

INTRODUCTION

BIONIKX- the students association of Biomedical Engineering was founded in the year 2006 by the 1st batch of Biomedical Engineering in response to emerging needs to promote Biomedical Engineering knowledge among students. The name of our association symbolizes the integration of Medical and Engineering emphasizing Biomedical Engineering fraternity.

BIONIKX aims at improving the excellence of students in academics and Professional development by communicating recent advances, discoveries and inventions. The association also aims to improve teamwork and leadership skills among students by organizing various activities.



MILESTONE OF THE DEPARTMENT

Department of Biomedical Engineering, VCET, Erode recognized as Research Centre under Anna University on 30.11.2023 for a period of three years from 30.11.2023 to 30.12.2026.

The research Centre Code is 4272325.

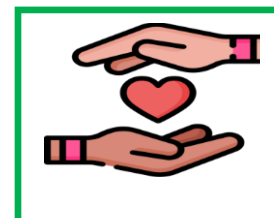
BIONIKX ASSOCIATION OFFICE BEARERS

SECRETARY : Mr.K.Thamarai Selvan (FINAL BME)

JOINT SECRETARY : Mr.M.Sri Hari (III BME)

TREASURER : Mr.G.Naveenkumar (FINAL BME)

JOINT TREASURER : Ms.P.Gifta Jenifer (III BME)



EXECUTIVE MEMBERS

S.No.	NAME	YEAR
1	Ms. P. Deepashri	Final A
2	Mr. A. Bhuvaneshwaran	Final A
3	Ms. A. Subiksha	Final B
4	Mr. T.S. Sabhari Ganesan	Final B
5	Mr. M. Jerwin Joshua	III A
6	Ms. C. Keerthana	III A
7	Mr. P. Siva Suryan	III B
8	Ms. G.G. Varshini	III B
9	Mr. A. Haran	II A
10	Ms. S. Kavya	II A
11	Mr. K.L. Sharavana	II B
12	Ms. V. Pooja	II B

FACULTY CORNER

"Success is the sum of small efforts - repeated day in and day out.

-Robert Collier



GRANTS

- **Mr.K.Rajaram** received a travel grant of **Rs.57,615** to attend the IAGES Mid-Term Conference 2023 and Fellowship Course in Bhopal.
- **Ms.S.Maheswari** received a Seminar grant of Rs. 25000 for the topic 'Oxidative Stress Markers and their Impact on the Metabolic Profile in Patients with Polycystic Ovary Syndrome' from Indian National Science Academy (INSA) on 8.12.2023.
- **Dr.M.Ponni Bala** received a grant for Value Added Course on 'Fabrication of Medical Assistive tools & PCB design for Commercial Products' of Rs. 10000 from BMESI on 26.12.23.

SUPERVISOR

Dr. J. Rajalakshmi got supervisor recognition from Anna university dated 13.07.2023. Supervisor recognition ID: 4290020. Her areas of specializations are Digital image processing, signal processing and Artificial Intelligence.

JOURNAL PUBLICATIONS

NAME OF THE STAFF	TITLE OF THE PAPER	NAME OF THE JOURNAL	MONTH YEAR
Dr.S.Mangai	A Novel Method for Selecting EEG Signals Using Emotion Recognition Values in the Context of Deep Learning	Journal of Environmental protection And ecology	November, 2023
Dr.S.Mangai	Passive Safety Devices for Heavy Vehicles to Prevent Human Accidents using Artificial Intelligence	International Journal of Vehicle Structures & Systems	December,2023
Dr.S.Mangai	Machine Learning for Respiratory Disease Diagnosis and Monitoring: A Survey of Recent Advances	International Journal of Creative Research Thoughts	March 2024
Dr.S.Mangai	Quadrature Response Spectra Deep Neural Based Behavioral Pattern Analytics for Epileptic Seizure Identification	Measurement Science Review	April 2024
Dr.N.Jeyashanthi	Novel Approach in Detecting Colon Cancer Using DCNN:A Systematic Study	International Journal of Current Research	March 2024
Dr.P.Ravikumar	Non-Voice Human Sound Disease Detection System Using Modified Deep Learning	International Journal of Creative Research Thoughts	March 2024
Dr.M.Ponni Bala	Intracardiac Mass Detection and Classification Using Double Convolutional Neural Network Classifier	Journal of Engineering Research	June,2023
Dr.J.Rajalakshmi	Online Physio Therapy System Using the IoT and Human Gaits Analysis	International Journal of Research and Analytical	September, 2023

		Reviews	
Dr.J.Rajalakshmi	Assessment of urban heat island using remote sensing and geospatial application: A case study in Sao Paulo city, Brazil, South America	Journal of South American Earth Sciences	February 2024
S.Maheswari	An Investigation of Single-core and Multi-Core Computing Methods for Biosignal Processing	Journal of Advanced Zoology	August, 2023
R. Indhumathi	Low Cost Skin Sensory Hearing Assisted Device for Profoundly Deaf Individual	International Journal of New Innovations in Engineering and Technology	March 2024
D. Sasi Preetha	Python-Powered Hybrid Visual Cryptography for Secure Cloud Transmission in the Banking Sector	International Journal for Multidisciplinary Research	March-April2024
Yamunadevi S	Integrating Splint for Real-Time Monitoring of Fracture Healing Process	International Journal of New Innovations in Engineering and Technology	March 2024
R.Leelavathi	Automatic Fall Detection Identification and Monitoring System For Elder People	International Journal of Electrical and Computer System Design	April 2024
S.Govindaraj	IoT Enabled Real Time Low Cost Cardiac Monitor using LabVIEW	International Journal of Innovative Research in Advanced Engineering	April 2024

PATENTS

Name	Application No	Title of the work	Date	Status	Type
Dr.S.Mangai	2024410233 47	An IoT Based Biometric, IR Reader and Thermal Scanner Health Registry Device	25.03.2024	Published on 29.03.2024	Utility Patent
Dr.P.Ravikumar	2023410479 70A	Embedded Based Medical Assistant Robot for Hospital	17.07.2023	Published on 22.09.2023	Utility Patent
Dr.J.Rajalakshmi	2023410624 87 A	Optimization Planning Models Enhancement in Human Resources Health Management with Foresight	17.09.2023	Published on 06.10.2023	Utility Patent
Dr.J.Rajalakshmi	395484-001	Wireless Laptop Charger cum Cooling Pad	20.09.2023	Published on 10.11.2023	Design Patent
Saravanakumar R	395642-001	Solar Power Air Pollution Detecting Billboard	21.09.2023	Granted on 02.11.2023	Design Patent
Dr. S. Sudha Mr. S. Govindaraj Ms. Sharmila M Dr. N. Jeyashanthi	400428-001	Biosensor And Machine Learning Device To Detect Lung Cancer	22.11.2023	Filed	Design Patent
Ms. S. Maheswari Mr. S. Govindaraj	20234107644 8	IOT And Artificial Intelligence Based Smart Indoor Tracking System To Track Multiple	08.11.2023	Published on 22/12/2023	Utility Patent

		Objects Within A Smart Home Using Data Mining And Machine Learning Algorithms			
Dr.M.Ponni Bala	20244100274 0	Artificial Intelligence and IoT based Smart Urban Waste Management System for Optimal Resource Allocation using Machine Learning algorithm	13.01.2024	Published on 23/02/2024	Utility Patent
R. Leelavathi	20244103614 2A	Prescription Image Based Pharmacy Care Services	07.05.2024	Published on 17/05/2024	Utility Patent

COPY RIGHTS

Applicants	Title of Invention	Date of Filing	Application Number
Dr.S.Mangai,S.Maheswari S.Govindaraj	Manual for Digital Image Processing Laboratory	22/12/2023	L-139294/2023
Dr.S.Mangai,S.Maheswari S.Govindaraj	Manual for Biosignal Processing	26/12/2023	L-139337/2023
Dr.S.Mangai, S.Maheswari Dr.J.Rajalakshmi Dr.M.Ponni Bala	Manual for Advanced Medical Image Processing	04/12/2023	L-142278/2024
Dr Manikandan S K	A High speed vedic multiplier design:yavadunam sutra with bit reduced reminder calculation	27/04/2024	13380/2024- CO/SW

RESEARCH GUIDANE

Under the Guidance of **Dr.S.Mangai**, Ms.M.Menagadevi, A.P./Department of BME ,Dr.NGP Institute of Technology ,Coimbatore completed her PhD viva voce Examination on 14.12.2023 in the offline mode under Anna University Chennai .She defended her thesis titled ‘ Investigation on Machine Learning and Deep Learning Approaches for Detecting Alzheimer Disease in Magnetic Resonance Imaging’.

