MEDITRONICS

DEPARTMENT OF BIOMEDICAL ENGINEERING

Vision of the Department

To be a globally recognized centre of excellence in the field of biomedical engineering where learners are nurtured in a scholarly environment to evolve into competent professionals to benefit society

Mission of the Department

- Evolve a curriculum which emphasizes on strong engineering fundamentals with the flexibility to choose advanced courses of interest and gain exposure to tools and techniques in Biomedical Engineering.
- Encourage a teaching-learning process in which highly competent faculty share a symbiotic association with the institutes of repute.
- Facilitate creation and dissemination of biomedical engineering knowledge through a digitally-enabled learning environment.
- Develop academic and infrastructural facilities with modern equipment and other learning resources and encourage reciprocal sharing with other institutes through networking.
- Establish a centre of excellence to enhance academia – biomedical industry partnership and work on collaborative projects.

Programme Educational Objectives (PEO)

- To enable the pursuit of knowledge in the field of Biomedical Engineering and contribute to the profession and employability of the students.
- To engage in research, generate the employment through entrepreneurship and work effectively in multidisciplinary environment.
- To understand the human, social, ethical and environmental context of their profession and contribute positively to the needs of individuals and society.

WHAT'S INSIDE

PROF. DR. GAJANAN NAGARE

HEAD OF DEPARTMENT, BIOMEDICAL ENGINEERING

Biomedical Engineering, field thrives on bold decisions, risk-taking, and the continuous pursuit of making groundbreaking innovations "right" for society. From developing advanced medical devices to improving diagnostic tools, and enhancing patient care, each decision we make leads to a better world.

I am happy to let you know that our students are doing extremely well in co-curricular activities. Recently a group of student from third year received first prize in Medical Hackathon organized by BETIC labs. More than 60 students completed their winter internship at various organizations. I am sure this must have been a wonderful learning experience for all.

We are starting our new term for even semester of A.Y. 2025-26 from first week of January-2026. Our NEP R-2023 students from semester-VI will have opportunity to select an Honours/Minors degree of their choice from this semester.

I wish my students all the best for new semester and Happy Learning!

" "Don't read success stories, you will only get a message. Read failure stories, you will get some ideas to achieve success."- Dr. A.P.J. Abdul Kalam "

Guest Lecture on "Building Secure and Trustworthy Generative AI for Healthcare"

The Department of Biomedical Engineering organized an online guest lecture on "Building Secure and Trustworthy Generative AI for Healthcare" on 10th October 2025 for final year Semester-VII students. The session was delivered by Mr. Kailash Talreja, Data Science Principal Software Architect at Dell Technologies, who shared industry-driven insights drawn from his extensive experience in Generative AI, AI security, and data science initiatives. The lecture focused on the strategic deployment of Generative AI in high-stakes healthcare environments, emphasizing ethical considerations, data privacy, and regulatory compliance. Key discussions included principles of building trustworthy AI systems, safeguarding sensitive patient health information using advanced techniques such as Retrieval Augmented Generation (RAG), and aligning AI solutions with global compliance standards. Real-world case studies highlighted the application of large language models in areas such as contract analysis, financial insights, and drug discovery. The session equipped students with a practical mindset and essential skills required to develop secure, reliable, and commercially viable AI solutions for healthcare and allied sectors. The guest lecture was coordinated by Prof. Komal Shinde for the department.
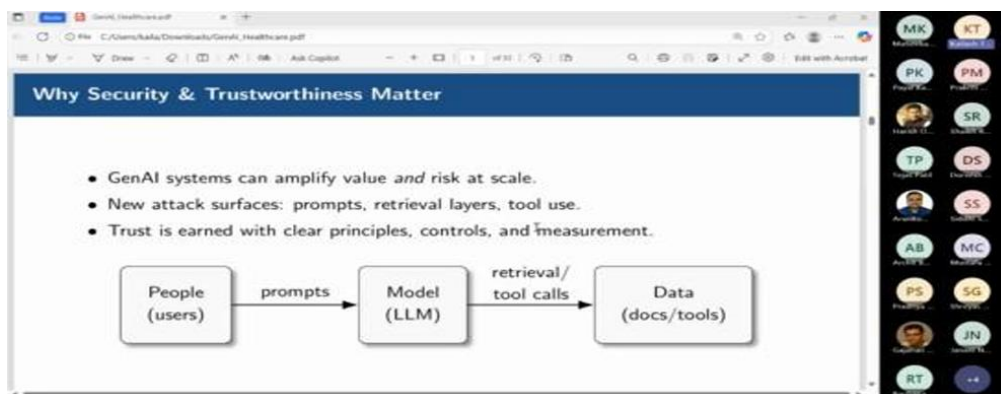
Screenshot of Guest Lecture conducted in Online Mode

