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NLP-Based GATE Preparation App

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Abstract: *Due to the lack of opportunities in the market and cutthroat competition Indian engineering graduates tend to pursue higher education, but for securing admission to a good college you need to have a wood over other students owing to which GATE becomes a necessity and due to the vast syllabus and minimal amount of study resources students are unable to keep up with the preparation. A candidate's GATE score reflects the candidate's relative performance level. The score is used for admissions to various post-graduate education programs. Better remuneration is being offered for students of M.Tech/M.E as compared to those pursuing B.Tech /B.E. Students who qualify in GATE are entitled to a stipend of Rs 8,000 per month during their M.Tech course. Gate scores become very important from the point of view of the organizations that fall under the government sector or which are associated with government sectors. There are as many as 217 units of public sector. A good GATE score becomes essential part of life as it not only grants admission in a good college but also guarantees a handsome and a well paying job. To overcome this problem we are providing a platform for students to prepare for GATE exams. This application includes three sections that are 'concept', 'questions & solution', and 'mock questions' this application will be user-friendly and interactive for which we will use various Web Technology and AI tools.*

Key Word: *GATE Exam, Machine Learning, Artificial Intelligence, NLP(Natural Language Processing)*

I.INTRODUCTION

The Graduate Aptitude Test in Engineering (GATE), an exam given in India, is designed to assess candidates' comprehensive knowledge of a range of engineering and scientific undergraduate courses in preparation for admission to master's programmes and employment in public sector companies. On behalf of the National Coordination Board - GATE, Department of Higher Education, Ministry of Education (MoE), Government of India, the GATE examination is jointly administered by the Indian Instituteof Science and seven Indian Institutes of Technology at Roorkee, Delhi, Guwahati, Kanpur, Kharagpur, Chennai (Madras), and Mumbai (Bombay).

A candidate's relative performance level is reflected in their GATE score. The score is used to determine admission to a variety of post-graduate degree programmes (such as the Master of Engineering, Master of Technology, Master of Architecture, and Doctor of Philosophy) at Indian higher education institutions, with funding provided by the MHRD and other government organisations. Recently, numerous Indian public sector organisations have started hiring recent graduates as entry-level engineers using GATE scores. This test is one of the most challenging in India. Many universities outside of India, like Nanyang Technological University in Singapore, Technical University of Munich, and North Rhine-Westphalia Technical University in Aachen, Germany, recognise GATE test scores as legitimate**.** In the current generation many students use different types of sources for study materials. Many students are wasting their time on study materials that are not sorted because of this students are under pressure to study. A candidate's GATE score shows his or her relative performance level in technical aptitude and logical thinking. Admission to many post-graduate education programmes is based on the score. Better remuneration is being offered for students of M.Tech/M.E as compared to those pursuing B.Tech /B.E.GATE scores are also used by a number of Indian public sector organisations. There are a total of 217 public sector workers in public sector unit. A high GATE score guarantees a good job. After completing M.Tech.at IITs and IISc, one may expect to earn somewhere between Rs 7 lakh and Rs 30 lakh per year, depending on specialty and performance.

II.LITERATURE SURVEY

[1] An Empirical Study of Important Keyword Extraction Techniques from Documents.

Annual International Workshop on Databases, Texts, Specifications and Objects, Pisek, Czech Republic, 2021

In the paper, we have discussed different approaches to keyword extraction techniques and have made a comparison to find which approaches are better. We have found out that both SVM and CRF give better results. Whereas, based on the F1 score (the balance between precision and recall), CRF accuracy is greater than SVM. SVM shows a better result than CRF according to precision. But, in case of the recall, logit shows the best result.

[2] An empirical study of important keyword extraction techniques from documents.

Journal of Informatics Electrical and Electronics Engineering.

The proposed approach seems to be efficient enough to be comparable with other automatic keyword extraction

systems. For example, RAKE system achieved 33.7% of precision with 41.5% of recall and the undirected TextRank achieved 31.2% of precision with 43.1% of recall. Our approach achieved 37.4% of precision and 54.6% of recall for a small corpus with an expanded number of annotations including the problem of keyword generation and automatic clustering. We can assume that precision and recall will be a little bit lower on a bigger corpus. The most significant feature of the corpus is the number of exact manual annotations which are used for performance tests.

III. PROPOSED SYSTEM

Our Proposed System is a Dynamic Web Based Application made using Python, HTML, JQuery, Bootstrap, CSS, JavaScript, PHP, MySQL. The main objective of the research was to examine the utility of educational applications of GATE Preparation.