CONVENER & COORDINATOR

Name of the staff	Programme Responsibility	Topic	Program details	
			Venue	Date
Dr.S.Mangai	Organizing Chair	ICECCT	VCET	2023
Dr. S.K.Manikandan	Publication Chair	ICECCT	VCET	2023
Dr.S.Mangai	Convener	Oxidative Stress Markers And Their Impact On The Metabolic Profile In Patients With Polycystic Ovary Syndrome	VCET - BME	31.01.2024
S. Maheswari	Organizing Secretary			

RESOURCE PERSON

Dr. N. Jeyashanthi	National Conference	Recent advances of nanoscience in healthcare	KSR Institute for Engineering and Technology	02.11.2023 & 03.11.2023
S.Yamunadevi	Student Enrichment Program	Equipments Used In Minimal Invasive Surgery	Velalar College of Engineering & Technology	02.06.2023
Dr.S.Sudha	SERB Sponsored Seminar	AI in Precision Agriculture	Sri Krishna College of Technology	22.02.2024
Dr.S.Sudha	SERB Sponsored Seminar	Deep Learning in Precision Agriculture	Sri Krishna College of Technology	07.03.2024
Dr.S.Mangai Mr.K.Rajaram S.Maheswari	2 nd International Conference on Artificial Intelligence and Machine Learning Applications	Technical Committee member	K.S.Rangasamy College of Technology	15.03.2024-16.03.2024
Dr.J.Rajalakshmi	Seminar	Health Care Information Technology	VCET	24.04.2024

APPRECIATION

Dr.S.Mangai	Hackathon	Internal Hackathon	VCET	09.09.2023
Dr.S.Mangai Dr.S.Sudha R. Saravanakumar M. Sharmila	Seminar	Implementation of Artificial Intelligence In Digital Therapeutics For Clinical Development Transforming The Practice Of Medicine	VCET	04.04.2024
Dr.S.Mangai S. Maheswari	Conference	IoT- Based Intelligent Crop Protection and Surveillance System from Climatic Changes and Wild Animals	Sri Krishna College of Engineering	28.02.2024
Dr.S.K.Manikandan	Hackathon	Internal Hackathon	VCET	14.09.2023
R. Saravanakumar	Hackathon	Internal Hackathon	VCET	14.09.2023
P.Ravikumar	Reviewer	IEEE International Conference on Distributed Computing, VLSI, Electrical Circuits and Robotics	SAHYADRI COLLEGE OF ENGINEERING & MANAGEMENT	13.10.2023-14.10.2023
Dr.M.Ponni Bala Dr.J.Rajalakshmi	Conference	IoT- Based Intelligent Crop Protection and Surveillance	Sri Krishna College of	28.02.2024

		System from Climatic Changes and Wild Animals	Engineering	
Dr.S.Sudha	Conference-Reviewer	AI for Healthcare and Life Science	MIT Art Design and Technology University	25.04.2024-27.04.2024
P. Georgia Chris Selwyna	FDP	LabVIEW	VCET	01.02.2024 03.02.2024
P. Georgia Chris Selwyna	Conference-Reviewer	3 rd IEEE International Conference on Artificial Intelligence for Internet of Things	Vellore Institute of Technology	03.05.2024-04.05.2024
R. Leelavathi	Hackathon	Internal Hackathon	VCET	09.09.2023
S. Maheswari	Reviewer	Second International Conference on Artificial Intelligence and Madras section	K S Rangasamy College of Technology	07.02.2024
Dr.J.Rajalakshmi	Reviewer	10 th International Conference on Communication and Signal Processing	Adhiparasakthi Engineering College	12.04.2024-13.04.2024

PROGRAM ORGANISED

Dr.S.K.Manikandan, N.N.Baalakumar organised an online Faculty Development Program on 'Curriculum Development for Outcome Based Education' from 11.09.2023 to 15.09.2023 by NITTTR, Chandigarh.

Dr.S.K.Manikandan, N.N.Baalakumar organised a Guest Lecture on 'Career Opportunities in Biomedical Engineering' by Dr. Nitturi Nareshkumar, Scientist – D, Indian Biomedical Skill Consortium, Andhrapradesh Med Tech Zone, Vishakapattinam on 14.09.2023.

NPTEL

NAME	COURSE	CERTIFIED
Dr.N.Jeyashanthi	Cell Culture Technologies	Elite+Silver
Dr.N.Jeyashanthi	Human Physiology	Completed
Dr.P.Ravikumar	Introduction to Machine Learning	Elite
Dr. S. Sudha	Control System	Elite+Silver
Dr. S. Sudha	Principles of Signals and Systems	Elite
C.Radhika	Introduction to Machine Learning	Elite
S.Govindaraj	Control System	Completed
S.Govindaraj	Principles of Signals and Systems	Elite

M Sharmila	Cell Culture Technologies	Elite
M Sharmila	Human Physiology	Completed
M Sharmila	Introduction to Machine Learning	Elite
R. Indumathi	Introduction to Machine Learning	Elite+Silver
A.Kalyani	Introduction to Mechanobiology	Completed
A.Kalyani	Cell Culture Technologies	Completed
P.Georgia Chris Selwyna	Introduction to Mechanobiology	Elite
P.Georgia Chris Selwyna	Cell Culture Technologies	Elite
P.Georgia Chris Selwyna	Human Physiology	Completed
R.Leelavathi	Accreditation and Outcome Based Learning	Elite+Silver

NPTEL MENTOR

NAME	COURSE	PERIOD
Dr. N. Jeyashanthi	Advance Course In Social Psychology	JUL – DEC 2023
Dr.J.Rajalakshmi	Entrepreneurship	JUL – DEC 2023
R. Indhumathi	Entrepreneurship	JUL – DEC 2023
R. Saravanakumar	Electronic Systems For Cancer Diagnosis	JUL – DEC 2023
R. Leelavathi	Entrepreneurship	JUL – DEC 2023

CONFERENCES

NAME OF THE STAFF	TITLE OF THE PAPER	NAME OF THE CONFERENCE	VENUE
Ponni Bala.M, Mangai.S, Rajalakshmi J, Maheswari S	IoT-Based Automatic Harvested Crop Protection and Monitoring System from Rainfall and Animals	Advanced BioCompatible Materials and Device/Systems for Biomedical Applications	Sri Ramakrishna Engineering College
Dr. Rajalakshmi J	Surveillance System for Long-Range Detection Based on an Ambient Intelligent Roveron	International Conference on Engineering and Technology	Selvam College of Technology
Dr.Sudha S	Augmented Reality Based Smart Surgical Glass for Medical Surgery	International Conference on Computing, Communication and Networking Technologies	IIT-Delhi

Dr.Sudha S	DASUIP:Driver Alerting System for Smart Safety Using Image Processing	International Conference on Computing, Communication and Networking Technologies	IIT-Delhi
R Saravanakumar	Optimal Load Flow Analysis for Distributed Generation in Radial Distribution Systems using Modified Newton Raphson Method	International Conference on Self Sustainable Artificial Intelligence Systems	M.P.Nachimuthu M. Jaganathan Engineering College
M. Sharmila	Efficient Brain-Computer Interface for Attention Detection in Health Care Industry	International Conference on Self Sustainable Artificial Intelligence Systems	M.P.Nachimuthu M. Jaganathan Engineering College
Maheswari S Rajalakshmi J	Analysis of ectopic Pregnancy in first Trimester Fetal Ultrasound Image Using Machine Learning Techniques	2 nd International Conference on Automation ,Computing and Renewable Systems	Mount Zion College of Engineering and Technology
P Georgia Chris Selwyna	Biosynthesis of Silver Nanoparticles from Regional Groundnut Plant Roots and Its Biomedical Applications	International Conference on Innovations in Life Sciences (ICILS'24)	SRM Institute of Science and Technology
P Georgia Chris Selwyna	Biogenic Synthesis of Pectin Based Nano microencapsulation and Study of its anti-microbial, anti-microbial, anti-cancer activity.	International Conference on Innovations in Life Sciences (ICILS'24)	SRM Institute of Science and Technology
Ponni Bala.M, Mangai.S, Rajalakshmi J, Maheswari S	IoT-based Intelligent Crop Protection and Surveillance System from Climatic Changes and Wild Animals	Second International Conference on Innovations in Robotics, Intelligent Automation and Control (ICIRIAC 2024)	Sri Krishna College of Engineering and Technology
Indhumathi R	Low Cost Skin Sensory Hearing Assisted Device for Profoundly Deaf Individual	Eight International Conference on Engineering Technology and Science	Muthayammal College of Engineering
Dr.J.Rajalakshmi	Detection and Classification of Oral Potentially Malignant Disorders and Oral Health Monitoring	International Conference on Newer Engineering Concepts and Technology	K.Ramakrishna College of Technology
Dr.J.Rajalakshmi	Multifaceted Analysis of Mental and Physical Stress Through Data Transmission in an IoT-Based System	International Conference on Newer Engineering Concepts and Technology	K.Ramakrishna College of Technology
Dr. M. Ponni Bala	Computer Aided Diagnosis of Glaucoma Detection using Fundus Images	International Conference on Recent Trends in Computing and Communication Engineering	SIMATS Engineering
Dr.S.K.Manikandan	A Node MCU Enabled Comprehensive Remote Healthcare Evaluation System for Elder People Care and Support	International Conference on Innovative Computing	

