

Online Based Answer-Sheet Evaluation And Rechecking

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Abstract— Evaluation is a process of assessing and measuring the educational system through many techniques like oral or viva-voce exam, subjective exam and objective exam etc. After conducting a survey on 200 peoples, we found, objective exam is preferred to evaluate the students frequently due to the easy and less time consuming in the evaluation of objective answer-sheet in compare to the subjective answer-sheet. This paper is a discussion on a solution to evaluate the objective answer-sheet automatically by computer. It is used to automate the import data which emanate from objective answer sheets into a computer. Its main advantage is the ability to work with every single scanner of the market, needing no extra drivers whatsoever and no special colour printing of the forms. Optical character recognition technique is used here to recognize the response of the students. Thirty objective sheets were filled by 30 peoples to test the proposed system.

1. Introduction

Today, the education system is totally changed by the technology. It has become more interesting and informative by projector teaching, online tutorial, online teaching video and animation etc. There is an intense use of technology to teach the student. But evaluation process is still done in the traditional way. There are different ways to evaluate the student like viva-voce or oral exam, subjective exam, online and offline objective exam, Group discussion etc. These all type of evaluation methods or exams are very important in today's education system because each method has its own Advantage. The oral exam is an opportunity for students to demonstrate their knowledge, presentation/speaking skills, as well as their ability to communicate. They can also be good practice for job interviews. Subjective exam is also known as essay exam because it doesn't have a single or a particular answer. This type of exam creates the writing habits and increases the language prowess in the students. Objective test is opposite to subjective test. The objective test demands one specific answer from multiple answers. It can measure all levels of student's ability from memory to synthesis. It enables wide sampling of subject content, quick and easy to score. This type of test is used to examine the students

frequently due to quite economical. Objective test can be conducted online and offline modes. In first sight, online mode seems good in comparison to offline mode without any paper cost, automatic and fast evaluation. A survey was conducted on 200 faculty members to know more about the online and offline objective exam. But online mode requires good computer infrastructure and software; those are not available in every institute. SO offline mode also exists.

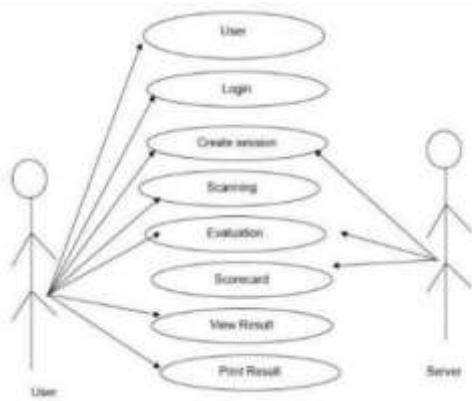
The software might do the sum of below mentioned activities:

- I. Examine the OMR answer sheet,
- II. Detect feedback i.e. response for each question.
- III. Compare student answer with master key which will be already saved in database.

Thus, our goal is to create a technique that can be executed with computer & scanner with a software program that will provide scores to these uniquely designed multiple choice exams with questions having four options for each question & only one correct answer per question can be chosen by the student. The software will examine to detect the response of each question of the paper by matching with accurate option which is already saved in database. OpenCV will be implemented to facilitate image processing with designed software program for decoding the answer.

2. Proposed System

Various methods of paper correction are available in the education system till date. The most basic method is manual paper correction. In this the system, the MCQ question paper are evaluated manually by the evaluator and then marks are entered in to the system. This process becomes challenging if the number of answer sheets are large. Today lots of competitive exams which are academic, governmental as well as in private sector are conducted. These exams have multiple choice questioning. Thus, a program needs to be implemented as a simple software tool.