The application will contain the following Algorithms:

- Extraction Algorithms

1. RAKE NLTK Algorithm

- Dependencies

2. pyPDF

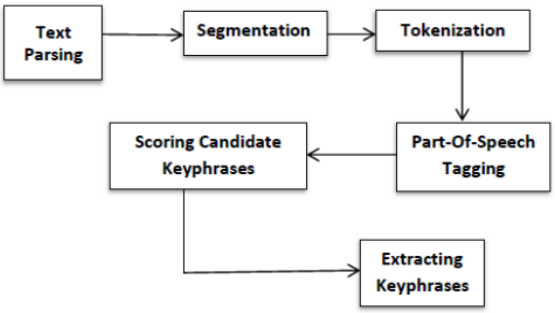

Fig 1. Phrase Detection pipeline

System Architecture

The major components of our application are shown in Fig.1.

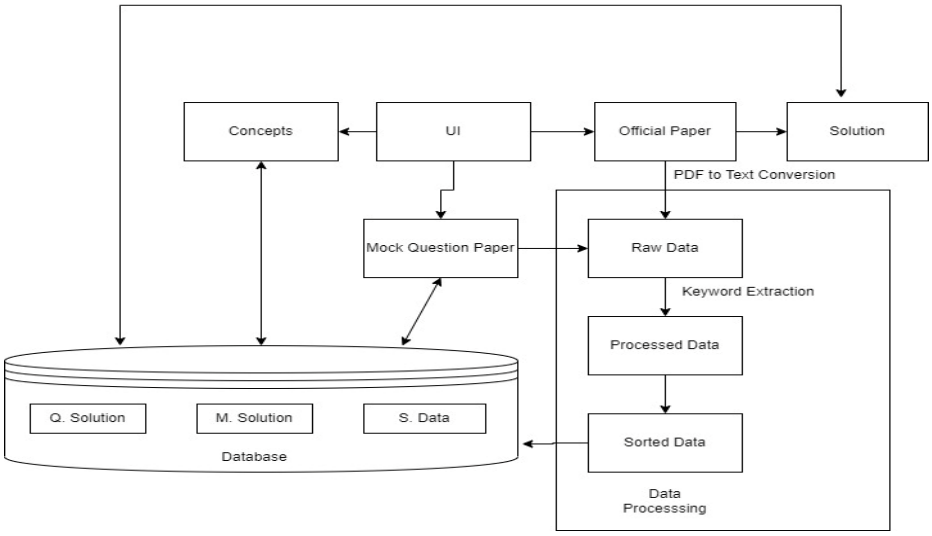

Fig. 2. System Architecture

The system architecture diagram depicts the overall outline of the software system and the relationships, constraints, and boundaries between components. When the user opens the web app, the main screen will be displayed which contains three buttons – concepts, GATE question papers, and Mock question papers. If the user clicks on the "concept" button, contains brief information about the topics regarding the GATE syllabus. Mock questions papers will contain the questions that are repeated and most focused and some papers from other reputed institutes that focus on gate preparation. The standard question paper will contain the previous year's question paper for the Gate Exam. Both sections will contain practice material whereas in the Concepts section sorted data gathered from raw data will be the categorization of topics according to the syllabus of the exam. At last, all three sections will provide Solutions to users relative to the section.

Additional Features

After going through various similar projects, we realized that m that can help make the web application more engaging and user friendly application more engaging, user friendly and improve the user experience. Following are some additional features of our application:

- Better User Interface and User Experience
- A Responsive Application that will deliver an excellent user experience on Mobile Devices too
- Dark Mode

IV.RESULTS

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V.CONCLUSION

A contemporary method of delivering education and information is through e-Learning.Different tools are being created to put this technique of learning into practice as well as helping others understand its significance and embrace it.Learning strategies that are synchronous and asynchronous are equally significant.From beginners to experts, e-Learning tools can meet everyone's needs, and their consistency further supports their superiority over conventional methods.

This App is known for its self-paced learning experience by enabling the student crack down difficult concepts. The app uses a host of modern techniques like web-based learning, visual graphics, etc. to provide an immersive learning experience. The app feat topic-based and full-length tests and GATE mock tests. The lessons have been developed in such a way that the syllabus is fully covered.

VI.ACKNOWLEDGEMENT

We invested a lot of time and energy into this project. However, a lot of people contributed to and encouraged us as we finished the task. We want to express our sincere gratitude to each and every one of them.

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We would like to express our gratitude to our parents and friends at Marathwada Mitramandal's Institute of Technology for their support and cooperation in helping us finish this job.

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