E-Valuation using Natural Language Processing

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Abstract: **E-valuation is an automated system which is especially designed and developed for the educational institutions. In previous exam evaluation, Generation of results and other activities are manually done which is very tedious and time consuming job which might lead to flaws in the result. The problem of this existing system can be overcome by using NLP technology by evaluating the paper automatically. The technique here is comparing the answers with key and producing results. Our ambition is to save time and efforts taken for manual calculation of results. For that, exam controller of institute can enter necessary details for creating account and they have the rights to upload question and respective key points. Student can attend the test by entering their id and subject code. The exam controller and students can view the results in their respective accounts.**

Keywords: **Flask, Natural Language Processing, Python.**

1. Introduction

Natural language process (NLP) may be a subfield of technology, data engineering, and computer science involved with the interactions between computers and human (natural) languages, specially a way to program computers to method and analyze massive amounts of tongue information. Challenges in tongue process of involve speech recognition, tongue understanding, and tongue generation. NLP is employed for interaction between laptop and natural (human) language, as written communication. Our project uses Python language to implement the user interface of our system in flask module. The flask will help to host the system as a web service, such service enables the institute to use the system in friendlier manner. The flask will be act as a front end in our project. The staffs can upload the questions and their corresponding key word answer set in their login. Our system maps the student's descriptive answers with the answers set. The approaches we used are primarily based on text mining technique that involves keyword matching, sequence matching and qualitative analysis and semantic analysis. The student can take their test by entering their roll number. By obtaining their roll number our system will allocate their respective subject to take their test. Then our system evaluation begins after they completed their assessment. Our evaluation should be based on extracting synonym from student's responses. Both the staff and students can view their result in their corresponding login.

2. Existing system

In Existing System student can take test in online only for a multiple choice question. After completion of test student can view their mark in that page itself and there is a concept for single line of online descriptive type answers valuation. which mainly lag in existing system it is overcome in our proposed system by using Natural Language Processing Concept. There are a number of commercial assessment tools available on the market today; however, these tools support only multiple choice Questions or short one-line free text responses. This will assess student's knowledge only at lower level of Blooms taxonomy. It's fail to assess student's performance at higher level of taxonomy. Also existing systems fail to check grammatical mistakes made by students. Even the answers with wrong meaning or with grammar error were awarded assigned scores by mere presence of words in student response. So to overcome these problems the system is going to be developed evaluated student's descriptive answers by considering the collective meaning of multiple sentences. Finally, scores will be assigned to student answer. The proposed system will try to provide feedback to the students so to help them to improve their performance in academics.

3. Proposed system

Several ways are prompt for descriptive answer assessment. NLTK may be a leading platform for building Python programs to figure with human language knowledge. It provides easy-to-use interfaces to over corpora and lexical resources like Word Net, at the side of a set of text processing libraries for classification, tokenization, stemming, tagging, parsing, and linguistics reasoning, wrappers for weapons-grade information science libraries. Stemming involves keyword matching, sequence matching and semantic analysis. Tokenization splits the sentence or given data into words. Part-of-speech (POS) tagging is the method of distribution a word to its category to understand its role inside the sentence. Ancient components like nouns, verbs, adverbs, conjunctions, etc. Part-of-speech taggers usually take a sequence of words (i.e. a sentence) as input, and supply an inventory of tuples as output, wherever every word is related to the connected tag. In word net Synonyms unit denote the same thought and area unit interchangeable in several contexts so they're sorted into unordered sets. Text might contain stop words like 'the', 'is', 'are'. Stop words is filtered from the text to be processed. Flask is a micro web framework

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written in Python. Flask supports extensions that can add application features as if they were implemented in Flask itself. Flask is used to develop our system as web application.
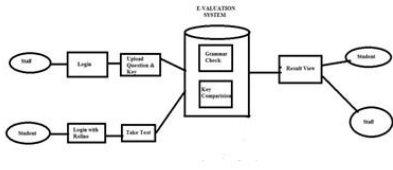
4. Methodology

Fig. 1. Architecture diagram

Firstly, staff can login in our webpage with their id and password and then it redirects to the staff corner page, in that page, staffs will enter subject code, questions and key related to that questions and date of exam will be conduct. These things are stored in separate database. Second thing, student submits roll number and take test. Once test completed, student roll number, answer for corresponding subject code will be store in student database. Answer and key taken from databases based on question number, exam type and subject code. Then using our NLP algorithm, it evaluates student answer with key and gives mark based on that evaluation. Mark will be stored in student database. Students can get their mark in the document format from result page and staff also gets overall mark for all students from the result page.

