PROJECT REPORT



On

Automatic MCQs Generation From Mathematics

Submitted to Centurion University of Technology& Management

in partial fulfillment of the requirement for award of the degree of

B. TECH.

in

COMPUTER SCIENCE & ENGINEERING

Submitted By

Md Maqsood Alam - 200101120082

Sarvasuddhi Manoj- 200101120080

Amisha Soren- 200101120070

Under the Guidance of

To Dr. Dhawaleswar Rao



DEPT. OF COMPUTER SCIENCE & ENGINEERING

SCHOOL OF ENGINEERING &TECHNOLOGY,

CUTM, Paralakhemundi-761200

CERTIFICATE



This is to be certified that the project entitled “**Automatic MCQs Generation From Mathematics**” has been submitted for the Bachelor of Technology in Computer Science Engineering of School of Engineering&Technology, CUTM, Paralakhemundi during the academic year 2021-2022 is a persuasive piece of project work carried out by “Md Maqsood Alam”, “Sarvasuddhi Manoj” and “Amisha Soren” towards the partial fulfillment for award of the degree (B.Tech.) under the guidance of “Dr. Dhawaleswar Rao” and no part there of has been submitted by them for any degree to the best of my knowledge.

Signature of HOD Signature of Project Guide

Mr.Debendra Maharana Dr. Dhawaleswar Rao

EVALUATION SHEET



1. Title of the Project: **Automatic MCQs Generation From Mathematics**
2. Year of submission:2021
3. Name of the degree: Btech
4. Date of Examination / Viva:
5. Student Name with Regn No.: Md Maqsood Alam- 200101120082

Sarvaddhi Manoj- 200101120080

Amisha Soren- 200101120070

1. Name of the Guide:
2. Result: [APPROVED/REJECTED]

Signature of HOD Signature of Project Guide

Signature of External Examiner

CANDIDATE’S DECLARATION



We Md Maqsood Alam-200101120082, Sarvasddhi Manoj-200101120080 and Amisha Soren-200101120070, B.Tech.in CSE (Semester- III) of School of Engineering &Technology, CUTM, Paralakhemundi, hereby declare that the Project Report entitled “Automatic MCQs Generation From Mathematics” is an original work and data provided in the study is authentic one. This report has not been submitted to any other Institute for the award of any other degree by me.

Signature of Student

Md Maqsood Alam-200101120082

Sarvosuddhi Manoj-200101120080

Amisha Soren-200101120070

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It is my pleasure to be indebted to various people, who directly or indirectly contributed in the development of this work and who influenced my thinking, behavior and acts during the course of study.

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We also extend our sincere appreciation to ***Mr.Debendra Maharana****,* HoD who provided her valuable suggestions and precious time in accomplishing our project report.

We extend my sincere appreciation to **Dr. Dhawaleswar Rao**, Coordinator who provided her valuable suggestions and precious time in accomplishing our project report.

Lastly, we would like to thank the almighty and our parents for their moral support and friends with whom I shared my day-to day experiences and received lots of suggestions

.Automatic MCQs Generation FROM Mathematics

ABSTRACT

MCQ generator is an dynamic web page. It will helps to the institution, organization and paper generator to generate questions in less time. Which makes work easy and time saving system for the people. In most of the exam questions is asked mostly MCQs so it is important to develop some kind of automatic questions generator.

MCQ Generator can be a digital platform , on which user can generate questions for study ,assessment and do practice for examination or for good grasp of concept. They can learn concept in better ways. This application have been developed in such way which are responsible for fulfilling the customer need through this application. They can use without any restriction. In MCQ Generator user can generate questions and can use for the purpose they want to use.

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2)RELATED WORK

3)IMPLEMENTATION

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5)REFERENCE

6)CONCLUSION

1.Introduction:

|  |  |
| --- | --- |
| It is developed by using Python language, Flask , HTML,CSS,JS . This system helps the Students and educational institution in generating MCQs and they don’t need to do manually and to search for people to generate the questions. The user can get questions this depend on what text they putted in the website. | |
|  |
|  |
|  |
| 1.1Features & Advantages of Automatic MCQs Generation from Mathematics: |
| * MCQ Generator helps users to get the questions of good quality and Most of the time they don’t need to buy questions book. * MCQ Generator helps Organization to generate their questions quickly for the assessment of the students and they don’t need to engage faculty completely in it. * MCQ Generator helps educational organizations to know about different type kind of questions how they can develop good amount of questions with quality. * With MCQ Generator people can save energy , time and money .   1.2 Problem Statement:   * The problem statement is if educational institutions and anyone who required MCQs they have to hire someone or give to the teacher for generation of questions. Students have to rely on someone to give questions and they have to buy MCQs from the seller. * Sometimes it is not easier for the peoples who want MCQs for the examination and practice. They end up wasting time in that process.   1.3 Functions to Be Provided:   * i. Users can access this website with free of cost and generate questions as per requirements. * ii. Users can get the MCQ easily * iii. Users can get the questions after putting the text by clicking on submit button.   **ABSRACT**  MCQ generator is an dynamic web page. It will helps to the institution, organization and paper generator to generate questions in less time. Which makes work easy and time saving system for the people. In most of the exam questions is asked mostly MCQs so it is important to develop some kind of automatic questions generator.  MCQ Generator can be a digital platform , on which user can generate questions for study ,assessment and do practice for examination or for good grasp of concept. They can learn concept in better ways. This application have been developed in such way which are responsible for fulfilling the customer need through this application. They can use without  2.Software Requirement Specification (SRS)    * 2.1 Programming Environment:   VS Code  2.2 Requirement to run the application:    Python  Flask  Browser   * 2.3 Users |
|  |

