

Data Capture System using Image Processing Techniques

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Abstract— It is automated process of collecting the details, usually in the form of circles or boxes and analyzes the same complex was using computations in order to generate required specific knowledge in Optical Mark Reader, also color of independent in the system, illumination and brightness will makes the system capable and robust for practical applications. Now days the different systems are in the current market for the same uses, but too costly, and ideal scanners and are contingent on a number of parameters like paper, printing quality. Proposed system sequence of the scanner and a computer to process the computation and it is assisted with GUI. The forms are filled and scanned pictures are given input to computer, which does the computation and save the result in spreadsheet in easy format to understand. The system tested for over 15 tests above, forms will get perfect percentage, thus the proving efficiency to the adaptive comparison method in proposed system process. The system has distance level of applications in the field of evaluation in exam, automated surveys and attendance.

Key words: .NET, OMR, Scanner, Software Methodologies, Adaptive Threshold; Image Processing, GUI

I. INTRODUCTION

The Optical Character Recognition is a method or a technique that allows people to get exact character from the system using OMR(Optical mark Reader) system. This system can scan any type files like PDF, image file etc,. It is automated process of collecting the details, usually in the form of circles or boxes and analyzes the same complex was using computations in order to generate required specific knowledge in Optical Mark Reader, also color of independent in the system, illumination and brightness will makes the system capable and robust for practical applications. Now days the different systems are in the current market for the same uses, but too costly, and ideal scanners and are contingent on a number of parameters like paper, printing quality. Proposed system sequence of the scanner and a computer to process the computation and it is assisted with GUI. The forms are filled and scanned pictures are given input to computer, which does the computation and save the result in spreadsheet in easy format to understand. The system tested for over 15 tests above, forms will get perfect percentage, thus the proving efficiency to the adaptive comparison method in proposed system process. The system has distance level of applications in the field of evaluation in exam, automated surveys and attendance.

In the Optical Character Recognition system we propose the novel technique of optical mark recognition system. A custom form is designed using the graphical user interface. The filled forms are scanned using a regular greyscale scanner. Scanned images are processed to automatically retrieve information of filled bubbles. the

recognition part to read the filled bubbles from the scanned form.

At present no such a system available which can evaluate the answer sheet scanned by the simple scanner. The existing system requires special hardware which turns out to be very costly for any mediocre organization. So using such a system may be cost inefficient or not feasible by organizations it is the need of the hour to develop system which would be cost effective and time effective in other words cheap and best. Besides, in today's competitive climate, where a single marks can decide the future of candidates. The organization cannot rely totally on the manual work. Because manual work cannot be totally error free.

II. SCOPE OF SYSTEM

- 1) The Optical Mark Reader answer sheet reads and checks, verify and processes the Optical Mark Reader answer sheets.
- 2) The Optical Mark Reader software is useful in collecting data's from different forms like feedback forms, survey forms, questionnaires, and admission forms and more.
- 3) It is extracting words from an image provided by the user.
- 4) One of the main objectives of implementing such OCR system is to minimize the time and cost for the evaluation of the OMR answer sheet.
- 5) The answer sheet can be scanned by the simple scanner and then by the use of the OMR software the answer sheet can be evaluated.

III. MODULE DESCRIPTION

A. Module 1: OMR Sheet Checker:

The Optical Mark Reader answer sheet reads and checks verify and process the Optical Mark Reader answer sheets. The software reads and scanned the images of the Optical Mark Reader sheets and compares the answers provided in the key answer and calculates the marks and presents score lists as well as full detailed reports of all students.

B. Module 2: OMR Form Reader

The Optical Mark Reader software is useful in collecting data's from different forms like feedback forms, survey forms, questionnaires, and admission forms and more. Such as forms have written materials also, the software has the providing of reading person names, date of births, phone numbers, printed form numbers, barcode, signature and more.

C. Module 3: Optical Character Recognition (OCR)

OCR is the process of extracting words from an image provided by the user.

D. Module 4: Dynamic OMR Sheets

This module provides the facility of dynamically creating our own OMR form. We can add features of our own by including controls just by dragging and dropping. In addition we can enhance the controls by adding style properties of our own. Finally the designed form can be printed.

E. Module 5: PDF Converter

OMR tool is capable of converting PDF files to image files. So that the required information is fetched and evaluation process begins.