Department Staff

DR. ARATI KANE
ASSOCIATE PROFESSOR

EDUCATION QUALIFICATION:
PhD ELECTRICAL ENGINEERING
M.TECH INSTRUMENTATION AND CONTROL

TEACHING EXPERIENCE:
23 YEARS

AREA OF SPECIALIZATION:
BIOMEDICAL INSTRUMENTATION
RENEWABLE ENERGY

PROF. SUVARNA UDGIRE
ASSISTANT PROFESSOR

EDUCATION QUALIFICATION:
ME-ELECTRONICS ENGINEERING
..

TEACHING EXPERIENCE:
15 YEARS

AREA OF SPECIALIZATION:
BIOLOGICAL MODELING,
NETWORKING IN MEDICAL
SYSTEMS & MEDICAL DEVICES

Guest Lecture on "Robotics Process Automation"

The Department of Biomedical Engineering conducted an interactive guest lecture on Robotic Process Automation (RPA) on 8th October 2025 via Microsoft Teams. The session was delivered by Mr. B. Karunakaran, AGM, TATA Power Company Limited, Mumbai, and was coordinated by Dr. Arati N. Kane and Prof. Sampada Pawar. The lecture aimed to create awareness about the growing industrial applications of RPA and its role in digital transformation. The speaker explained how RPA enables automation of repetitive, rule-based processes such as billing, data validation, report generation, and customer communication, particularly within the power and energy sector. Real-time industry examples demonstrated how automation reduces manual effort, minimizes errors, and improves operational efficiency. Participants were introduced to the working of attended and unattended bots and popular RPA tools such as UiPath and Automation Anywhere. The session witnessed enthusiastic participation from around 110 students and provided valuable insights into career opportunities and practical applications of RPA technologies.
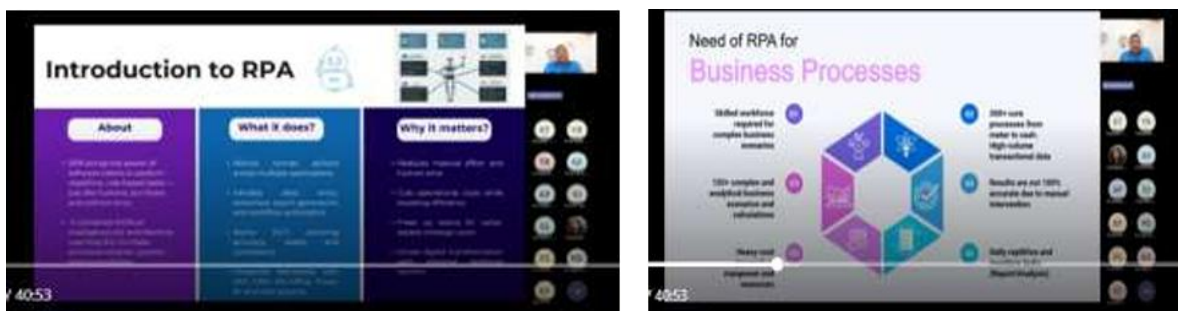
Screenshot of Guest Lecture conducted in Online Mode

Know an Alumnus
Mr. Samar Mandke (2010 Batch)

Samar is an alumnus of VIT , passed out in the year 2010 from the Biomedical Engineering Department.

