



International Journal on Recent Researches In Science, Engineering & Technology

(Division of Computer Science and Engineering)

A Journal Established in early 2000 as National journal and upgraded to International journal in 2013 and is in existence for the last 10 years. It is run by Retired Professors from NIT, Trichy. It is an absolutely free (No processing charges, No publishing charges etc) Journal Indexed in JIR, DIIF and SJIF.

Research Paper

Available online at: www.jrrset.com

ISSN (Print) : 2347-6729

ISSN (Online) : 2348-3105

Volume 3, Issue 9
September 2015.

JIR IF : 2.54

DIIF IF : 1.46

SJIF IF : 1.329

CHARACTER RECOGNITION SYSTEM USING LAB VIEW

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ABSTRACT

The undertaking acquires an enter personality from the person using a four wire resistive touch display screen which is then processed in Lab VIEW to compare with the database of saved characters and the closest match is displayed.

Keywords: Character Recognition, LabVIEW

I. INTRODUCTION

Pattern consciousness and personality consciousness is presently used to system records in contact display screen devices such as smart phones, tablets, etc. The machine in this paper goals to apprehend a personality drawn on the contact display screen which is despatched to a pc serially by using an ATmega16 microcontroller. The input produced with the aid of the microcontroller is processed by using LabVIEW which compares it with the database of stored characters using information and then shows the closest match.

II. RELATED WORKS

Character or Handwriting focus software has been in use in cell phones, pill PCs for a long time. The first handwriting consciousness system in a PDA got here in 1993 in the Apple Message Pad. Since then a number of sophisticated algorithms have been developed that can apprehend words at a time and produce accurate results.

III. HARDWARE

There are 4 components-

1. 4 wire analog resistive touchscreen
2. ATmega16 microcontroller
3. PL2303 USB to TTL converter
4. Computer equipped with LabVIEW

3.1 Touch Screen

It is a 2- Dimensional sensing system that is developed of 2 sheets of cloth separated barely by way of spacers. It incorporates a sheet of glass offering a stable backside layer and a sheet of Polyethylene (PET) as a flexible top layer .The 2 sheets are covered with a metallic compound called Indium Tin Oxide (ITO).When the PET movie is pressed down, the two resistive surfaces meet. The role of a contact can be examine with the aid of a touch screen microcontroller circuit.

3.2 ATmega16 Microcontroller

The microcontroller has been programmed to alternately do an Analog to digital conversion for X and Y coordinate of the factor touched on the screen. After each conversion the cost is transmitted digit through digit thru UART (Universal Asynchronous Receiver Transmitter) of the microcontroller. The coordinates are despatched in the structure x1x2x3, y1y2,y3 followed by a new line character

IV. LABVIEW

It stands for Laboratory Virtual Instrument Engineering Workbench. It was developed to permit scientists and engineers to control gadgets thru computers using an convenient to understand graphical programming language. LabVIEW has been used to serially gather information using VISA libraries and then to plot and examine the input character with the database of characters.

V. MAIN VI

The fundamental VI configures the serial port using controls setting the fabulous records bits, give up bits, baud price and parity (not used). After the port has been configured it uses the VISA Read characteristic to examine statistics in every new release of the whilst loop. In every iteration, it reads one set of coordinates, makes use of the Match Pattern feature to separate the X and Y coordinates and shops them in separate arrays. These arrays are then clustered together and sent for plotting to the XY Graph. All sets of coordinates is 8 bytes, 6 for the numbers 1 for the comma and 1 for a new line character at the end, so 8 bytes are examine every iteration.

