



Wireless Medical History Tracker and Token Generator Using Finger Biometric Technology and ARM

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ABSTRACT: As world is moving towards the technology based applications for any field, this work is proposed for making the system for such application in the hospitals or clinics in which there are queuing problems or the documentations or paper work used for making the patients records in the hospital. in this research work the system is developed for solving such kind of problems, as per the Latest technologies that are working right now for accessing the patient information or data in particular hospital are conventional so we are using a Finger module for accessing the patient information at the doctors desk itself so the patient need not to carry the files or papers with that a wireless token generator system is developed for resolving the queuing problem as well.

KEYWORDS: Authorization, Biometric (Access control) Finger Biometric, ARM, cc2500 Trance receiver.

I. INTRODUCTION

As we see the recent procedures that are being used for making the patients information visible are the conventional procedures due to which the patient have to wait for founding his data on the doctors desk and that must be a lengthy procedure This work is proposed for the accessing of patents information in the hospital easy, with that the queuing problem that anyone is being faced when he goes to any hospital is also being minimized by making certain technology related changes or modifications in it., due to which the patient have to wait more for getting his data but the system proposed is such u just have to access your finger on the finger biometric module placed at the doctors desk as soon as he put a finger on the module the information regarding the name and the previous prescription that is being made by the doctor is being immediately displays on the screen of the doctors monitor. so he can get all the information and make any changes he wants to make in his prescription.The particular system is being useful for making all the kind of Applications in accessing the information in any field that is being also used in the stock management in police stations as well or anywhere where the identification and authorization are being take place this is the most secure mode of accessing any persons information where the security of the particulars are become the first priority.

Data from an electronic medical record system can be used for statistical reporting in matters such as quality improvement, resource management and public health communicable disease surveillance. The token generator system is made which has the information about the token number of the patients and the total no of overall patients that in the hospital for checkups to the consulting doctors.

II. LITERATURE SURVEY

The Biometric technology is the widely growing technology for various applications like forensics, secured access and prison security. there are various biometric technologies that are being used right now in which the various biological features are being identified and authenticate using that the various decisions are being made which is useful in the security as well as identification purposes[1]. There are many existing computer security systems used at

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Vol. 3, Issue 6, June 2015

different places like banking, passport, credit cards, smart cards, PIN , access control and network security these systems are using the password system for persons identification but the biometric handling includes the biological parts of the person's body[2]as we talk about the biometric techniques conventionally it will used as by taking the thumb impressions using ink and the identification is being performed manually, but some factors affects the finger print such as short duration template of image, poor quality of capturing the finger print,etc. manual matching of the fingerprints leads to many drawbacks to this system and it's a time inefficient process as well,[3].The new finger biometric technology that is being used has more advancements and features as well such as more accurate, better time efficiency, cost effective and adaptability[3].in fingerprint scanning techniques there are many algorithm are being developed but the system also need to detect the face fingerprint scanning as well for that in earlier research work certain techniques are being introduced such as the detection of liveliness of fingerprint scan which contains the various environmental factor recognition such as Temperature sensing Detection of pulsation on finger trip Pulse oximetry, Electrical conductivity .by which the fake value of finger printing can also be made possible.[5].as we consider the definition of the biometric technology any human physiological or behavioral characteristic that can satisfies the requirements such as Universality, Distinctiveness, Permanence, Collectability. Can be use as a biometric identity. However if we consider the Practical conditions there are certain factors that are also needs to be in consideration such performance, acceptability, circumvention [6].

The another part that has to be discussed is the wireless networking in which the ad-hoc network formation has been done for particular organization in which the overall study regarding the recent technologies work over it ,the RF trance receiver technology is being used at many applications such as in traffic control system, warehouse management, etc. this system gives the total access for communicating with the nodes that has been created for the communication in between each other. By using this technique a sequence updating system is being made which is usable in small scale organizations and hospitals.

III. OBJECTIVE

To generate a particular system or maintaining the proper records of the patients previous prescriptions when he lastly visited the doctor due to which he don't have to face the problems regarding his records if he forgot to bring them because of any conditions with that the basic problem that everyone faces at the crowded areas is queue for solving this a token generator system is being placed.