Hello readers currently I am working as Field Service Engineer 3 at Intuitive India Surgical Pvt Ltd working on Davinci Surgical products supporting states like Maharashtra, Goa, Chhattisgarh. Expertise in delivering one of the best services in healthcare Industry even in Tier 2 and Tier 3 cities within 24 hours. I am also responsible for various projects utilizing my data analytics (Python, SQL) and visualization skills (Tableau/Power Bi) at global level viz:
• Improving predictive / proactive service aiming for reduction of breakdown during surgeries
• KPI improvisation for service team in Europe and APAC countries
• Improving customer and patient experience
• Transfer of error codes/system events into human readable form
I started my career as installation specialist for MRI (one of the complex imaging modality) in GE healthcare installing around 50 MRI during my tenure. A special thanks to Prof. Uma Jayashankar who laid the foundation of MRI basics right from my final year of engineering. I was also one of the member experimental in starting the Biomedical Student Association (BMSA) in 2007 under guidance of Dr. Arun Chavan. The Guidance of Dr. Chavan taught us the importance of time management, optimizing available resources without affecting the core job. This has enabled me to take additional responsibility during my career which helped me to grow in my professional career. I would also like to thank all my teachers, mentors, and friends who has helped me to grow in healthcare industry.
I will suggest my juniors to Identify their area of interest, hobby and start focusing on strong foundational concepts, actively seeking practical experience through projects, develop problem solving skills, mastering relevant software tools, cultivating communication teamwork abilities, and stay updated with industry trends. College life may be stressful at times, so find the time for your hobbies, interest and participate in sports, extra-curricular activities to gain confidence at various levels. College life is the best time of your life. Try to utilize it by having healthy conversation with teachers, mentors, and seniors. Do not hesitate to try something new. come with new ideas, try to implement it .

STUDENT ARTICLE

Early Detection of Breast Cancer using ML techniques

Ms. Sanika Korpe (B.E. Biomedical Engineering)

Breast cancer is a leading cause of cancer-related deaths among women worldwide, accounting for approximately 25% of female cancer cases. Early detection is crucial for improving survival rates, but interpreting mammograms can be challenging and time-consuming for radiologists. Machine Learning and Artificial Intelligence techniques have emerged as promising tools to assist in this process, analyzing medical imaging data and patient information to identify potential malignancies with high accuracy. A recent study by Naseem et al., titled "An Automatic Detection of Breast Cancer Diagnosis and Prognosis Based on Machine Learning Using Ensemble of Classifiers," explores the application of various machine learning techniques to enhance the accuracy and efficiency of breast cancer detection and prognosis.

The study utilized an ensemble of machine learning classifiers to detect breast cancer, combining algorithms such as Support Vector Machines, Logistic Regression, Naive Bayes, and Decision Trees. This approach aimed to leverage the strengths of each classifier while minimizing their weaknesses. An Artificial Neural Network was used as a final layer to integrate the outputs of these classifiers. The results were promising, with the best ensemble model achieving 98.83% accuracy for breast cancer diagnosis and 88.83% accuracy for prognosis when using techniques to address data imbalance. These ensemble methods consistently outperformed individual classifiers. Overall, these results demonstrate the potential of ensemble machine learning methods in enhancing the accuracy of breast cancer detection and prognosis.

Machine learning techniques show great potential for improving breast cancer detection and diagnosis. By analyzing complex patterns in medical imaging and patient data, these methods can assist radiologists and doctors in identifying malignancies early and accurately. As algorithms continue to improve and more training data becomes available; machine learning is likely to play an increasingly important role in breast cancer screening and diagnosis in the future. However, these tools should be seen as aids to human medical experts rather than replacements. The combination of artificial and human intelligence offers the most promising path forward for advancing breast cancer detection and care.

FACULTY ACHIEVEMENTS

Sr. No.	Faculty	Achievement
1	Prof. Geetha Narayanan	Completed Professional Development Programme on 'Next Gen Technologies AI Block Chain and AR VR Metaverse for Digital Excellence'
2	Prof. Geetha Narayanan	Reviewer for IEEE 3rd International Symposium on Sustainable Energy Signal Processing and Cybersecurity
3	Dr. Gajanan Nagare	Book Chapter Publication-Radial Pulse Pattern Recognition Using Deep Learning

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Editorial Team

PROF. ARUNKUMAR RAM
Chief Editor