AUTOMATED DESCRIPTIVE ANSWER EVALUATION SYSTEM USING MACHINE LEARNING

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ABSTRACT

Nowadays, where the world is moving towards automation so, there is a necessity for automation in educational institutions as well. The manual system for evaluation of descriptive answers involves a lot of time & efforts of the evaluator. When the teacher evaluates any paper manually, the quality of evaluation may vary along with the emotions of the teacher. Hence, the marks distribution can sometimes be inappropriate. Our proposed system can be used instead in order to reduce their burden & allot marks equally.
Our system will use machine learning to solve this problem. In Machine Learning, all result is only based on the input data provided. It will evaluate the answer based on the keywords, only one has to scan the paper then, the system will provide the marks according to the dataset present.
The main aim of the project is to ensure user-friendly and more interactive software to the institution. Performing evaluation through our system will ensure uniformity in marking as the same inference mechanism will be used for all students.

Keyword: *Evaluation, Automation, System, Keywords, Descriptive, Answers, Papers, Examinations, Dataset.*

1. INTRODUCTION

Computer based evaluation of student answer is the common work which is used in many areas in assessment of students learning process. The great idea on using the computers in learning process has changed the field of learning system widely. The computer assisted assessment system was developed for to evaluate the one word answer such as of multiple choice questions. And can also evaluate the paragraph answer such as descriptive answer based on the keyword matching. This system can be widely used in academic institutions for checking answer sheets. It can also be implemented in different organizations which conduct competitive examinations. Student writes answer on answer-sheet. The system will take scanned copy of the answer as an I/P & then after the preprocessing step it will extract the text of the answer. Model answer sets will be provided by the moderator/evaluator. This model answers will be then trained. The evaluator also provides with the keywords and

Question Specific Things. Model answer sets and keywords categorized as mentioned will be the input as well. This system is based on three parameters i.e. Keywords, Grammar and Question Specific Things.

2. PROBLEM DEFINITION:

The manual system for evaluation of Subjective Answers for technical subjects involves a lot of time and effort of the evaluator. Subjective answers have various parameters upon which they can be evaluated such as the question specific content and writing style. Evaluating subjective answers is a critical task to perform. When human being evaluates anything, the quality of evaluation may vary along with the emotions of the person. This system can be used instead in order to reduce their burden. It will save a lot of effort and time on teacher's part. The human efforts applied in this repetitive task can be saved and spent more in other academic endeavors. The obvious human mistakes can be reduced to obtain an unbiased result. The system calculates the score and provides results fairly quickly.

3. LITERATURE SURVEY

- Yuejin Xu and Noah Reynolds (2012) did a survey to analyze the students' written response to a teacher leadership dilemma. The main objective of this study is to find out the accuracy of the categories which were generated by the IBM SPSS of text analytics survey.
- Pooja Kudi and Amitkumar Manekar did a study on online evaluation of the descriptive answers with the short text matching. This method used the machine learning approach to solve the problem using the text mining and focused on short answer matching.
- Meena K and Lawrence Raj did a research work on "Evaluation of the Descriptive answers using the Hyperspace Analog to language algorithm and self-organizing Map". These works focused on the online evaluation of the descriptive answer which will be eliminate the discrepancy in that manual evaluation. The HAL algorithm is used to separate categories of words.
- Shweta M. Patil and Prof. Ms. Sonal Patil did a research work on "Evaluating the student descriptive answer using natural language processing". The method evaluates the paper using the NLP tools.
- Chi-Hong LEUNG and Wun-Na YUNG did a study on "Efficient Japanese parsing Algorithm for computer assisted language learning" (2003). In this work they used the algorithm called Computer Assisted Language Learning algorithms (CALL) for the computer language teaching and learning.

4. SYSTEM ARCHITECTURE

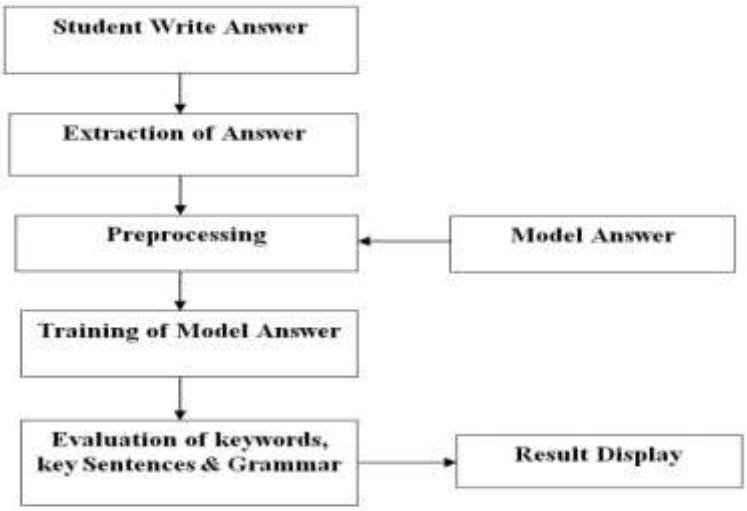

Fig. System Architecture

5. METHODOLOGY

In this study to evaluate the student answer Machine Learning used. The process starts by first staff creates answer sheet and keyword dataset for the examination process. These dataset stored in data storage and students enter their answer in the examination page. Once the student has submitted an answer, the system will automatically calculate result. Before this evaluation process the pre-processing technique in undergone for the answer. Here we used algorithm for the normal answer comparison and stores mark for this in database and also evaluates the same answers to check grammar mistakes and stores the marks for this in database.

After linguistic analysis the student's answer text is processed by the artificial neural networks algorithm it will compares the student's answer with the model answer and with keywords.

The result of each process is calculated to compute the total marks obtained by the student for his/her answer and finally compares both marks and provides final result. By these methods we can get an efficient result.

6. PROPOSED SYSTEM

The proposed system seeks to implement an application which will be able to evaluate the descriptive answer to a question. It will allot the marks according to the percentage of accuracy present in the answer. This is a software system in which user will be authenticated by using user login. After the authentication, users will be provided with the questions. The proposed system is designed to evaluate answers. The standard answer is stored in the database with the description meaning and keywords. Then it will evaluate each answer by matching the keywords or the key concepts as well as its synonyms with the standard answer. It will also check the grammar and spellings of the words. After the evaluation, it will grade the answer depending on the correctness of the answer. The entire process consists of three main steps: keywords and synonyms extraction, matching of keywords, weighting the keywords and generating score. This evaluation system will grade the answers depending upon the number of keywords matched.

7. CONCLUSION

Many schools, colleges and universities and many others educational institutes conduct the online exam. But these examinations only include multiple choice questions. These type of exam is efficient to check the student's aptitude skill, but MCQ type exams are not able check the theoretical knowledge of the student.

The proposed system attempts to calculate the subjective answers. It calculates the student's answer based on the keywords. By judging against the model answer and the student's answer marks are allocated to the student. Therefore, our proposed system can evaluate MCQ as well as one sentence question. Further it can be extended to evaluate answers written in other language and mathematical expression also.

8. REFERENCES

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