

# Implementing E-assessment using Open CV in $\infty$ Exams

Dammati.Pavan Kumar<sup>1</sup>, Kocherla Meeravali<sup>2</sup>, Kuruguntla Reshma Reddy<sup>3</sup>

*1 Asst. Professor, Dept of CSE, Tirumala Engineering College, Narasaropet, Guntur, A.P., India*

*2, 3 B. Tech Students, Dept of CSE, Tirumala Engineering College, Narasaropet, Guntur, A.P., India*

**Abstract:** This paper includes a product framework called  $\infty$ Exams (Infinity Exams) which underpins (fundamentally in advanced education) paper-based assessment and makes it simpler, progressively agreeable and accelerates the entire procedure while keeping each and every positive property of it yet in addition lessening the quantity of negative viewpoints. The methodology altogether contrasts from the ones utilized in the past 10+ years which were executed so that they couldn't recreate and supplant the conventional paper-based assessment model. The core of the article depends on the most significant component of the product which is the picture preparing stream. The method for directing testing the information on an individual utilizing Multiple Choice Questions (MCQ) has been expanded steadily. In Educational businesses (like schools and universities) it is progressively regular now days having tests utilizing various decision questions. Indeed, even in leading meetings it is utilized. Current day situation is either utilizing OMR innovation to address the test or physically. Progressively it is very hard to have OMR at constantly and physically it is exceptionally requiring some investment to address and it might give you the blunder. We address this issue, in our proposed framework we utilizing computerized picture preparing system to address the appropriate response utilizing multi decision question in python. We are here utilizing Open Source Computer Vision Library (Open CV) to process and address the appropriate response. Python is the best language to execute this idea with the accessible Open CV library. In this framework we likewise execute in the django condition.

**Keywords:** E-assessment, computer-based assessment, computer-assisted assessment, computer-aided assessment, examination, exam, image processing

## I. INTRODUCTION

There is a developing requirement for putting away paper-based data digitalized these days. This issue concerns instruction too yet it doesn't generally get enough consideration, anyway utilizing our innovation appropriately numerous parts of the instructive procedure could be made significantly less difficult, simpler, quicker, increasingly agreeable and (halfway) automatable. A large portion of the instructive organizations are utilizing customary educating and assessment techniques in the greater part of their subjects still. In spite of the fact that the digitalization of training got a tad of consideration in the earlier years and started its development from that point forward. Close by it there are likewise PC based assessment strategies however it isn't the primary usefulness of the e-learning frameworks. So generally the conventional assessment models are utilized concerning those subjects who require such an approach to be inspected as needs be. Starting now and into the foreseeable future the paper-based assessment technique will be talked about, since it is the fundamental worry of this paper. The watchword "e-appraisal" alludes to electronic evaluation as programming is utilized to stamp the test papers filled by the understudies after the test is finished.

Numerous decisions Question (MCQ) are a type of a target evaluation wherein respondents are approached to choose just right answers out of the decisions from a list. [1] The various decision groups is most habitually utilized in instructive testing, in statistical surveying, and in races, when an individual picks between different competitors, gatherings, or strategies. In this paper we are utilizing picture preparing to achieve the MCQ redress in simple way. It delivers the incredible exertion to arrangement to expel the boundaries of multi decision appraisal adjustment. In this we are utilizing cluster arrangement to address the appropriate response paper which is printer and transferred by client. The fundamental idea is to get the picture and find the solution which is shadowed by client. In Python Open CV library is accessible for picture preparing. So as to get the best successful yield we utilize the django system alongside python. The Open CV is a library of programming capacities fundamentally focused on constant PC vision. The Following points are sorted out to clarify the procedure of how to manage this system.

