KSR College of Engineering

AN AUTONOMOUS INSTITUTION

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Volume -24, Issue II
(JAN-JUN)

BYTE BATE

25 YEARS
2001 – 2026
Celebrating Academic Excellence

DEPARTMENT OF INFORMATION TECHNOLOGY

VISION OF THE INSTITUTE

We envision to achieving status as an excellent educational institution in the global knowledge hub, making self-learners, experts, ethical and responsible engineers, technologies, scientists, managers, administrators, and entrepreneurs who will significantly contribute to research and environment-friendly sustainable growth of the nation and the world.

MISSION OF THE INSTITUTE

- To inculcate in the students' self-learning abilities that enable them to become competitive and considerate engineers, technologists, scientists, managers, entrepreneurs, and administrators by diligently imparting the best of education, nurturing environmental and social needs.

- To foster and maintain a mutually beneficial partnership with global industries and Institutions through knowledge sharing, collaborative research, and innovation.

VISION OF THE DEPARTMENT

To nurture a generation of IT professionals empowered with technological expertise, innovation mindset, and commitment to global sustainability.

MISSION OF THE DEPARTMENT

- To deliver industry-ready curriculum enriched with emerging technologies, hands-on learning, and interdisciplinary exposure.

- To provide modern infrastructure and a collaborative environment that supports innovation, research and continuous learning

- To empower ethical digital citizens contributing to inclusive and sustainable technological solutions.

Message from CHAIRMAN

Thiru. R. SRINIVASAN, B.B.M., MISTE
CHAIRMAN

I am pleased to witness the launch of BYTE BATE the official magazine of the Information Technology Department at K.S.R. College of Engineering. In today's rapidly evolving digital landscape, it is inspiring to see the department taking proactive steps to keep students informed, engaged, and future-ready through such academic and creative endeavors. This magazine serves as a vibrant platform to highlight the department's achievements in academics, research, student innovations, and industry interactions. It is a reflection of the commitment of the faculty and students towards excellence in the field of Information Technology.

I commend the department for its consistent efforts in nurturing young minds and cultivating an environment of inquiry, innovation, and integrity. My heartfelt congratulations to the editorial team for bringing out this issue and my best wishes for continued success in all future initiatives.

With best wishes
Mr. R. SRINIVASAN
Chairman
KSR Educational Institutions

Message from DEAN

Dr. M. VENKATESAN, M.E., Ph.D.,
DEAN

It is with great pleasure that I share the latest edition of the IT Department BYTE BATE , which showcases the remarkable progress, initiatives, and accomplishments of our students and faculty. Over the years, KSR College of Engineering has established itself as a hub of academic excellence, nurturing generations of aspiring engineers with a strong foundation in knowledge and innovation. Our department continues to strive toward excellence through dynamic teaching practices, robust research activities, and active student engagement. This magazine is a testament to our collective efforts in embracing new technologies, promoting creativity, and fostering a culture of continuous learning. I commend the faculty, students, and the editorial team for their commitment and hard work in bringing out this informative and inspiring edition. I am confident that this publication will serve as a source of motivation for all, driving us toward even greater achievements in the future.

With best wishes
Dr. M. Venkatesan
Dean

Message from PRINCIPAL

Dr. P. MEENAKSHI DEVI, M.E., Ph.D.,

PRINCIPAL

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With best wishes

Dr. P. Meenakshi Devi

Principal

Message from HoD

Dr. S. ANGURAJ., M.E.,Ph.D.
Associate Professor & Head
Information Technology

As the Head of the Department of Information Technology, I am delighted to collaborate with our dedicated faculty and enthusiastic students in bringing out this magazine that showcases the activities and accomplishments of our department in a well-organized manner. This edition highlights our recent initiatives, including seminars, workshops, research publications, student projects, and industry collaborations. I also take this opportunity to extend my heartfelt gratitude to our esteemed alumni and industry partners, whose continued support and active engagement play a vital role in the growth and success of our department.

With best wishes
Dr. S. Anguraj
Associate Professor & Head
Information Technology

BYTE BATE

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Fault Prediction Using Neural Network on IoT Environment with Heterogeneous Sensing Data Fusion

It focused on enhancing the reliability of IoT systems through intelligent fault prediction. The project aims to identify potential system failures in advance by utilizing Artificial Neural Networks (ANNs) that process and analyze data collected from a range of heterogeneous sensors such as temperature, vibration, pressure, and humidity sensors. By employing a robust data fusion technique, the system integrates multi-source sensor inputs to form a comprehensive dataset for fault detection. The neural network model is trained to recognize complex patterns and anomalies that typically precede system faults, enabling real-time alerts and proactive maintenance. This solution holds great promise for applications in smart manufacturing, predictive maintenance, and industrial automation, where system uptime and efficiency are critical. With an impressive fault prediction accuracy of 92%, the project showcases how AI-powered data fusion can drive smarter, more dependable IoT environments.

