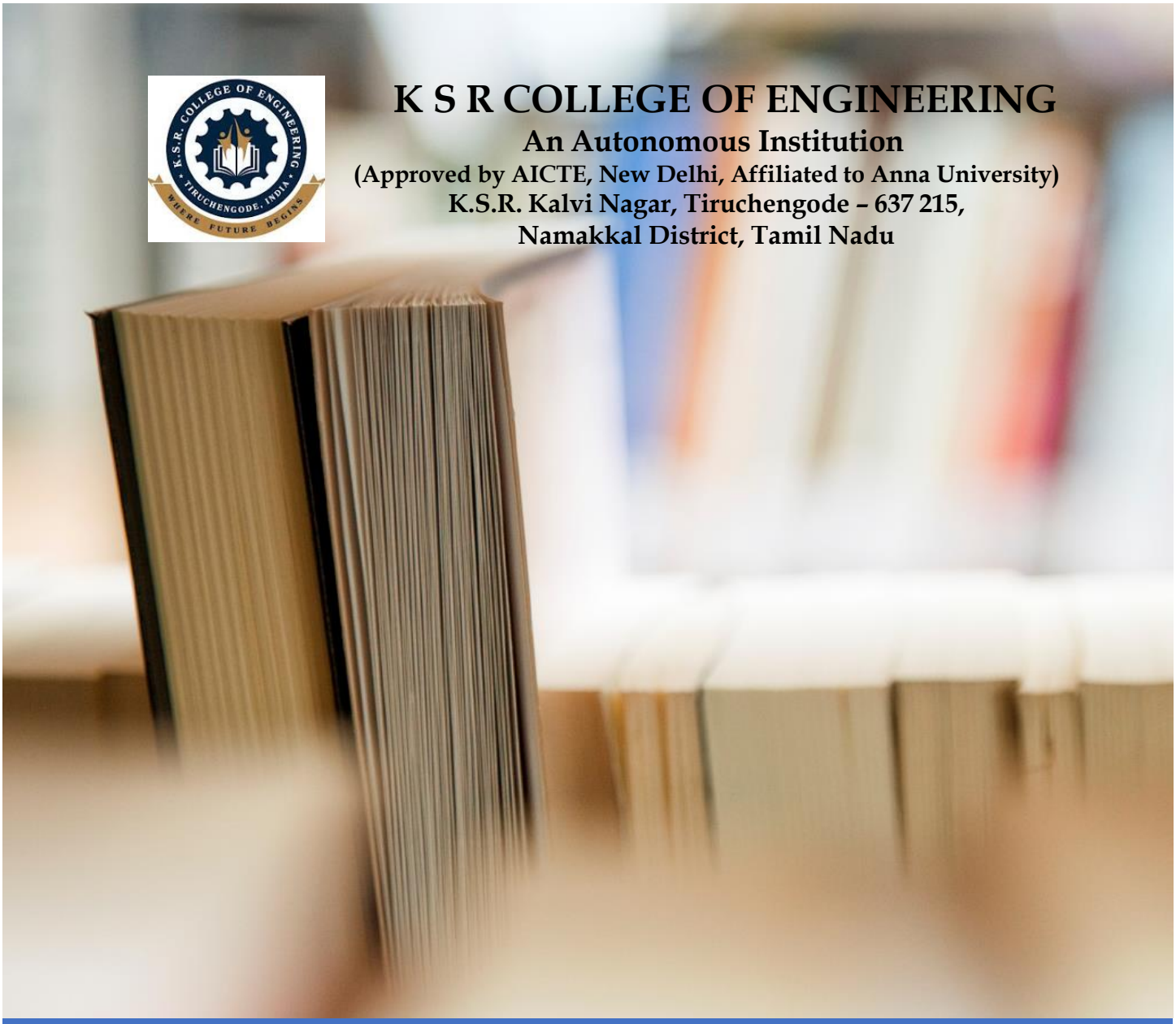


K S R COLLEGE OF ENGINEERING

An Autonomous Institution

(Approved by AICTE, New Delhi, Affiliated to Anna University)

K.S.R. Kalvi Nagar, Tiruchengode – 637 215,

Namakkal District, Tamil Nadu

DEPARTMENT OF BIOMEDICALENGINEERING

BIOTRON 2024-25

July- December 2024 **2024-2025/Volume 1/Issue 1** **TECHNICAL MAGAZINE**

Vision, Mission of Institution

Vision:

- The department aims to develop professionals having good knowledge, skills and attitude in the field of computer applications for the betterment of industry and society.

