ORIGINAL RESEARCH PAPER

Engineering

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DESIGN AND ENHANCED ADHAAR SECURED AUTOMATIC RATION SYSTEM FOR PUBLIC WELFARE USING LABVIEW

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ABSTRACT

The main purpose of the paper is to Develop an Automatic ration system with Biometric secured for different geography. Current authenticate mechanism is to reliable firmware solution would be appropriate to solve the problem like inaccurate quantity of goods, low processing speed, large waiting time, material theft in ration shops. The proposed system replaces the manual work in ration shops by designed system of automatic ration machine to provide transparency. The hardware used is My RIO. The algorithm used for this work is LabVIEW algorithm. The proposed idea has been implemented in windows platform with LabVIEW and hardware My RIO. The performance parameters evaluated are precision, recall. The idea proposed in this paper can be applied to Public welfare sector.

INTRODUCTION

India's Public Welfare Sector is one of the largest retail sectors in the world. Public welfare sector provides a smart card issued under an order or authority of the State Government for the purchase of essential consumer materials like rice, wheat, kerosene and oil. State Government issues distinctive smart card which depends on family annual income. The consumer material is supplied to ration card holders in the first week of every month by ration shopkeeper Public Distribution System is one of the widely controversial issues that involve malpractice. The manual intervention in weighing of the materials leads to inaccurate measurements and/or it may happen, the ration shop owner illegally uses consumer materials without prior knowledge of ration card holders. The proposed system aids to control malpractices which are present in ration shop by replacing manual work with automatic system based on LabVIEW.

FUTURE SECURED FOR PROPOSED SYSTEM SMART RATION CARD

The smart card is modified as smart ration card by coding the microprocessor chip present in it according to the requirements. Each smart ration card contains unique barcode. We need to collect the data from all the valid ration card holders and estimate the total number of smart ration cards to be created. After the complete data has been collected a database is created. It contains separate record for each family which includes details like no of members in family, names of the members, head of the family, permanent address, present living address, phone number, CREDITS, Adhaar card detail etc. These credits are like units or points that are issued to each family every month by the respective state governments. Here we will be having two databases for two different categories i.e. one for the card holder information and the other one to store the details of the items (products) that are being distributed. Now, the smart ration cards are generated and distributed to the valid card holders.

When the smart ration card holder visits the FPS where the ration is being distributed the smart ration card is taken from the card holder and verified if it is valid using the bar code on it. If it is valid then the details of the card holder are verified with that of the details in the database if they do not match then the database is updated and a list of the products (items) with their respective codes available at the FPS is shown to the customer to select which items he wants. When the items are selected the bill will be generated. The important thing to note here is that, each and every item will be having a particular code and using that code and the quantity of the item purchased the amount for that particular item will be calculated. For example the code for rice is 002(which means 002= 5credits) and the quantity of rice purchased is 2kg then the amount related to rice will be 5*2=10 credits. Now, after the bill is generated for the purchased items using the above method the dealer puts the card in the swipe machine and then the pin will be entered and the number of credits in the bill will be deducted from the customer's smart ration card. Swiping process referred here is almost similar to the swiping in the shopping malls etc but the main difference is that here instead of money the credits will be deducted. Therefore, the customer leaves the FPS with the bill and items he has purchased.

BIOMETRIC MECHANISMS

Biometric is the technological term for the measurement and statistical analysis of people's physical and behavioral characteristics. The physical characteristics include face recognition, finger prints, DNA, iris recognition and palm veins. The behavioral characteristics includes behavior of a person, they are voice, gait (manner of walking) and typical rhythm. From a very young age, most humans recognize each other easily. A familiar voice, face, or manner of moving helps to identify members of the family a mother, father, or other caregiver and can give us comfort, comradeship, and safety. When we find ourselves among strangers, when we fail to recognize the individuals around us, we are more prone to caution and concern about our safety.

FINGERPRINT RECOGNITION

Fingerprint Scanners is a fingerprint recognition device's for computer security equipped with the fingerprint recognition module featuring with its superior performance, accuracy, durability based on unique fingerprint biometric technology. Fingerprint Reader / Scanner is very safe and convenient device for security instead of password, that is vulnerable to fraud and is hard to remember. Use USB Fingerprint Scanner / Reader with our Biometrics software for authentication, identification and verification function that Let your fingerprints act like digital passwords that cannot be lost, forgotten or stolen. The main function of fingerprint scanner is to get an image of our finger and it needs to check whether the pattern of ridges and valleys in the image matches the pattern of ridges and valleys in already scanned images. The captured fingerprint is not saved in the form of images

and it save in the form of series of number (a binary code) which is used for verification. The binary code cannot be reconverted into image, so no one can use your own fingerprint.

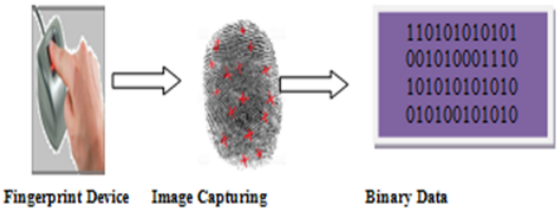

Fig 1 basic block diagram of Finger print Recognition

FACE RECOGNITION

Face recognition is a computer technology is used to scan, store and detect human faces for use in indentifying a person from a video frame or digital image from a video source. It is commonly used for security purposes compared to other biometrics and increasingly used in variety of other application. It also refers to the psychological process by which locate the humans location and attend to faces in visual scene. Human computer interface, Image database management and Video surveillance are the other applications of face recognition.

BAR CHART FOR BIOMETRICS

In the following flowchart is a percentage of biometrics at the year of 2016.