Gokul S (73152251001)
M.Tech / II Year

Block chain for Achieving Accountable Outsourcing Computations in Edge Computing

In an era where data-driven services and real-time computing dominate modern applications, edge computing has emerged as a transformative solution. However, with increased reliance on third-party edge service providers, the accountability and trustworthiness of outsourced computations become crucial. Addressing this challenge, a pioneering project titled “Blockchain for Achieving Accountable Outsourcing Computations in Edge Computing” explores how blockchain technology can ensure transparency, integrity, and traceability in outsourced computational tasks.

The project integrates blockchain with edge computing to establish a decentralized, tamper-proof ledger that records all computation requests, results, and verifications. By leveraging smart contracts, the system automatically validates whether computations performed by edge nodes are accurate and within predefined conditions. This ensures that both users and service providers are held accountable, thereby preventing malicious behavior or false computation claims. The use of cryptographic proofs further strengthens the system's reliability.

This research presents a significant step toward building trust in edge-enabled services, especially for sensitive sectors such as healthcare, smart cities, and industrial IoT. By embedding accountability into the architecture using block chain, the project proposes a secure, verifiable, and efficient framework for future computing environments.

KARTHI P (73152251002)

M.Tech / II Year

Personalized MCQ Generator Using Gen AI

The proposed solution is an AI-powered MCQ generator that leverages Retrieval-Augmented Generation (RAG) to produce customized and adaptive questions. This intelligent system analyzes user learning behavior, engagement history, and previously attempted questions to dynamically generate quizzes tailored to individual knowledge levels and subject understanding. It aims to bridge the gap between static question banks and dynamic, personalized assessments by focusing on the learner's pace and performance.

The model incorporates a real-time retrieval mechanism that sources relevant content from structured datasets, academic materials, or user-uploaded documents.These questions are context-aware and designed to enhance retention by focusing on concept clarity, pattern recognition, and logical reasoning.

The responsiveness and adaptability of the system enable smart difficulty-level calibration. As users answer questions, the system evaluates their performance in real time and adjusts subsequent questions to maintain an optimal challenge level. It also includes an intelligent feedback loop that highlights strengths, pinpoints areas for improvement, and offers revision suggestions.

RAGUL .R (73152221039)

B.Tech / IV Year

Automated Quiz Creator Using NLP and RAG

The proposed system automates the process of quiz generation by integrating advanced Natural Language Processing (NLP) techniques with Retrieval-Augmented Generation (RAG). It intelligently analyzes the input study material or user-provided content to extract relevant topics and key ideas. Based on this analysis, it formulates multiple-choice questions (MCQs) that align with the learner's current comprehension level, ensuring both relevance and cognitive appropriateness.

By combining the power of retrieval models with GPT-like text generators, the system identifies core concepts and learning objectives from the source material. It then dynamically generates well-structured MCQs that are not only syntactically correct but also semantically meaningful. These questions are crafted to reinforce understanding, encourage critical thinking, and provide a varied learning experience across difficulty levels.

Furthermore, the system is designed to improve iteratively through interaction. It tracks user responses, evaluates accuracy, and adjusts future question difficulty accordingly. Through this continuous loop, it embeds adaptive feedback into the learning process—highlighting areas of strength, addressing knowledge gaps, and ultimately supporting a more personalized and effective e-learning journey.

BALAMBIGA.K(73152221004)

B.Tech / IV Year

AI-Based MCQ System for Tailored Learning

This project leverages the power of Generative AI and Retrieval-Augmented Generation (RAG) to generate personalized multiple-choice questions (MCQs) directly from study materials. The core innovation lies in its ability to adapt to each learner's progress, dynamically adjusting the complexity of questions based on individual performance metrics.

The system incorporates a vector-based semantic search mechanism to accurately retrieve the most relevant segments of content from a wide range of sources, including textbooks, PDFs, and online repositories. Once retrieved, these content snippets are fed into advanced generative models—such as transformer-based large language models—that are capable of crafting context-aware, coherent, and pedagogically sound MCQs.

By tailoring assessments to the learner's current understanding and adapting in real time, the system provides a highly personalized evaluation experience. This not only improves knowledge retention through spaced and active recall but also boosts learning engagement by delivering targeted, meaningful practice. The result is a smart assessment tool that supports continuous, self-paced, and effective learning.

DINESH.V.N (73152221009)

B.Tech / IV Year

Dynamic MCQ Generation Using RAG Framework

This system proposes a dynamic MCQ generator that intelligently combines content retrieval techniques with powerful generative language models. By analysing structured and unstructured educational content such as textbooks, notes, and learning platforms, the system extracts key concepts and learning objectives. Using this extracted data, it formulates contextually relevant and concept-focused multiple-choice questions that align with curriculum goals and cognitive learning outcomes.