### Users of the System

1. Who required MCQs for any purpose whether students, teachers, organization and educational institution etc.

### Front End and Back End

1. Front End: HTML, CSS, JAVASCIPTS
2. Back End: Python

RELATED WORK:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl #** | **Year** | **Author(s)** | **Country** | **Title** | **Journal** | **Domain in English language (domain, lauguage, english)** | **Approaches applied (based, approach)** | **Application** | **Purpose of the Work** | **Learning Outcome** | **Pre-porcessing** | **Evaluation Results** | **Parameter(s) used for Evaluation** | **Alternative method followed** |
| 1 | 2020 | Kurdi, Ghader, Jared Leo, Bijan Parsia, Uli Sattler, and Salam Al-Emari | UK | A systematic review of automatic question generation for educational purposes. | International Journal of Artificial Intelligence in Education. | English | 1) syntax-based, 2) semantic-based, and 3) template-based. | In education and assessment | The main purpose of generating questions is to use them as assessment instruments. | Generated questions had significantly higher post-test proportion correct that other type of questions ( | 1) standard preprocessing and 2) QG-specific preprocessing |  |  |  |
| 2 | 2020 | Nagasaka, Kosaku | Japan | Multiple-choice questions in Mathematics: automatic generation | Asian Technology Conference in Mathematics | English | WebMathematica, M¨obius Assessment (formerly Maple T.A.) and STACK | In education and assessment | To find a suitable question generator | To use the multiple-choice question as the direct assessment tool for grading (i.e. the final examination) in mathematics learning. |  |  |  |  |
|  | 2014 | Naveed Afzal | USA | Automatic generation of multiple choice questions using dependency-based semantic relations. | Soft Computing | English | Unsupervised Information Extraction methods | in education and assessment | To develop automatic MCQ generator |  |  |  |  |  |
|  | 2008 | Papasalouros, Andreas, Konstantinos Kanaris, and Konstantinos Kotis | Greece | Automatic Generation Of Multiple Choice Questions From Domain Ontologies | e-Learning | English | Domain ontologies | in education and assessment | educational content organisation, searching and planning |  | shallow parsing, term extraction, sentence transformation and computation of semantic distance | defining the semantics of questions, , the problem of generating syntactically correct question items is only partially tackled | Pedagogical quality, linguistic/ syntactical correctness and number of questions produced |  |
|  | 2018 | Ch, Dhawaleswar Rao, and Sujan Kumar Saha | India | Automatic multiple choice question generation from text | IEEE Transactions on Learning Technologies, | English | Pre-Processing of Input Text, Sentence Selection, Key Selection, Question Formation, Distractor Generation | in education and assessment | Automatic MCQ generation |  | Text Normalization, Structural Analysis, Sentence Simplification, Lexical Analysis, Statistical Analysis, Syntactic Analysis, Coreference resolution, Word Sense Disambiguation |  |  |  |

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| **Sl #** | **Year** | **Author(s)** | **Country** | **Title** | **Journal** | **Domain in English language (domain, lauguage, english)** | **Approaches applied (based, approach)** | **Application** | **Purpose of the Work** | **Learning Outcome** | **Pre-porcessing** | **Evaluation Results** | **Parameter(s) used for Evaluation** | **Alternative method followed** |
| 1 | 2014 | Atzal,Naveed,Ruslan Mitkov | USA | Automatic generation of mutiple choice questions using dependency-based semantic relations. | Soft-computing | English | scope of application. Research objects of automatic questionnaires must consist of online review | information access application | Unsupervised information extraction methods | A high-performanced semi-supervised learning method for text chunking. | We separated the original text in to different sentences using this. | The results of this evaluation make it possible for us to draw conclusions about the utility of the approach in practical e-Learning | This one presents a novel automatic question | This paper presents a survey of that generation. |
| 2 | 2016 | Tahani Alzubait,Bijan parsia, and Uli Sattler | UK | Generating multiple choice questions from Ontologies | International conference of knowledge engineering and knowledge management | English | Approach includes automatic generation. | is to adopt concepts of Web 2.0 knowledge sharing applications | Goals is to validate mapping relation | Representation of knowledge structure | Generation a computational query. | Onthology based questions generators used onthologies to auto generate question | Considered highly useful | Generation and verbalization of onthology content |
| 3 | 2020 | Ghader Khurdi, | UK | Automatic mcq generation for educational purposes. | [International Journal of Artificial Intelligence in Education](https://link.springer.com/journal/40593) | English | it presents an approach for predicting the difficulty of human-authored questions | it focuses on question answering rather than question generation | MCQ generation for educational purpose. | We found that AQG is an increasing activity of a growing community. | 1) standard preprocessing and 2) QG-specific preprocessing. | report on standard datasets and evaluation practices that are currently used in the field | Experiment in sports domain generation | Standardisation and Development of Automatic Scoring Procedures |