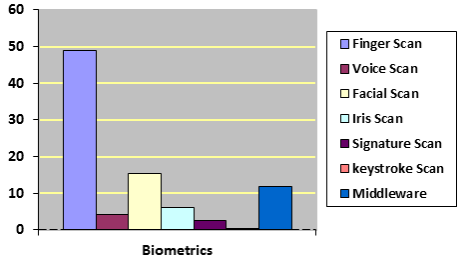

Fig 2 Bar Chart for Biometrics

MYRIO

MyRIO is a real-time embedded evaluation board made by National Instruments. It is used to develop applications that utilize its onboard FPGA and microprocessor. It requires LabVIEW. It's geared towards students and basic applications. NI MyRIO is used for a variety of teaching applications to improve student learning in engineering education. Whether used alone or paired with add-ons, NI mini systems, or third-party sensors, NI MyRIO can help student learn multiple engineering concepts on one device.

Fig 3-NI MyRIO

PROPOSED SYSTEM

In this paper, Ration shop stock can be enabling by acquiring details by inserting ration card. When the ration card is inserted, it displays the family head photo with details and request for thumb impression of any one of his family members.

Once the finger print matches with the database, it displays the photo and a detail of that member and it request the person to deposit money and enables the purchase button. If the finger print doesn't match, it displays a message stating that "finger print invalid". After depositing the money, the consumer can select as per his/her needs based on his/her available stock. It checks for amount deposited and the bill amount, if the amount deposited is less, it request to deposit required money and dispenses the material selected.

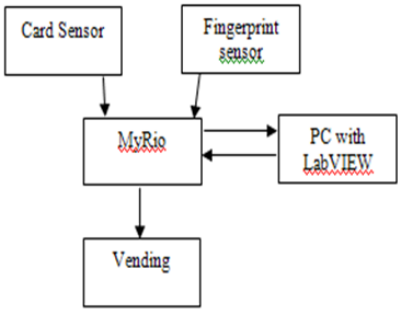

Fig 4-Block Diagram

If amount Deposited is greater than bill amount, the balance amount and the material selected will be dispensed. The purchased details like person name who used the card, purchased date/time, machine id number, details of the materials purchased, balance available stock and the bill amount can be updated in that smart card. And the overall details of ration machine stock details also will be updated on every purchase. The main purpose of the project is to use smart ration card at any geographical throughout the state.

Flowchart

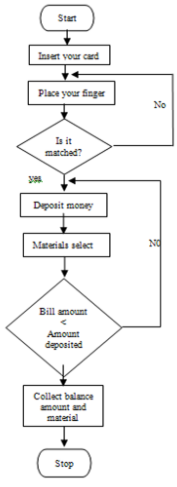

Fig 5-Flowchart of Enhanced Adhaar secured automatic ration system

RESULTS

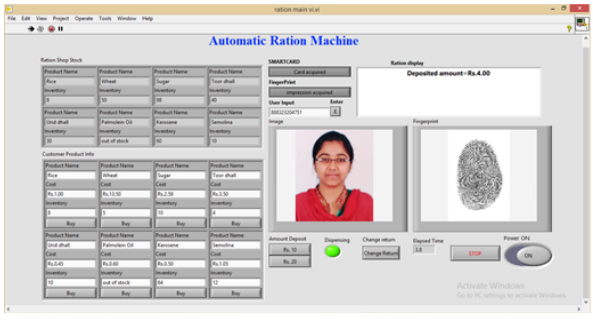

Fig 6 Automatic Ration Machine

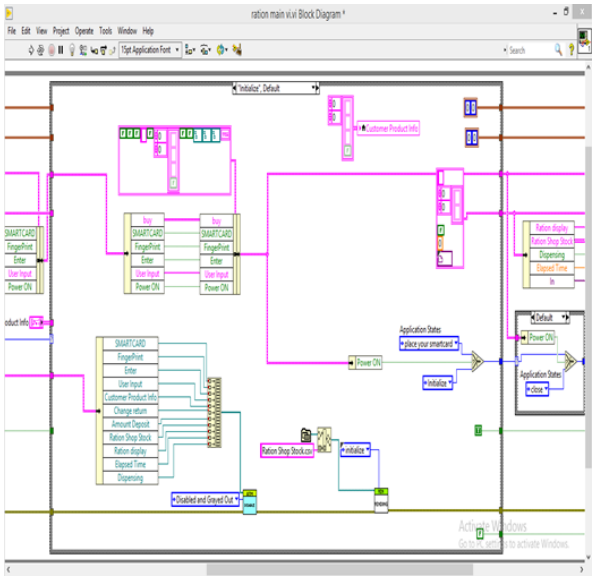

Fig 7 Enhanced Adhaar secured automatic ration system

The overall result of the development of enhanced Adhaar secured automatic ration system for public welfare is shown on the display fig6. Card sensor is used to scan the card and fingerprint sensor is used to scan the biometric. Captured image of the biometric compared by using LabVIEW software and their Ration details will be displayed. Finally the users enter the bill amount and collect the selected material.

CONCLUSION

This paper concludes that the Manual system of public distribution system needs to be replaced with biometric secured automatic ration system where the distribution process become easier, reliable, secure and accurate quantity of goods, high processing speed, eliminating the material theft in ration shop. It can be developed on the basis of more need of security in public distribution system. Now a days public distribution system is getting less secure with emerging ways to theft material and malpractices in distribution. Biometric based Automatic ration systems have become a mature technology which provides financial services to an increasing segment of the population in many countries. The fraudster may easily match everything but they can never match the biometric samples. Biometric refers an automatic detection of a person based on her behavioral and / or physical characteristics. The main reasons for introducing biometric based automatic ration system are to increase over all security.

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