IV. EXISTING SYSTEM

At present no such a system available which can evaluate the answer sheet scanned by the simple scanner. The existing system requires special hardware which turns out to be very costly for any mediocre organization. So using such a system may be cost inefficient or not feasible by organizations it is the need of the hour to develop system which would be cost effective and time effective in other words cheap and best. Besides, in today's competitive climate, where a single marks can decide the future of candidates. The organization cannot rely totally on the manual work. Because manual work cannot be totally error free. So OMR can be used to yield error free and reliable result.

V. PROPOSED SYSTEM

We propose the novel technique of optical mark recognition system. A custom form is designed using the graphical user interface. The filled forms are scanned using a regular grayscale scanner. Scanned images are processed to automatically retrieve information of filled bubbles. The recognition part to read the filled bubbles from the scanned form.

VI. DIAGRAMS

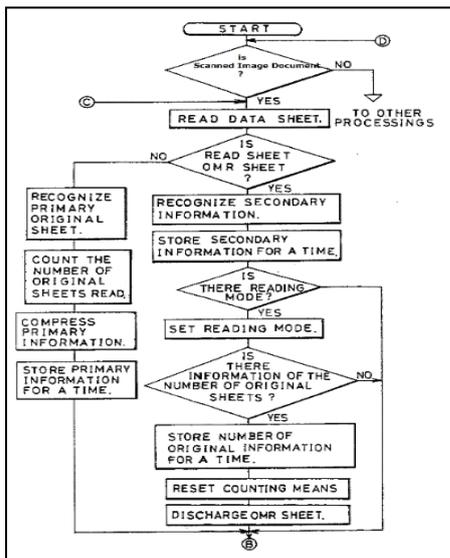


Fig. 1: Diagram

VII. SCREEN SHOTS

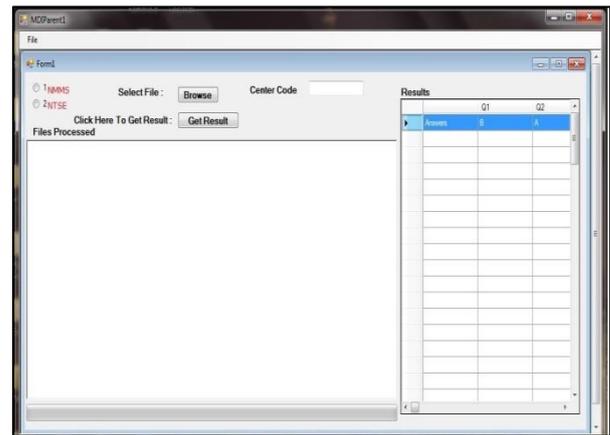


Fig. 2: Screen Shot

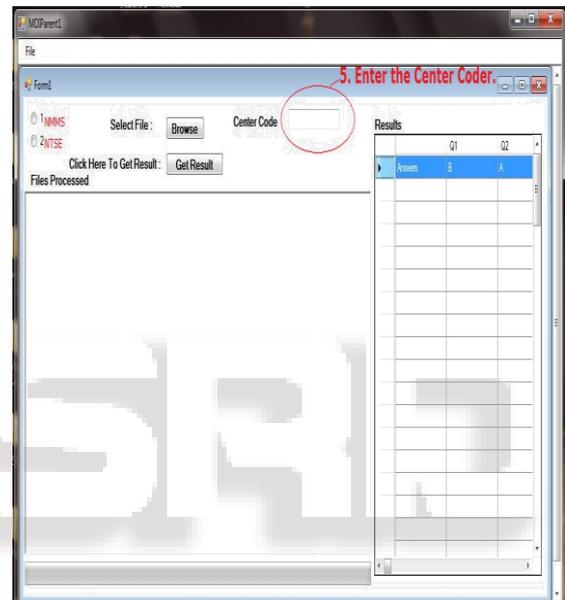


Fig. 3

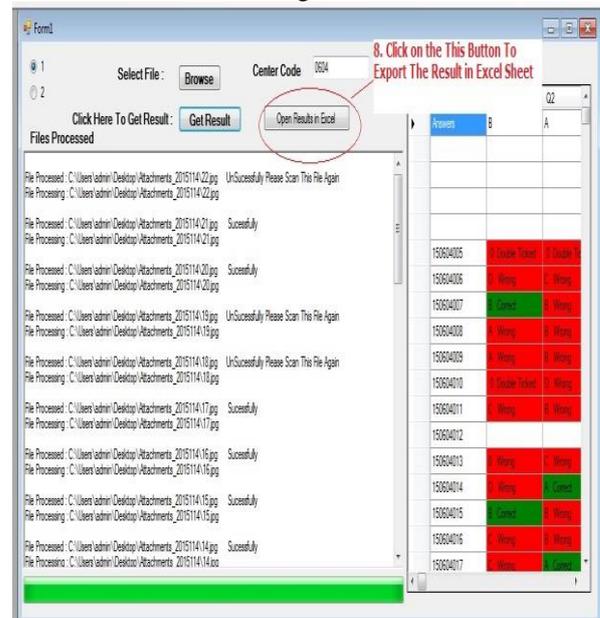


Fig. 4

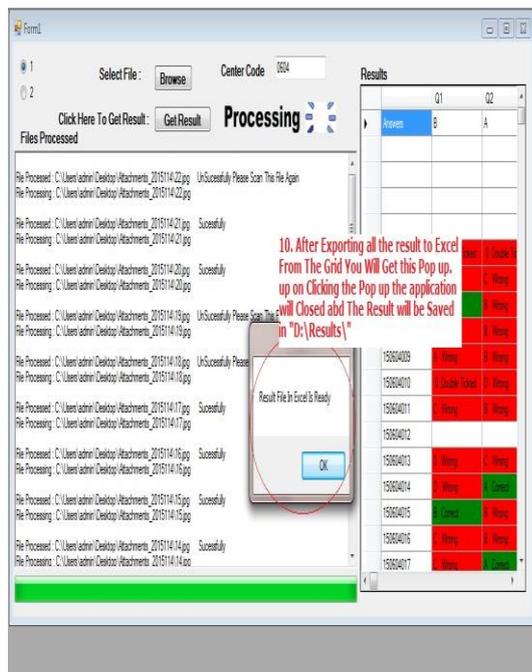


Fig. 5

VIII. REQUIREMENTS

A. Hardware Requirements:

- System : Pentium IV 2.4 GHz.
- Hard Disk : 40 GB.
- Monitor : 15 VGA Color.
- Mouse : Logitech.
- Ram : 1GB.

B. Software Requirements:

- Operating system : Windows XP/7.
- Coding Language : C#
- IDE : Visual Studio
- Framework : .net Framework 4.0

IX. CONCLUSION