| 4 | 2021 | Samantha rajapaksha, Thusithanjana Thilakarthna | Srilanka | Smart Mathematical e-learning Platform for Grade Five Students | (ICARC-2021) | English | Sentiment Analysis in Natural Language Understanding (NLP) approach has been used in this e-learning technique along with the voice-based mechanisms where pitch and loudness are used. | a distance learning method for the lockdown situations occurred due to COVID-19 pandemi | To help the grade 5 children to create a successful, attractive learning environment andprogressive process | outcome of this function is to increase the capacity of the students thus they can face examinations with higher level of confidence | Generating distractor having values key | It reveals the gaps identified in those systems, which have been filled in this Guru Gedara Smart E-Learning Platform. | gender and studied hours | Tips and Ticks |
| 5 | 2014 | Kapil, Naik |  | . Automatic Question paper Generation System using randomization algorithm. *International Journal of Engineering and Technical Research* | IJETR | english | onset of computer based technology there have been evolutionary changes in many areas of our professional environments. | the application starts the user authentication takes place | purpose of this application is to describe automatic question paper generator using shuffling algorithm for randomization. | strangely e-education and e-learning is highly influenced. | design process performs the scrutiny and composes the examination paper using an efficient algorithm with a high rate of success. | Successful generation of question paper | after computing the questions based on given input parameters, | eliminate repeated questions and checks even for the alternatives. |
| 6 | 2016 | Kurdi, G., Leo, J. | Persia | A systematic review of automatic question generation for educational purposes. | *International Journal of Artificial Intelligence in Education*, *30*(1), 121-204. | English | a comprehensive summary of the recent AQG approaches; | the paper mentioned only educational applications of QG, | potential purposes for generating questions | Self-directed learning, self-study or self-assessment | . We grouped the tasks into the stages of preprocessing | ) evaluation of their performance. Despite the growth in AQG, | . Generating story problems via controlled parameters | alternative uses for controlled vocabulary thesauri in biomedicalsciences education. |
| 7 | 2014 | Atzal,Naveed,Ruslan Mitkov | USA | Automatic generation of mutiple choice questions using dependency-based semantic relations. | Soft-computing | English | Automatic MCQ generation | information access application | Unsupervised information extraction methods | A high-performanced semi-supervised learning method for text chunking. | Proficiency in english | The results of this evaluation make it possible for us to draw conclusions about the utility of the approach in practical e-Learning | Convert complex sentence in to simple | Specific processing to input |
| 8 | 2017 | ,danan , Guy and Mark last | Denmark | . A syntactic approach to domain-specific automatic question generation. | *arXiv preprint* | English | AQG systems that utilize the template-based approach to question generation, | Manual writing of good questions, though, is a challenging and time-consuming task. The increasing availability of electronic information, along with the growth of various question– answering applications, | These approaches are most suitable for special– purpose applications within a closed domain | this question is not specific enough to be used in an exam or some other learning task. | Lemmatization and POS tagging were done as preprocessing to the training process, using Stanford Parser. | 195 verbs in different tenses that were found in the 69 sentences of the evaluation corpus. | the window size parameter (in the scope of 5 to 12) and the vector size (between 50 and 200) | We propose a fourcomponent pipeline, which obtains as input a training corpus of domain-specific documents, |
| 9 | 2018 | Zhang, Chengzhi, and Qingqing Zhou | China | Online investigation of users’ attitudes using automatic question answering. *Online Information Review*. | EEE | English | use of online reviews to complete an online investigation via automatic question answering (AQA). | scope of application. Research objects of automatic questionnaires must consist of online review | With the development of the Internet, huge numbers of reviews are generated, disseminated, and shared on e-commerce and social media websites by Internet users. | ? Cyberpsychology Behavior & Social Networking | ", Proceedings of the conference on Human Language Technology and Empirical Methods in Natural Language Processing | "Design, evaluation, and analysis of questionnaires for survey research", Journal of Workplace Learning | satisfaction”, Journal of Marketing, | The relationship between automatic questionnaires and traditional questionnaires is complementary, rather than alternative. |