S.Yamunadevi	Integrating Splint for Real-time Monitoring of Fracture Healing Process	8 th International Conference on Engineering Technology and Science	Muthayammal College of Engineering Technology and Science
S.Yamunadevi	Real Time User Control Rehabilitation Device for Hemiplegia Patient	Innovation in Scientific Computing and Optimization Techniques	Er.Perumal Manimekalai College of Engineering
Dr. M. Ponni Bala	An Intelligent and Secure System for Prenatal Health Management Using Wireless Sensors and Mobile Phone	First International Conference on Data Analytics and Intelligence Computing-2024	Velammal Institute of Technology
Dr.J.Rajalakshmi	Automatic Fall Detection Identification And Monitoring System For Elder People	Innovations In Communication And Electrical Drives	P.A.College of Engineering and Technology
R.Leelavathi	Automatic Fall Detection Identification And Monitoring System For Elder People	Innovations In Communication And Electrical Drives	P.A.College of Engineering and Technology
Dr.M.Ponnibala, S.Maheswari, S.Govindaraj	AI Based System To Detect Uterine Cancer Using Ultrasound Images	Knowledge Engineering and Communication Systems	SJC Institute Of Technology
Sharmila M	Cervical Cancer Detection Using Soft Computing Techniques	KAMARAJ International Conference on Recent Trends in Science, Engineering and Technology, 2024 (KIRSET'24)	Kamaraj College of Engineering and Technology
Radhika C	Boundary Confusion Alleviation and Multiscale Temporal Feature Extraction for VAG-Based Fine Grained Multi Grade Osteoarthritis Deterioration Monitoring	International Conference on Communication, Computing & Internet of Things	Sai Ram Engineering College
Radhika C	Detection of Human spine posture using wearable monitoring system.	International conference on adaptive technologies for sustainable growth	Paavai Engineering College
Radhika C	Emotion Sensing Spectacles: A Raspberry PI-Powered Wearable for Autism Rehabilitation	12 th International Conference on Advanced Science and Engineering Research	AI-Ameen Engineering College
Dr.J.Rajalakshmi	IoT Based GPS Operated and Dual Axis Solar Tracking for Improved Energy Efficiency		
Rajaram K	Design of Vaccine Storage Monitoring and Management System using IOT and Blockchain Technology for Government Hospital	AICASETM 24 - 4th ACE International Conference on Applied Science, Engineering, Technology and Management	Alpha Engineering College, Chennai-124
Rajaram K	Automated Multi Reservoir Intravenous Infusion System for IV Fluid in Hospitals		

FACULTY DEVELOPMENT TRAINING PROGRAM & SHORT TERM TRAINING PROGRAM

Name of the staff	Topic	Program details	
		Venue	Date
Dr.S.Mangai	Outcome based curriculum development	National Institute of Technical Teachers Training and Research Chandigarh	11.09.2023 -15.09.2023
Dr. N. Jeyashanthi	Outcome based curriculum development		11.09.2023 -15.09.2023
Dr. N. Jeyashanthi	Cell Culture Technologies	NPTEL - AICTE	AUG-OCT 2023
Dr. N. Jeyashanthi	Virtual Labs	PALS-VLAB	16.10.2023- 18.10.2023
Dr.S.K.Manikandan	Research methodology and ethics in research publication	National Institute of Technical Teachers Training and Research Chandigarh	15.05.2023 -19.05.2023
Dr.S.K.Manikandan	Curriculum Development for Outcome Based Education		11.09.2023 -15.09.2023
Dr. P. Ravikumar	Resourcefulness of Research	Dr.M.G.R Education and Research Institute	13.07.2023- 19.07.2023
Dr. P. Ravikumar	Radiological Equipment	Kings Engineering College	24.07.2023- 29.07.2023
Dr. P. Ravikumar	Introduction to machine learning (Tamil)	NPTEL - AICTE	JUL-SEP 2023
Dr. P. Ravikumar	Outcome based curriculum development	National Institute of Technical Teachers Training and Research Chandigarh	11.09.2023 -15.09.2023
Dr. P. Ravikumar	Data Science using R		17.07.2023- 21.07.2023
Dr. P. Ravikumar	AI and Machine Learning for Chip Design	Muthayammal Engineering College	11.12.2023- 16.12.2023
Dr.M.Ponni Bala	Tricks and techniques for research article	Baselios Mathews II College Of Engineering	02.08.2023
Dr.M.Ponni Bala	Sensors and Measurements	Alpha College of Engineering, Chennai	03.08.2023 to 05.08.2023
Dr.M.Ponni Bala	Transformation in Health Care: Smart Technologies	IEEE-EMBS	12.08.2023- 30.09.2023
Dr.J.Rajalakshmi	Data science	Sathyabama Institute of Science and Technology	31.07.2023- 04.08.2023
Dr.J.Rajalakshmi	Frontiers in multidisciplinary research	School of Basic Sciences Galgotias University	16.08.2023 -22.08.2023
Dr.J.Rajalakshmi	Entrepreneurship	NPTEL	JUL – DEC 2023
S.Sudha	Effective teaching learning using social media	NITTTR Chandigarh	05.06.2023- 09.06.2023
S.Sudha	Frontiers in multidisciplinary research	School of Basic Sciences Galgotias University	16.08.2023- 22.08.2023
S.Sudha	Outcome Based Curriculum Development	National Institute of Technical Teachers	11.09.2023- 15.09.2023

S.Sudha	Data Science using R	Training and Research Chandigarh	17.07.2023-21.07.2023
S.Sudha	Design challenges and Realization of Wearable Antennas From Antenna Engineer Perspective	VCET	18.12.2023-23.12.2023
C.Radhika	Resourcefulness of Research	Dr.M.G.R Education and Research Institute	13.07.2023-19.07.2023
C.Radhika	Emerging technologies for next generation networks	Kings Engineering College	17.07.2023-22.07.2023
C.Radhika	Frontiers in Multidisciplinary Research	School of Basic Sciences Galgotias University	16.08.2023-22.08.2023
C.Radhika	Cloud Infrastructure	Sathyabama Institute of Science and Technology	21.08.2023-25.08.2023
C.Radhika	Introduction to machine learning (Tamil)	NPTEL - AICTE	JUL-SEP 2023
D.Sasipreetha	Resourcefulness of Research	Dr.M.G.R Education and Research Institute	13.07.2023-19.07.2023
D.Sasipreetha	Transformation in Health Care: Smart Technologies	IEEE-EMBS	12.08.2023-30.09.2023
D.Sasipreetha	Cloud Infrastructure	Sathyabama Institute of Science and Technology	21.08.2023-25.08.2023
D.Sasipreetha	Frontiers in multidisciplinary research	School of Basic Sciences Galgotias University	16.08.2023-22.08.2023
K.Rajaram N.N. Baalakumar	Outcome based curriculum development	National Institute of Technical Teachers Training and Research Chandigarh	11.09.2023-15.09.2023
P. Georgia Chris Selwyna	Funding opportunities in engineering		24.07.2023-28.07.2023
P. Georgia Chris Selwyna	Sensors and measurements	Alpha College of Engineering	03.08.2023-05.08.2023
P. Georgia Chris Selwyna	Cloud Infrastructure	Sathyabama Institute of Science and Technology	21.08.2023-25.08.2023
P. Georgia Chris Selwyna S. Yamuna Devi	Recent advances, trends and challenges in nanomaterials characterization and techniques	Koneru Lakshmaiah Education Foundation	25.09.2023-29.09.2023
P. Georgia Chris Selwyna	Cell Culture Technology	NPTEL-AICTE	AUG-OCT-2023
S. Maheswari S. Govindaraj	Funding opportunities in engineering	NITTTR Chandigarh	24.07.2023-28.07.2023
S. Maheswari	Tricks and techniques for research article	Baselios Mathews II College of Engineering	02.08.2023
S. Maheswari S. Govindaraj	Frontiers in multidisciplinary research	School of Basic Sciences Galgotias University	16.08.2023-22.08.2023
S. Maheswari	Cloud Infrastructure	Sathyabama Institute of Science and Technology	21.08.2023-25.08.2023
S. Maheswari	Basic Life support & First Aid	AICTE	04.09.2023