## II. RELATED WORK

### A. Classifications of related systems

The essential grouping depends on the principle functionalities of the given framework as follows:

1. PC based assessment and evaluation frameworks
2. PC based evaluation frameworks

It is unimportant that the previous gathering of frameworks gives a more extensive arrangement and it even appears to be better and simpler to do the entire procedure along these lines yet it isn't for each situation for certain; in addition for the most part it isn't even justified, despite all the trouble. In spite of the fact that it suggests that the majority of the related work in the past 10+ years talks about these sorts of frameworks, since these ought to be the genuine eventual fate of PC based instruction Nowadays the assessment some portion of these frameworks is excessively worthless and just in uncommon cases (for example various decision tests) can it completely replicate the method for its paper-based proportionate. For instance, in the USA they needed to have these sorts of frameworks in each school and they needed to make it required to take tests along these lines however the arrangement have not gone in like manner on the grounds that numerous states announced failing frameworks and different issues concerning these product frameworks, so they needed to drop this entire arrangement [1].

The two classes of the recently expressed frameworks can likewise be seen from another viewpoint since both are additionally appraisal frameworks which have a supposed knowledge of assessment. As per the insight of assessment the characterization is as per the following [2; 3]:

- Manual evaluation, the evaluation of the solutions is done manually, by human resources.
- Quasi-automatic evaluation, the system is able to evaluate the major part of the solutions automatically, still a smaller part of them are evaluated by the teacher.
- Automatic evaluation, the system is able to evaluate all answers automatically.

### **B. Computer-based examination and assessment systems**

As it was referenced before the majority of the related work comprises of this class of way to deal with the issue yet underneath just one of these is featured. The explanation and the outline of the featured framework lie beneath. The purported eMax [2; 3; 4; 5] framework which was likewise made under the top of Obuda University, John von Neumann Faculty of Informatics, gives semi programmed assessment to short content answer questions and extraordinary math's undertakings. The content can be any contribution from a console however at the math's assignments there is a necessary linguistic structure which must be followed to

guarantee the greatest proficiency of the assessment calculations. As a result of this limitation numerous understudies were not ready to adjust all around ok to the methods for the framework and furthermore the framework just demonstrated helpful enough in a couple of cases so the imagined usefulness of the product was not understood. Today the framework is as yet utilized yet unfortunately not the manner in which it was intended to be. The issues of comparative arrangements are talked about in [6].

### **C. Computer-based assessment systems**

There are a few works concerning this class of appraisal frameworks also however not every one of them are finished ones [7] or basically take care of a particular issue thusly [8]. As beforehand just one of these is featured underneath yet this time there is no close to home association with it. It is only one of the better ones discovered during the examination. The paper which will be referenced as of now expresses its methodology in its title: "Mixed e-appraisal: Migrating old style tests to the advanced world." [9]. It makes the peruse secure with what is the point of the work; it basically is nearly equivalent to mine. It has a solid contention about the value and significance of such programming and even shows the finished programming, in addition outlines a few years of involvement in the framework with the encounters of the understudies and the educators. It additionally includes some key arrangements in the product itself which for the most part just make it more easy to use but since of this a portion of my initial musings of such programming got confirmed.

## **III. METHODOLOGY**

∞Exams is a PC based appraisal framework utilizing manual assessment and containing the accompanying highlights:

- Teacher and understudy UIs, login alternatives.
- Teachers, understudies, tests can be included and adjusted.
- Generation of uncommon test sheets and the entirety of its segments including QR codes.
- Upload of examined pictures of a given test, programmed picture handling of these documents and setting them up to be adjusted by the instructors.
- Automatic age of tests with the assistance of the given QR codes if a test is absent in the framework and arranging of the handled pictures by tests and by understudies.
- Exam remedy interface for the instructors.

The final products of the individual test papers are naturally created with the assistance of the given remedy of an educator. Outlined final products are likewise determined and various insights can be seen by anybody.

