



## Automatic AnswerSheet Checker

---

Ronika Shrestha, Raj Gupta and Priya Kumari

EasyChair preprints are intended for rapid dissemination of research results and are integrated with the rest of EasyChair.

April 5, 2022

# Automatic AnswerSheet Checker

Ronika Shrestha, Raj Gupta, Priya Kumari

Author Emails:

[roneeystha98@gmail.com](mailto:roneeystha98@gmail.com), [2019004993.raj@ug.sharda.ac.in](mailto:2019004993.raj@ug.sharda.ac.in), [priyayadav8782@gmail.com](mailto:priyayadav8782@gmail.com)  
[Mandeep.kaur@sharda.ac.in](mailto:Mandeep.kaur@sharda.ac.in), [nitin.rakesh@sharda.ac.in](mailto:nitin.rakesh@sharda.ac.in), [parma.nand@sharda.ac.in](mailto:parma.nand@sharda.ac.in)

**Abstract—** *In this current era, world is moving towards computerization. Everything is made easier so, there is a necessity for automatic answer sheet checker. It takes plenty of time and energy to check an answer sheet manually. In this project the application is based on checking or evaluating answer sheet using NLP. The main objective of this project will be to save the time and manpower and to allocate marks based on keywords not the length of answers. Many times when the answer is evaluated manually the marks can be different for same answer but our application will equally distribute marks by using keywords which are provided in form of input by the admin. 1st the answer is captured in form of photos. Then the answers are scanned and the keywords are picked from the photos. The marks are equally allocated based on the keywords. The total marks are calculated and result are shown at last.*

**Keywords—** *automatic answer sheet checker, NLP, Python*

## I. INTRODUCTION:

The main problem in educational institutions or any authorities and private universities is an evaluation of the examination paper. Usually there is an objective based answering system in the online education courses which is easier to evaluate and record but if we compare them to the course done to complete the university degree, we need to examine the idea level of the students. Subjective or descriptive examination plays an important role in every field and even in competitive exam. The internet-based Exams are highly useful to the students. The goal of this venture is to grant active, immediately and straight forward thanks to exhibit up the exam. It can supply specific blessings to the students/applicants that cannot be located somewhere else via fellowships with agencies/boards that are organizing the various desire type questions examination. Its working is that college students permit registering for the exams and instructor approves registering for conducting the exams. This way, it will proceed to develop finally offering a large spread of

services for really useful to the students. On random basis tests can be done for students. To determine the total mark of the test the online automatic answer sheet checker can be used which add the marks allocated in all question. Number of instances for student to write a test also gets limits in online examination system. Before exiting the test, students are mostly compelled to visit through every question a minimal of once. Before completing every question, students can have access to exit the test and look. The aim is to check and mark written scripts almost like Human's being.

This application is designed to calculate subjective options during an online exam and assign marks to the client after confirming the response. The system needs that you save your first account. After the participant enters his or her solutions, the device compares them to the unique responses stored in the database and assigns

marks accordingly. Both responses don't have to be word-for-word identical. Answer checkers are quickly bored when they have to verify a large number of answer sheets, therefore this method minimizes their effort by accurately automating the manual checking process to provide unbiased results.

The automatic answer script evaluation based on Natural Language Processing (NLP) will assist us to overcome the difficulties confronted in the manual evaluation. Here a student's written reply is furnished as enter and the system will automatically be rating marks after the evaluation. The device considers all feasible elements like spelling error, grammatical error, and more than a few similarity measures for scoring marks. A pupil might also reply a query by means of following one of a kind grammatical style, and chooses distinct phrases comparable to the real answer. The motivation in the back of the automatic answer script comparison comes from much less time consuming, much less manpower involvement, prohibiting human evaluator's psychological changes, and very convenient to hold document and extraction. It additionally assures that temper swings or trade in point of view of the human assessor will no longer have an effect on the evaluation process. The natural language processing method is used to make the dealing with of used English language tons easier.

The principal goal of this paper is by using the usage of more than one method for evaluating student solutions and achieve the aim of the automatic evaluation of examination paper with much less time consuming and more correct [1].

- Save the inquiries and responses/answers in a dataset.
- After submission the examination, Display result to the students.
- Fill in the blank with correct/suitable answer for Multiple or single-choice answers.
- It's Based on internet-based test.
- Everyone should study guidelines before starting the test.
- Generate the correct answer [3].

## II. ONLINE DESCRIPTIVE EXAMINATION:

### 2.1 ISSUES ARISES IN ONLINE SUBJECTIVE EXAMINATION:

Major difficulty of the online subjective exam is the example, clarification and explanation given by using college students in the test could have many different words that is the synonym which is used to frame the sentence must have the same meaning and point's necessary for the answer to be correct.

