# INTERNATIONAL JOURNAL
# OF INNOVATIVE RESEARCH

## IN COMPUTER & COMMUNICATION ENGINEERING

**INTERNATIONAL STANDARD SERIAL NUMBER INDIA**

**Impact Factor: 8.165**

# Cost Effective OMR Grader

**Greeshma Shaik[1], Vinnakota Jaya Sri[2], Vankalapati Shree Durga Bhavani[3], Vineela Kanakamedala[4]**

B. Tech Students, Department of IT, Vasireddy Venkatadri Institute of Technology, Guntur, Andhra Pradesh,India[1,2,3]

Asst. Professor, Department of IT, Vasireddy Venkatadri Institute of Technology, Guntur, Andhra Pradesh, India[4]

**ABSTRACT**: Even in era of digital world, in the presence of mobiles and computer oriented quizzes, conducting MCQ exams with OMR is still being done. The OMR sheets still haven't lost their importance till date. Many kinds of machines and software are made to aid the evaluation process for grading OMR sheets. But none of them completely satisfy the needs of an educational Institute completely. So, our idea is to design a web application that can effectively do that. This application is capable to do the process of evaluation, Marking, report generation and result declaration in a school, college or any other educational organization.

**KEYWORDS**: image-processing, OMR, automation using python

## I. INTRODUCTION

MCQ exams are often conducted in schools, colleges and other educational institutes to evaluate the performance of students. The OMR sheets are designed to ease the process of evaluation. OMR sheets have become irreplaceable even though it has been many years since their launch. The reasons behind that are:
Students need not be trained to take exam with OMR, even the students of elementary schools.
• They make evaluation process easy because faculty need not check the whole question paper to see the answermarked by student.
• Saves cost and time.
• Easy to handle
Using OMR to conduct exams is surely an advantageous process. But when it comes to
evaluating them using machines the process becomes costly. Though cost is a factor of disadvantage, the machines offer nothing other than detecting the answers. They just mark the sheets and print the score on paper. Many OMR softwares are designed to evaluate them but they are not efficient because they give inaccurate results sometimes. Our project is designed taking all these factors into consideration and offers more benefits to educational institutes which use OMR,rather than just marking them. OMR grader is a web application that can
• Grade OMRs
• Generate individual reports for each OMR
• Generate rank wise report of students for each test •Automatically send the result to students or their parents just in span of seconds after making OMR.
Even today large number of institutes and colleges implement the idea of OMR sheet for evaluation of students based on multiple choice questions. Most of the standardized tests also use the same. Big institutes use expensive OMR software along with the machines associated to evaluate the OMR sheets. Our project is aimed to help all the organizations that 10 do not have the financial credibility to afford the costly setup and would have to manage it using manpower. The designed web application can be used by all people if they want to calculate the score of the questions are answered on OMR. It can be used by:
• Large educational organizations with lots of students
• Small educational organizations
• Private tutors who conducts test on OMR.
OMR based evaluation is preferred over the manual methods when a large volume of data is to be collected and processed in short period of time. The goal and objective of this project is to create an application that can evaluate the OMR and make result announcement easier and faster in an institute.The benefits of this are :
•There will be no need to buy the costly equipment of the OMR evaluation.
• It can be productive compared to any other software.
• The students will get the result to their mails immediately after evaluation along with details of wrong and correct answers.

## II.    RELATED WORK

Earlier known models of P2P lending were mainly about lending money to friends, family and close ones – This is where a factor of trust began to show importance as the lending bandwidth grew in terms of people and ticket sizes. Earlier known models of P2P lending were mainly about lending money to friends, family and close ones – This is where a factor of trust began to show importance as the lending bandwidth grew in terms of people and ticket sizes. Optical mark recognition (OMR) is the scanning of paper to detect the presence or absence of a mark in a predetermined position. Many hardware machines like OMR scanners are used to evaluate the OMR sheets are available in markets. Some OMR systems require special paper, special ink and a special input reader. There are a few drawbacks which limit the application of OMR technology . The paper quality and the paper weight should be in the range of 90-110 gsm (grams per square meter) to process by the OMR machine. Such quality papers are more costly than the normal printed paper (A4 sheets). Then, the layout of the OMR sheet should be highly precise and in a particular format, whereas any other format of the OMR sheet cannot manipulate the same OMR machine.

 The OMR methodology is more convenient for applications in which plenty of humanmarked printed forms which are needed to perform timely and with tremendous efficiency, for example, questionnaires, ballots, and surveys. Some of the other cons in the existing system are documents for optical mark recognition are complicated to design. If the marks don't fill the space completely, or aren't in a dark enough pencil, they may not be read correctly. Some of the limitations in the hardware system are: special hardware must be purchased by institutes to complete the task which costs the institute, purchased hardware cannot be used for other tasks other than OMR evaluation, though the equipment produces accurate results it requires human support, the hardware equipment requires continuous maintenance.