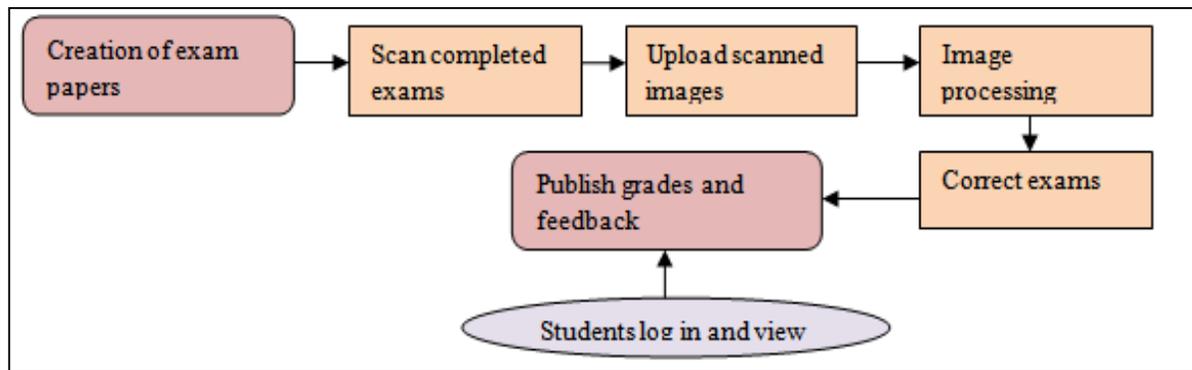


Figure1. User’s Functional model image

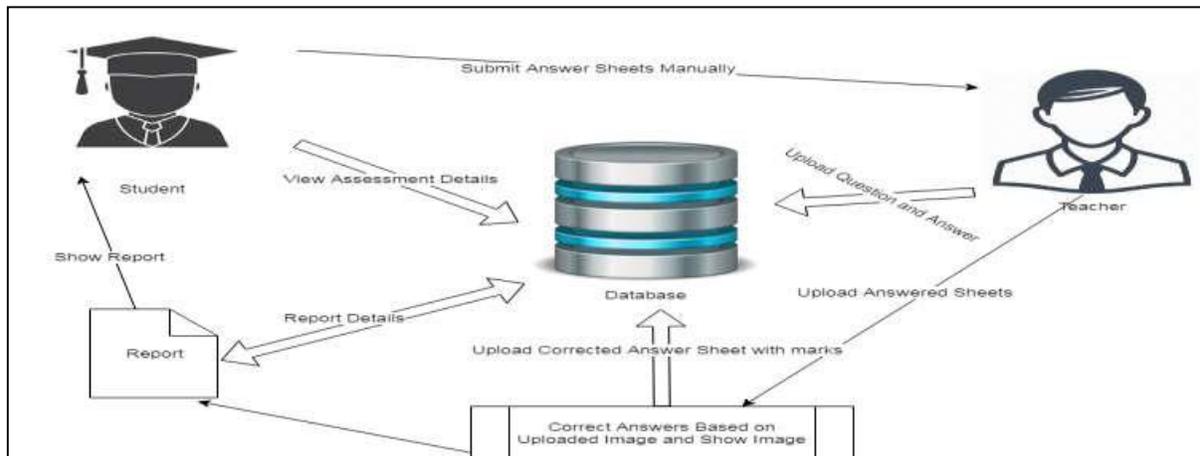


Figure2: Architecture

#### IV. MODULES

In this task there are four modules to accomplish our normal outcome. These are the significant functionalities of the undertaking. The enrollment and login process are critical to get to the task for the two clients. There are two clients' administrator (Teacher) and client (Student).

##### A. Student Management

The understudies are not legitimately enrolled. Staff is transferring the mass subtleties of understudies with subtleties of name, understudy id, class, etc. Understudies will get physically understudy id from staff physically. With the username and understudy id as secret phrase, understudy can verify to get to the subtleties. The subtleties can be changed by understudies not by staff simultaneously understudy can't adjust their understudy id which given to them.

##### B. Evaluation using Image Processing

The Faculty will transfer the understudies answer sheets as photographs. Those photographs can be assessed with the

assistance of Digital Image Processing method. It very well may be

Accomplished with the assistance of python's opencv library. The framework structure is made with answer key to recognize and give the outcome according to the photographs.

##### C. Result Analysis

The outcomes from the above module are dealt with by some math capacities to place those qualities into figuring's. Get the ball out imprints achieved by understudies and normal of the understudy can be determined by the auto functionalities and show to clients

##### D. Graph Analysis

The chart investigation is finished by the qualities taken from the outcome examination part and it very well may be broke down by the graphical portrayals. For example, pie outline, pyramid diagram and pipe graph here in this venture.