So, OpenCV which is a free open source software application that helps computer programmers for developing software has a simple interface which is systematic & well-organized technology is used, depending on the scanner used, thousands of OMR sheets per day can be checked with combination of these tools. It contains following main components: software, answer sheets & scanner. Thus, after completion of exam, the candidates with total selected choices of responses are analyzed & final scores are generated. Structured Query Language (SQL) which is a designed as special programming language that is used to create & manage data efficiently in database management system. Further, Open Source Computer Vision Library (OpenCV) is an open source that is designed with computer vision and machine learning software library. OpenCV tool was created to help a common infrastructure for computer vision applications and also to make notable impact to the use of machine perception in the commercial products. OpenCV makes it easy to utilize and modify the code for various business. Visual Studio is an integrated development environment (IDE) from Microsoft technologies which is used to create extraordinary computer programs for Microsoft Windows, web sites enhancements, web applications development and other web services. OpenCV (Open Source Computer Vision) IDE free for use under the open-source is as programming function library that is primarily focused at vision for computer which is real-time, this library is cross-platform and which is a multi-pattern program language which has strong typing which is robust, agile as well as indispensable, object oriented programming which is highly functional. It also consists interfaces of C & C++, Python, Java and interfaces from MATLAB.

3. System Module

Registration And Login Module: In this module simply new user is going to register first for this system and existing user are login for accessing the system. User is must going through biometric validation for this we have used SQL server database for storing user details.

Exam Paper Module: In this module teacher is going to set the exam paper for the subject for each & every department.

Examination Module: Mainly in this module user or students is going to appearing the exam by student type whether it is blind or not exam type get change. **Final Result Module:** Result can be shown by this module. Result is first calculated in this & then directly getting show to the user on their screen only.

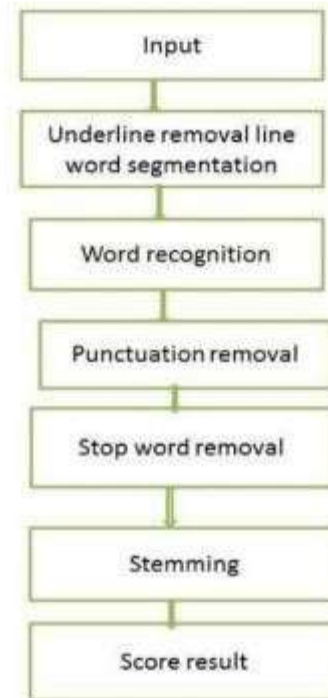


Fig: Architecture

4. Manual Vs Automotive Evaluation

Manual evaluation of offline objective answer-sheet is time consuming process because at the time of evaluating answer, we have to evaluate it from the ideal answer-sheet if there are 60 questions then we have to match 60 times with ideal sheet and mark it right or wrong. After that we have to see again all the answers to calculate how many of them are right or wrong and then we put total marks. If the weight age of each question is not same then it takes more time to calculate the total marks. The advantages of automatic evaluation of offline objective answer-sheet over manual evaluation are listed below.

1. Faster way to produce the result than manual.
2. Very less chance to making error in calculation.
3. Bias free.
4. Very less human effort (Save teacher's time).
5. Automatic data entry of the result.
6. No special hardware is required except scanner

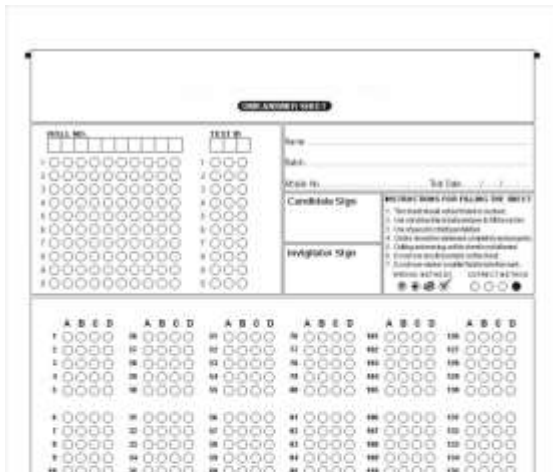


Fig: Format for Answer Sheet

5. OMR Sheet Vs OCR Sheet

OMR (optical mark reader) sheets shown in Fig. 2 are very common way to conduct offline objective exam. Most of the banks, all government organizations are used OMR sheet to conduct the competition exams. OMR sheet is a special type of sheet which requires special paper or printer to make it. It also takes more space to point any character for example if I want to write any character, there are 26 circles which points

26 alphabet of English in the OMR sheet. But in our sheet there will a single space to write any character so it reduce 26 time space needed to take a single alphabet. OMR sheet is expensive to conduct objective exam in education institutes. So there is a great need a cheap solution that is provided by OCR sheet and a simple printer make OCR sheet and also a normal scanner to read this OCR sheets. Advantage of OCR sheets over OMR sheet listed as follows.

