

AUTOMATIC QUESTION PAPER GENERATOR USING SEMANTIC APPROACH

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Abstract : In Today's age, Education is the most important way of achieving success. Examination prepares students in their quest for knowledge. So, having a proper Examination Paper is quite necessary. The project is Automatic Question Paper Generator Using Semantic Approach will enable college authorities to automatically generate question paper out of existing question set in the database. This system will use the database to harness the question paper where the database could consist number of questions. It will produce a random question paper set using Semantic algorithm such that the question does not repeat in the same paper. Once the question is entered into system then you can easily generate question paper in one click. In this way this system will help to generate question paper uniquely and in less time.

Keywords: Fisher-Yates, Automatic generation, Difficulty level, Semantics.

I. INTRODUCTION

Nowadays, generating question paper is long and tedious process in an institution. The professors spend their precious time in designing the question paper which is a not acceptable in these days. This system come in rescue to professors and helps to create question papers in single click without repeating the same questions again. This system solves the problem of randomizing the questions every time. As we move ahead we need more resources to fulfill our requirements and that's why this Automatic Question Paper Generator Using Semantics was designed. It's very much different from other paper generation systems. The questions are stored in the database and new questions can be added on if needed.

The preparation of question paper in a given format and of given marks is a difficult and time consuming process. This project consist of a set of pre-defined templates. Whenever a request is made, a new instance of the question paper is generated. All possible questions are generated by a set of pre-defined templates. Once the question is entered into system then you can easily generate question paper in one click. Every time the system selects the questions from the database randomly (which should not be of similar meaning) to generate question paper that means every time the question paper will be different. [3]

Administrator can view the generated question paper sets. Also, Administrator has all rights to modify the branch, faculty and subject related dataset. It will help an administrator to access or view the questions. The system also provides security to the database so that only trusted and permitted people can access it. The present project has been developed to meet the requirements needed in the modern age. An attempt has been made through this project to do all work ease & fast.[1]

II. PROBLEM STATEMENT

Existing system produces a random question paper set such that the question does not repeat in the same paper. So the problem statement is to develop a system such that it should be capable of an producing a random question paper set with no repeated question even if they are semantically same. The task of measuring sentence similarity is defined as to determine how similar the meanings of two sentences are, Computing sentence similarity is not a easy task due to the variability of natural language - expressions.. It checks for relationship between a word and the sentence through their meanings. The main motive behind this is to enhance the concepts of semantics over the syntactic measures that are able to categorize the pair of sentences effectively. Semantic similarity plays the main role in Natural language processing, Informational Retrieval, Text Mining, Q & A systems, text-related research and application area To calculate the similarity we follow an approach which generates the similarity score in depth of word meaning level and definition level and then compare the results that are generated with the existing measures for better results. Semantic similarity values of sentences were calculated using the proposed

measure. Therefore, in overall, the proposed solution performs very well and has great potential.

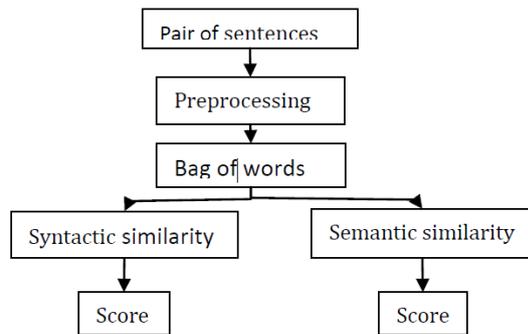
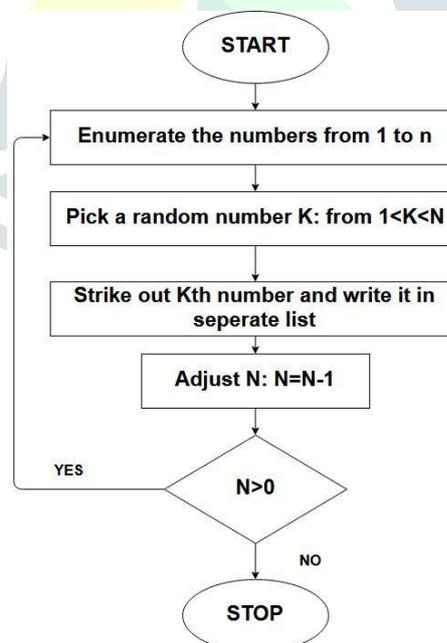


Fig1: Measuring sentence similarity based on semantic knowledge database such as e.g. WorldNet, Thesaurus

III. PROPOSED SYSTEM

In our proposed system, we are developing an application which would be useful to generate question papers without any time consumption. In our application, we would update the database with the set of questions with respect to each subject as well as each topic. Also we are updating sample templates of the question papers required in future. And then we propose a system for automatic paper generation with the least probability of repetition of the questions as we have a huge amount of question sets from the subject. The proposed system helps us to save time generating a paper with detailed study of the subject and also is unpredictable from student's point of view as the questions generated are randomly selected. Sentence similarity measures are increasingly becoming more important in text-related research and other application areas.

For Randomly selection of questions from database we used a following algorithm:[3] Fisher Yates Shuffle Algorithm is named after its inventors, Ronald Fisher and Frank Yates and is used to change the order of randomly generated inputs. This shuffle algorithm is used to generate a random permutation in a finite sequence plain terms. The algorithm shuffles the sequence. The algorithm effectively puts all the elements in one place; it continually determines the next element by randomly drawing an element from the place until no elements remain. The permutations generated by this algorithm results with the same probability. The basic method given for generating random permutations of 1 to N numbers goes as follows:



- Write a numbers from 1 to n.
- Fill k with random number between 0 and i + 1 round down.
- Calculate from the down site, put the k value and write it somewhere else
- Repeat step 2 until all numbers are replace.
- The order of the numbers written in step 3 is now a random permutation of the original numbers.
- In the modern version, the select number is not cross out, but exchange its position with the last digit of the number that has not been select.