S. Maheswari	Outcome based curriculum development	NITTTR Chandigarh	11.09.2023 -15.09.2023
S. Yamuna Devi	Funding opportunities in engineering		24.07.2023 -28.07.2023
S. Yamuna Devi	Sensors and measurements	Alpha College of Engineering	03.08.2023- 05.08.2023
S. Govindaraj	Tricks and techniques for research article	Baselios Mathews II College of Engineering	02.08.2023
S. Govindaraj	Outcome based curriculum development	NITTTR Chandigarh	11.09.2023 -15.09.2023
R. Indhumathi	Introduction to machine learning (Tamil)	NPTEL - AICTE	JUL-SEP 2023
R. Indhumathi	Frontiers in multidisciplinary research	School of Basic Sciences Galgotias University	16.08.2023- 22.08.2023
R. Indhumathi	Virtual Labs	PALS-VLAB	16.10.2023- 18.10.2023
R. Indhumathi	Entrepreneurship	NPTEL	JUL – DEC 2023
A. Kalyani	Funding opportunities in engineering	NITTTR Chandigarh	24.07.2023 -28.07.2023
A. Kalyani	Sensors and measurements	Alpha College of Engineering	03.08.2023- 05.08.2023
A. Kalyani	Cloud Infrastructure	Sathyabama Institute of Science and Technology	21.08.2023- 25.08.2023
A. Kalyani	Recent advances, trends and challenges in nanomaterials characterization and techniques	Koneru Lakshmaiah Education Foundation	25.09.2023- 29.09.2023
A. Kalyani	Cell Culture Technology	NPTEL-AICTE	AUG-OCT-2023
R. Saravanakumar	VLSI & Chip Design	PSG Institute of Technology	24.07.2023- 29.07.2023
R. Saravanakumar	Cloud Infrastructure	Sathyabama Institute of Science and Technology	21.08.2023- 25.08.2023
R. Saravanakumar	Outcome based curriculum development	NITTTR Chandigarh	11.09.2023 -15.09.2023
R. Saravanakumar	Electronic Systems For Cancer Diagnosis	NPTEL	JUL – DEC 2023
M. Sharmila	Resourcefulness of Research	Dr.M.G.R Education and Research Institute	13.07.2023- 19.07.2023
M. Sharmila	Transformation in Health Care: Smart Technologies	IEEE-EMBS	12.08.2023- 30.09.2023
M. Sharmila	Cloud Infrastructure	Sathyabama Institute of Science and Technology	21.08.2023- 25.08.2023
M. Sharmila	Frontiers in multidisciplinary research	School of Basic Sciences Galgotias University	16.08.2023- 22.08.2023
M. Sharmila	Introduction to machine learning (Tamil)	NPTEL - AICTE	JUL-SEP 2023

M. Sharmila	Cell Culture Technologies	NPTEL - AICTE	AUG-OCT 2023
R. Leelavathi	Funding opportunities in engineering	National Institute of Technical Teachers Training and Research Chandigarh	24.07.2023 -28.07.2023
R. Leelavathi	Transformation in Health Care: Smart Technologies	IEEE-EMBS	12.08.2023-30.09.2023
R. Leelavathi	Cloud Infrastructure	Sathyabama Institute of Science and Technology	21.08.2023-25.08.2023
Dr.S.Mangai Dr. N. Jeyashanthi	Labview DAQ & Biomedical Sensor Interface using Graphical System Design	VCET-BME	01.02.2024-03.02.2024
Dr. N. Jeyashanthi	Recent Advances in Smart Materials and Sensor Technology	Paavai Engineering College	12.02.2024-17.02.2024
Dr. N. Jeyashanthi	Human Physiology	NPTEL - AICTE	Jan-Apr 2024
Dr.S.K.Manikandan Dr. P. Ravikumar	Labview DAQ & Biomedical Sensor Interface using Graphical System Design	VCET-BME	01.02.2024-03.02.2024
Dr. P. Ravikumar	Based Design Approach in Biomedical Engineering	KSR IET	04.03.2024-11.03.2024
Dr.M.Ponni Bala Dr.J.Rajalakshmi	Advanced Research In Biomedical Engineering	Saveetha Engineering College, Chennai	29.01.2024 -02.02.2024
Dr.J.Rajalakshmi S.Sudha Dr.M.Ponni Bala	Labview DAQ & Biomedical Sensor Interface using Graphical System Design	VCET-BME	01.02.2024-03.02.2024
S.Sudha	Issues, Opportunities and Challenges in Smart Grid	The Kavery Engineering College	20.02.2024-24.02.2024
S.Sudha	Medical Device Regulatory Affairs	B.V.Raju Institute of Technology	12.02.2024-16.02.2024
S.Sudha	Deep Learning Techniques for Social Media Analytics	Kongu Engineering College	15.04.2024-20.04.2024
C.Radhika	Innovative Teaching Pedagogies	Government arts and science college for women	29.02.2024-03.03.2024
C.Radhika,D.Sasipreetha K.Rajaram,N.N. Baalakumar P. Georgia Chris selwyna	Labview DAQ & Biomedical Sensor Interface using Graphical System Design	VCET-BME	01.02.2024-03.02.2024
P. Georgia Chris Selwyna	Human Physiology	NPTEL-AICTE	Jan-Apr 2024
S. Maheswari S. Govindaraj	Advanced Research In Biomedical Engineering	Saveetha Engineering College	29.01.2024-02.02.2024
S. Govindaraj R. Leelavathi S. Yamuna Devi S. Maheswari	Labview DAQ & Biomedical Sensor Interface using Graphical System Design	VCET-BME	01.02.2024-03.02.2024
R. Indhumathi	'Exploring The Nexus Of Industry 4.0 And Healthcare - Context, Applications, Advantages And Challenges	Rajalakshmi Engineering College	18.01.2024-24.01.2024

R. Indhumathi A. Kalyani R. Saravanakumar M. Sharmila	Labview DAQ & Biomedical Sensor Interface using Graphical System Design	VCET-BME	01.02.2024- 03.02.2024
M. Sharmila	Python	Star International Foundation for Research and Education	19.03.2024- 25.03.2024
M. Sharmila	Deep Learning Techniques For Social Media Analytics	Kongu Engineering College - Perundurai	15.04.2024 – 20.04.2024
M. Sharmila	Human Physiology	NPTEL - AICTE	Jan-Apr 2024

SEMINAR/WEBINAR

Dr.S.Sudha	Webinar	Emerging Trends in Computer Science (IWETCS'23)	Jayaraj Annapackiam College for Women	12.01.2024
S.Maheswari	Webinar	Artificial Intelligence	NoviTech R&D Private Limited	03.11.2023 – 04.11.2023
S.Maheswari	Webinar	IEEE Xplore	VCET	06.02.2024
R. Leelavathi	Webinar	Biodegradable Polymers	Thiagarajar College Of Engineering	25.08.2023
A. Kalyani	Webinar	Biodegradable Polymers	Thiagarajar College Of Engineering	25.08.2023
R. Indhumathi	Webinar	Challenges and Opportunities for Microwave Antennas	QIS College Of Engineering And Technology	12.01.2024
M.Sharmila	Webinar	Emerging Trends in Computer Science (IWETCS'23)	Jayaraj Annapackiam College for Women	12.01.2024
P. Georgia Chris Selwyna	Webinar	Detection and Characterization of Antimicrobial Resistance in Agricultural, Food and Biosystems	Biosensors	11.04.2024
Dr.J.Rajalakshmi	Awareness program	National intellectual property awareness mission	Intellectual Property Office	26.07.2023
Dr.J.Rajalakshmi	Conference	Detection and Classification	Ramakrishnan college of technology	28.03.2024
K.Rajaram	Training program		IEEE Madras section student summit	14.10.2023
K.Rajaram N.N. Baalakumar	Conference	Delegate	Indian Association of gastrointestinal endosurgeons	01.02.2024 04.02.2024
S.Maheswari	Masterclass	Artificial Intelligence	NoviTech R&D Private Limited	17.11.2023 To 24.11.2023
S.Maheswari	Training Program	Intellectual Property Awareness Mission	Intellectual Property Office	11.03.2024
S. Govindaraj	Awareness program	Fire prevention mitigates	VCET – CIVIL Dept	21.09.2023
S. Govindaraj	Masterclass	Deep Learning	Pantech e learning pvt	28.9.2023 to

			ltd.	18.10.2023
S. Govindaraj	Masterclass	Generative AI	Pantech e learning pvt ltd.	08.01.2024 to 27.01.2024
S. Govindaraj	Internship	Python Demystified Unraveling the Language	Marcello Tech	26.02.2024 to 03.03.2024
R. Saravanakumar	Training program	MoE`s Innovation Cell & AICTE		07.12.2023
R. Saravanakumar	Training program			09.12.2023
R. Saravanakumar	Quiz	Sardar Unity Trinity Quiz		
R. Saravanakumar	Quiz	Dr.B.R. Ambedkar Quiz		
R. Leelavathi	Training program		MoE`s Innovation Cell & AICTE	08.12.2023
R. Leelavathi	Training program		MoE`s Innovation Cell & AICTE	22.12.2023
P. Georgia Chris Selwyna	e-Quiz	National level E-Quiz	Muthayammal College of Arts and Science	04.02.2024

WORKSHOP

Dr.N.Jeyashanthi	Brain Balancing and Hypnosis	Ramanujan College, University of Delhi	13.10.2023
S. Govindaraj	Machine Learning	Pantech E Learning Pvt Ltd.	14.09.2023
S. Govindaraj	Artificial Intelligence	NoviTech R&D Private Limited	25.09.2023
S. Govindaraj	Internet of Things	NoviTech R&D Private Limited	29.09.2023
S. Govindaraj	Machine Learning and Deep Learning For Modern World Applications	Marcello Tech	10.03.2024
R. Saravanakumar	SPSS in Research	Star International Foundation	26.12.2023 -30.12.2023
M.Sharmila	Brain Balancing and Hypnosis	Ramanujan College, University of Delhi	13.10.2023
M.Sharmila	SPSS in Research	Star International Foundation	26.12.2023- 30.12.2023

ASSOCIATION ACTIVITIES

"Great things are done by a series of small things brought together"



Guest Lecture

Association of BME-BIONIKX in association with IEEE & EMB society organized a Guest Lecture on 22.07.2023. Mr. Srinath, Business Analyst, Beroe Inc, Chennai gave a talk on 'Why Walk When You Can Fly! - Personal and Professional Goals' & Ms. Swathi Sivanesan, Senior Validation Analyst, Zifo RnD Solution on 'Strategize Your Career'.