Mission:

- To provide high quality education in the field of computer applications and there by create compute professionals with proper leadership skills, commitment and moral values.

- To educate students to be successful, ethical, and effective problem-solvers and life-long learners who will contribute positively to the economic well-being of our nation

Vision, Mission of Department

Vision:

- To Produce erudite Biomedical Engineers, Research and Entrepreneurs with ethical values to meet the global challenges.

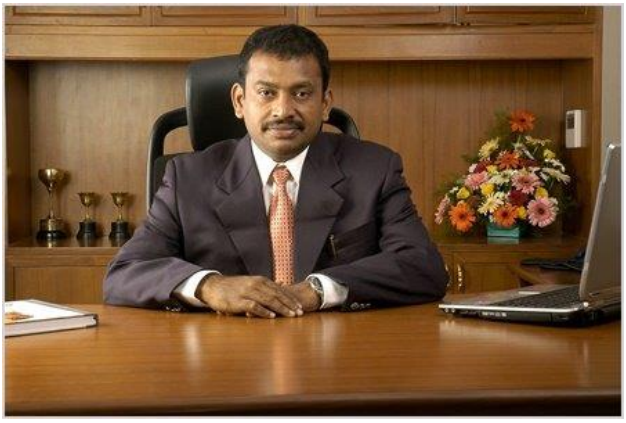
Mission:

- Impart quality education to enhance problem solving skills, leadership qualities and team spirit through teaching and learning process with ethical responsiilties.
- Enrich interdisciplinary skills providing state of the art laboratories and facilities.
- Enhance research and entrepreneurship skills with social responsibilities to meet social needs.

K S R COLLEGE OF ENGINEERING

An Autonomous Institution

Message from Chairman



Thiru R. Srinivasan BBM., MISTE.,

Chairman,
KSR Educational Institutions

Education is the foundation of a brighter tomorrow, and this magazine reflects the vibrant spirit of our learners. May it continue to inspire creativity, excellence, and lifelong curiosity in every reader. In the recent times, the role of KSRCE is to carry out proactive research and development activities to make the students as well as faculty member's intellectuals, which are very challenging and demanding. It is of great significance that this magazine is going to deliberate upon It will definitely explore new areas of practice and enhancing quality of professional services. I am sure this magazine will be a milestone in ensuring the highest standards in this profession. I wish the organizers the very best in this and all their other endeavors. I am eagerly looking forward to seeing you and enjoying this magazine in KSRCE Campus.

With best wishes

Mr. R. Srinivasan
Chairman
KSR Educational Institutions

K S R COLLEGE OF ENGINEERING

An Autonomous Institution

Message from Principal

Dr M Venkatesan
Principal – KSRCE

It is with immense pride and joy that I present to you the latest edition of our BME Department magazine a vibrant reflection of the creativity, talent, and achievements of our students and staff. Over the past one decade, KSRCE has served the young engineering aspirants of our nation by providing state-of-art facilities and well knowledgeable faculty members. The Institute has held high the lighted torch of teaching and learning and has not failed in its duty in the hour of need. The students imbibe qualities of an excellent teacher and researcher to set academic standards. The last couple of years marked several milestones in the history of KSRCE. Technology is constantly evolving, and staying up to date with the latest trends can help us stay competitive in the job market, give you access to new features and capabilities. I congratulate the editorial team, contributors, and all those who have worked tirelessly to bring this edition to life. Let this magazine serve not only as a record of our accomplishments but also as an inspiration for the journeys yet to come.

With best wishes

Dr. M Venkatesan
Principal

KSRCE

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Message from Head of the Department

Dr R Parbu
HoD-BME

It is a pleasure to present this edition of our Biomedical Engineering magazine. Our department continues to push the boundaries of innovation, merging engineering principles with medical sciences to develop impactful healthcare solutions. From medical devices to bioinformatics and tissue engineering, our students and faculty are driving meaningful change. This magazine highlights their inspiring work, research, and achievements. We take pride in nurturing a culture of curiosity, collaboration, and excellence. As we move forward, we remain committed to shaping the future of healthcare through technology, creativity, and dedication