Following are the steps for Sentence Similarities Approach:

1.Pre-processing

This is the first phase of sentence similarities. In this phase every sentence are break and some basic pre-processing is done.

2.Tokenization

Tokenization is the task of breaking up sentences into tokens and removing away punctuation and other unwanted characters.

3.Tagging

Tagging is the process of marking up a word in a text (corpus) as corresponding to a particular part of speech, based on both its definition and its context. In our case we have tagged the word to noun and verb.

4.Lemmatization

Lemmatization is a technique from Natural Language Processing which does full morphological analysis and identifies the base or dictionary form of a word, which is known as Lemma.

5.Syntax Similarity

Syntax similarity is a measure to check similarity between the word sets of two given sentences are similar or not. A similarity of 1 (100%) would mean a overlap between vocabularies, whereas 0 means there are no common words.

6.Synset extraction

Synset is a set of synonyms that share a common meaning. Each synset contains one or more lemmas, which represent a specific sense of a specific word.

7.Semantic Similarity

In this phase, it returns a score which is showing how similar two words or sentences, with the help of some measure that check whether the sentence are similar or not. The range for each measure is different.

IV. SYSTEM OVERFLOW

The actors of the use case diagram application are the Administration and Faculty. Faculty can login to application and add, edit or remove the question and view the questions from database for respective any subject. Admin can also assign the subject to user, can delete user and also see the logs and user details.[4]

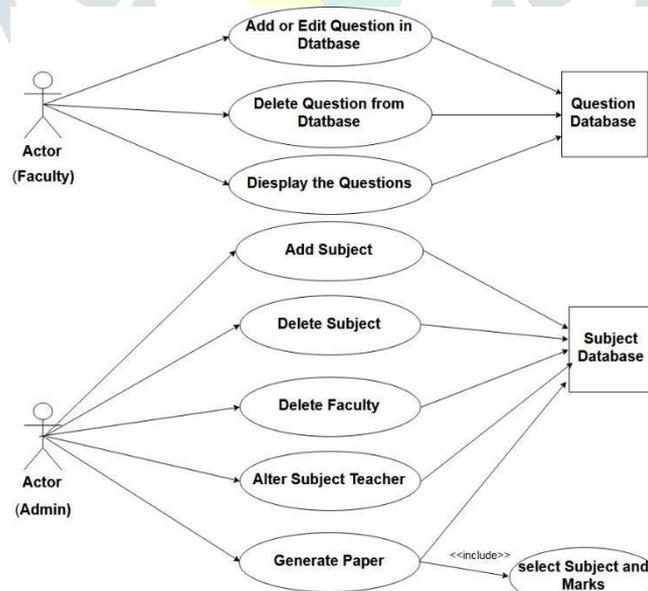


Fig 2: Use Case Diagram of the System

V. IMPLEMENTATION OF PROPOSED SYSTEM

The main purpose of this application is to describe automatic question paper generator using random algorithm for randomization. This system is desktop-based application system with several features mainly producing non repeating sets of exam paper. One can make many sets of paper from one database. This software assures no duplicity of questions in database.[3]

Questions will have marks weight upon which the administrator can generate various question paper sets, having questions with different marks weight. The Question paper is generated with great ease and accuracy in less

than a minute.[3] Also, the concern remains is how the current technologies would also help the instructors automatically generate the different sets of questions from time to time without being concern about repetition and duplication from the past exam while the database keeps growing[1].

This automated system provides cost saving and time-efficient solutions.

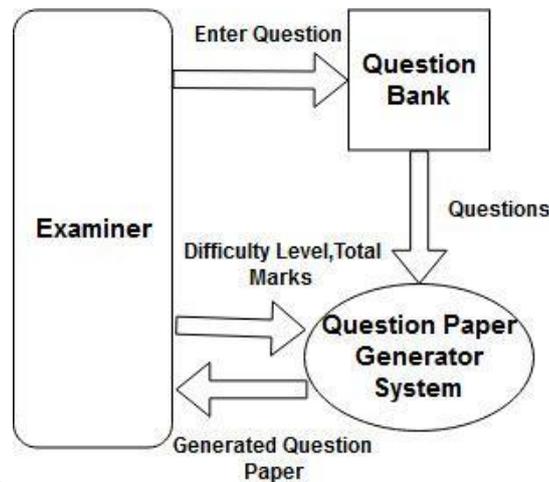


Fig 3: System Architecture

VI. CONCLUSION

In this paper we have proposed, Semantic Automatic Question Paper Generator system to automatically generate a question paper with non-repetition of questions even though having similar meaning (semantically) also. It is a platform of integrating existing “Question Paper Generation System” with improvement in terms of speed, efficiency, control access to the resources, randomization of questions and security.[4]

This project Automatic Question Paper Generator will enable college authorities to automatically generate question paper out of existing question set in the database. It also increases the usage of technology. Its primary characteristics are the automation of process of creation of question paper which reduces human effort to very far extent. This system can also upgraded as generating distracter for the MCQ based questions with some modification in UI.

VII. ACKNOWLEDGMENT

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VIII. FUTURE SCOPE

This project has vast scope in educational sector. It can be used by teachers to generate question paper for exams and this project can help students to practice for examinations. Also this project will reduce difficulty of generating unique question paper within minutes every time. This project wills security for database by creating their logs and keeping it as record.

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