

Power supply is a reference to a source of electrical power. A device or system that supplies electrical or other types of energy to an output load or group of loads is called a power supply unit or PSU. The term is most commonly applied to electrical energy supplies, less often to mechanical ones, and rarely to otherThis power supply section is required to convert AC signal to DC signal and also to reduce the amplitude of the signal. The available voltage signal from the mains is 230V/50Hz which is an AC voltage, but the required is DC voltage(no frequency) with the amplitude of +5V and +12V for various applications_In this section we have Transformer, Bridge rectifier, are connected serially and voltage regulators for +5V and +12V (7805 and 7812) via a capacitor (1000µF) in parallel are connected parallel as shown in the circuit diagram below. Each voltage regulator output is again is connected to the capacitors of values (100µF, 10µF, 1 µF, 0.1 µF) are connected parallel through which the corresponding output(+5V or +12V) are taken into consideration.

3.2.SMART ARM-based MPU:

SMART SAMA5D3 series is a high-performance, power-efficient®The Atmel -A5 processor, achieving 536 MHz® Cortex®embedded MPU based on the ARM with power consumption levels below 0.5 mW in low-power mode. The device features a floating point unit for high-precision computing and accelerated data processing, and a high data bandwidth architecture. It integrates advanced user interface and connectivity peripherals and security features.

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The SAMA5D3 series features an internal multi-layer bus architecture associated with 39 DMA channels to sustain the high bandwidth required by the processor and the high-speed peripherals. The device offers support for DDR2/LPDDR/LPDDR2 and MLC NAND Flash memory with 24-bit ECC. The comprehensive peripheral set includes an LCD controller with overlays for hardware-accelerated image composition, a touchscreen interface and a CMOS sensor interface. Connectivity peripherals include Gigabit EMAC with IEEE1588, 10/100 EMAC, multiple CAN, UART, SPI and I2C. With its secure boot mechanism, hardware accelerated engines for encryption (AES, TDES) and hash function (SHA), the SAMA5D3 ensures anti-cloning, code protection and secure external data transfers. The SAMA5D3 series is optimized for control panel/HMI applications and applications that require high levels of connectivity in the industrial and consumer markets. Its low-power consumption levels make the SAMA5D3 particularly suited for battery-powered devices.

3.3. TFT TOUCH SCREEN

A thin-film-transistor liquid-crystal display (TFT LCD) is a variant of a liquid-crystal display (LCD) that uses thin-film transistor (TFT) technology to improve image qualities such as addressability and contrast. A TFT LCD is an active-matrix LCD, in contrast to passive-matrix LCDs or simple, direct-driven LCDs with a few segments. TFT LCDs are used in appliances including television sets, computer monitors, mobile phones, handheld video game systems, personal digital assistants, navigation systems and projectors. TFT LCDs are also used in car instrument clusters because they allow the driver to customize the cluster, as well as being able to provide an analogue-like display with digital elements. The liquid crystal displays used in calculators and other devices with similarly simple displays have direct-driven image elements, and therefore a voltage can be easily applied across just one segment of these types of displays without interfering with the other segments.

3.5.GSM

GSM, which stands for Global system for mobile communications (GSM) is a second-generation digital technology, which was originally developed by Europe but now has in excess of 75 per cent of the world market. For efficient transmission of digital voice and data service, GSM is a very advanced technology, mobile phones connect to it by searching for cells in the immediate vicinity. There are five different cells in a GSM network—micro, macro, femto, umbrella and pico cells. Every cell varies with the coverage range, according to the implementation environment. GSM networks works on different frequency ranges, 2G GSM networks works in the 900 MHz spectrum and later introduced on 1800 MHz band. 900MHz GSM works with the combination of both TDMA and FDMA at the data rate of 9.6 kbps.

CONCLUSION

Embedded face recognition system based on ARM 9 on windows operating system is proposed and delivered good recognition performances under controlled conditions. Face recognition security system is designed with the combination of embedded and Matlab. By this approach we can provide complete security for safeguarding to offices, houses, banks, etc. In this thesis we proposed our work based on windows operating systems. Further research can be implemented on RTOS and other sophisticated OS.

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Authors profile:

MS.Neeharika R M.**Tech**., (Assistant Professor)

Academic Record

Name of the Faculty	**MS.Neeharika R**
Profile Picture	
Designation	Assistant Professor
Qualification	B.Tech (JNTUH) M.Tech (JNTUH)
Area of Specialization	-
Experience	Teaching - 2.7
Publication	International - 2 Seminars/Workshops - 3 National Conference - 1
Mobile Number	-
E-Mail ID	-

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SONTI.SOWJANYA
D.O.B:- 11/06/1992 (11TH JUNE 1992)
ADDRESS: - H.NO:- 2-252-1, KALLURU(V) , KALLURU(M),
DISTRICT- KHAMMAM, PIN CODE- 507209, TELANGANA.
MAIL ID: - sontisowjanya9@gmail.com, MOBILE: - 9866869525.

QUALIFICATION:- B-TECH (E.C.E)
(MOTHER TERESSA INSTITUTE OF SCIENCE AND TECHNOLOGY (2009-2012-3) Affiliated to JNTU Hyderabad, (VILL)-KOTHUR, (MDL)-SATHUPALLY, (DIST)-KHAMMAM.
M-TECH (EMBEDDED SYSTEMS), (PERSUING)
VIGNANA BHARATHI INSTITUTE OF TECHNOLOGY (2013-2015) Affiliated to JNTU Hyderabad, Aushapur (V), Ghatkesar (M), R.R.Dist-501301