With best wishes

Dr. R.Prabu

HoD-BME

KSRCE

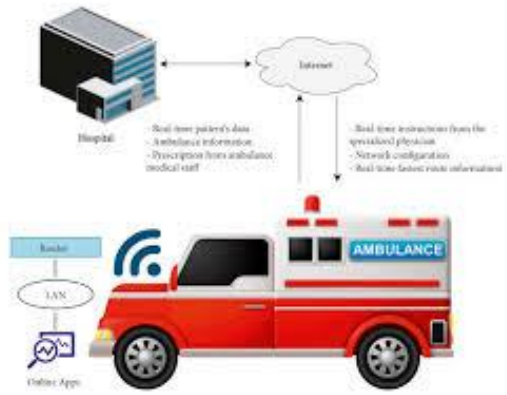
Table of Content

Development of an Intelligent Ambulance System

This project proposes the creation of an intelligent ambulance system that enhances the efficiency and responsiveness of emergency medical services. The system will be equipped with GPS-based route optimization, real-time traffic updates, and AI-driven triage algorithms to prioritize patients based on severity. Onboard diagnostics including ECG, pulse oximetry, and portable imaging devices will be integrated with a cloud-based platform to share patient data with the receiving hospital in advance. The ambulance will also feature voice-assisted systems for paramedics, ensuring hands-free communication and streamlined workflow. This intelligent approach will reduce the golden hour delays and improve outcomes in critical cases.

Applications:

- Real-time coordination with hospitals during emergencies
- Faster and more informed triage and treatment
- Improved EMS (Emergency Medical Services) logistics and dispatch
- Enhanced patient monitoring en route to hospital



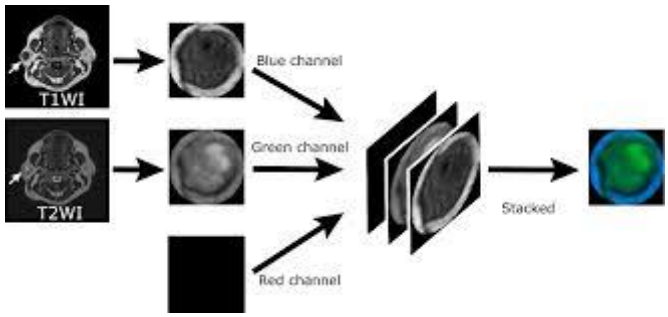
S Priyadharshini
II BME

Deep Learning-Based Anomaly Detection in Medical Images

The rising volume of medical imaging data has increased the burden on radiologists and clinicians, often leading to diagnostic delays. This project introduces a deep learning-based system for automated anomaly detection in medical images such as X-rays, CT scans, and MRIs. The system will be trained on annotated datasets to recognize patterns associated with tumors, fractures, hemorrhages, and other abnormalities. It will employ techniques like CNNs and autoencoders to enhance detection accuracy and reduce false positives. The tool will assist in prioritizing critical cases and can be used as a second opinion in diagnostic workflows.

Applications:

- Computer-aided diagnosis in radiology departments
- Early detection of cancer, stroke, and musculoskeletal disorders
- Triage support in emergency imaging
- Integration into PACS (Picture Archiving and Communication Systems)



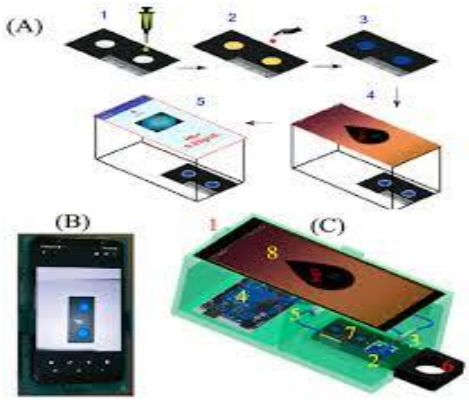
P J Iniyan
II BME

Point-of-Care Blood Analyzer for Rapid Diagnostics

Accurate and timely diagnosis is crucial in emergency and primary care settings. This project focuses on designing a portable point-of-care (POC) blood analyzer capable of delivering rapid diagnostic results from a single drop of blood. The device will use microfluidic technology combined with biosensors to detect key biomarkers for conditions like anemia, infection, liver/kidney function, and metabolic disorders. Results will be displayed on an integrated screen or transmitted wirelessly to a clinician's interface. The analyzer aims to reduce turnaround time from hours to minutes, improving treatment decisions in both clinical and field environments.

