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A SMART QUESTION PAPER GENERATION SYSTEM BASED ON BLOOM'S TAXONOMY

Bagul Payal , Navale Aarti , Ravate Shubhangi ,Suryavanshi Pranjal
Prof. M. V. Korade
Students of Computer Engineering,
Sandip Institute of Engineering and Management, Nashik

Abstract: This study has been Bloom's Taxonomy is used for educational learning objectives that educators assign to students. During a written examination, the purpose of this taxonomy is that, it is used to validate a student's cognitive level. Educators sometimes find it difficult to determine whether their assessment questions meet the Bloom's taxonomy's requirements at various cognitive levels. Based on this taxonomy, this study suggests an automated analysis of exam questions to find the proper category. This rule-based approach uses Natural Language Processing (NLP) approaches to find essential keywords and verbs that can help identify a question's category. This project focuses on the field of computer programming. The study currently employs a set of 100 questions (70 training questions and 30 test questions). According to preliminary findings, the guidelines may be useful in correctly identifying the Bloom's taxonomy category in exam questions. We've developed a new algorithm that provides complete randomization of questions and eliminates duplicates. Many educational institutions and non-profit organizations will benefit from the suggested approach

Index Terms **- Bloom's taxonomy, natural language processing, rule based, question generation, randomization.**

I. INTRODUCTION

To identify a student's learning levels, various types of evaluation or tests can be done. In higher education institutions, the most usual method of examining students is through a written examination. A question is a part of the exam that is connected with it. The questions provided in the paper play an important role in efforts to examine the students' general cognitive capabilities conducted each semester. Bloom's Taxonomy, which he developed in 1956, is widely used as a framework for creating fair examination questions for various cognitive levels. Bloom's hierarchical models are commonly used in education to build questions, maintaining balance and student cognitive mastery. The taxonomy improves curriculum design and assessments in the computer science domain.

Academicians would normally manually classify a question based on Bloom's cognitive level. However, not everyone can correctly determine a question's cognitive level. This may result in exam questions being miscategorized and, as a result, failing to achieve the subject's examination standard. Also, several academicians do not seem to agree on how to apply Bloom's taxonomy to student education. The goal of this study is to develop a rule-based approach for determining the Bloom's taxonomy cognitive level of test questions using natural language processing. Exam questions will be analyzed and every question will be classified primarily based totally on the Bloom's taxonomy cognitive level. This will help the academicians in putting in appropriate examination questions according to the requirements.

II. OBJECTIVE

- To create question papers with a variety of questions that fulfil the course's learning objectives.
- To develop a method for generating intelligent questions for academic purposes.
- Within a few seconds, the question paper is created from the teacher's specifications.
- To cover all areas of the course objectives while avoiding question duplication in subsequent tests.

III. LITERATURE SURVEY.

1. In the 1948, a group of educators took the task of classifying education goals and objectives. The work on cognitive domain completed in 1950s and is commonly called as Blooms taxonomy of the cognitive domain. . The Bloom's taxonomy consists of six levels
    a. Knowledge-level: known as recalling of data or memorization'. This level is a lower level or the beginning level of the hierarchy. The questions for programming in this category have the defining or describing computing terms, methodology and process, concept or term and listing explicitly information from questions. Example: Describe the key properties of a binary tree, Define method in JAVA.
    b. Comprehension- level: Describes this level as grasping the meaning of information. The capacity to interpret, translating, classifying, explaining are the concepts of these levels. Example: What is the output of the following code segment?
    c. Application-level: Application is defined by making use of the concept to a specific scenario. The questions have the following criteria: understand the concept and use it to a new algorithm and modifying controls. Example: Modify the given for loop into while loop.
    d. Evaluation- level: This is a last level in which judging, criticism, supporting or defending own stand involves. The programming question is interpreted by checking codes if the code fits the requirement for testing strategy. This level includes commenting quality of codes according to standards .Example: Explain the concept of inheritance and give the sample of code to illustrate the answer.
    e. Synthesis-level: If a student achieves this level, the student should be able to integrate and combine ideas or concepts .The programming questions for this level involves writing a complete program to create new alternative methods to solve a problem. Examples: Create a program that asks the user for the masses of the bodies as well as the distance between them. The force between the bodies is then output by the program.