## III.    PROPOSED SYSTEM

Firstly the image is captured saved in computer. The saved image and the key is given as the input on web interface. The process of evaluation automatically starts after giving the input. Then the areas of the OMR bubbles and score area where the score is entered are detected. Then we extract the birds eye view of the bubble area. Then this area is converted into the gray scale and the marked answers are evaluated against the key provided and the score is calculated. This score is inserted in score area and an excel report is generated. Then this result will be sent to the student through mails. Because of this proposed system we have many advantages.

• There is no need of financial support for purchase of hardware equipment. Robust to different kinds of backgrounds.

• There is no need to provide input in birds eye view. It calculates the score automatically.

• The students can receive results immediately after evaluation via mail which saves a lot of time and they can relieve their stress.

• The correct and wrong answers are clearly differentiated in result which helps the students to know where they have done wrong.

• It also helps the faculty by providing the marksheet of particular test in rank wise order
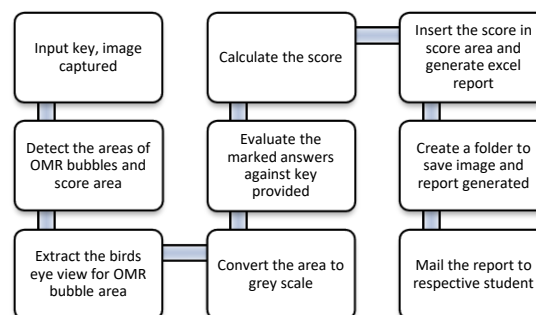
## IV.    MODULES



Fig.1. Representation of the process.

.

 The implementation of OMR grader is done by diving the task into multiple operations. Each operation is performed in the below specified modules.

•**Login module**: this module allows only specified users to access the contents of the software.

•**Signup module**: this module is capable of allowing new users to access the system by taking their information like email, name, etc

•**Evaluation module**: it is responsible for all the backend processes like evaluation, marking.

•**Sendmails module**: this is given the task of sending emails to the given mail address. It can send an excel sheet and some text containing details of the score

• **App module**: this module is capable of interacting and coordinating all the actions that are performed by the user when the application is active.

## V.    WORKING

The application OMR grader consists of many components to get the assigned job done. The major components are

• Front end components: these mainly include web pages that the user interacts with. They communicate with each other and are responsible for forwarding the user requests to back end for task finishing. They are designed using html and css.

• Back end components: these components do the actual task of the project. They receive the inputs given by user from front end pages. They are written in Python programming language. They use predefined and user defined modules and calculate the marks scored for the given OMR sheet..
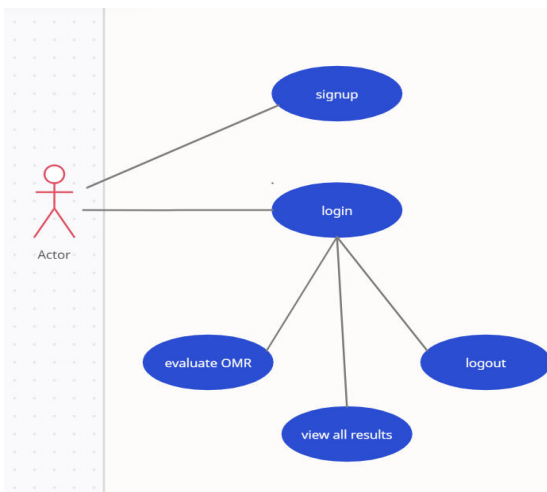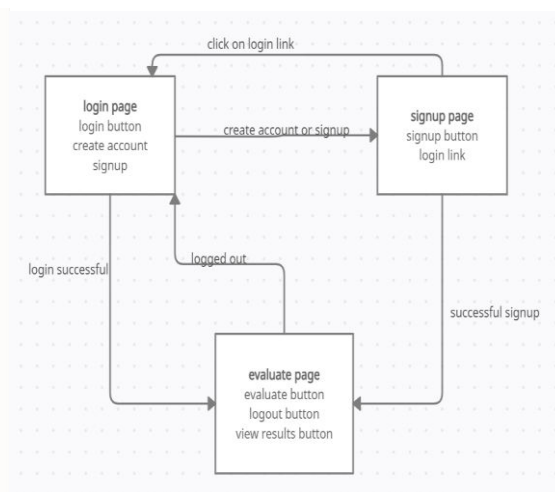


Fig. 2. Representation of Use case diagram.                Fig. 3. Interaction between UI objects.

## VI.    TESTING

Software Testing is defined as an activity to check whether the actual results match the expected results and to ensure that the software system is Defect free. It involves the execution of a software component or system component to evaluate one or more properties of interest. Software testing also helps to identify errors, gaps, or missing requirements in contrary to the actual requirements. It can be either done manually or using automated tools.