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| **Sl #** | **Year** | **Author(s)** | **Country** | **Title** | **Journal** | **Domain in English language (domain, lauguage, english)** | **Approaches applied (based, approach)** | **Application** | **Purpose of the Work** | **Learning Outcome** | **Pre-porcessing** | **Evaluation Results** | **Parameter(s) used for Evaluation** | **Alternative method followed** |
| 1 | 2014 | Alsubait, T., Parsia, B., & Sattler, U. | New york | Proceedings from the First International Workshop on Educational Knowledge Management | *international Conference on Knowledge Engineering and Knowledge Management* | ENGLISH | An Agent Based Approach to Annotate Ideas during Creativity Challenges in an Engineering School of Innovation Davy Monticolo, Chang T. K., and Inaya Lahoud | application | The analyzed educational systems are quite diverse in an application 3 of CQA concepts for the purpose of learning | Green Dolphin is another social question answering board designed to support collaborative learning of programming | Constructing high-quality MCQs is an error-prone process. | TXDOLW\HVWLPDWLRQis manual evaluation what is, however, really time consuming and thus it is not possible to apply it on great datasets. | We believe that ontology-based MCQ generation has proved to be a useful method for generating quality MCQs. The cost of generation is still considered to be high but is expected to be reduced over continuous uses of the same ontology | . Three-alternative multiple-choice tests: An attractive option. Personnel Psychology, 47:829–835, 1994. |
| 2 | 2016 | Alsubait, T., Parsia, B., & Sattler, U. | uk | Proceedings from the First International Workshop on Educational Knowledge Management | *School of Computer Science, University of Manchester* | ENGLISH | These approaches utilise some notion of concept similarity to select suitable distractors just as we suggest in the current project, however, on the one hand | In: Proceedings of workshop on applications of semantic web technologies for e-learning | The focus in their work was to extend the functionality of a previously implemented tutoring system (Tex-Sys) by concentrating on the assessment component. | implemented in eLearning tools that give students immediate feedback. | While such mechanisms can be suitable for generating distractors for language testing, it is clearly not always suitable for other domains. | Among these are 535, 344 questions that have at least 3 distractors for the KR and Java ontologies, respectively | This conjecture involves two parameters: the suitability of | we need to generate suitable *distractors*, i.e., reasonable yet incorrect alternative answers. To generate a good *set* of MCQs, i.e., an *exam*, |
| 3 | 2020 | Nagasaka.K | japan | Multiple-choice questions in Mathematics: automatic generation, revisited | Especially in the first semester of 2020, we have four courses with our format below: | ENGLISH | In our framework, we need many multiple-choice questions to give the students a set of periodic drills and/or self-assessment activities | From the technological point of view, “with mathematical expression input” is very interesting and sounds great hence we have tended to focus on the fill-in-the-blank question. | For your information, we briefly summarize some of them as Table 1 (we selected rules that are still important for questions in mathematics). | Especially in mathematics learning, the multiple-choice question is used mainly for assessing lower-level cognitive processing (e.g. definitions, simple computations and so on) | the multiple-choice question is used mainly for assessing lower-level cognitive processing | t that is compatible with the well-known drill & practice methodology, and the result reported by Ng et al. | preparing a set of good questions of this kind is not easy. | weekly self-assessment quiz” on Moodle, and the in-class activity consists of paper-based assignments (submitting their photos to Moodle and responding by image files with marks and comments by hands on tablets) |
| 4 | 2009 | Liu.B ,sarac | china | A framework for automatic item generation | According to characteristic of this course and teaching law, | ENGLISH | This generative approach introduces new features into computer-based assessment and has attracted many researches. | A reverse engineering approach to automatic item generation (AIG) was applied to a figurebased publicly released test item from the Organisation for Economic Cooperation and Development | In this framework, item models are stored in XML format. | The system has a bank of 1,000 test **items** that measure specific **learning outcomes** in surgery. | The practice shows that the proposed teaching method based on CAI contributes to play the leading role of teachers and the subject status of students. | According to the data collected by P.M. Harrison et al., results demonstrate strong validity and reliability. | CAI could be used correctly and reasonably by some methods which could wake up the interest of students, | The learning initiative of college students could be inspired and their learning interest could also be aroused by CAI. |
| 5 | 2019 | Tatnall, A | south africa | *Education and Information Technologies*, | exposure to technology continues to occur predominately outside the school setting. | ENGLISH | *A layered approach to evaluation spanning Bloom’s taxonomy of learning*”. | In the reported research new heuristics were developed to extend those of Nielsen to support heuristic evaluation of mobile learning applications. | They propose an eLearning Tools Acceptance Model with the purpose of examining the level of acceptance and critical factors of virtual learning tools among university students in developing countries. | Formal methods in learning management systems (LMS) for supporting students and academics to achieve industry demands are yet to be developed for higher education institutes. | It was observed that there was a statistically significant relationship between the learning styles of the pre-service teachers and their m-learning readiness. | It was observed that there was a statistically significant relationship between the learning styles of the pre-service teachers and their m-learning readiness. | They note that assessment plays an important role in learning and that Multiple Choice Questions (MCQs) are quite popular in large-scale evaluations. | Formal methods in learning management systems (LMS) for supporting students and academics to achieve industry demands are yet to be developed for higher education institutes. |
| 6 | 2001 | Rewitzky | Department of Mathematics and Applied Mathematics University of Cape Town South Africa | Editorial for EAIT issue | Jansen, A. (1995-1998). User guide for the LaTeX based test generating system. | ENGLAISH | The very positive feedback from the students and staff indicates that this approach to continuous assessment is an excellent way of helping students master the course material and keep up to date, |  | For marking purposes each MCQ is given a number, which together with the correct answer sequence for the MCQ is added to the marking key. | ; understood the material far better and learnt the work faster. | questions and their possible answers are carefully structured so that the correct answers are not easily guessed by a process of elimination; | On completion of the marking two reports are produced: the results (including student numbers, MCQ numbers, correct answer sequences, student answer sequences, scores) | The numeric answer, in terms of the parameters p and q, may be encoded as, ncans = (p\*q)/2. | answers corresponding to incorrect methods for answering the question. |
| 7 | 2019 | Leo, J., Kurdi, G., Matentzoglu, N., Parsia, B., Sattler, U., Forge, S., | France is a country) | , multi-term MCQs. *International Journal of Artificial Intelligence in Education*, | Each relationship is manually curated and based on evidence in Elsevier content, which includes books, journals, | ENGLISH | In what follows, we briefly review relevant MCQ-generation approaches. Based on our observations about text-based approaches, we mainly focus on ontology-based approaches (Papasalouros et al. | We implement our approach as an application for a medical education scenario on top of a large knowledge base in the medical domain. | Quantifying the effectiveness of the method serves two purposes. Firstly, it indicates how restrictive the constraints imposed on the generation are (e.g. all distractors must be related to the key via hDDx relation in differential diagnosis template). | MCQs are used as learning and revision tools (e.g., drill and practice exercises). | MCQs are used as learning and revision tools (e.g., drill and practice exercises). | The contributions of this work include the design, implementation, and evaluation for an ontology-based approach for generating case-based questions, which are a complex class of questions. | We generated questions with EM CQG, underpinned by EMMeT-OWL, with the following parameters, broken down by each applicable template: | As far as we are aware, there exists no alternative medical ontology with the same level of detail as EMMeT-OWL. |
| 8 | 2021 | Rajapaksha, S., Thilakarthna, T., | Malabe, Sri Lanka | Smart Mathematical e-learning Platform for Grade Five Students | Cypriot Journal of Educational Sciences, p. 12, 2009 | ENGLISH | approach has been used in this e-learning technique along with the voice-based mechanisms where pitch and loudness are used | Since our system is web-based application, | he has used some feature like pitch, SPL, timber, and time gaps in audio file for analyzing [10] purposes, with the support of the MATLAB and Wavepad software packages. | This application can be also used as a distance learning method for the lockdown situations occurred due to COVID-19 pandemic. | Artificial Intelligent (AI), Natural Language Processing (NLP). | Student evaluation using questions This section describes the mechanisms were used to build MCQ Generating and Student Training System with machine learning and Q learning, | , by using regression tree algorithm with the two parameters, gender and studied hours. | This application can be also used as a distance learning method for the lockdown situations |