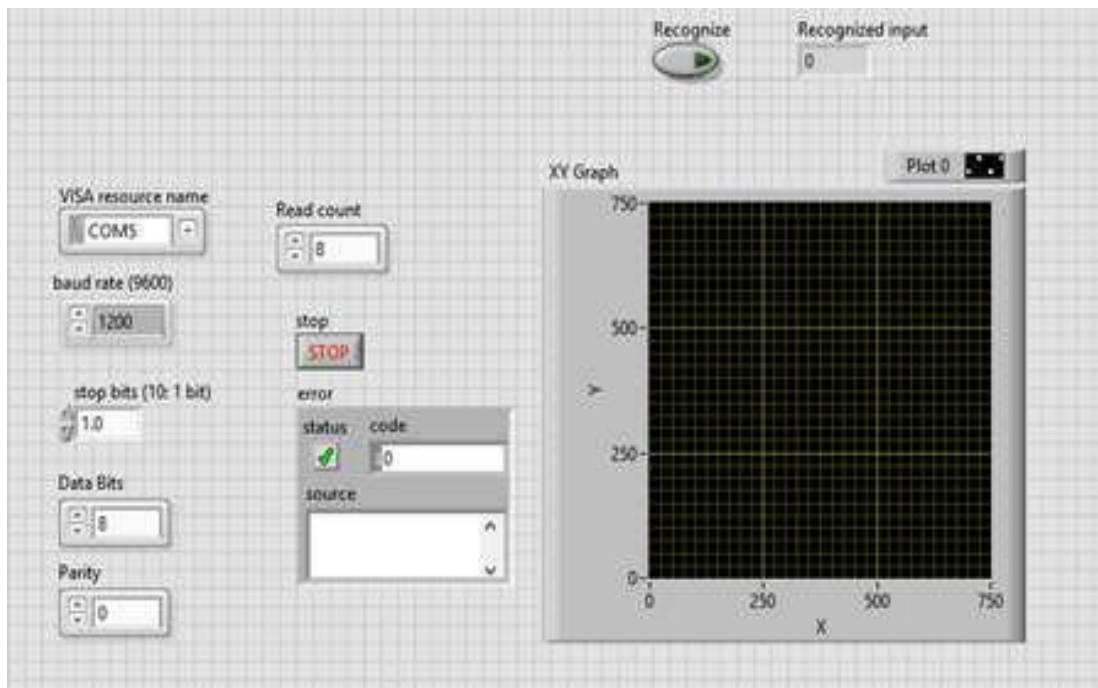


Fig 1 Front Panel of the Main VI

When the consumer has completed getting into the character, he may press the Recognize button on the the front panel to do the character recognition and display the recognized character. After the user presses the Recognize button, the Compare subVI is surpassed the X and Y arrays of the enter character. It does the awareness and displays the output.

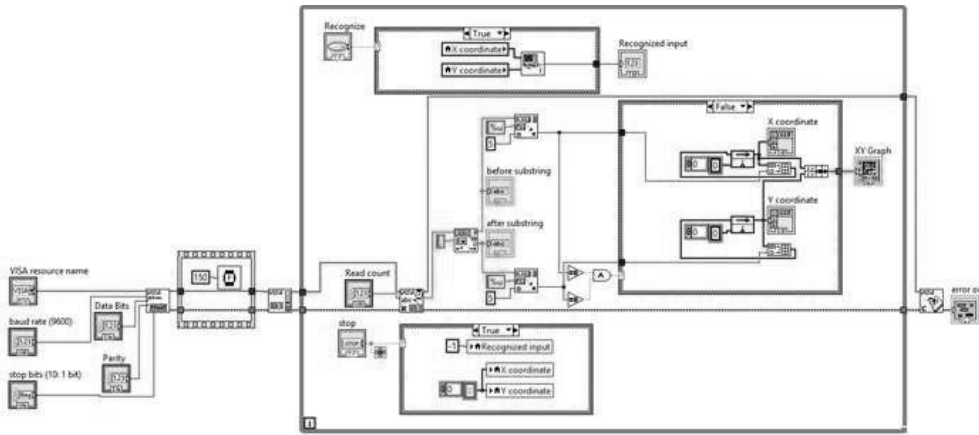


Fig 2 Block Diagram of the Main VI

VI. COMPARE SUBVI

The Compare subVI performs the computations for the recognition. It applies the Mean Absolute Deviation function of Statistics for performing the comparisons. Mean Absolute Deviations of difference of input arrays and stored arrays is calculated and compared. Mean Absolute Deviation of a data set tells us how far, on average, all values are from the imply value.

The imply absolute deviation of a set {x1, x2, ..., xn} is

$$m(X) = \frac{1}{n} \sum_{i=1}^n |x_i - m(X)|.$$

is the mean of the data set

It can be zero for distinction of 2 curves if they are identically drawn on the screen irrespective of their locations. It will be non-zero and will extend as the 2 curves being in contrast get more distinctive from each other.