Value Added Course

In association with IEEE student branch and EMB society organized a Value Added Course on 'Devices and Circuit Design' from 07.08.2023 to 12.08.2023. Mr. R. Praveen, Technical Lead, SAN Technovation, Erode was the resource person. 26 students from third years attended the course.

Inter Departmental Paper & Project Presentation

In association with IEEE student branch and EMB society organized an Inter Departmental Paper & Project Presentation 'TECH GEN-2K23' on 11.08.2023. 63 students were participated in technical and non technical events and won prizes. Internal Faculty members acted as a jury and awarded prizes.

Paper Presentation

PLACE	REG NO	NAME	TEAM NAME
1	21CSR061	MohammudhaRasmiya.R	Brain Storm
2	21ITR113	Sudharsan.R	AK Surge
3	21MDR041	Subiksha.U.K	Tech Titans
	21MDR035	Shobbiga.U.K	

Project Presentation

PLACE	REG NO	NAME	TEAM NAME
1	20CSR002	Abinivesh.s	Alphas
	20CSR046	KeerthiNannepamula	
2	20ITR095	Shasianand.T	Falcons
	20ITR071	Nandhini.J	
3	20BMR037	Justin Shyju	JK Team
	20BMR038	KavinKumar.T	
3	20BMR023	Duraimurugan.P	Health Guardians
	20BMR028	Hariharan.P	

Organ Donation Awareness Programme

On the occasion of World Organ Donation Day 2023, IEEE student branch and EMB society in association with PSG Hospital, Coimbatore organized an Organ Donation Awareness Programme on 'Giving a Second Chance of Life is in Your Hands' on 11.08.2023.

Guest Lecture & Alumni Interaction

In association with IEEE student branch and EMB society organized a Guest Lecture & Alumni Interaction on 12.08.2023. Mr. T. Sivashankar, (BME Alumnus-Batch (2017-2021)), Field Service Engineer, Stryker India Pvt. Ltd., Coimbatore was the resource person and the Chief Guest. He gave a talk on 'Recent Trends in Medical Equipment'

Orphanage Visit

On Independence day, Student association -BIONIKX organized an Orphanage program 'Eye on Social' at 'Bharathiyar Kulandhaigal Kaappagam', Chennimalai on 15.08.2023. Faculty members and students provided groceries, stationary things and clothes to the needy.

Industrial Visit

Final year students underwent Industrial Visit at Lotus Hospital, Erode on 17.08.2023 and 24.08.2023.

Guest Lecture & Alumni Interaction

In association with IEEE student branch and EMB society organized a Guest Lecture on 'Conquering the Cosmos of Life Science: Unraveling the Opportunities' & Alumni Interaction on 19.08.2023. Ms. Shangamithra Sivakumar, (BME Alumnus-Batch (2017-2021)), Data Manager, Zifo Technologies was the resource person and the Chief Guest.

Inauguration Function

Inaugural Function of Association of BME- BIONIKX was organized on 25.08.2023. A Guest Lecture on 'Build Skills-Grab Opportunities' was organized. Mr. S. Dheenadhayalan, Siemens, Coimbatore was the Chief Guest.

Inter Departmental Quiz Competition

On the occasion of Engineers Day, an Inter Departmental Quiz Competition 'BRAIN BLAST' was organized by BIONIKX in association with IEEE student branch and EMB society on 20.09.2023. 56 participants from inter departments were participated.

Guest Lecture

In association with IEEE student branch and BMESI students' chapter organized a Guest Lecture on 'First Responder Training' & 'Recovery Renaissance' on 23.09.23. Dr. V. Ramprabhakar, MBBS., Mem, Mrcem (UK), FICM, Dr. S. Nagarajan, MD(Psy), Lotus Hospital, Erode were the resource persons.

Technical Paper Presentation

IEEE, EMBS-WIE in association with BIONIKX organized a Technical Paper Presentation Event- **Sparkathon** on 03.10.2023. 44 students participated in the event and winners were awarded with prizes.

- Kavishna P.J, Sanjay Adithya.V, Kishore Karthikeyan.S (ECE) won first place
- Janane.K.S, Dharanisri.S (BME) won second place
- Gowri Raja Loganathan (EEE) won third place.

Guest Lecture & Eye Camp

- Organized a Guest Lecture on 'Eye Care Basics' on 14.10.2023 and general eye camp for students and all staff members. Dr. S. Vijay Kumar, MBBS, MS., The Eye Foundation, Erode was the resource person and the Chief Guest.
- In association with IIC/EDC cell organized a Guest Lecture on 'Business start-up ideas for Aspiring Entrepreneurs' on 09.11.2023. Mr. M. Parthiban, Additional Director, Caliber Embedded Technologies, Salem was the Chief Guest and the resource person.
- Organized a Guest Lecture on 'Medical Coding' on 15.11.2023. Mr. Lokesh Chinraju, B.E., Cigma Medical Coding Academy Pvt Ltd., Karnataka.

Valedictory Function

Department of BME in association with IEEE EMBS student chapter organized the valedictory function for the year 2023 on 24.11.2023.

INSA sponsored National Technical Seminar

INSA sponsored National Technical Seminar on 'Oxidative Stress Markers and their Impact on the Metabolic Profile in Patients with Polycystic Ovary Syndrome' on 31.01.2024. Dr.E.S.Usha, MD., DGO., Fellow in fetal medicine, Erode. Dr.Shruthi Rajendran, MS (OG)., FRM., DRM, Lotus Hospital, Poondurai Main Road, Kollampalayam, Erode were the Chief Guest and the resource persons.

Workshop

IEEE, EMBS-WIE in association with BIONIKX organized a Workshop on 'IEEE Xplore Digital Library Training Program' on 23.01.2024. Mr.T.S.Nandha Lal, Senior Training Manager, EBSCO Information Services & IEEE was the resource person and the Chief Guest.

Guest Lecture

On International Women's Day 2024, in association with Women Empowerment Cell and IIC/EDC cell organized a Guest Lecture on 'Health and wellbeing of Adolescent and Reproductive Women' on 08.03.2024. Dr. Kaytri S , MBBS., M.S (OG) , Consultant Obstetrician And Gynecologist & Dr. Anisha Kumarasamy Manickam, MBBS., M.D. (Physician), Chief Medical Officer, Kaligarayan Medical Center and Hospital (Unit of Vilva Hospitals), Erode were the resource persons.

Workshop

IEEE, EMBS-WIE organized a Workshop on 'Poster and Certificate Designing' from 22.03.2024 to 23.03.2024. Mrs.S.Maheswari, Assistant Professor, Department of Biomedical Engineering, Velalar College of Engineering and Technology, Thindal, Erode was the resource person.

IEEE, EMBS-WIE organized a Workshop on 'Online Poster Making Contest' on 23.03.2024. Mr.R.Rajaram, Assistant Professor, Department of Biomedical Engineering, Velalar College of Engineering and Technology, Thindal, Erode was the resource person.

Quiz Competition

IEEE, EMBS-WIE organized a Quiz competition on 'Knowledge Knockout' on 29.03.2024. Mrs.S.Maheswari, Assistant Professor, Department of Biomedical Engineering, Velalar College of Engineering and Technology, Thindal, Erode was the resource person.

National Level Technical Symposium

Association of BME-BIONIKX organized a National Level Technical Symposium BIO FUTURIKZ on 05.04.2024. M.Dhipa, Department of BME & Head, Nandha Engineering College was the Chief Guest and adjudged the papers presented. Around 37 papers were received from students of various Engineering Colleges across the country, of these 25 were selected for presentation. Other technical and non technical events such as Brain Teaser, Clip Hunt, Technical Quiz, Adzap were conducted and awarded cash prizes.