5. Modules descriptions
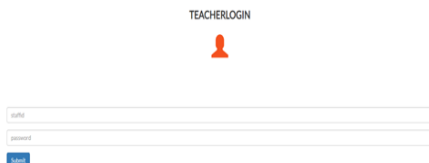
A. Teacher login

Fig. 2. Teacher login

Here, teacher login with their id and password. Teacher's id and password was given by admin to avoid students' interference. After authenticate teacher's id and password it redirects to the teacher corner.

B. Student login

Fig. 3. Student login

Here, students submit their roll number. After submitting their roll number, it redirects to the exam page for the student to take test.

C. Question and key upload section

Fig. 4. Upload section

Here, teachers upload question and key for corresponding subject code and also enter the date in which exam will be conduct and which type of exam.
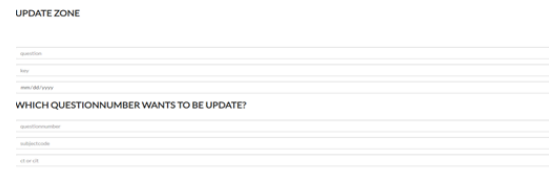

Fig. 5. Update section

Here, teacher can update their already entered questions, keys, subject code, exam date.
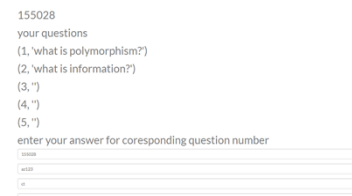
D. Exam center

Fig. 6. Question page

Here, students take a test and submit their answers. Students roll number, answer for the corresponding question number, subject code, exam type will be store in student database.
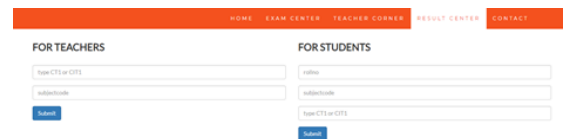
E. Final result

Fig. 7. Result page

Here, student can submit their roll number, subject code and exam type to get their mark. Teacher can submit the exam type and subject code to get overall student marks.
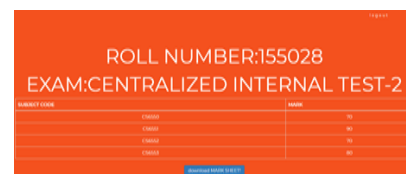

Fig. 8. Student's Result page

Here, Student sees their result. If they want, they can download their marksheet.

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Fig. 9. Teacher's Result page

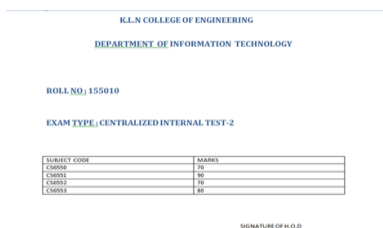Here, teacher can see their students result. If teacher can want, he/she can download it.

Fig. 10. Result in a document format

6. Conclusion

Online Examination Software development has been an interesting research area since 70's. It helps in evaluation of student performance accurately and without wastage of time. Most of the Examination software provides promising results compared with results provided by human graders. But the problem of existing software developed so far is that they evaluate student performance at lower level by making assessment of only objective type questions. So the proposed system will try to overcome this problem by evaluating students at higher level by considering assessment of descriptive type question consisting of multiple sentences. The proposed system will consider the collective meaning of multiple sentences and it will try to provide Report to institute as well as student. Our future work to make the software as case sensitive and work more efficient than other.

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