ISSN (O) 2393-8021, ISSN (P) 2394-1588

IARJSET

International Advanced Research Journal in Science, Engineering and Technology

Vol. 8, Issue 11, November 2021

DOI: 10.17148/IARJSET.2021.81150

SUBJECTIVE ANSWER-CHECKER

Nisarg Chakravarty[1], Dr. Sunil Maggu[2]

[1,2]Information Technology, Maharaja Agrasen Institute of Technology, Delhi, India

Abstract: It's been noticed that a variety of students apply for all sorts of examinations including institutional, non-institutional and at times even competitive. Some exams are objective in nature i.e. We are dealing with multiple choice questions. Automated scoring is sorted in such situations. Automation of scoring for subjective paper is still something that we are struggling with. In this research paper the main goal is to design an algorithm that automates answer evaluation and provide an automated score using Artificial intelligence technology such that human effort can be reduced while the quality of scoring is maintained. The main idea behind this paper is that of automatic text similarity. This concept is used to check the answer provided by students matched with the correct ones and then scored automatically.

Keyword: Assessment, Subjective, Automated, Score, Evaluation, Examination

1. INTRODUCTION

A person's capability and proficiency is calculated with the help of examinations which can be subjective or in the form of multiple choice questions. The objective exams are easier to score in an automated manner. This helps to reduce the resources and effort. However, the crux of the matter is that most examination are still subjective in nature and automated evaluation is for objective exams whereas a similar solution for subjective exams is yet to be found. It is one of the most tiresome tasks that come under administration of any educational institute. The usual examination process involves distributing examination paper to students, them writing the answers, an examiner collecting those sheets and as the last step submitting these sheets to the authority that is responsible for further processing. There are multiple levels of checking

- Level one paper checking
- Level one moderation
- Level two Moderation

The education system and faculty go through immense pressure due to large number of students and answer sheet concerned. Also, the stakes are too high. A slight mistake in calculation might break someone's career path.
There is an extreme necessity for finding some approach which can automate the process of evaluating answers given by student and provide appropriate results accordingly.
We have developed a systemwhich takes answers from student for the question paper set by the teacher andcompares them with the reference answers present in the system and awards marks by checking them automatically.
It takes certain parameters into consideration while evaluating, such as keywords, grammar, similarity between sentences

2. RELATED WORK:

Checking subjective Answers automatically has been a major field of research inrecent years**.** In March 2020, Saloni Kadam, Priyanka Tarachandani, Prajakta Vetal and Charusheela Nehete[1] focuses on designing an efficient algorithm that will automatically evaluate the answers given by students and assign a scorebased on the AI technologies which are as good as scores given by a human being. In [2] Bjorn Andrist, Martin Hassel describe TEXTSIM, a system for determining the similarity between texts. Further, we show the results of a
comparison between two various configurations of TEXTSIM; one with and onewithout any deeper linguistic analysis. To evaluate and compare the two modelsof TEXTSIM we used two sets of examples: a set of automatically generated examples and a set of examples acquired from two assessors. Depending on thetype of documents, we found the model using linguistic analysis to perform equally well or better than the model not using linguistic analysis. In [3] Mayeesha Mariam proposed Automatic Text Summarization is a demanding subject for Natural Language Processing(NLP).Wherein the concept of automatic text summarization has been used to establish an application that would check the answers of provided questions automatically and decide the correctness of the answers. In 2017, [4] Merien Mathew, Ankit Chavan, Siddharth Baikar proposed "ONLINE SUBJECTIVE ANSWER CHECKER". The system here requires you to store the original answer for the system. This facilityis provided to the admin. The admin may insert questions and respectivesubjective answers in the system. These answers are stored as notepad files. When a user takes the test he is provided with questions and area to type his answers. Once the user enters his/her answers the system

ISSN (O) 2393-8021, ISSN (P) 2394-1588

IARJSET

International Advanced Research Journal in Science, Engineering and Technology

Vol. 8, Issue 11, November 2021

DOI: 10.17148/IARJSET.2021.81150

then compares this answer to the original answer written in database and allocates marks accordingly. Both the answers need not be exactly the same, word to word. Thesystem consists of inbuilt artificial intelligence sensors that verify answers and allocate marks accordingly as good as a human being.