IV. SYSTEM OVERVIEW

Medical Report/History Tracking:

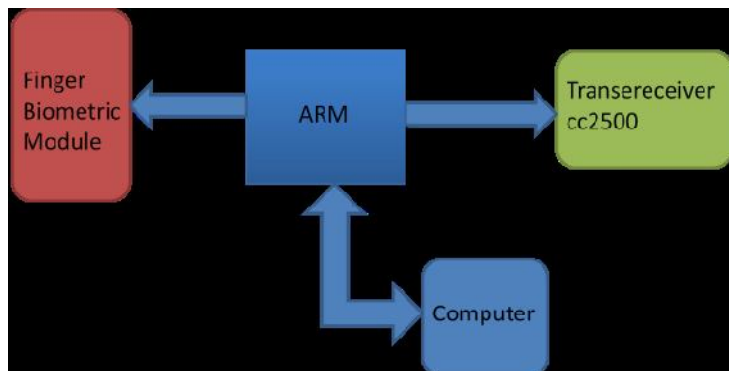


Figure shows the basic Block Diagram of the history tracker system which contains the finger biometric module attached with the ARM 7 Family Microcontroller (LPC2148). This is advanced controller nowadays.

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 6, June 2015

Token Generator:



V. METHODOLOGY FOR IMPLEMENTATION

1] Medical Report/History Tracking:

The medical report tracking system is shown in figure 1. Finger Biometric is used as unique user ID. The Finger Biometric Module can only give the access to the doctor to read the data of that particular patient to whom it belongs to. The Finger Biometric is the best option for any identity card/electronic identity modules.

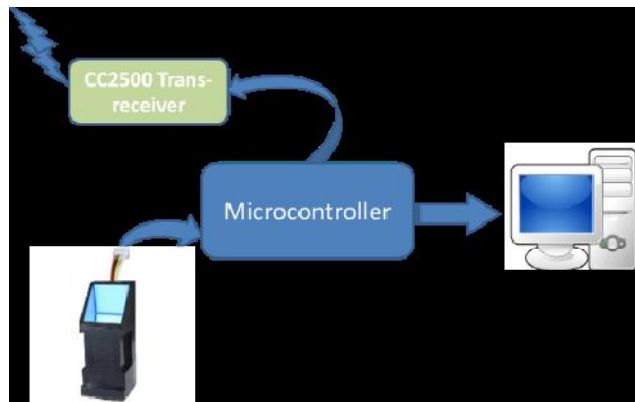


Figure 1- Medical Report Tracking System

2] Token Generator:

Functional Block Diagram 2:-

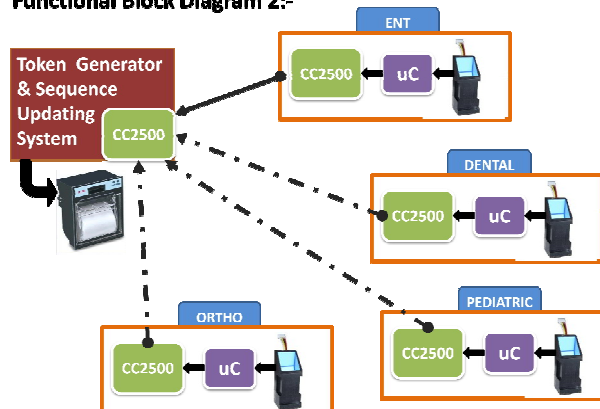


Figure2- Token Generator & Sequence Updating system

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 6, June 2015

This system is designed so as to generate the particular patients token number by which he can get the appointment of the doctor but the thing is only on the access of the doctor he will get the token of the next number unless he will have to wait for the call of the doctor the access has been sent by the doctor to the token generator system using the trance receiver module which is used for the wireless communication between two systems At the OPD (Outdoor Patient Department)on the request of patients, the Receipt (slip) is generated by Medical Receipt Generation system which is shown in figure 2.A zigbee protocol is used to control and communicate with the network.

Receipt contains the following information:

1. It contains the current number of the patient
2. Name of the consulting doctor in particular department
3. Name of the department
4. Name of the hospital

VI. SYSTEM DEVELOPMENT

1] Finger Biometric:

The device is basically the identification and authorization unit developed for maintaining high security administration. The basic generalized biometric system has Data acquisition unit, Decision Making unit, Matcher, Feature extractor and a Database for storing the biometric information. Which is then used for making user to authenticate a particular system?

