

## Human Data Acquisition through Biometrics using LabVIEW

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### Article Info

#### Article history:

Received Sep 6, 2016

Revised Nov 30, 2016

Accepted Dec 17, 2016

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#### Keyword:

Human biometric

LabVIEW

NI MyDAQ

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### ABSTRACT

Human Data Acquisition is an innovative work done based on fingerprints of a particular person. Using the fingerprints we can get each and every detail of any individual. Through this, the data acquired can be used in many applications such as Airport Security System, Voting System, and Employee login System, in finding the thieves etc. We in our project have implemented in Voting System. In this we use the components such as MyDAQ which is data acquisition device. The coding here is in done in a Graphical Programming language named LabVIEW where the execution of any program is done in a sequential way or step by step according to the data received.

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## 1. INTRODUCTION

In the present scenario to find out the details of any particular person is a tedious task. We need to have the Adhaar Card Id or else through the passport, pan card etc., we get the details. So we have come up with an innovative idea of acquiring the human data i.e. through the fingerprints [1]. This method can be applied or implemented in many cases such as, airport security system, voting system [2] etc. Acquiring the human data just through fingerprints is done using the Fingerprint Sensor Module which takes the finger inputs and displays the details of the person from the database.

The fingerprints are read through separate software named SFG where they are stored as templates for future use. The main component used here is NI MyDAQ [3] which is a Data Acquisition Device. Furthermore, as an application we have implemented the above process in the Voting System. This project when used in the voting system [2], [4] displays all the details of the person who has to cast his votes. If the data displayed is valid then he/she is allowed to vote.

A Fingerprint Sensor is an electronic device used to capture a digital image of the fingerprint pattern [5]. The captured image is called a live scan. This live scan is digitally processed to create a biometric template (a collection of extracted features) which is stored and used for matching.

## 2. RESEARCH METHOD

In this method we are storing the data along with the fingerprint templates of every individual in the database. As soon as the finger inputs are read from the sensor it automatically displays the complete data of that particular person along with the photograph. Then we are using the proposed method in application of the voting procedure. Presently the voting process in India is done using a valid voter id card. Through this voter id the person is allowed to vote. So, if anybody who are having their voter id cards can use the

fingerprint method to cast their valuable votes. By using this technology we would benefitted a lot as it not very difficult to implement.

### 3. RESULTS AND ANALYSIS

The project was implemented in a graphical programming language named LabVIEW which is dataflow programming model wherein the execution is done in step by step process. LabVIEW has two windows namely Front Panel and Block diagram together known as VI's. The logical part (coding) is done in the block diagram and the output is verified on front panel. Below Figure 1(a) are the sequential snippets of our project.



Figure 1. MAIN VI

The above are main VI's of the project code. First is the main Front panel where a unique user-id and password are provided to one person who administers the whole process in Figure 1. If the entered user-id and password are matched then it gives us the status as valid, then after if we press on OK button it goes to the next level in the process.

As mentioned earlier the fingerprint inputs are read by software named SFG which saves them as templates in Figure 1(b) and (c). The window of that software opens and we can provide the finger inputs.

After the inputs are saved we can mention any one name then the process begins. It asks us to select the ROI (Region of Interest) where it scrutinises the image given and displays the complete data of that person in Figure 2.

When the ROI is given after scanning the fingerprint input if it is matched then it goes to verify the image of the person in Figure 3.