2. These questions can be divided into two categories as higher order and lower order questions. In terms of Blooms taxonomy, the article attempts to distinguish between these two types of issues, with related concepts such as deep and surface learning being examined.

3. Many data preparation techniques are used to a feature set, including word extraction, stop word removal, stemming, and vector representation, and then the content of a question item is changed into a numeric form, referred to as a feature vector. Because neural networks have poor scalability on high-dimension input spaces, numerous feature reduction strategies have been investigated to reduce the feature space's dimensionality. The results of the experiments show that the proposed model can improve computation time. The results also show that document frequency reduction is the most effective feature reduction strategy since it maintains classification precision while increasing convergence speed. But the identification of the cognitive question level is incorrect. This may result in exam questions being miscategorized, and as a result, failing to achieve the subject's examination standard.

4. In this proposed system, an end-to-end automatic cloze question generating system is shown that uses a semi-structured approach to generate CQs by utilising a knowledge base retrieved from a Cricket portal. In addition, unlike previous systems, we provide context to the inquiry sentence while creating a CQ. This is done to clarify the topic and avoid situations when there are multiple answers to a question. In Example 1, we clarified the question by placing it in the context of the World Cup final. This type of CQG system can be used for a variety of purposes, such as quizzes, trivia games, and assigning fan ratings on social media by asking game-related questions[5].

5. We study whether the questions generated by our system may be successfully used as pre-questions, so helping creators of assessment materials, in this suggested approach. There are two types of pre-questions investigated as text-based and image-based pre-questions. .The experiment examines the impact of pre-questions on test-takers' performance on a comprehension test about a scientific video documentary when used in combination with audio-visual learning material rather than reading material; We also examine whether the psychometric qualities of questions generated automatically (by two systems) and those generated manually are the same. The discrimination power of questions, for example, is one of the most important markers of question quality[6].

6. This system provides a model for a multiple choice question generator that asks about labels and things retrieved from a given sentence using Semantic Role Labeler (SRL) and Named Entity Recognizer (NER). The sentence's distractors are picked based on the string similarity between the question sentence and the rest of the data set's sentences[7].

7. This system explains a technique that may be used to generate a question bank automatically using a set of pre-defined templates. The implemented algorithm's main goal is to provide a big number of questions in the question bank. The essential characteristic of a question bank is that it covers all levels of knowledge for all topics in a course at various levels of difficulty. This capability allows us to offer a large number of questions in an online asynchronous training course, such as biology1. This functionality also allows us to provide different paper tests at the same level[8].

8. This suggested system focuses on several strategies for creating the various types of questions listed in Graesser and Pearson's Taxonomy. For different goals such as academic writing or reading comprehension, there are many techniques to producing trigger questions, generic questions, or factual questions[9].