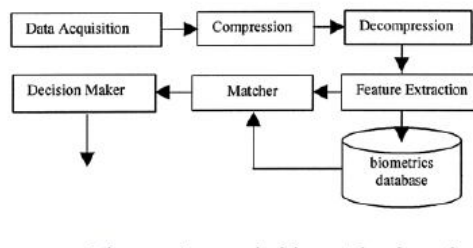


Figure2: A generic biometrics-based system

There are five stages involved in finger-scan verification and identification:

1. Fingerprint Image Acquisition
2. Image Processing
3. Locating Distinctive Characteristics
4. Template Creation
5. Template Matching



Figure 3. Finger Biometric Module

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 6, June 2015

Working

In Finger biometric module when the person scan his finger on the lens .by capturing the image of the finger print it saves it to the memory allocated in the module, by comparing it with the already stored finger print images it will gives the authentication or identification of a particular person.

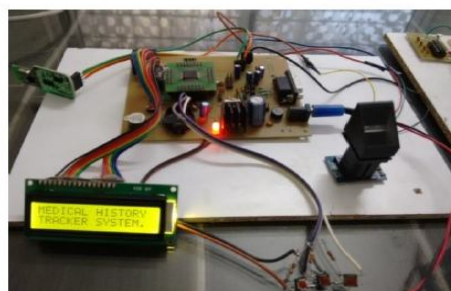
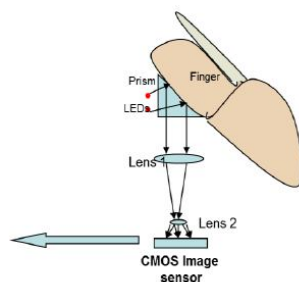
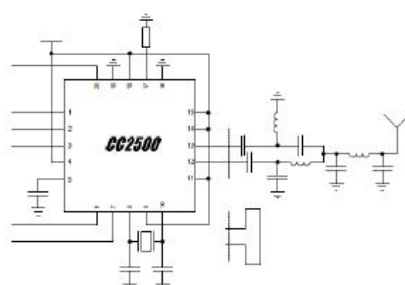


Fig: System for Tracking using Biometric module

2] Trans-Receiver CC2500 Modules:

RF data modem working at 2.4 Ghz frequency in half duplex mode with automatic switching of receive/transmit mode with LED indication. Receives and Transmits serial data of adjustable baud rate of 9600/4800/38400/19200 bps at 5V or 3V level for direct interfacing to microcontrollers. This model can work with other 2.4 Ghz models 1124(TTL 30 meters range) or 1253(RS232) or 1252(USB). RF modem can be used for applications that need two way wireless data transmission. It features high data rate and longer transmission distance. The communication protocol is self controlled and completely transparent to user interface. The module can be embedded to your current design so that wireless communication can be set up easily.

Circuit diagram



Fig; Circuit Diagram [7]

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 6, June 2015

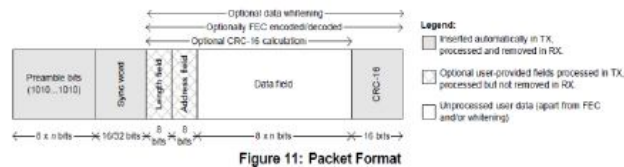


Fig: Packet format of cc module[8]

Packet format is based as per the communication protocol specified



Fig : System of token generator using CC2500

3] Arm Processor/ Microcontroller

Arm7 processor will be used for interfacing the wireless cc2500 module, Keypad and printer together.