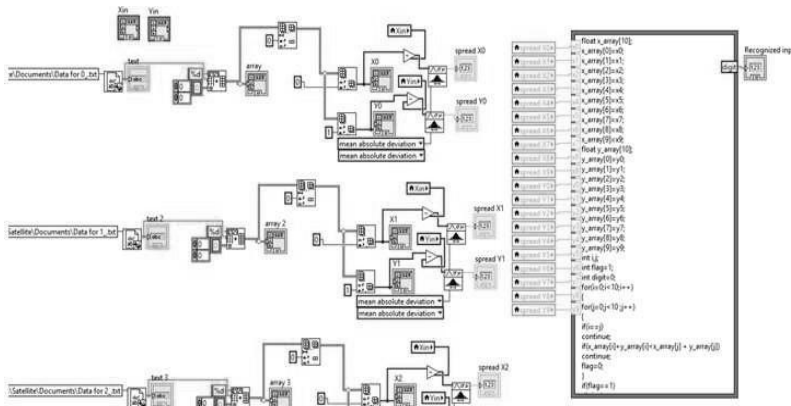


Fig 3 Block Diagram of the Compare subVI

The subVI has get right of entry to the database of characters which consists of a textual content file for each character. Each textual content file carries the X and Y arrays of the personality in the database, with which the input character's X and Y arrays will be compared. The subVI calculates the Mean Absolute Deviations of the difference of the input and saved characters and then compares these values iteratively in a Formula Node to find the character with least deviations in contrast to all others in the database. This is taken as the closest fit and is displayed as the Recognized enter on the Front Panel of the fundamental VI.

VI. CONCLUSION

The accuracy of the character attention machine relies upon on the following:

1. The figure of the character in association to shape stored in the database. We obtained correct consequences when the center was once similar to the database. It used to be now not a big constraint as characters did now not have to be exactly the same for correct results.
2. The pace at which the persona used to be drawn when it used to be saved in the database. The velocity has extra have an effect on on the accuracy as even if the same form is drawn, but at a substantially exclusive speed from the database, the end result will be inaccurate.
3. While drawing on the touch screen, some factors can appear randomly on the XY graph. If too many of these points appear, the accuracy will be lowered and effects may additionally not be as expected. These factors might also be due to noise in the ADC.
4. The baud price plays a very widespread function in figuring out the error and pace of the statistics transmission.

So, if the pace at which the personality is drawn and it's form are comparable to the persona in the database, the results will be correct most of the times.

VII. RESULT

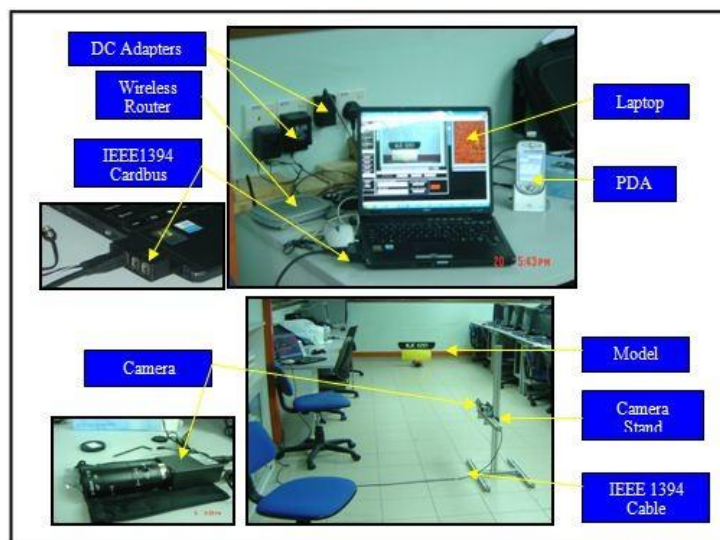


Fig 4. Lab view of Character Recognition System

VIII. FUTURE SCOPE

It is possible to consist of many extra characters in the database without affecting accuracy. A greater advanced model could be made which would be able to apprehend a word of writing at a time. It may want to additionally be used as pattern lock machine for units like cellular phones, PDAs, drugs PCs. A sample to unencumbered the machine would be saved in the database and if the enter would suit with that, the system would unlock.

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