Applications:

- Emergency room diagnostics
- Rural and mobile health camps
- Field use during disaster or military operations
- Routine health checks in clinics and pharmacies



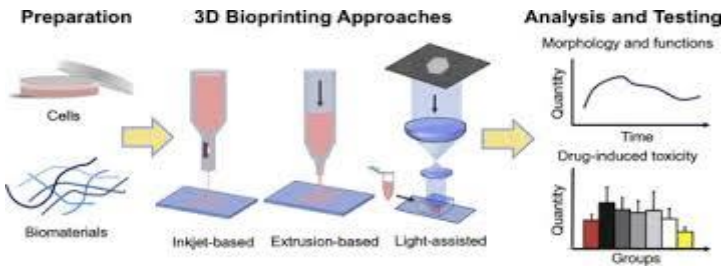
S Vidhyashree
I BME

Bioprinted Tissue Model for Drug Screening

Traditional drug testing often relies on animal models and 2D cell cultures, which may not fully replicate human physiological responses. This project investigates the use of 3D bioprinting technology to fabricate tissue models that closely mimic human organs for more accurate and ethical drug screening. By printing layers of living cells and biomaterials in predefined patterns, functional tissue constructs such as liver, skin, or tumor models can be created. These models will be used to assess drug toxicity, metabolism, and efficacy in a controlled laboratory environment. This approach has the potential to reduce drug development time and costs, while improving prediction accuracy for human responses.

Applications:

- Preclinical drug testing and toxicity assessment
- Personalized medicine through patient-specific models
- Alternative to animal testing
- Research in tissue engineering and regenerative medicine



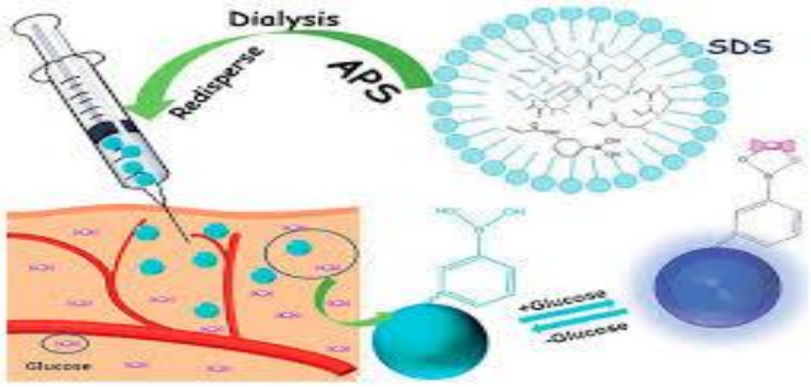
M R Ishaani
I BME

Wearable Sensor for Continuous Glucose Monitoring

This project centers on the design and development of a wearable, non-invasive sensor for continuous glucose monitoring (CGM). The device aims to replace traditional finger-prick methods by employing optical or sweat-based biosensors that can detect glucose fluctuations in real time. Embedded with Bluetooth or NFC connectivity, the sensor will transmit glucose data to a mobile application, enabling users and clinicians to track trends and receive alerts for hypo- or hyperglycemia. The design will prioritize user comfort, skin compatibility, and energy efficiency, with potential integration into wristbands or adhesive skin patches. The system will also feature AI-driven analytics for personalized insights and recommendations, improving overall diabetes management.

Applications:

- Daily glucose monitoring for diabetic patients
- Remote patient management by healthcare providers
- Personalized lifestyle and medication recommendations
- Integration with insulin pumps or other wearable health tech



L Sanjay
III BME

Smart Pill Dispenser with Medication Adherence Tracking

Medication non-adherence is a significant challenge in chronic disease management, leading to worsening health outcomes and increased healthcare costs. This project proposes a smart pill dispenser that automates medication dispensing and monitors adherence behavior. The dispenser will be equipped with programmable schedules, compartment-based storage, and reminder systems using sound, light, and mobile alerts. Additionally, the device will log pill intake events and send adherence data to caregivers or healthcare providers. AI-based analytics will help predict missed doses and recommend interventions. Designed for elderly and chronically ill patients, the system supports remote monitoring and enhances patient safety and compliance.

Applications:

- Chronic disease management (e.g., diabetes, hypertension)
- Elderly and cognitively impaired patient care
- Post-operative medication management
- Remote patient monitoring in telemedicine

G Pavithran
IV BME

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