3. METHODOLOGY

We have developed the process of Subjective Answer Evaluation which includesshort answers. It goes through pre-processing-case normalization, stopwords removal, tokenization. Each answer coming from a student is evaluated using same pre-processing against the reference answer provided by teacher.

3.1. Question Paper

When a teacher logs-in into its id, the following three questions are asked:

a. Select from the 2 sets of paper

b. Select the no. of questions

c. Choose level of complexity

Based on the choices made and the reference QnA loaded in the system a random Question paper is generated which is then stored into a dynamically generated text file along with corresponding reference answers which is used for evaluation.

3.2. Answer Sheet

When a student logs-in into its account, The same Question paper as set by the teacher and stored in the text file is presented in front of the student for which the student takes the exam and submit its answers.

3.3. Evaluation

- Both the answer sheet(provided by student) and answer Key(Provided byteacher) is then pre-processed using same following libraries: **pandas, numpy, math, nltk.**

The processed data is then converted into vectors using Embedding and is then passed through cosine formula which provides the similarity between the two.
On the Basis of the value of similarity achieved (between 0 and 1), marksare rewarded for each provided answer and final result is calculated by adding them all.

 # cosine formula

$$similarity(A,B) = \frac{A \cdot B}{\|A\| \times \|B\|} = \frac{\sum_{i=1}^{n} A_i \times B_i}{\sqrt{\sum_{i=1}^{n} A_i^2} \times \sqrt{\sum_{i=1}^{n} B_i^2}}$$

3.4. Result

Pass/Fail status is printed along with marks obtained on the basis of similarity in answers.