We have proposed a simple and cost-effective software tool to evaluate OMR forms with high accuracy and execution speed. This system can easily replace current day heavy machinery which consists of expensive dedicated scanners that achieve the same objective with multiple dependencies and strict constraints. The proposed system uses normal printer and scanner with no added cost, and allows the forms to be printed on normal paper, without any constraints on quality or color.

REFERENCES

- [1] A. M. Smith, "Optical mark reading - making it easy for users", In Proceedings of the 9th annual ACM SIGUCCS conference on User services, United States, 1981, pp: 257-263.
- [2] K. Toida, "An Overview of the OMR technology: based on the experiences in Japan", Workshop on Application of new information technology to population: Paper based data collection and capture, Thailand, 1999.

- [3] Sabyasachi Das, "Optical Mark Recognition Technology for Rural Health Data Collection", November 2010.
- [4] Hui Deng, Feng Wang, Bo Liang, "A low- cost OMR solution for educational applications", Parallel and Distributed Processing with Applications 2008, ISPA 2008
- [5] E. Greenfield, "OMR Scanners: Reflective Technology Makes the Difference", Technological Horizons In Education, Vol. 18, pp: 1991.
- [6] K. CHINNASARN, "An image -processing oriented optical mark reader", Applications of digital image processing XXII, Denver CO, 1999.
- [7] Ngo Quoc Tao and Do Nang Toan " Some Characteristical aspects of Markreader Software Package for Automatic Mark Data Entry", Circuits and Systems, 2002. APCCAS '02, pages 437 - 442 vol.2, 2002.
- [8] N.Q.Tao, D.N.Toan, "Some Methods Improving Efficiencies Of The Mark Recognizing For Designing Automatic Form Entry System Markread," Journal of Computer Science and Cybernetics, Vol.15, No. 4, Hanoi, 1999.