BRNS Sponsored National Seminar

BRNS Sponsored one day National Seminar organized a on 'Implementation of Artificial Intelligence in Digital Therapeutics for Clinical Development: Transforming the Practice of Medicine' on 4.4.2024. Dr. R. Periyasamy, Assistant Professor, Department of Instrumentation and Control Engineering, National Institute of Technology, Tiruchirappalli was the Chief Guest.

Project Expo 2024

'Project Expo 2024' was organized on 13.04.2024. The Chief Guest of the function was Dr.C.K.Vijayalakshmi, Technical Facilitator, Cyrix Health Care Pvt. Ltd, Ernakulam, Kerala who released the souvenir. Projects have been exhibited by 180 students among which three were selected and appreciated with cash prizes. Rohith R, Athissh Pranav K S, Sabarinathan M, Gokulnath L (II BME) won first prize.

Poster Making Contest

In association with IEEE student branch organized a Poster Making Contest on 23.04.2024. Second year and third year students were participated and awarded prizes.

Inaugral function of IEEE

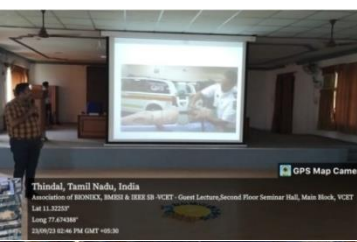
Inaugral function of IEEE student branch was organized on 30.04.2024. Dr. Meenakumari Ramachandran, Professor, Department of EEE, Kongu Engineering College was the Chief Guest and gave a talk on 'IEEE benefits from a 360 degree perspective' on 30.04.2024.

Farewell day

Farewell day for final year 2020-2024 was organized on 9.5.2024.

MOU SIGNED

- ✓ Infinity Biomedicals, Coimbatore on 05.07.2023 for a period of 5 years.
- ✓ Hrey's- Hub, Erode on 01.12.2023 for a period of 5 years.



STUDENT'S CORNER



“Learning is a treasure that will follow its owner everywhere”

BEST OUTGOING STUDENT



KEERTHANA A
IV BME A

BEST CO CURRICULAR STUDENT



SOWBARNIKA SRY A P
IV BME B

MEMBERSHIP IN PROFESSIONAL SOCIETIES

- Institute of Electrical and Electronics Engineers (IEEE)
- Biomedical Engineering Society of India (BMESI)
- Indian Society for Technical Education (ISTE)
- Engineering in Medicine and Biology Society (EMBS)

PLACEMENT TRAINING

54 students of batch 2020-24 have undergone placement training at AMTZ campus under Indian Biomedical Skill Council (IBSC), Vishakhapatnam from 20.09.2023 to 21.09.2023.

TRAINING CUM PLACEMENT

28 students of final year (batch 2020-24) have undergone placement training at IBSC AMTZ campus, Vishakhapatnam from 19.06.2023 to 15.07.2023.

INDUSTRIAL VISIT

YEAR/SEM	BATCH	ORGANIZATION VISITED	DATE	NO OF STUDENTS VISITED
II/4	2022-2026	Cyrix Healthcare Pvt Ltd., Kochi	15.04.2024	101
III/5	2021-2025	Sree Sairam Healthcare services	14.09.2023	99

VALUE ADDED COURSES

Name of the course	Duration	Number of days	Company Name	Number of Students Participated
LabVIEW,DAQ & Biomedical Sensor Interface using Graphical System Design	05.02.2024 to 09.02.2024	5	VI Solutions	47
Fabrication of Medical Assistive Tools	16.11.2023 to 21.11.2023	6	Caliber Embedded Technologies India Pvt Ltd	30
PCB Design for Commercial Products	16.11.2023 to 21.11.2023	6	Caliber Embedded Technologies India Pvt Ltd	30
Devices and Circuit Design	07.08.2023 to 12.08.2023	6	SAN Technovation	26

ANDHRAPRADESH MEDTECH ZONE(AMTZ)

NAME OF THE STUDENT	DURATION
Poovarasan J,Praveen K,Praveen P,Ram Chandar S K,Sabhari Ganesan T S,Sankaralingam V,Santhoshkumar T,Shibichandru S K,Surendiran J,Suvishesh E,Tamilarasan S,Thamaraiselvan K, Vishnukumar K	19.06.2023-24.06.2023 26.06.2023-01.07.2023 03.07.2023-08.07.2023 (16 DAYS)
Amarnath S A, Yaswanth S ,Dhachanamoorthy P,Dharanidharan R,Elavendhan M,Jagan S ,Kavinkumar M,Laksman Pranav S,Mohammed Harrish N,Mohammed Mushfiq S,Naveenkumar G,Duraimurugan P,Girubhadharan D,Gokul R, Kavinkumar T	

PRIZE WINNERS

TAMIL S	CIRCUIT DEBUGGING	TECHNICAL SYMPOSIUM	3.5.2024	MPNMJ ENGINEERING COLLEGE	2ND
TAMIL S	QUIZ	TECHNICAL SYMPOSIUM	3.5.2024	MPNMJ ENGINEERING COLLEGE	1ST
KAAVIYA K	TECH DEBATE	SYMPOSIUM	11.3.2024-16.3.2024	RATHINAM GROUP OF INSTITUTIONS,COIMBATORE	1ST
KAAVIYA K	QUIZ COMPETITION	SYMPOSIUM	11.3.2024-16.3.2024	RATHINAM GROUP OF INSTITUTIONS,COIMBATORE	2ND
TAMIL S	PAPER PRESENTATION	TRENTECH 2024	3.5.24	MPNMJ ENGINEERING COLLEGE	1ST
RAMANA K	BALL BADMINTON	STATE LEVEL SOUTH ZONE GAMES	18.6.2024	ACHARYA MATRIC HR SEC SCHOOL,SALEM	1ST
SHRUTICA SRI M V	BALL BADMINTON (WOMEN)	ANNA UNIVERSITY ZONAL TOURNAMENT 23-24	26.9.23	VCET	3rd

POOJA M BOORVASANTHIY A K AATHI SHREE D K MADHUMITHA M VINODHA R	RANGOLI COMPETITION	SRAVANMAHOTSAV' 23	31.08.2023	VELALAR COLLEGE OF ENGINEERING AND TECHNOLOGY	2nd
LOKHAMITRA B	VOLUNTEER	BLOOD DONATION CAMP	23.9.2023	ERODE BLOOD BANK	
NITHYA K	JAVELIN THROW	ANNA UNIVERSITY ZONAL TOURNAMENT 23-24	7.11.2023- 8.11.2023	KONGU ENGINEERING COLLEGE	3rd
TAMIL S	QUIZ	NATIONAL MATHEMATICS DAY	22.12.2023	ROTARACT CLUB OF VCET	2nd
LOKHAMITRA B	MENTAL HEALTH	POSTER CONTEST	17.3.2024	ROTARACT CLUB OF AHMEDABAD GREATER	2ND
BHAVADHARANI S	MENTAL HEALTH	POSTER CONTEST	17.3.2024	ROTARACT CLUB OF AHMEDABAD GREATER	2ND
VINODHA R	MENTAL HEALTH	POSTER CONTEST	17.3.2024	ROTARACT CLUB OF AHMEDABAD GREATER	2ND
LOKHAMITRA B	EXCLAMATORY	DISTRICT ROTARACT CONFERENCE	17.3.2024	ROTARACT CLUB OF VCET	
LOKHAMITRA B	SOLO SINGING	FINE ARTS CLUB	28.3.2024	VCET	1ST
SHARAVANA K L	PENCIL SKETCH	INSPIRE 24- SYMPOSIUM	6.4.2024	EXCEL ENGINEERING COLLEGE	
SHARAVANA K L	DRAWING	INSPIRE 24- SYMPOSIUM	6.4.2024	EXCEL ENGINEERING COLLEGE	
RAMANA K	BALL BADMINTON	ANNUAL SPORTS MEET 23-24	2023-2024	VCET	2ND
SUDHARSHAN C	CHESS	ANNUAL SPORTS MEET 23-24	2023-2024	VCET	1ST
TAMIL S	BALL BADMINTON	ANNUAL SPORTS MEET 23-24	2023-2024	VCET	2ND
NITHYA K	JAVELIN THROW	ANNUAL SPORTS MEET 23-24	2023-2024	VCET	1ST
NITHYA K	3000 MTS	ANNUAL SPORTS MEET 23-24	2023-2024	VCET	3RD
NITHYA K	BALL BADMINTON	ANNUAL SPORTS MEET 23-24	2023-2024	VCET	2ND
SHRUTHICA SRI M V	BALL BADMINTON	ANNUAL SPORTS MEET 23-24	2023-2024	VCET	2ND
LOKHAMITRA B	GROUP SONGS	INTER COLLEGIATE LITERARY FEST	2.2.2024	VELLARAR COLLEGE FOR WOMEN	2nd