Another drawback of online subjective examination revolves around the size of the sentences written in the answer. Different individuals or students will have different answers, which require extra effort to classify them into a given category or sequence according to the correct answer or the context in the situation [3].

### 2.2 System of Subjective Examination:

We created an online evaluation system based on descriptive questions. According to our opinion, questions can be classified into two groups:

#### A. Question Based Answer:

For Ex: - Where do you live?

The main aim of this question is place where you live.

Answer: -

A1- I live in Delhi

A2- I live in India.

A3- I live in my own apartment.

The solution has remained the same, but the manner in which it is delivered has changed. [3].

#### B. Answer Based on Conditions:

For Ex: - What's the time now?

The major focus of this question is on time.

Answer: -

B1: It's 7:30 pm now.

B2: It's half past 7.

B3: It's seven-thirty pm.

B4: It's 19:30 right now.

Here, we clearly see the difference in the way of replying the given question [3].

### III. Literature Review:

It's almost as if an automatic answer checker system that checks and marks written answers is almost same as human being. The system needs that you save your first account. This service is available to the administrative staff. Within the system, the administrator can add questions and their subjective solutions. These answers are kept in notepad files. When a user takes the test, he is provided with the questions and a place to type his answers. After the user submits his or her answers, the system compares them to the main answer stored in the database and assigns grades appropriately. Both replies don't have to be identical, exact words. The system includes inbuilt Artificial Intelligence devices that check answers and assign grades in a manner similar to that of a human. Here they have used CNN, Image processing, res-net image feature extractor to design this system. This system has included an accuracy checking algorithm that checks character error rates. They examine one answer sheet and got the result as a greedy algorithmic program had a mean character error rate = 18.936 whereas the lexicon search had CER = 18.897. The Motivation in the back of the automatic reply script assessment comes from the consumption of much less time, the requirement of less manpower, and unbiased human evaluator's mood swing. The first step of the proposed model is to provide the answer script. Their proposed system graded short questions with 59 percent accuracy. This paper will focus on rectifying the idea of many other keywords that will appear in each answer and assigning grades to scholars based on the existence of the keywords in the answers. This system aids in the reduction of all human errors, resulting in a more efficient system. The system developed aims to evaluate subjective answers by identifying keywords at every point so that marking can be done according to the keyword that matches the answer sheets and it's not mandatory that the Keywords should be same to same. The system then checks the grammatical correctness of the answers and grades the answers. They have come up with an algorithm that will a lot mark to the student according to the algorithm. In 2016-2017 a system was designed with the idea to develop a way which will be used with a device & scanner with the software program applications that will grant rankings to those distinctively designed MCQ examination tests

with questions having 4 selections for every query & the scholar can select simply just one reply per query. The software will have a look at the question paper to become aware of the response of each query of the question paper through matching with an accurate reply which can be already saved in the databank, the program application is going to be a handy software with Open CV to facilitate image processing. A student may answer an issue by following different grammatical styles and chooses different words almost like the particular answer. A student's written answer is provided as input and therefore the system will automatically score marks after the evaluation.

The above projects don't scan the answer sheet or handwritten characters. It only checks the answers which are in system writing. To overcome this limitation, we come with the solution to design a system that can scan handwritten answer-sheet in the form of pdfs or documents and hence generate marks according to the keywords matched.

### IV. Abbreviations and Acronyms:

- NLP: It stands for Natural Processing Language. The process starts by first staff creates answer sheet and keyword dataset for the examination process. This dataset stored in data storage and students enter their answer in the examination page. Once the student has submitted an answer text, the system will automatically calculate result using two algorithms of NLP and ANN.

Natural language processing [NLP] algorithm is used to check grammatical errors and places the secured marks of the students in the exam in the database. Here, by using the Natural Language Algorithm, we can evaluate the student's answer, and this section begins with the technique of pre-processing of scholar's answer. Then eventually moves in to its NLP process technique which occur in text mining process.

- CNN: It stands for Convolutional Neural Networks. CNN most likely produces the accuracy of 95.6% and even it estimates the students answers more correctly.
- Convolutional Neural Networks (CNN) is used everywhere. It is probably the most famous deep learning architecture. The current flow of interest in deep learning is due to its high demand, popularity and validity of ConvNets. The interest in the field of CNN has started with AlexNet in the year 2012 and it has grown rapidly afterward. In simply 3 years of time span, researchers stepped forward from eight layer AlexNet to 152 layer ResNet [4].

### V. RESULT:

#### A. Functioning of LOGIN MODULE:

The login function has been used to verify the identity of both the user as well as the admin. After both the users and the admin have been validated, both can go about their business.