## V. CONCLUSION

The highlighted supposed  $\infty$ Exams programming framework is in alpha variant which implies that the recently imagined functionalities have been mostly executed and can be utilized. The product has a work area application in which the clients can create test sheets, peruse and alter the database, transfer pictures and right the tests. The effectively actualized structure gives a pleasant take a gander at how the entire framework will be collected. At the present time, the product must be utilized in disconnected mode. The functionalities of the framework have just been tried with in excess of a 100 test sheets rounded out by understudies exclusively for this reason. The picture preparing some portion of the framework has given palatable outcomes as it appeared to be sufficiently quick to process even countless pictures on the double without a solitary blunder. It is certain that the further advancement capability of the  $\infty$ Exams programming framework is extraordinary and by taking advantage of this lucky break, when it will be finished and discharged, it could assume an extensive job later on for the insurgency of the digitalization of training. The MCQ Test redress is significant method for evaluation in the present situation. MCQ Test group have distinctive method for amendment and leading the tests which is exceptionally troublesome. The proposed framework tends to the issue and taking care of this issue with the assistance of Image Processing and Django Framework. Both of these strategies were exceptionally convenient to take care of the issues in MCQ Test Correction. It has its own constraints which are explained in future yet with respect to current situation it is better arrangement among the current thoughts. In future can ready to have numerous administrations to be remembered for this application.

## VI. REFERENCES

- [1]. Davis, Michelle R. "Online Testing Suffers Setbacks in Multiple States." *Education Week* 32.30 (2013): 1-18.
- [2]. Istvan Vajda, "Computer Aided Teaching of Discrete Mathematics and Linear Algebra", University of Debrecen, PhD Thesis (2012).
- [3]. Csink, L., Gyorgy, A., Raincsak, Z., Schmuck, B., Sima, D., Sziklai, Z., & Szollósi, S. "Intelligent assessment systems for elearning." *Proc. of the 4-th European Conference on E-Activities, ECOMM-LINE 2003.* (2003).
- [4]. Gyorgy, A., & Vajda, I. "Intelligent mathematics assessment in eMax." *AFRICON 2007. IEEE* (2007).
- [5]. Sima, D., Schmuck, B., Szollósi, S., & Miklos, A. "Intelligent short text assessment in eMax." *Towards intelligent engineering and information technology. Springer Berlin Heidelberg* (2009): 435-445. 000304 Á. Tóth et al. • E-assessment using Image Processing in  $\infty$ Exams

- [6]. Keady, G., Fitz-Gerald, G., Gamble, G., & Sangwin, C. "Computer-aided assessment in mathematical sciences." *Proceedings of The Australian Conference on Science and Mathematics Education (formerly UniServe Science Conference).* (2012).
- [7]. Hendriks, Remco. "Automatic exam correction." *UVA Universiteit van Amsterdam* (2012).
- [8]. de Assis Zampiroli, Francisco, Jose Artur Quilici Gonzalez, and Rogerio Perino de Oliveira Neves. "Automatic Correction of Multiple-Choice Tests using Digital Cameras and Image Processing." *Universidade Federal do ABC* (2010).
- [9]. Llamas-Nistal, M., Fernandez-Iglesias, M. J., Gonzalez- Tato, J., & Mikic-Fonte, F. A. "Blended e-assessment: Migrating classical exams to the digital world." *Computers & Education* 62 (2013): 72-87.
- [10]. Duda, Richard O., and Peter E. Hart. "Use of the Hough transformation to detect lines and curves in pictures." *Communications of the ACM* 15.1 (1972): 11-15.
- [11]. Otsu, Nobuyuki. "A threshold selection method from gray-level histograms." *Automatica* 11.285-296 (1975): 23-27.
- [12]. Soille, Pierre. "On morphological operators based on rank filters." *Pattern recognition* 35.2 (2002): 527-535.
- [13]. Deodhare, Dipti, NNR Ranga Suri, and R. Amit. "Preprocessing and Image Enhancement Algorithms for a Form-based Intelligent Character Recognition System." *IJCSA 2.2* (2005): 131-144.
- [14]. Eikvil, Line. "Optical character recognition." *citeseer.ist.psu.edu/142042.html* (1993).