**4.IMPLEMENTATION:**

Flask Code:

|  |
| --- |
| from flask import Flask, render\_template, request |
|  | #from gen\_mcq import display |
|  | import pandas as pd |
|  |  |
|  | app = Flask(\_\_name\_\_) |
|  |  |
|  |  |
|  | @app.route('/', methods=['GET']) |
|  | def index(): |
|  | # Main page |
|  | return render\_template('index.html') |
|  |  |
|  |  |
|  | @app.route('/result/', methods=['GET', 'POST']) |
|  | def mcq\_results(): |
|  | # Use these signatures to pass in function |
|  |  |
|  | # display(request.form['paragraph'], request.form['num']) |
|  | data = pd.read\_json('response.json') |
|  | data = data.to\_json(orient='records') |
|  | print("Finally returning Response...") |
|  | #time.sleep(6) |
|  | return data # pass JSON as string, will be parsed in JQuery |
|  |  |
|  |  |
|  | if \_\_name\_\_ == "\_\_main\_\_": |
|  | app.run(host='0.0.0.0',port=5500) |

HTML Code:

|  |
| --- |
| <!DOCTYPE html> |
|  | <html lang="en"> |
|  |  |
|  | <head> |
|  | <meta charset="UTF-8"> |
|  | <meta name="viewport" content="width=device-width, initial-scale=1.0"> |
|  | <title>Mcq generator</title> |
|  | <link rel="stylesheet" href="/static/style.css"> |
|  | <link href="https://fonts.googleapis.com/css2?family=Roboto:wght@300&display=swap" rel="stylesheet"> |
|  | <script src="//ajax.googleapis.com/ajax/libs/jquery/1.9.1/jquery.min.js"></script> |
|  | </head> |
|  |  |
|  | <body> |
|  |  |
|  | <div class="top"> |
|  |  |
|  | <div class="header"> |
|  | <p>GENERATE MCQ'S FROM TEXT</p> |
|  | </div> |
|  |  |
|  | <div class="svg-area"> |
|  |  |
|  | <div class="svg-text"> |
|  | <img src="/static/input\_data.svg" alt="input data" class="svg"> |
|  | <span class="span1">ENTER YOUR DESIRED TEXT</span> |
|  | </div> |
|  |  |
|  | <img src="/static/arrow.svg" alt="arrow" class="arrow"> |
|  |  |
|  | <div class="svg-text"> |
|  | <img src="/static/ai.svg" alt="input data" class="svg"> |
|  | <span class="span2">LET THE A.I.<br>WORK IT'S MAGIC</span> |
|  | </div> |
|  |  |
|  | <img src="/static/arrow.svg" alt="arrow" class="arrow"> |
|  |  |
|  | <div class="svg-text svg3"> |
|  | <img src="/static/get mcq group.svg" alt="input data" class="svg"> |
|  | <span class="span3">GET AUTOMATICALLY<br>GENERATED MCQ'S</span> |
|  | </div> |
|  | </div> |
|  |  |
|  | </div> |
|  |  |
|  | <div class="bottom"> |
|  |  |
|  | <div class="inputArea"> |
|  |  |
|  | <div class="header sub"> |
|  | <p>ENTER TEXT</p> |
|  | </div> |
|  | <textarea rows="13" cols="80" class='textarea'></textarea> |
|  | <br> |
|  | <div class="submit-bar"> |
|  | <button class="submit">SUBMIT</button> |
|  | <div class="loader"></div> |
|  | <span>Generate MCQ From :</span> |
|  | <div class="high-low"> |
|  | <label><b>Full Text</b> <input type="radio" name="high-low" value="1"></label> |
|  | <label><b>Summary</b><input type="radio" name="high-low" value="0" checked></label> |
|  | </div> |
|  | </div> |
|  | </div> |
|  |  |
|  | <div class="instructions"> |
|  | <div class="header sub"> |
|  | <p>INSTRUCTIONS</p> |
|  | </div> |
|  | <ul> |
|  | <li>The algorithm takes average time of around 50 seconds to produce MCQ.</li> |
|  | <li>Our Algorithm may generate some MCQ's that are not upto the mark, |
|  | wrong answer choices generated might not be correct for some questions.</li> |
|  | <li>The article must have minimum length of 200 words in order to generate MCQ's.</li> |
|  | <li>These generated MCQ's are most suitable for primary level school kids. Still |
|  | working on making more dificult MCQ's.</li> |
|  | </ul> |
|  | </div> |
|  |  |
|  | </div> |
|  |  |
|  |  |
|  | <div class="output" style="display: none;"></div> |
|  |  |
|  |  |
|  | <footer> <strong>Made by: </strong> <strong>Maqsood </strong> , <strong>Manoj </strong> , <strong>Amisha </strong> </footer> |
|  |  |
|  | <script src="{{ url\_for('static', filename='script.js') }}" type="text/javascript"></script> |
|  | </body> |
|  |  |
|  | </html> |

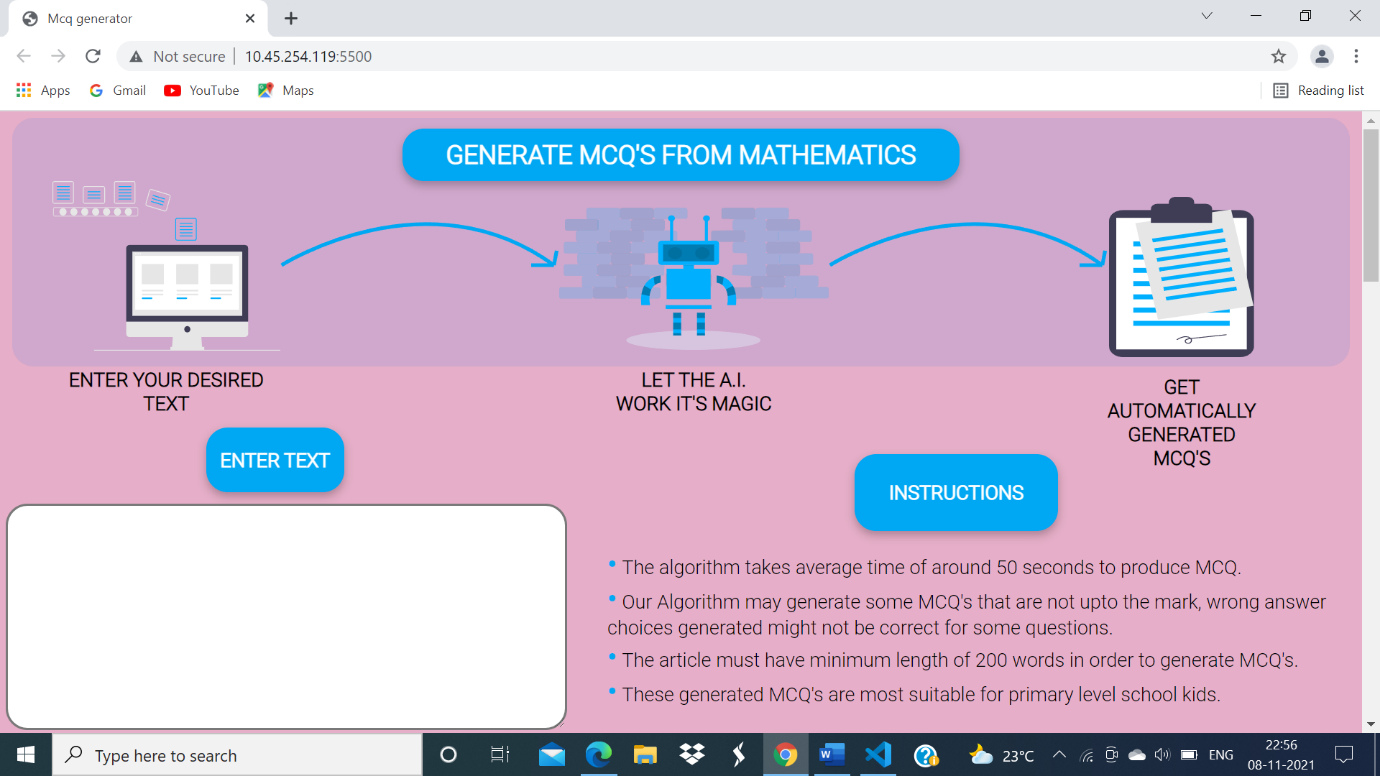
CSS Code:

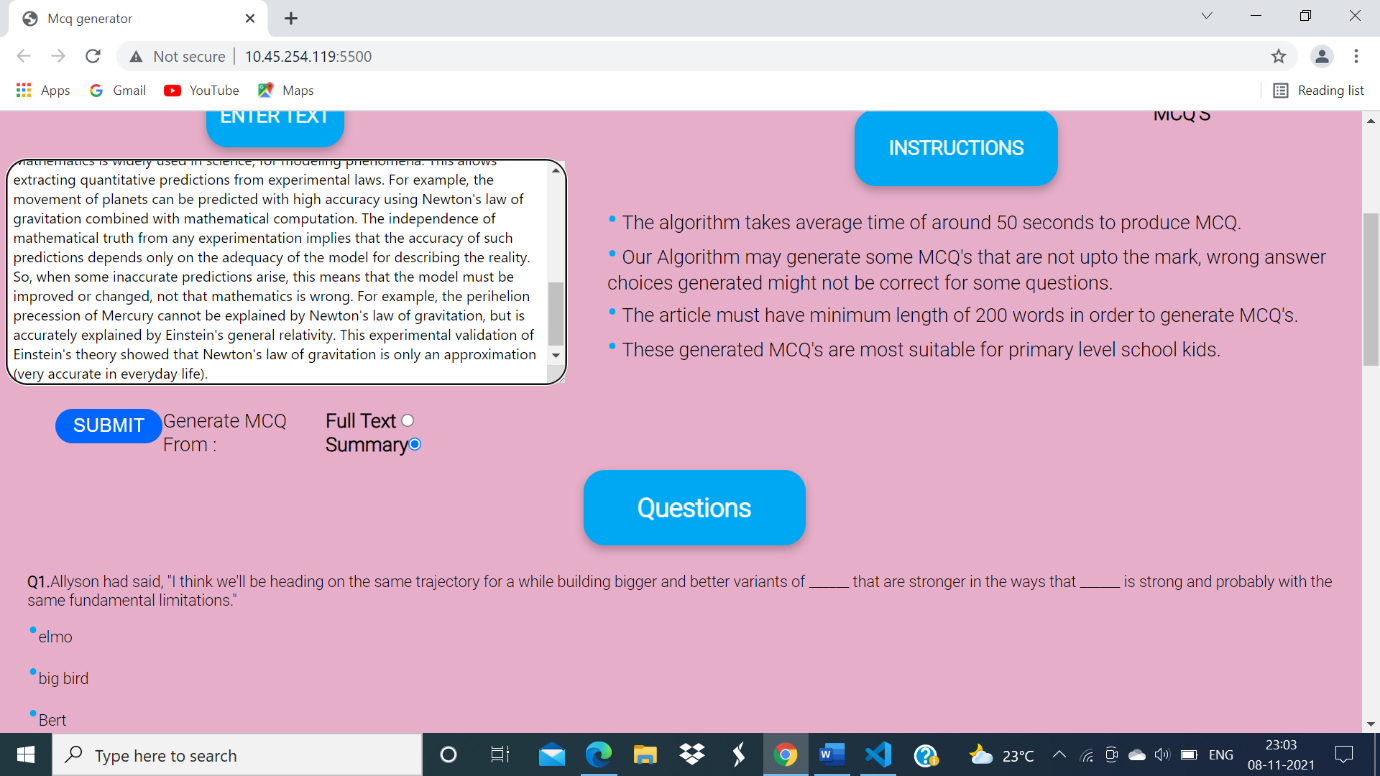
|  |
| --- |
| \*{ |
|  | margin: 0; |
|  | padding: 0; |
|  | } |
|  | body{ |
|  | height: 100vh; |
|  | font-family: roboto; |
|  | font-size: 18px; |
|  |  |
|  | } |
|  |  |
|  | .top{ |
|  | background-color: #0066ff18; |
|  | margin: 1vh 2vh; |
|  | height: 40%; |
|  | border-radius: 20px; |
|  | display: -webkit-box; |
|  | display: -ms-flexbox; |
|  | display: flex; |
|  | -webkit-box-orient: vertical; |
|  | -webkit-box-direction: normal; |
|  | -ms-flex-direction: column; |
|  | flex-direction: column; |
|  | -webkit-box-align: center; |
|  | -ms-flex-align: center; |
|  | align-items: center; |
|  | -ms-flex-pack: distribute; |
|  | justify-content: space-around; |
|  | } |
|  |  |
|  | .header{ |
|  | background-color: #00A8F3; |
|  | margin-top: 3%; |
|  | width: 25%; |
|  | height: 18%; |
|  | padding: 10px; |
|  | border-radius: 20px; |
|  | font-weight: bolder; |
|  | color: white; |
|  | display: -webkit-box; |
|  | display: -ms-flexbox; |
|  | display: flex; |
|  | -webkit-box-orient: vertical; |
|  | -webkit-box-direction: normal; |
|  | -ms-flex-direction: column; |
|  | flex-direction: column; |
|  | -webkit-box-pack: center; |
|  | -ms-flex-pack: center; |
|  | justify-content: center; |
|  | -webkit-box-align: center; |
|  | -ms-flex-align: center; |
|  | align-items: center; |
|  | -webkit-filter: drop-shadow(0px 4px 4px rgba(0, 0, 0, 0.25)); |
|  | filter: drop-shadow(0px 4px 4px rgba(0, 0, 0, 0.25)); |
|  | font-size: 1.5rem; |
|  |  |
|  | } |
|  |  |
|  | .svg-area{ |
|  | display: -webkit-box; |
|  | display: -ms-flexbox; |
|  | display: flex; |
|  | -ms-flex-pack: distribute; |
|  | justify-content: space-around; |
|  | width: 90%; |
|  | margin-right: 4%; |
|  | } |
|  |  |
|  | .svg-text{ |
|  | display: -webkit-box; |
|  | display: -ms-flexbox; |
|  | display: flex; |
|  | -webkit-box-orient: vertical; |
|  | -webkit-box-direction: normal; |
|  | -ms-flex-direction: column; |
|  | flex-direction: column; |
|  | -webkit-box-align: center; |
|  | -ms-flex-align: center; |
|  | align-items: center; |
|  | text-align: center; |
|  | font-weight: bold; |
|  | } |
|  |  |
|  | .svg-text img{ |
|  | margin-bottom: 1rem; |
|  | height: 55%; |
|  | } |
|  |  |
|  | .arrow{ |
|  | margin-bottom: 15%; |
|  | } |
|  |  |
|  | .svg3{ |
|  | padding-top: 1.3%; |
|  | } |
|  |  |
|  | .bottom{ |
|  | display: -webkit-box; |
|  | display: -ms-flexbox; |
|  | display: flex; |
|  | -webkit-box-pack: justify; |
|  | -ms-flex-pack: justify; |
|  | justify-content: space-between; |
|  | width: 100%; |
|  | /\* flex-wrap: wrap; \*/ |
|  | } |
|  |  |
|  | .inputArea{ |
|  | display: -webkit-box; |
|  | display: -ms-flexbox; |
|  | display: flex; |
|  | -webkit-box-orient: vertical; |
|  | -webkit-box-direction: normal; |
|  | -ms-flex-direction: column; |
|  | flex-direction: column; |
|  | -webkit-box-align: center; |
|  | -ms-flex-align: center; |
|  | align-items: center; |
|  | } |
|  |  |
|  | .instructions{ |
|  | display: -webkit-box; |
|  | display: -ms-flexbox; |
|  | display: flex; |
|  | -webkit-box-orient: vertical; |
|  | -webkit-box-direction: normal; |
|  | -ms-flex-direction: column; |
|  | flex-direction: column; |
|  | -webkit-box-align: center; |
|  | -ms-flex-align: center; |
|  | align-items: center; |