##### 1. Admin Login:

The administrator logs with using their user id and password. After verification is complete, the administrator can enter responses to questions into the system. Subjects, students, and assessments for such pupils can all be added by the administrator. All of the keywords in the answer must be capitalized by the administrator. As a result, the administrator must first analyze the keywords in the response. The pupils will be shown the question, and the database answer will be utilized as it includes a systematic comparison with the participant's response.

##### 2. User Login:

The user signs with using the user information and the passwords, which is the test id. When all of the prerequisites are met, the learner is forwarded to a screen with the problem and a text field for response. The user could then give the response to the presented question. He/She might upload the solution for review when finishing it.

### 3. WEIGHTAGE MODULE:

#### i) **Keywords:**

When entering in the system, the keywords out from standard response must be typed in upper case letters. The typical answer's keywords are recorded in something like a set of elements. To begin, the student's answer is split down into string and saved in a set of elements. The keywords from the explains the basic are then compared first to the student's response arrays. The keywords are verified throughout the student's response, and scores are assigned based on the keywords included in the pupil's response.

Question 1: What is software engineering?

Full marks: 5

Key words: Methods and procedures, development, software product

Answers	Marking
Software engineering is an engineering branch associated with development of software product using well-defined scientific principles, methods and procedures.	100 % of full marks = 5
Software engineering is the development of software products.	60% of full marks = 3
Software engineering is the engineering branch	0% of full marks = 0

Question 2: Define SDLC?

Full marks: 5

Key words: software development life cycle, high quality software, design

Answers	Marking
Software Development Life Cycle (SDLC) is a process used by the software industry to design, develop and test high quality software's.	100 % of full marks = 5
SDLC is Software Development Life Cycle (SDLC)	60% of full marks = 3
SDLC is a framework defining tasks performed at each step in the software development process.	0% of full marks = 0

Question: what is computer?

Full marks: 5

Key words: Data, Process, output, input.

Answers	Marking
A computer is a machine that accepts data as input, process the data and give the processed	100% of full marks = 5

data as output.	
A machine that stores and process the data is known as computer.	60% of full marks = 3
A computer is an electronic machine.	0% of full marks = 0

Question: What is Photosynthesis?

Full marks: 8

Key words: green plants, Sunlight, Food, Carbon dioxide, Water, Oxygen, Nutrients

Answers	Marking
The process in which green plants uses sunlight, carbon dioxide and water to make their own food.	70% of Full Marks = 5.6
The process where green plant uses sunlight to make food	20% of Full Marks = 1.6
It is a process where green plants use sunlight to synthesize nutrients from carbon dioxide and water. They also give out oxygen as by-product	100% of full marks = 8

#### ii) **Formation of the Sentence:**

Also scores for grammar is granted if the statements seem grammatically correct.

#### iii) **Length:**

Because the pupil could submit all keywords and precise short phrases, the length of the response also is an essential part. Such a response might receive maximum marks for its keywords or grammar but would receive a lower grade due to its short length.

## VI. CONCLUSION:

For online exams, there are many software which are available for on-line objective type examinations but on the other side, when we talk about the descriptive or subjective type examinations, we face limited sources. That's why, we have mannequin this system as the time demands. We have mentioned and even try to solve some problems which had been difficulty while developing the subjective type examination system.

Here, Python Language with NLTK tool kit is used for coordinating with the answers. For synonymous paraphrasing, we have considered worldwide dictionary, that is, WordNet. As we all know that one word type questions are generally being hundred percent correct as they have got just two probabilities either true or false and wrong or right but if we talk about one line sentence answer or one paragraph type answers, so they got eighty percent to ninety percent accurate answers as the students have generally copy pasted the exact answer as they have studied in the tutorial classes.

In this system, we haven't considered figures related questions, diagrams, miscellaneous answers, and more conditional type based on different references, abbreviations, so we can say that these are additionally the limitations of our system.

## **VII. REFERENCES**

[1] IJSRP publishes online journal with ISSN 2250-3153; DOI is: 10.29322

[2]<https://www.duet.ac.bd/wp-content/uploads/2020/02/NLP-based-Automatic-Answer-Script-Evaluation-38-45.pdf>

[3] Dhokrat, Asmita & Hanumant, Gite & Mahender, C.. (2012). Automated Answering for Subjective Examination. International Journal of Computer Applications. 56. 14-17. 10.5120/8958-3160.

[4] Shaikh, Eman & Mohiuddin, Iman & Manzoor, Ayisha & Latif, Ghazanfar & Mohammad, Nazeeruddin. (2019). Automated Grading for Handwritten Answer Sheets using Convolutional Neural Networks. 1-6. 10.1109/ICTCS.2019.8923092.