It enables educators to automatically generate quizzes that are both syllabus-aligned and personalized to the learner's current level of understanding. Teachers can input specific topics or upload material, and the system will retrieve the most relevant information, generating questions accordingly. This automation not only reduces the workload of manual question creation but also ensures quality and variety in the assessments being delivered.

The system further promotes continuous and adaptive learning by adjusting question difficulty in real-time based on individual learner responses. As students interact with the quiz, the system evaluates their performance and modifies future questions to target weak areas while reinforcing strengths. This approach supports personalized learning paths, maximizes engagement, and helps students achieve better academic outcomes through data-driven practice.

JAYAPRAKASH.M(73152221052)
B.Tech / IV Year

Intelligent Question Paper Generator with RAG

The intelligent question paper generator utilizes Retrieval-Augmented Generation (RAG) to automatically produce high-quality MCQ papers tailored for academic exams, practice sessions, or adaptive testing environments. By integrating advanced content retrieval techniques with generative AI, the system ensures that the generated questions are both contextually accurate and aligned with the intended learning outcomes. It takes input from course syllabi, lecture notes, or textbooks and transforms them into comprehensive and meaningful assessments.

The system categorizes questions into multiple difficulty levels—easy, medium, and hard—by analysing the complexity of the source material and mapping it to cognitive learning levels such as recall, understanding, and application. This layered approach helps educators maintain a balanced assessment strategy that challenges students progressively and encourages deeper understanding. The generator also ensures broad syllabus coverage by evenly distributing questions across all important topics and subtopics through intelligent retrieval filtering and topic modelling.

One of the major advantages of this system is its ability to significantly reduce the manual workload of instructors. Traditionally, educators spend considerable time crafting and organizing question papers to meet exam standards. With this automated solution, instructors can instantly generate secure and varied question papers with minimal input. Additionally, the system is scalable and secure, capable of supporting a wide range of users simultaneously while maintaining data integrity and preventing content duplication. Overall, it serves as a robust tool for modernizing assessment creation and improving efficiency in educational environments.

VIGNESH K (73152221052)

B.Tech / IV Year

Adaptive Learning Quiz Bot Using Gen AI

The proposed quiz bot interacts intelligently with users to deliver adaptive multiple-choice questions based on their level of topic understanding. It uses Retrieval-Augmented Generation (RAG) to retrieve relevant content from study materials and a conversational AI layer to frame personalized questions in real-time. This dynamic system continuously evaluates the learner's responses and adjusts the complexity of the next questions accordingly, creating a personalized learning path. By simulating a human-like tutor, the quiz bot ensures that learners receive appropriate challenges that suit their pace and knowledge level. The system provides instant feedback after each question, helping users quickly understand their mistakes and reinforce correct concepts. It also maintains a running score and learning history to track student progress over time.

This encourages consistent learning and allows both learners and educators to identify areas needing improvement. Additionally, the conversational design makes learning more engaging and less intimidating, especially for self-learners. The quiz bot serves as a virtual assistant, supporting students anytime and anywhere with minimal teacher intervention.

It can also be integrated into e-learning platforms, mobile apps, or classroom smartboards to enhance accessibility and flexibility. Furthermore, its data analytics module provides insights into student behavior, question effectiveness, and knowledge gaps, making it a valuable tool for both assessment and instruction.

RISHANTHI S (73152221042)
B.Tech / IV Year

Smart MCQ Maker for E-Learning Platforms

This project creates a smart MCQ generator designed for seamless integration with e-learning platforms and Learning Management Systems (LMS). The system extracts content from various sources, including lecture notes, textbooks, and reference materials, and processes it using Retrieval-Augmented Generation (RAG) to generate meaningful, context-rich questions. These questions are not randomly formed—they are aligned with curriculum objectives and structured to assess conceptual understanding rather than rote memorization. The generator dynamically adjusts question difficulty based on the learner's past performance, ensuring a personalized and progressive learning experience.

Through intelligent performance tracking, the system monitors individual learner responses, identifying strengths and gaps in knowledge over time. It then adapts subsequent questions to target weak areas while reinforcing previously mastered concepts. The tool supports multiple question formats and difficulty tiers, making it suitable for diverse learners and academic levels. Educators can use it to create automated quizzes, assignments, or mock exams with minimal effort, while also receiving analytics dashboards to monitor class-wide performance. The system also supports multilingual content generation, allowing institutions to extend adaptive learning in regional languages. Overall, it enhances the quality of digital education by delivering customized assessments that promote engagement, retention, and continuous academic growth.

ARAVINDAN R (73152221003)
B.Tech / IV Year

KSR College of Engineering

KSR KALVI NAGAR, TIRUCHENGODE.

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