LOKHAMITRA B	BEST PERFORMER MUSIC	SYMPOSIUM	16.2.2024	KONGU ENGINEERING COLLEGE	BEST
LOKHAMITRA B	SOLO SINGING	SYMPOSIUM	16.2.2024	KONGU ENGINEERING COLLEGE	2ND
VISHNUPRIYANGA R	DEBATE COMPETITION	NCC	8.3.2024	VCET	3RD
LOKHAMITRA B	CULTURALS	23rd ANNUAL DAY	4.5.2024	VCET	
YAMUNA SRI S	CULTURALS	23rd ANNUAL DAY	4.5.2024	VCET	3RD
MADHUMITHA M	CULTURALS	23rd ANNUAL DAY	4.5.2024	VCET	3RD
POOJA V PAVALAKODI S	CULTURALS	23rd ANNUAL DAY	4.5.2024	VCET	2ND
KARISHMA SELVAM S	CULTURALS	23rd ANNUAL DAY	4.5.2024	VCET	2ND
JOSE MAXITHA J	CULTURALS	23rd ANNUAL DAY	4.5.2024	VCET	2ND
AKALYA J AKALYA D ABILISHA S	CULTURALS	23rd ANNUAL DAY	4.5.2024	VCET	2ND
TAMIL SELVAN P	CULTURALS	23rd ANNUAL DAY	4.5.2024	VCET	
SAKTHI MURUGAN P	CULTURALS	23rd ANNUAL DAY	4.5.2024	VCET	
BALA KUMAR K	CULTURALS	23rd ANNUAL DAY	4.5.2024	VCET	
PAVITHRA C	IOT BASED AUTOMATED SMART WHEELCHAIR	TEKOZURA 2K23-PAPER PRESENTATION	26.08.2023	IEEE SB, Dr.NGPIT	3RD
JEEVITHA S	ASSIST DEVICE FOR NEUROMUSCULAR DISORDER	PROJECT CONTEST	26.9.2023-27.9.2023	SENGUNTHAR ENGINEERING COLLEGE	2nd
KANIMOZHI S		PROJECT CONTEST	26.9.2023-27.9.2023	SENGUNTHAR ENGINEERING COLLEGE	2nd
JOTHISRI S		PROJECT CONTEST	26.9.2023-27.9.2023	SENGUNTHAR ENGINEERING COLLEGE	2nd
JENIS CHRISTINA		PROJECT CONTEST	26.9.2023-27.9.2023	SENGUNTHAR ENGINEERING COLLEGE	2nd
SHALINI J J SOWMIYA R PAVITHRA D	VOICE CONTROLLED WHEEL CHAIR	PAPER PRESENTATION	27.3.2024 28.3.2024	KPR INSTITUTE OF ENGINEERING AND TECHNOLOGY	1ST

SIVASAKTHI M					
SYED ABDULLAH P SREESANTH	PAPER BATTERY	PAPER PRESENTATION	3.5.2024	MPMJ ENGINEERING COLLEGE	3RD
DIVYA SRI A	VOLLEY BALL	ANNA UNIVERSITY ZONAL TOURNAMENT 22-23	3.11.2022- 4.11.2022	BUILDERS ENGINEERING COLLEGE,KANKEYAM	3RD
NITHYA M	CULTURAL PROGRAMME	ANNUAL DAY	25.04.2023	VELALAR COLLEGE OF ENGINEERING AND TECHNOLOGY	2nd
MADHUMITHA V JOTHI SHREE S JEEVITHA S SHALINI J J,PREETHI K PAVITHRA K	RANGOLI COMPETITION	SRAVANMAHOT SAV'23	31.08.2023	VELALAR COLLEGE OF ENGINEERING AND TECHNOLOGY	2nd
KRISHNARAJ V	CATC CUM RD TRAINING III CAMP	NCC	18.09.2023- 27.09.2023	KPR INSTITUTE OF ENGINEERING & TECHNOLOGY	2ND
FATHIMA FARHANA S SHALINI J J	MEHENDI	FINE ARTS CLUB	10.1.2024	VCET	2ND
PAVITHRA K SANJURITHA S PAVITHRA C	RANGOLI COMPETITION	FINE ARTS CLUB	11.1.2024	VCET	2ND
SOWMIYA P SUGANYA S PAVITHRA K	BALL BADMINTON	ANNUAL SPORTS MEET	2023-2024	VCET	2ND
SUBHARANJANI M SATHIYAPRIYA P PREETHI K,NITHYA M MADHUMITHA R M MADHIARASI A KAVIYA M, DHANASRI B SUGANYA S,SUJA M SHALINI J J	CULTURALS	23rd ANNUAL DAY	4.5.2024	VCET	2ND

IEEE

NAME OF THE STUDENT	TITLE	EVENT	DATE	VENUE
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THRISHA S	IEEE WIE MAS LEADERSHIP CONCLAVE	LEADERSHIP CONCLAVE	19.8.2023	SRI SAIRAM ENGINEERING COLLEGE,CHENNAI
PAVITHRA C	IEEE R10-MADRAS SECTION STUDENT SUMMIT 2023	SB OFFICER TRAINING	14.10.2023	ANNA UNIVERSITY, CHENNAI

WORKSHOP/SEMINAR/SYMPOSIUM

NAME	TITLE OF THE PROGRAMME	PROGRAMME	DATE	VENUE
LOGESWARI M PRATHIKSHA G	FLASH'23	SYMPOSIUM	23.6.2023	NANDHA COLLEGE OF TECHNOLOGY
PAVALAKODI S MUTHUKUMARI S	EXODUS 4.0	NATIONAL LEVEL TECHNICAL SYMPOSIUM	8.9.2023	SCAD COLLEGE OF ENGINEERING & TECHNOLOGY
KERTHIGA A	INTERNAL HACKATHON 2023(MEDMINDERS)	TECHNICAL	13.9.2023	VCET
MYVIZHI S D PRIYADHARSHINI B S SRIMATHI S	INDUSTRY 4.0 AND DIGITAL TWIN	WORKSHOP	15.09.2023	SRI KRISHNA COLLEGE OF ENGINEERING & TECHNOLOGY, COIMBATORE
SRIMATHI S MYVIZHI S D PRIYADHARSHINI B S	KRIZEN'23	SYMPOSIUM	15.09.2023	
VISHNU PRIYANGA A R	SPARKATHON	TECHNICAL	3.10.2023	IEEE SB-VCET
SWETHA G LOGESHWARI M PRATHIKSHA G SOWMIYA V,RANJANI V	ABLAZE 2023	NATIONAL LEVEL TECHNICAL SYMPOSIUM	13.10.2023	KSR COLLEGE OF ENGINEERING
SWETHA G LOGESHWARI M PRATHIKSHA G SOWMIYA V,RANJANI V	SKILLS NEEDED FOR FULL STACK DEVELOPER	NATIONAL LEVEL WORKSHOP	13.10.2023	KSR COLLEGE OF ENGINEERING
KIRUTHIGA SREE M KAVYA S	DESIGN AND FABRICATION OF THIN FILM BIOPATCHES FOR DETECTING BIO PARAMETERS IN HUMAN BODY UNDER NONINVASIVE METHODOLOGY FOR HEALTHCARE APPLICATIONS	2-DAY NATIONAL LEVEL SEMINAR	18.10.2023	DR.N.G.P INSTITUTE OF TECHNOLOGY
VISHNU PRIYANGA A R	EQUIP FOR EXCELLENCE:A WORKSHOP ON ICU DEVICES	WORKSHOP	28.12.2023	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN

DHARANI R	SOCIO-TECH HACKATHON 2024	HACKATHON	29.11.2023	KPR COLLEGE OF ARTS SCIENCE AND RESEARCH
TAMILSELVAN P	METaverse APPLICATIONS IN HEALTHCARE	NATIONAL SEMINAR	1.2.2024-2.2.2024	BANNARI AMMAN INSTITUTE OF TECHNOLOGY
DIVIJA N DHARSHINI V	IOT SENSORS	WORKSHOP	25.3.2024 26.3.2024	NANDHA ENGINEERING COLLEGE
BALAJIE K N HEMAPRABHA K M KARISHMA SELVAM S	SYNECTICS 24	WORKSHOP	25.3.2024 26.3.2024	NANDHA ENGINEERING COLLEGE
SHARAVANA K L	INSPIRE 24	TECHNICAL SYMPOSIUM	6.4.2024	EXCEL ENGINEERING COLLEGE
ANDRUSH SHIYAM M BALAJII K N BRINDHA ISSWARYA S KABINI PUNITHAVATHY	UI&UX DESIGN	NATIONAL LEVEL SEMINAR	22.04.2024 23.04.2024	ERODE SENGUNTHAR ENGINEERING COLLEGE
SUGANYA S,PREETHI K LOGESWARI M KEERTHANA C KEERTHANA T SATHIYA PRIYA P	TEKCLUSTER'23	TECHNICAL SYMPOSIUM	26.08.2023	KONGUNADU COLLEGE OF ENGINEERING AND TECHNOLOGY, NAMMAKKAL
KEERTHANA C SATHIYA PRIYA P KAVIYA K	MODERN MEDICAL SENSORS	WORKSHOP/SYMPOSIUM	06.10.2023	KSR INSTITUTE FOR ENGINEERING AND TECHNOLOGY
SUBARAJA P	SRISHTI 2K23	TECHNICAL SYMPOSIUM	14.10.2023-15.10.2023	PSG TECH,COIMBATORE
SOWMIYA P PREETHI K	EQUIP FOR EXCELLENCE: A WORKSHOP ON ICU DEVICES	WORKSHOP	28.12.2023	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
NANDITHA T R	URBAN FUTURISM GRAND FINALE	TECHFEST 2023	28.12.23-29.12.23	IIT BOMBAY
KANAGAVELU S T	RANG UTSAV 2024	SYMPOSIUM	14.2.2024-17.2.2024	KSR INSTITUTE FOR ENGINEERING AND TECHNOLOGY
SAI NHANDHINI C K	FOOT STEP POWERED SYSTEM FOR PAIN RELIEF	PROJECT PRESENTATION	08.09.2023	VCET
SOWMIYA P DHANASRI B PREETHIKA M SUBHARANJANI M PREETHI K,SUGANYA S	EFFECTIVE STRATEGIES FOR ENHANCING COGNITIVE REHABILITATION FOR CHILDREN DISEASED WITH AUTISM SPECTRUM DISORDER	CSIR SPONSORED 2 DAY NATIONAL LEVEL SEMINAR	11.1.2024-12.1.2024	Dr.NGPIT,COIMBATORE