 The features to be tested are:

• Interactions of user with UI.

• Sheet evaluation.

• Checking if mails were sent properly to the students.

The user interface has following pages:
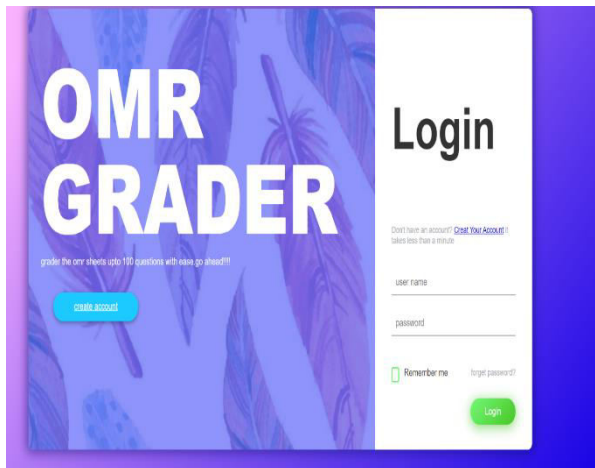
- • Login.html
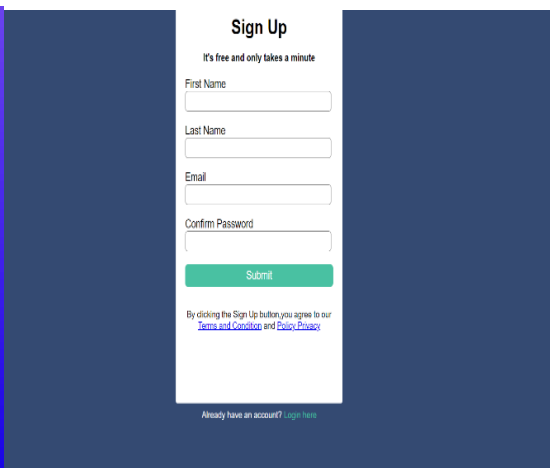- • Signup.html
- Results.html



Fig 4.. Login page after testing                    Fig 5. Sign up page of web application.



Fig.3. Evaluation page after testing

## VII.    CONCLUSION

In the end, any new technology that is being introduced should always serve the purpose of well being of common community. OMR (Optical mark recognition) is a data capture technology which is used to entry automated data into a computer system. Today, it has gained wide acceptance in educational institutes for various computer related assessments. OMR grader effectively evaluates the given answer sheets and delivers the results to students effortlessly. This software is accurate and reduces finances. This is a tool that is easy to use and free of cost.

• The system is designed and implemented with minimum cost.

•the system perfectly meets all the needs and is well suited for all educational organizations.

• The system is designed with easy andresponsive user interface.

## VIII.    FUTURE WORK

This OMR grader can evaluate may be between 1 to 100 questions only. But in the future it can be used to evaluate more number of questions by adding some additional features. This work focuses development of the OMR software for MCQs through using a technique which paves the way to the future works for development of more efficient OMR in speed and accuracy.

## REFERENCES

1. Fairley R. (2002) Software Engineering Concepts (For project size) New York: Tata Mac Graw Hill.

2. Pressman Roger S. (2001) Software Engineering- A Practitioner's ApproachFifth Edition New York: Tata Mac Graw Hill.

3. Software Project Management – A Unified Framework by Walker Royce 4. Stephen Hussmann and Peter Weiping Deng, "A High Speed Optical Mark Reader Hardware Implementation at Low Cost using Programmable Logic", Science Direct, Real-Time Imaging, 11(1), 2005

5. A. A. Abbas, "An Automatic System to Grade Multiple Choise Question Paper Based Exams," Journal of Al-Anbar University for Pure Science, vol. 3, no. 1, 2009

6. G. Krishna, Hemant Ram Rana et al, "Implementation ofOMR Technology with the Help of Ordinary Scanner," International Journal of Advanced Research in Computer Science and Software Engineering , vol. 3, no. 4, pp. 714-719, 2013

7. A. Rajasekaran and Senthilkumar. P, "Image Denoising Using Median Filter with Edge Detection Using Canny Operator," International Journal of Science and Research,vol. 3, no. 2, 2014

8. Andrea Spadaccini, "A Multiple-Choice Test Recognition System based on the Gamera Framework", 2011, arXiv: 1105.3834v1 [cs.CV] 19 May 2011 .

**INNO SPACE**
SJIF Scientific Journal Impact Factor

**Impact Factor: 8.165**

**doi® crossref**

**ISSN** INTERNATIONAL STANDARD SERIAL NUMBER INDIA

निस्केयर NISCAIR

# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

📱 9940 572 462  💬 6381 907 438  ✉ ijircce@gmail.com

Scan to save the contact details