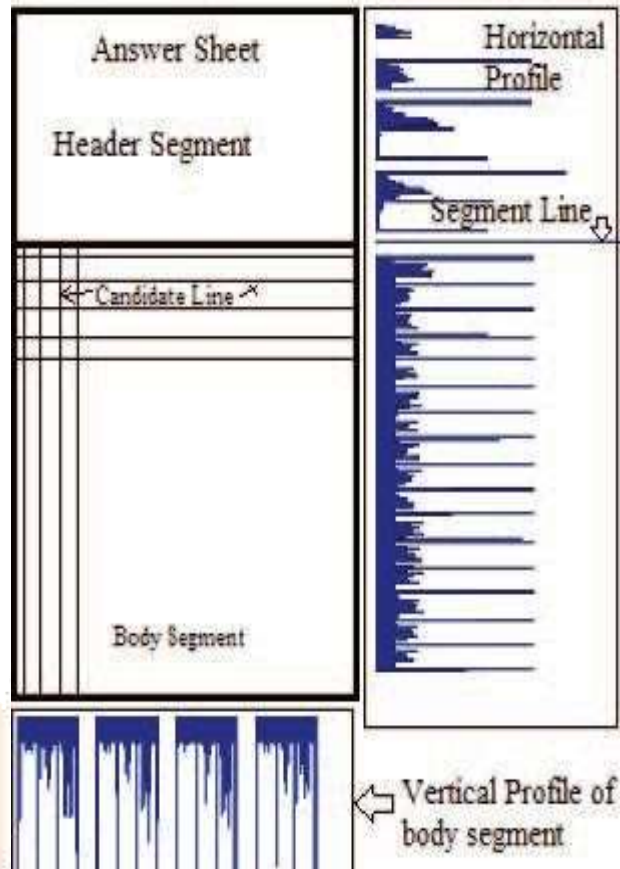
1. OCR sheet printed on A4 normal paper
2. Take less space

6. Segmentation of Answer-sheet

As in Fig. 1, there are two main segments, header and body. Header segment contains the information about the student like registration number, name, branch and signature. Body segment contains the response from the student. Segmentation of answer-sheet is done by identify the line between the header and body for this horizontal profile is used and find the maximum peak location same process discussed. Fig. shows clearly showing segment line.

7. Related Work

Many architectures and features have been proposed for descriptive answer evaluation. The approaches are mainly based on keyword match, sequence match and quantitative analysis, but semantic analysis of descriptive



After finding the row and column candidate line or coordinates, the next task is to locate the ROI or written character image, which passes to the OCR system to find that character. A different strategy is applied for header and body segments to locate ROI. In Body segment, the ROI or written answer images are extracted by row and column coordinates. But in header segment, some sub-segments are extracted by horizontal and vertical profiles like registration number, name, signature, branch and subject code. The Name and Signature extracted images are directly stored in database. These are not passing to the OCR system.

As shown in Fig. 1, there is one more column (N) in front of each question in body segment if a student wrongly writes wrong option in (A) column then (N) column can be used to write new option. So firstly, (N) column is checked if there is a character then this will be extracted character image otherwise (A) column will be extracted character image. Extracted character image is passed to OCR system after some pre-processing to recognize that character. Foreground sub sampling technique which is good and new technique used in recognition of handwritten characters and numerals, is applied here for more information about foreground sub sampling.

answer is still an open challenge. Considering the structure of text analysis in natural language processing, most of the work has been done for morphological and syntactic analysis but semantic, pragmatic and discourse are still being explored. Online tools that support managing of

online assessments such as Model and Zoho are based on string matching technique for short answers but long answer evaluation is still handled manually by most systems. The evaluation descriptive answer is still an open challenge. Existing system is used for conducting online objective test or single sentence, the test will be customized such system will have automated evaluation of answers based on the user interaction. This project helps the faculties to create their own test based on the subject. This also helps the instruction to perform online interview, test paper such that the academic performance of the students can be increased and can take the feedback from students.