|  | } |
|  |  |
|  | .sub{ |
|  | width: 25%; |
|  | margin-bottom: 2%; |
|  | padding: 0px; |
|  | font-size: 18px; |
|  | } |
|  |  |
|  | textarea{ |
|  | margin-left: 2%; |
|  | border-radius: 20px; |
|  | padding: 1%; |
|  | border: 2px solid rgba(0, 0, 0, 0.527); |
|  | font-family: -apple-system, BlinkMacSystemFont, 'Segoe UI', Roboto, Oxygen, Ubuntu, Cantarell, 'Open Sans', 'Helvetica Neue', sans-serif; |
|  |  |
|  | } |
|  |  |
|  | .submit-bar{ |
|  | width: 80%; |
|  | display: -webkit-box; |
|  | display: -ms-flexbox; |
|  | display: flex; |
|  | -webkit-box-pack: justify; |
|  | -ms-flex-pack: justify; |
|  | justify-content: space-between; |
|  | } |
|  |  |
|  | .submit{ |
|  | width: 7rem; |
|  | height: 2rem; |
|  | background-color: #0066FF; |
|  | color: white; |
|  | border: none; |
|  | font-size: 1.1rem; |
|  | } |
|  |  |
|  | .instructions ul{ |
|  | list-style: none; |
|  | margin-left: 7%; |
|  | } |
|  |  |
|  | .instructions ul li::before{ |
|  | content: "\2022"; |
|  | color: #00A8F3; |
|  | font-weight: bold; |
|  | display: inline-block; |
|  | width: 0.5em; |
|  | font-size: 1.5em; |
|  | } |
|  |  |
|  | .output{ |
|  | margin-top: 1%; |
|  | margin-left: 2%; |
|  | font-size: 0.9rem; |
|  | } |
|  |  |
|  | .oSub{ |
|  | width: 15%; |
|  | height: 50px; |
|  | margin: auto; |
|  | margin-bottom: 2%; |
|  | } |
|  |  |
|  | .questions{ |
|  | margin-top: 1%; |
|  | margin-left: 2.5%; |
|  | display: -webkit-box; |
|  | display: -ms-flexbox; |
|  | display: flex; |
|  | -webkit-box-orient: vertical; |
|  | -webkit-box-direction: normal; |
|  | -ms-flex-direction: column; |
|  | flex-direction: column; |
|  | } |
|  |  |
|  | .question{ |
|  | margin-bottom: 1%; |
|  | display: -webkit-box; |
|  | display: -ms-flexbox; |
|  | display: flex; |
|  | -webkit-box-orient: vertical; |
|  | -webkit-box-direction: normal; |
|  | -ms-flex-direction: column; |
|  | flex-direction: column; |
|  | } |
|  |  |
|  | .bold{ |
|  | font-weight: bolder; |
|  | } |
|  |  |
|  | .question ul{ |
|  | list-style: none; |
|  | display: -webkit-box; |
|  | display: -ms-flexbox; |
|  | display: flex; |
|  | -webkit-box-orient: vertical; |
|  | -webkit-box-direction: normal; |
|  | -ms-flex-direction: column; |
|  | flex-direction: column; |
|  | } |
|  |  |
|  | .question ul li{ |
|  | margin-right: 1%; |
|  | } |
|  |  |
|  |  |
|  | .question ul li::before{ |
|  | content: "\2022"; |
|  | color: #00A8F3; |
|  | display: inline-block; |
|  | font-size: 2rem; |
|  | } |
|  |  |
|  | .loader { |
|  | border: 8px solid #f3f3f3; |
|  | border-top: 8px solid #0066FF; |
|  | border-radius: 50%; |
|  | width: 40px; |
|  | height: 40px; |
|  | -webkit-animation: spin 1s linear infinite; |
|  | animation: spin 1s linear infinite; |
|  | } |
|  |  |
|  | @-webkit-keyframes spin { |
|  | 0% { -webkit-transform: rotate(0deg); transform: rotate(0deg); } |
|  | 100% { -webkit-transform: rotate(360deg); transform: rotate(360deg); } |
|  | } |
|  |  |
|  | @keyframes spin { |
|  | 0% { -webkit-transform: rotate(0deg); transform: rotate(0deg); } |
|  | 100% { -webkit-transform: rotate(360deg); transform: rotate(360deg); } |
|  | } |
|  |  |
|  | footer{ |
|  |  |
|  | font-size: 0.9rem; |
|  | width: 100%; |
|  | height: 2%; |
|  | text-align: center; |
|  | bottom: 10px; |
|  | } |