IV. SYSTEM ARCHITECHTURE

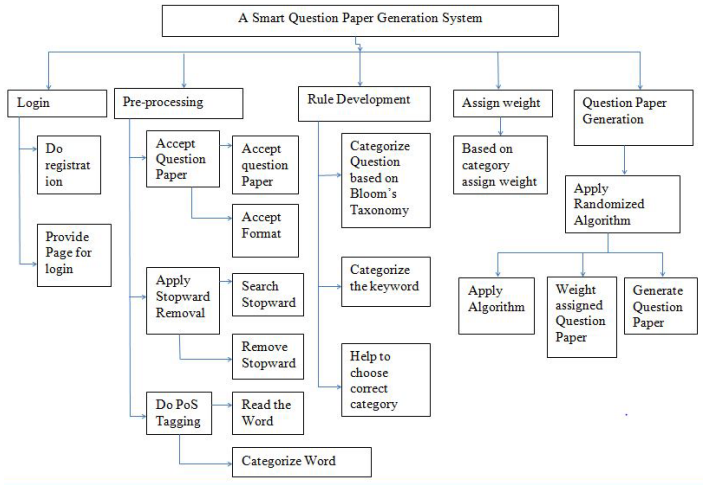

Fig.1 System Architecture

Firstly the user will be register the site , after the successful registration the user provided the page by the login-Id and password. After successful login In the user can input the text file or by manually entering it either by providing the path of the file. After the input is given, the questions will be generated accordingly. Questions can be reviewed and manipulated by the user. A question paper can be cause by selecting desired questions bring about by the software. After the generation of question paper, there will be two options: first it will be emailed to the user or admin and the secondly it will be downloaded as a file.

IV. CONCLUSION

Bloom's Taxonomy is a classification of studying objectives within education that educators set for students. To automate the method of categorizing examination question according to Bloom's Taxonomy based on its cognitive levels. The formation of rules may improve the accuracy of the result .In this system smart version for question paper generation may be applied as real time application. The proposed work describe a smart system that develop from the traditional technique of paper generation to an smart method by providing the control access to the resources.

The system may be utilized in multiple self-evaluation scenarios. For example, many students can use it to make learning easier as well as more interactive and interesting. Teachers and professors can use this system to instantly create a quiz. A central exam board can use this system to generate a unique test that isn't recognised to any professor, eliminating the possibility of cheating and thereby securing the privacy and integrity of the exam

REFERENCES

[1] kithsiri jayakodi,madhushi bandara,Indika pereca.An automatic classifier for exam qua- tions in engineering :A process for Blooms taxonomy. IEEE international conference on Teching,Assessment and learning for Engineering(TALE).PAGE:195-202,2015.

[2]Swart,Author James. Evaluation of final examination papers in engineering : A case study using Blooms Taxonomy . Education, IEEE Transaction on 53,no.2,p.257- 264,2010.

[3]Lister, R., and Leaney, "Introductoryprogramming,criterian-referencing , and Bloom.proceedings of the 34th SIGCSE technical symposium on computer science education",Reno,Nevada,USA,SCM Press,2003.

[4]Yusof,Norazah, Chai Jing Hui.Determination of Blooms cognitive level of question items using artificial neural network. In intelligent system design and application (ISDA),2010 10th International conference on,pp. 866-870,2010.

[5]Ibrahim EldesokyFattoh ,"Automatic Multiple Choice Question Generation System for Semantic Attributes Using String Similarity Measures in journal Computer Engineer- ing and Intelligent Systems" www.iiste.org ISSN 2222-1719 (Paper) ISSN 2222-2863 (Online) Vol.5, No.8,2014

[6]Ahmed EzzAwad and Mohamed Yehia Dahab,"Automatic Generation of Question Bank Based on Pre-defined Templates",in International Journal of Innovations Ad- vancement in Computer Science IJIACS ISSN 2347 8616 Volume 3, Issue 1 April

[7]Ms. Deepshree S. Vibhandik, Prof. Mrs.Rucha C. Samant ,"An Overview of Automatic Question Generation Systems",in International Journal of Science, Engineering and Technology Research (IJSETR), Volume 3, Issue 10, October 2014 .

[8]Bloom, Benjamin S. Longman," Taxonomy of educational objectives: The classification of education goal .Cognitive domain. Handbook",1956.

[9]Ibrahim EldesokyFattoh,"Semantic Based Automatic Question Generation using Artifi- cial Immune System",in Computer Engineering and Intelligent Systems www.iiste.org ISSN 2222-1719 (Paper) ISSN 2222- 2863 (Online) Vol.5,No.8,2014

[10]AnnamaneniNarendra, Manish Agarwal and Rakshit shah LTRC,"Automatic Cloze- Questions Generation", IIIT-Hyderabad, India,Sept 2013.