ISSN (O) 2393-8021, ISSN (P) 2394-1588

IARJSET

International Advanced Research Journal in Science, Engineering and Technology

Vol. 8, Issue 11, November 2021

DOI: 10.17148/IARJSET.2021.81150

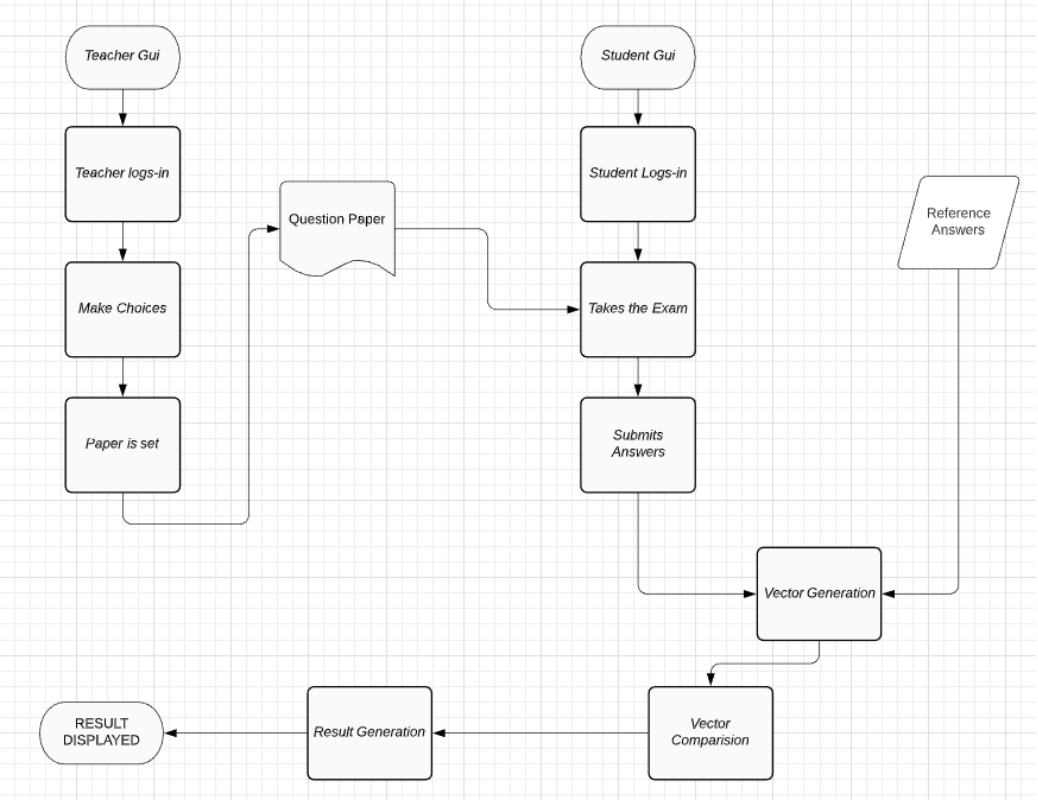

Fig-1: Flowchart for the system

4. RESULT

4.1. The Teacher GUI is as shown below, where the teacher makes the choices and question paper and reference answers for the student with unique question paper code are set.

