

All Students General Accessibility Resource Domain

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Abstract: In today's fast-paced and information-driven world, we are constantly bombarded with questions that arise in our minds. However, finding reliable solutions to these questions is not always an easy task. This has led us to recognize the need for a readily accessible website that can provide dependable answers to our queries. As students ourselves, we embarked on a project to develop a user-friendly website aimed at addressing this very need.

Our project leverages the power of Database Management Systems (DBMS) to create a comprehensive database comprising trusted sources that can provide answers to a wide range of questions. By utilizing the MERN Stack and other cutting-edge web technologies, we have ensured that our website is intuitive and effortless to navigate. But we did not stop there.

Recognizing the importance of fostering a sense of community and collaboration, we have also designed an online educational platform that serves as a hub for knowledge sharing. This platform facilitates active participation from both students and educators, encouraging them to interact and assist one another in finding solutions to their problems. The result is an integrated ecosystem that offers a strong foundation for students and educators to engage, learn, and collectively overcome obstacles.

Keywords: Student Community, MERN Stack, Q&A

I. INTRODUCTION

In the digital era of education, learners often encounter numerous questions that require reliable answers. To address this challenge, we have undertaken the development of a Q&A community website specifically designed to assist learners in finding trustworthy solutions. Our website not only allows learners to post their queries but also encourages participation from fellow learners and educators to contribute their knowledge and expertise in answering those questions. However, ensuring the reliability and authenticity of the answers presented a significant hurdle to overcome.

The implementation of this rating system allows us to identify and recommend top profiles within the community whose user engagement and accuracy in providing answers are consistently high, particularly within specific topics. Over time, as the system collects more data, we aim to develop a semi-supervised model that will further enhance the reliability and accuracy of the answers provided.

Through this research paper, we seek to shed light on the efficacy of incorporating supervised learning techniques in establishing a reliable and collaborative learning environment. By presenting our detailed methodology and sharing our findings, we aim to contribute to the advancement of online educational platforms, enabling learners to access dependable information efficiently. Ultimately, our vision is to cultivate a vibrant and engaged learning community where learners can enhance their overall learning experience through accurate and credible answers.

II. PROBLEM STATEMENT AND OBJECTIVES

A domain is accessible to all students/everyone providing them with the necessary materials and information to acquire knowledge.

2.1 Objectives:

1. To build an online community of students and solve the questions raised by them.
2. To provide one-to-one solutions to queries raised by them and be accessible to the majority.
3. To provide study & internship material.

III. LITERATURE REVIEW

The literature survey reveals a wide range of research and scholarly work on online educational communities and their impact on learning outcomes. Several studies have emphasized the importance of collaborative learning within online communities, highlighting its positive influence on knowledge construction and critical thinking skills. Through active engagement, learners deepen their understanding of the subject matter, enhance problem-solving abilities, and cultivate critical thinking skills. Online educational communities also facilitate personalized and self-directed learning experiences, allowing learners to explore diverse topics, access resources, and interact with like-minded individuals.

For example, in “Why users contribute knowledge to online communities: An empirical study of an online social Q&A Community” by Jiahua Jin, Yijun Li, Xiaojia Zhong & Li Zhai published in July 2015 they have tried to, according to their objective “Online social Q&A communities augment regular Q&A systems with social networking features that help establish social linkages among users, questions, and topics”.

Their Research had many advantages such as:

1. Involves social learning opportunities.
2. Spreading knowledge.
3. The group-size effect.

Other studies, such as “Investigating an Intervention System to Increase User Engagements in an Educational Social Q&A” by Erik Choi, Chad Coleman, Tomasz Sienkiewicz, and Karolina Wojcik have explored the role of online communities in promoting social interaction and knowledge sharing among learners, enabling them to gain diverse perspectives and develop their communication and collaboration skills. Overall, the literature supports the notion that online educational communities have the potential to enhance learning experiences, foster meaningful connections, and facilitate knowledge exchange among learners and educators.

IV. ONLINE EDUCATION COMMUNITY

An online education community serves as a virtual platform that brings together learners, educators, and other stakeholders in a digital environment to participate in educational activities and foster knowledge exchange. These communities utilize technology to overcome the limitations of time and space, providing access to a wide range of learning resources, interactive tools, and collaborative opportunities. By incorporating features like discussion forums, real-time chat, and peer feedback, online education communities actively promote and facilitate active and collaborative learning experiences, fostering the development of critical thinking and problem-solving skills.