FEATURES

- 16-bit/32-bit ARM7TDMI-S microcontroller in a tiny LQFP64 package.
- 8 kB to 40 kB of on-chip static RAM and 32 kB to 512 kB of on-chip flash memory.
- One or two 10-bit ADCs provide a total of 6/14 analog inputs, with conversion times as low as 2.44 μ s per channel.
- Single 10-bit DAC provides variable analog output.
- Two 32-bit timers/external event counters
- Low power Real-Time Clock (RTC) with independent power and 32 kHz clock input.
- Multiple serial interfaces including two UARTs (16C550), two Fast I2C-bus(400 Kbit/s),SPI and SSP With buffering and variable data length capabilities

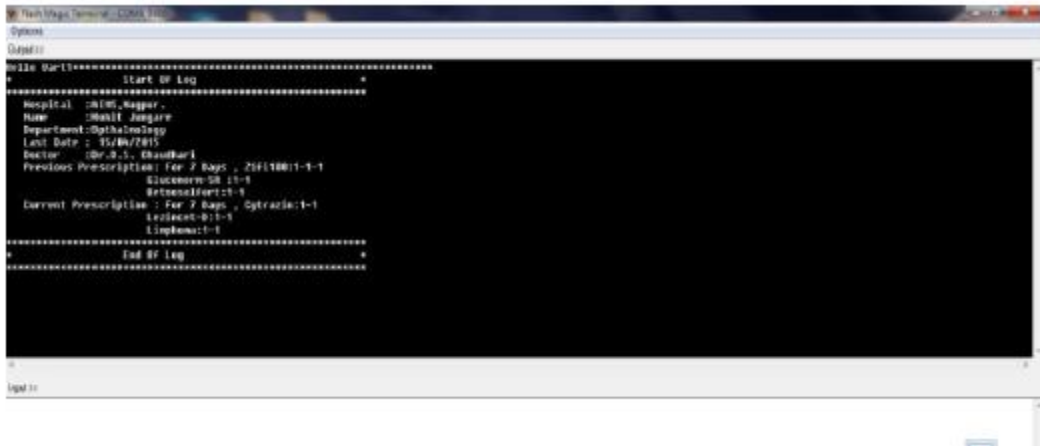
VII. RESULT OF SYSTEM

As soon as the patient access his finger on the biometric module the predefined data that has been stored at the database created by the hospital has been traced and the total information of patient regarding the previous prescription is being displayed on the flash magic terminal ,here flash magic is used only for display operation , in future by creating a server for the hospital it can be easily access .

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 6, June 2015



This result shows as per as the first patient is being accessed by the system the total information about the patient that has been already stored un the database of the hospital is displayed on the flash magic terminal. The result based on the Flash Magic Terminal for the output of the history Tracker.

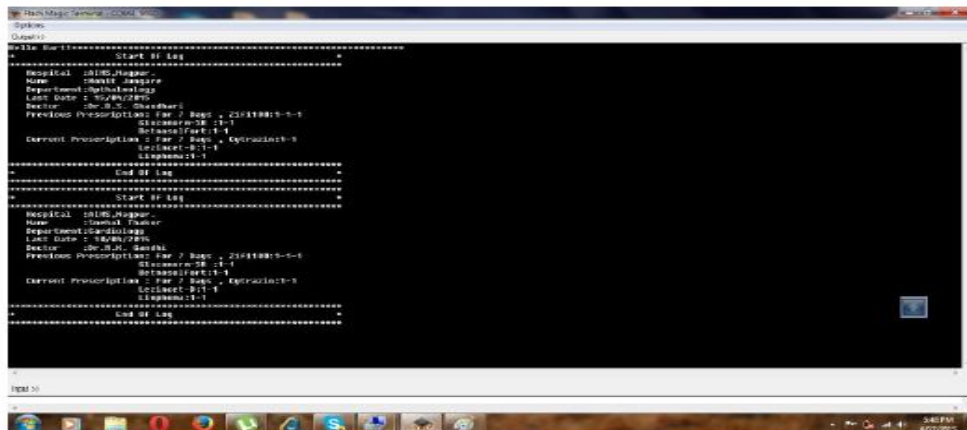


Fig 1

This figure shows the token number of first Department.



International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 6, June 2015



Fig 2

Here fig 1 and 2 shows the format of token that has been generated from the token generator system which contains the current token number and total token numbers.

VIII. CONCLUSION AND FUTURE SCOPE

As per the given Assembly of Paper by creating a particular network configuration between two or more stations without any kind of internet connection we can communicate with the other users as well as send and receive the data as per the instructions given to it and also access the patients information and which is a base of this paper.

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BIOGRAPHY

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