Javascript Code:

|  |
| --- |
| $(document).ready(function () { |
|  |  |
|  | $('.loader').hide() |
|  |  |
|  | $(this).ajaxStart(function () { |
|  | $('.loader').show() |
|  | $('.submit').hide() |
|  | console.log('ajax start') |
|  | }).ajaxStop(function () { |
|  | $('.submit').show() |
|  | $('.loader').hide() |
|  | console.log('ajax stop') |
|  | }); |
|  |  |
|  | $('.submit').bind('click', function () { |
|  |  |
|  | var paragraph = $(".textarea").val() |
|  | var num = $("input[name='high-low']:checked").val() |
|  | console.log('input : ', paragraph, num) |
|  |  |
|  | if ((paragraph.split(" ")).length < 200) { |
|  | alert(`Paragraph should me minimum 200 words!`) |
|  | } |
|  |  |
|  | else { |
|  |  |
|  | $.ajax({ |
|  | url: "/result/", //the page containing python script |
|  | type: "POST", //request type, |
|  | data: { 'paragraph': paragraph, 'num': num }, //num - 1 for high, 0 for low, to change toggle value in template>index.html |
|  | cache: false, |
|  | async: true, |
|  |  |
|  | success: function (response) { |
|  |  |
|  | response = JSON.parse(response) |
|  | console.log('response recieved', response) |
|  | $('.output').empty(); |
|  | $('.output').append('<div class="header oSub"><p>Questions</p></div>'); |
|  | $('.output').show(); |
|  | var temp = '' |
|  |  |
|  | for (var i = 0; i < response.length; i++) { |
|  |  |
|  | temp = '' |
|  | if (response[i].extras.length > 0) { |
|  | for (var j = 0; j < response[i].extras.length; j++) { |
|  | temp += `<option>${response[i].extras[j]}</option>` |
|  | } |
|  | } |
|  |  |
|  | if (response[i].options.length == 4) { |
|  | $('.output').append(`<div class="question"> |
|  | <p><span class="bold">Q${i + 1}.</span>${response[i].question}</p> |
|  | <ul> |
|  | <li>${response[i].options[0]}</li> |
|  | <li>${response[i].options[1]}</li> |
|  | <li>${response[i].options[2]}</li> |
|  | <li>${response[i].options[3]}</li> |
|  | ${temp.length > 0 ? `<li><select><option disabled selected>More Options..</option>${temp}</select></li>` : ''} |
|  | <span style='font-weight: bolder;'>Ans: ${response[i].answer}</span> |
|  | </ul> |
|  | </div>`) |
|  | } |
|  |  |
|  | else { |
|  | $('.output').append(`<div class="question"> |
|  | <p><span class="bold">Q${i + 1}.</span>${response[i].question}</p> |
|  | <ul> |
|  | <li>${response[i].options[0]}</li> |
|  | <li>${response[i].options[1]}</li> |
|  | <li>${response[i].options[2]}</li> |
|  | ${temp.length > 0 ? `<li><select><option disabled selected>More Options..</option>${temp}</select></li>` : ''} |
|  | <span style='font-weight: bolder;'>Ans: ${response[i].answer}</span> |
|  | </ul> |
|  | </div>`) |
|  | } |
|  | } |
|  | $(document).scrollTop($(document).height()); |
|  | } |
|  | }) |
|  | } |
|  | }) |
|  | }); |

**6.SNAPSHOTS OF OUTPUTS**





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7.Conclusion

In this paper, we have presented an approach for automatic generation of MCQs based on unsupervised surface-based semantic relations. Our approach consisted of three main components: in the first component, we used IE methodologies to extract semantic relations and in the second component, we automatically generated questions using these semantic relations. In the third component, distractors were automatically generated using a distributional similarity measure.

Multiple choice items are a common way to measure student understanding and recall. Wisely constructed and utilized, multiple choice questions will make stronger and more accurate assessments.At the end of this activity, you will be able to construct multiple choice test items and identify when to use them in your assessments.Let's begin by thinking about the advantages and disadvantages of using multiple-choice questions. Knowing the advantages and disadvantages of using multiple choice questions will help you decide when to use them in your assessments.

8.References

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