One of the key advantages of online education communities is their support for self-paced learning. Individuals can tailor their educational experiences according to their specific needs and preferences, enabling flexible and personalized learning journeys. Furthermore, these communities encourage lifelong learning by offering a diverse range of courses and resources. Learners can continuously acquire new skills and knowledge, ensuring they stay up-to-date with the evolving demands of education and professional development.

However, ensuring sustained learner engagement, maintaining content quality, and addressing accessibility and inclusivity are challenges that researchers and educators are actively exploring solutions for. This research paper aims to examine the benefits, challenges, and implications of online education communities, contributing to the advancement of modern education practices and providing insights for creating engaging, accessible, and inclusive virtual learning spaces.

V. MERNSTACK

The MERN stack, an acronym for MongoDB, Express.js, React, and Node.js, is a powerful web development technology stack widely used for building robust and efficient web applications. Each component of the stack serves a specific purpose and seamlessly integrates with the others to create a comprehensive development environment. It offers developers the ability to create full-stack JavaScript applications with flexibility, scalability, and efficiency. MongoDB provides a flexible NoSQL database, Express.js simplifies server-side application development, React enables dynamic front-end user interfaces, and Node.js allows for server-side JavaScript execution. The MERN stack is open-source, well-supported by a large community, and facilitates the development of single-page applications. With its comprehensive set of tools, the MERN stack has become a popular choice for building modern, data-driven web applications.

VI. IMPLEMENTATION

Used Model: Incremental Model

The incremental Model is a process of software development where requirements are divided into multiple standalone modules of the software development cycle. In this model, each module undergoes the requirements, design, implementation, and testing phases, with each subsequent release incorporating additional functions from the previous release. This iterative process persists until the entire system is accomplished.

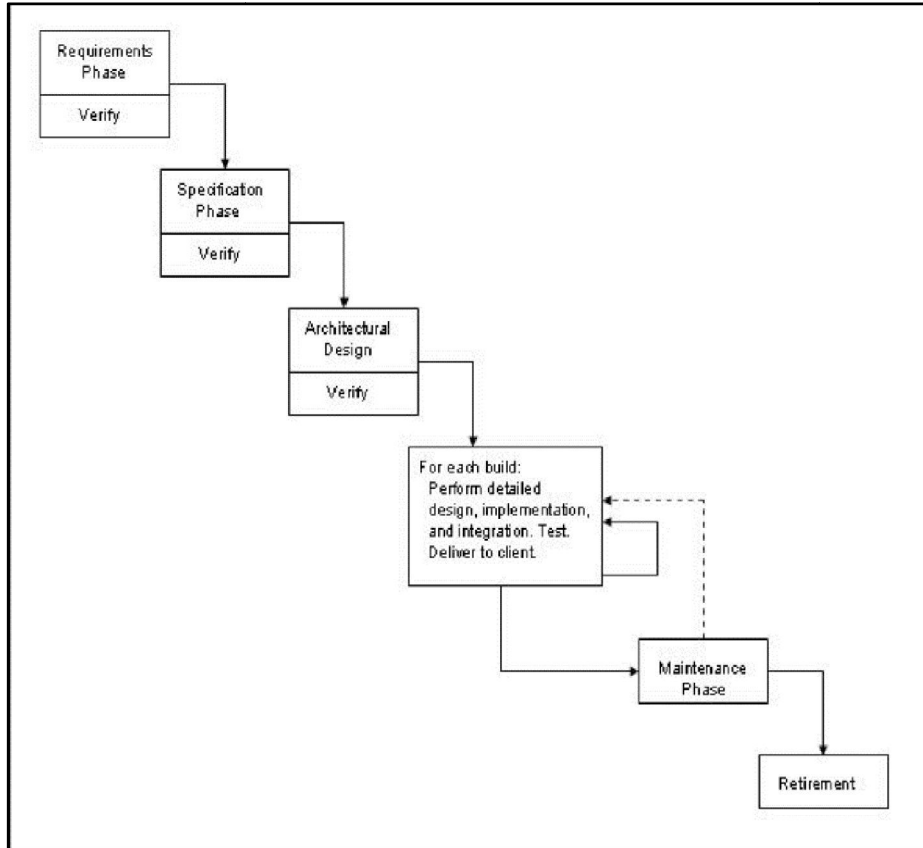


Fig. 1. Incremental Model

System Architecture:

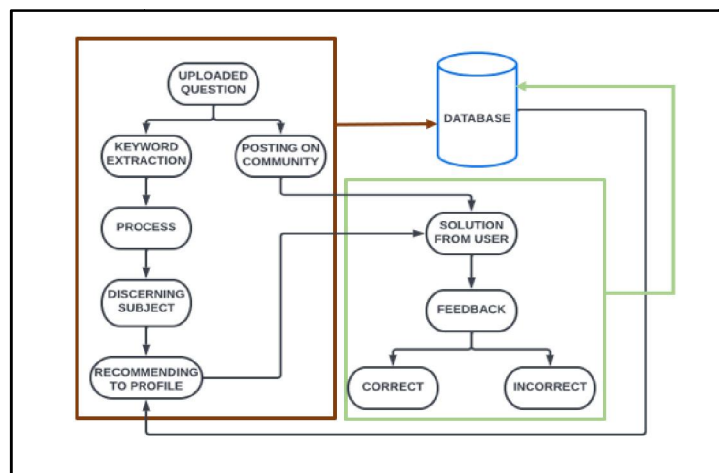


Fig. 2. System Architecture

VII. KEYWORD EXTRACTION

RAKE (Rapid Automatic Keyword Extraction) is an efficient algorithm for automatically extracting important keywords from text documents. It utilizes statistical and linguistic heuristics to identify significant terms or phrases based on their frequency of occurrence and word co-occurrence patterns. RAKE's key features include phrase candidate generation, keyword scoring using term frequency and word degree, and phrase ranking. It has been successfully applied in tasks such as text summarization, document classification, information retrieval, and topic modeling. RAKE's advantages include language independence, simplicity, and efficiency, while limitations include sensitivity to document length and limited context understanding. Despite its limitations, RAKE remains a valuable tool for keyword extraction in various natural language processing applications.

VIII. CONCLUSION & FUTURE SCOPE

In conclusion, our research has resulted in the development of a user-friendly website and online educational platform that addresses the need for reliable and collaborative learning environments. Leveraging DBMS and the MERN Stack, we have created a comprehensive database of trusted sources, fostering a sense of community and encouraging knowledge sharing. By implementing supervised learning techniques and an incremental model, we ensure the accuracy and systematic development of our platform. Overall, our project contributes to the advancement of online education by empowering learners to access dependable information and enhancing their overall learning experiences.

In the future, the educational community website plans to expand and enhance its offerings to provide a comprehensive online learning experience. The key areas of development include diversifying coaching services, integrating advanced virtual classroom tools, incorporating multimedia learning materials, implementing gamification elements, fostering a peer-to-peer learning community, exploring monetization options, and developing a mobile application.

REFERENCES

- [1] Jiahua Jin, Yijun Li, Xiaojia Zhong, Li Zhai School of Management, Harbin Institute of Technology, 92 West Dazhi Street, Harbin 150001, China. in Why users contribute knowledge to online communities: An empirical study of an online social Q&A community, www.elsevier.com/locate/im, Information & Management 52 (2015) 840-849
- [2] Qingyao Ai, Liu Yang, Jiafeng Guo, W. Bruce Croft, College of Information and Computer Sciences, University of Massachusetts Amherst, Amherst, MA, USA. {aiqy,lyang,croft}@cs.umass.edu 2CAS Key Lab of Network Data Science and Technology, Institute of Computing Technology, Chinese Academy of Sciences, China guojiafeng@ict.ac.cn in Analysis of the Paragraph Vector Model for Information Retrieval, <https://dl.acm.org/doi/10.1145/2970398.2970409>
- [3] Firoozeh N, Nazarenko A, Alizon F and Daille B. Keyword extraction: Issues and methods. Natural Language Engineering <https://doi.org/10.1017/S1351324919000457>
- [4] Erik Choi, Chad Coleman, Tomasz Sienkiewicz, Karolina Wojcik in Investigating an Intervention System to Increase User Engagements on an Educational Social Q&A IDC '17, June 27–30, 2017, Stanford, CA, USA. © Copyright is held by the author/owner(s). ACM ISBN 978-1-4503-4921-5/17/06. <http://dx.doi.org/10.1145/3078072.3084325>