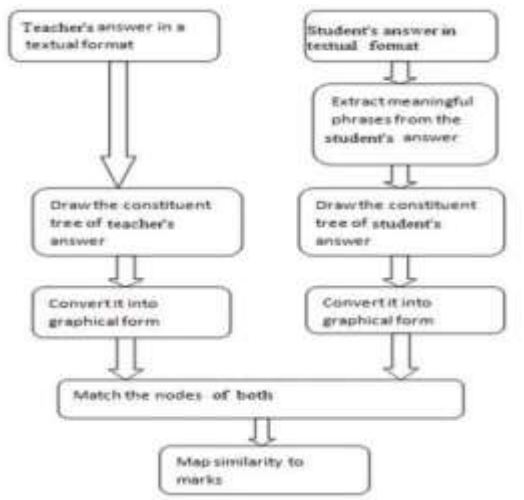


Fig: Basic Block Diagram

This approach is used for the development of the algorithm is to match student's descriptive answer with the teacher's descriptive answer by converting both answers into a graphical form and then matching their nodes is an intelligent way.

8. Conclusion and Future Work

This paper discussed the faster way to evaluate offline objective answer-sheets. That is really made fast and efficient the evaluation process in education system. This system also saves the teacher's time which can be used in research and Solve the student's problems. The efficiency of system is still required to improve with take care of other issue of image processing like poor scanning, skew correction, poor writing etc. The options of questions may be in other languages like English, Hindi and Punjabi etc. so we want to make this system work with other language also. Its main advantage is

the ability to work with every single scanner of the market, needing no extra drivers whatsoever and no special colour printing of the forms. Optical character recognition technique is used here to recognize the response of the students. Thirty objective sheets were filled by 30 peoples to test the proposed system. Automatic evaluation of descriptive answer would be beneficial for the universities, schools and colleges for academic purpose by providing ease to faculties and the examination evaluation cell. As well as it is used for conducting online interview. No grammar checking in this paper because manually paper is not grammatically checked. So accurate assessment of marks will be given to student.

9. References

- [1] Technical paper: "An Automatic System to Grade Multiple Choice Questions paper based Exams" by Ammar Awny Abbas.
- [2] Digital Image Processing (3rd Edition) -Rafael C. Gonzalez.
- [3] Learning OpenCV-Computer Vision with them OpenCV Library Gary Bradski, Adrian Kaehle
- [4] www.wikipedia.com/C#.net
- [5] <http://opencv.org>
- [6]. Ontology Based Algorithm And Life Cycle For Subjective Answer Assessment System, International Journal of Advance Research In Science And Engineering, IJARSE, Vol. No.4, Special Issue (01), March 2015.
- [7]. Subjective Evaluation using LSA Technique" By M. Syamala Devi And Himani Published in International Journal of Computers and Distributed Systems, Issue 10, December 2014.
- [8]"The paper on the automatic scoring of handwritten essay" is proposed by sargur shrihari, rohini shrihai, Pavithra babu, harish shrinivasan.
- [9] "Recognition of object in image of paper based line drawings is proposed by kiyko v.
- [10]<http://eduexamsoftware.weebly.com>.
- [11]www.projectcorner.in/online-examination-system-college-project-asp-net
- [12] <http://oes.sourceforge.net>.
- [13]Paliwal, K.K.; Ramasubramanian, V., "Comments on "modified Kmeans algorithm for vector quantizer design","in Image Processing, IEEE Transactions on , vol.9, no.11, pp.1964-1967, Nov. 2000
- [14] www.codeguru.com
- [15]Web Enabled Commercial Application Developmen -Ivan Bayross
- [16]Head First Servlets and JSP -Bryan Basham,Kathy Sierra and Bert Bates