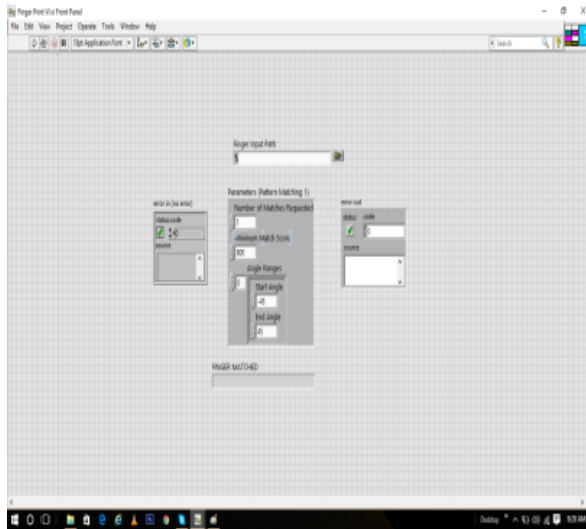


Figure 2. FINGERPRINT VI

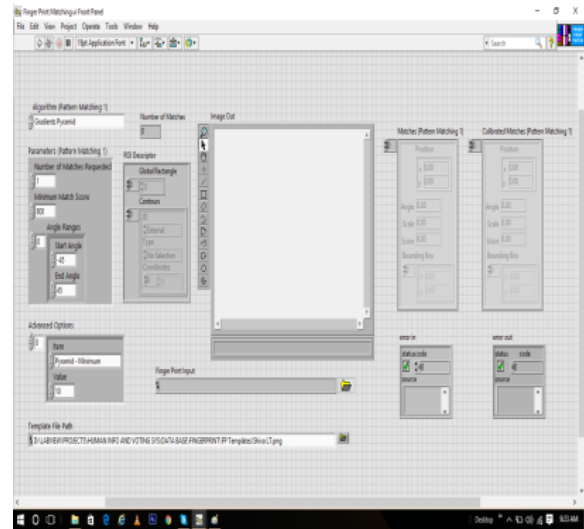


Figure 3. Fingerprint Matching Vi

Image of the person is also displayed by using IMAQ and Refnum icons in LabVIEW. We need to mention the exact file paths of all images stored in the database and the Refnum output displays the image in Figure 4. This VI displays the whole data of the person including the image of the person. These details include name, age, gender, nationality, address, date of birth, passport details if any, voter id, image in Figure 5. Here we also have an option where we can proceed to vote. Here the person is allowed to cast his vote by selecting any one button of different political parties in Figure 6. This VI also displays the number of votes the candidates have given. The indication that the person has cast his vote is that the LED glows and the buzzer gives the output.

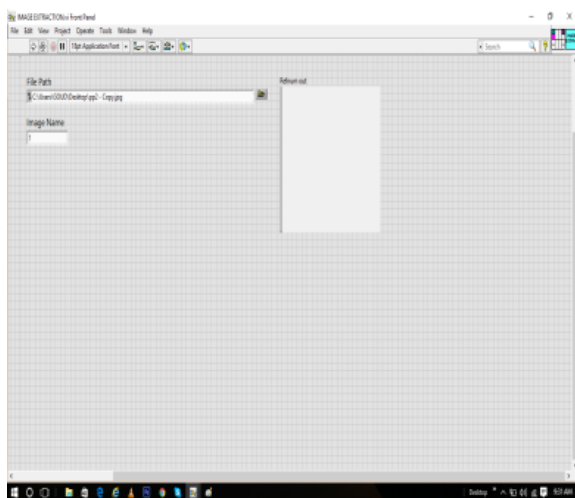


Figure 4. Image Extraction

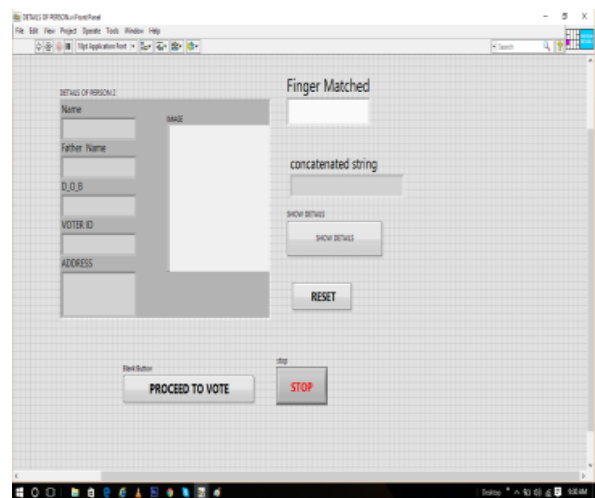


Figure 5. Details of Person Vi

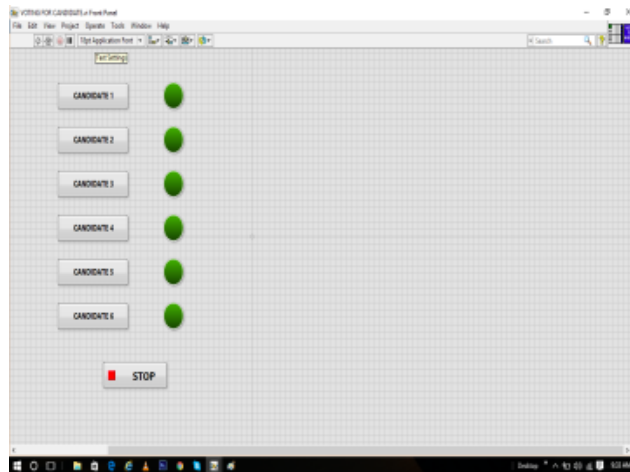


Figure 6. Voting VI

#### 4. CONCLUSION

The above mention process of acquiring the human data through his/her fingerprint inputs is an innovative and a secured procedure. It is secured because only one person can have access to perform the whole process through the unique user-id and password. It also helps many institutions, offices, and also some of the government departments to store their employee data in this manner. Through this they can have an easy access to acquire details of any individual.

#### 5. FUTURE SCOPE

- a. It can also be used in airport security system, employee data acquisition.
- b. This project can be implemented as a mobile application where-in total security is provided.
- c. Memory of finger print module can be expanded .We can use a 1mb flash memory finger print module for increasing the capacity.

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