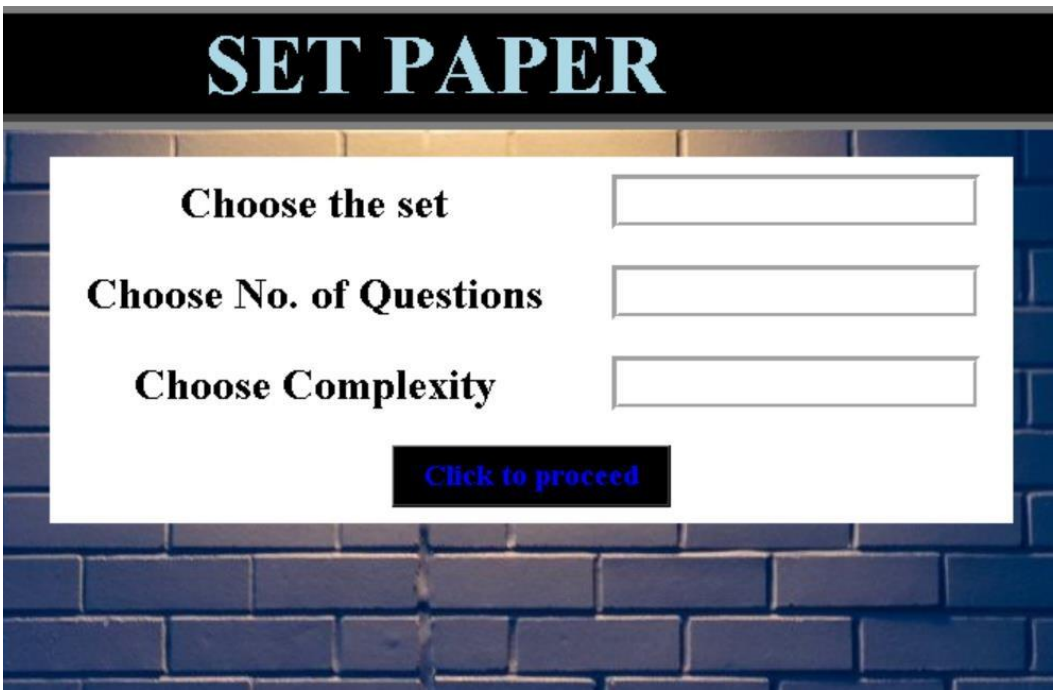

Fig-2: Teacher's gui

ISSN (O) 2393-8021, ISSN (P) 2394-1588

IARJSET

International Advanced Research Journal in Science, Engineering and Technology

Vol. 8, Issue 11, November 2021

DOI: 10.17148/IARJSET.2021.81150

4.2. Students GUI, where the student gets Question paper and takes thetest.

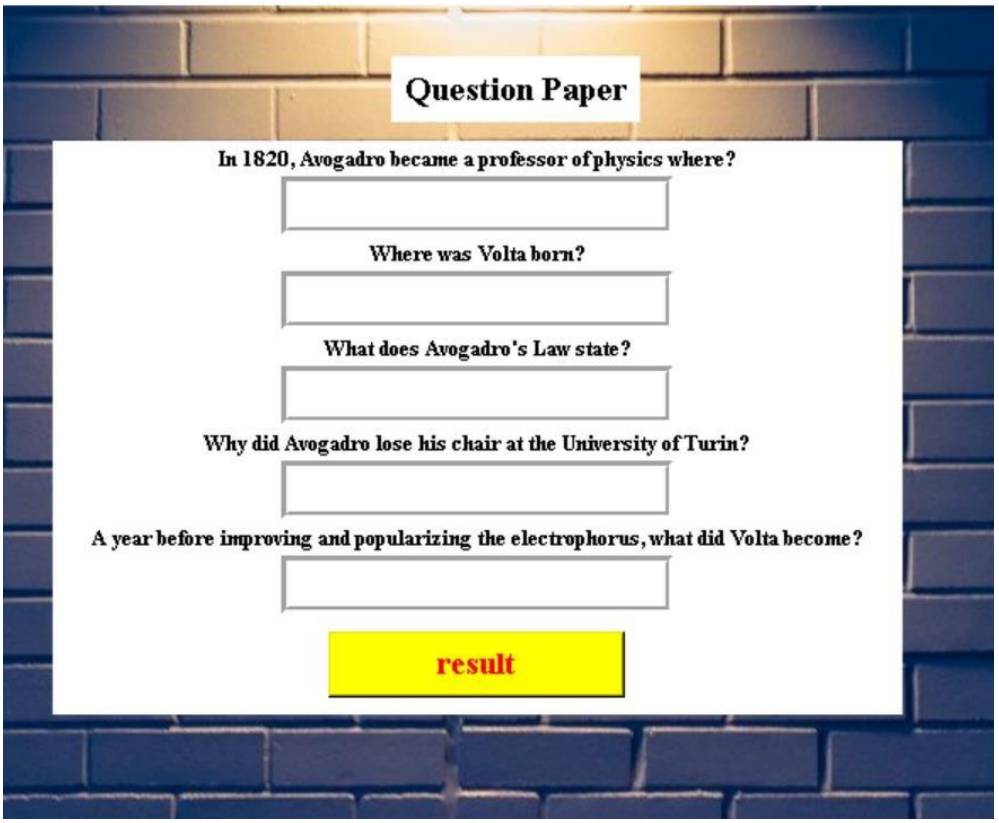

Fig-3: Student's gui

Then the student clicks on result and gets the marks based on submittedanswers.

5. CONCLUSION AND FUTURE SCOPE

System would be extremely helpful for all sorts of educational institutions such as colleges, schools and other academic related organizations by providing some aid to faculties and examination cell. Most educational institutions like to create online evaluations so that their reach is not restrictive but due to them being online evaluations, examiners have to resort to objective questions. Now multiple-choice questions are convenient but fails to perfectly grasp the aptitude and capability of a student. It does not examine conceptual knowledge that learner or student holds. Thus, the hour of need is to add subjective answers as well in the online examination. The method that is being offered here allows examiner to automate the process of scoring subjective answers on the basis of provided keywords. By judging against the reference answer, marks are assigned to the student. The highest marks are achieved if the student writes accurate answers in terms of grammar, semantics and spellings with all the keywords cited in the reference answer. Therefore, the offered system could be of great utility to the instructors whenever they need to take a quick test for revision purposes as it saves time and the trouble of assessing the loads of papers. Also, by removing the human interference and adding automation in the process we are avoiding the chance of a mistake taking place which in turn makes the entire procedure more refined.

6. REFERENCES:

[1] Saloni Kadam, Priyanka Tarachandani, Prajakta Vetal and Charusheela Nehete (March 2020), "AI Based E-Assessment System", Easy Chair.
[2] Bjorn Andrist, Martin Hassel , "Linguistically Fuelled Text Similarity", KTH CSC
, Stockholm, Sweden. This paper describes TEXTSIM, a system for determiningthe similarity between texts.
[3] Mayeesha Mariam, "Implementation of Smart Examiner using Automatic Text Summarization", American International University, Dhaka, Bangladesh. Automatic Text Summarization is a demanding subject for Natural Language Processing(NP).
[4] Merien Mathew, Ankit Chavan, Siddharth Baikar (2017), "ONLINE SUBJECTIVE ANSWER CHECKER", International Journal of Scientific & Engineering Research.
[5] www.engpaper.com/automatic-answer-checker.htm
[6] https://nevonprojects.com/automatic-answer-checker/
[7] http://ijaes.co.in/wp-content/uploads/2017/06/6.Automatic-Answer-Sheet- Checker.pdf