RAMESH D,NARUN P ROHITH M SANTHOSH S	NAVIGATING THE NANOSCALE INNOVATIONS AND APPLICATIONS IN NANOMEDICINE	WORKSHOP	19.1.2024- 20.1.2024	KONGUNADU COLLEGE OF ENGINEERING AND TECHNOLOGY, NAMMAKKAL
AKSHARASREE J R GOBIKA S,NANDHINI T VARSHINI G G MOHANAPRIYA N MADHUMITHA S VASUNDRA T	MEDUINO 24: ARDUINO- LABVIEW INTEGRATION FOR MEDICAL DEVICE PROTOTYPING	WORKSHOP	22.3.2024- 23.3.2024	KPR INSTITUTE OF ENGINEERING & TECHNOLOGY, COIMBATORE
SIVASAKTHI M SOWMIYA R, PAVITHRA D SHALINI J J	GRAPHICAL XPERIENCE USING LABVIEW	SYMPOSIUM	27.3.2024- 28.3.2024	KPR INSTITUTE OF ENGINEERING & ECHNOLOGY,COIMBATOR E
THAMARAI SELVAN K SOWBARNIKA SRY A P PRIYA DHARSHINI K YASWANTH S SHOBICA T,SHAJNA A	TECHNOLOGICAL SOLUTION FOR SAFE DISPOSAL OF MENSTRUAL WASTE	INTERNAL HACKATHON PROJECT PRESENTATIO N	13.09.2023	VCET
SANDHIYA S SAI NHANDHINI C K SUBARNA DHANAVANTHINI S SWETHA D,SANTHIYA R,SHARMIKA M	BIOMATERIAL BASED CUSTOMIZED INSOLE LAYERS	PROJECT PRESENTATIO N	13.09.2023	VCET

PAPER/PROJECT PRESENTATION

NAME	TITLE OF THE PROGRAMME	PROGRAMME	DATE	VENUE
LOGESWARI M PRATHIKSHA G	PHYSICS	PAPER PRESENTATION	23.6.2023	NANDHA COLLEGE OF TECHNOLOGY
DHARANIDHARAN S	ALERTING AND IDENTIFYING A VARIOUS HEALTH PROBLEMS THROUGH SLEEP MONITORING SYSTEM	ELEMENTS 2K23- PAPER PRESENTATION	6.10.2023	SRI RAMAKRISHNA ENGINEERING COLLEGE
HARAN A BOORVASANTHYA K KAVYA S	SMART BANDAGE	ELEMENTS 2K23- PAPER PRESENTATION	6.10.2023	SRI RAMAKRISHNA ENGINEERING COLLEGE
ABISHA J DHARANI R	LAB ON A CHIP	EKKLESIA'23- PAPER PRESENTATION	13.10.2023	SRI RAMAKRISHNA ENGINEERING COLLEGE
AACHIKAA R E AATHI SHREE T K DELSIKA J	MECHANISM IN SPORTS	MXCEL 2K23- PAPER PRESENTATION	11.10.2023	KONGU ENGINEERING COLLEGE

ARUNACHALAM C KAAVIYA K	QUANTUM TECHNOLOGY, APPLICATION OF AI IN BIOMEDICAL ENGINEERING	MXCEL 2K23- PAPER PRESENTATION	11.10.2023	KONGU ENGINEERING COLLEGE
KARTHIGA A	ARTIFICIAL INTELLIGENCE	PAPER PRESENTATION	25.11.2023	ROTATACT CLUB.VCET
ARUNACHALAM C KAAVIYA K BRINDHA ISSWARYA S	APPLICATIONS OF AI IN BIOMEDICAL ENGINEERING	RATHINAM GRAND FEST	11.03.2024 16.03.2024	RATHINAM GROUP OF INSTITUTIONS, COIMBATOR E
GURU SARAN K ABISHA J	HYDRO ELECTRICITY	SOCIO-TECH HACKATHON 2024	29.1.2024- 30.1.2024	KPR COLLEGE OF ARTS SCIENCE AND RESEARCH
GURU SARAN K ABISHA J DHARANI R	EFFICIENT WATER SUPPLY USING TURBINES	ENTHIRATHON 24	12.4.2024- 13.4.2024	RAJALAKSHMI ENGINEERING COLLEGE, CHENNAI
JENIS CHRISTINA B JEEVITHA S, KANIMOZHI S JOTHI SRI S SNELI DHARSHINI Y PAVITHRA C	ASSIST DEVICE FOR NEUROMUSCULAR DISORDER	TEKOZURA 2K23- PROJECT PRESENTATION	26.08.2023	IEEE SB, Dr.NGPIT
THRISHA S THIRUVENKADAM G	IOT ENABLED HEALTHCARE MONITORING STICKER	TEKOZURA 2K23- PROJECT PRESENTATION	26.08.2023	IEEE SB, Dr.NGPIT
NABISATHUL MUSRIYA	SMART ATTENDANCE AND PORTAL LEARNING USING ADMIN, FACUKTY AND STUDENTS LOGIN	TEKOZURA 2K23- PROJECT PRESENTATION	26.08.2023	IEEE SB, Dr.NGPIT
PRIYA DHARSHINI S YAMINI S	ULTRASOUND SCANNER	TEKOZURA 2K23- PAPER PRESENTATION	26.08.2023	IEEE SB, Dr.NGPIT
KANIMOZHI S	VISUAL IMPAIRMENT TEXT TECHNOLOGY	PAPER PRESENTATION	3.5.2024- 4.5.2024	BANNARI AMMAN INSTITUTE OF TECHNOLOGY
JANANI S JANANI M	ASSIST DEVICE FOR NEUROMUSCULAR DISORDER	PAPER PRESENTATION	26.9.2023- 27.9.2023	SENGUNTHAR ENGINEERING COLLEGE

CONFERENCES

Name	Title of the Paper	Name	Date	Venue
NIVETHA SRI G SHAJNA A SOWMYA S SUVISHESH E	Wearable robotic assistant for post stroke ankle foot rehabilitation	Journal: Advances In Medical Science	3.5.2024	Elsevier (Submitted Manuscript)
RAMYA K SUBHASRI V TAMILARASAN S	A hybrid visual cryptography for security enhancement	International Conference On Recent Trends In Science,	16.4.2024	Kamaraj College Of Engineering And Technology.

VISHNUKKUMAR K	in color images	Engineering And Technology		
PRIYADHARSINI S N SHOBICA T SWETHA D	AI based system to detect uterine cancer using ultrasound images	2nd International Conference On Knowledge Engineering And Communication Systems	18&19 April 2024	SJC Institute Of Technology, Karnataka
PRAVEEN K SOWMIYA S SUBHAPRIYA S YASWANTH S	An intelligent and secure system for prenatal health management using wireless sensors and mobile phone	1 st International Conference On Data Analytics And Intelligence Computing	6.4.2024	Velammal Institute Of Technology, Chennai.
SANTHOSHKUMAR T SINDUJA B SUJAN S M, SWEHA M	Automated drug dispensing machine	9th International Conference On Adaptive Technologies For Sustainable Growth	27.4.2024	Paavai Engineering College, Namakkal.
BALADHINESH M BLESSON SAMUEL D HEMACHANDIRIKA U NEGA R	Automated multi reservoir infusion system for IV fluids in hospital	4th ACE International Conference On Applied Science, Engineering, Technology And Management	3.5.2024	Alpha College Of Engineering, Chennai.
JANANI S V KAVINKUMAR M NAVEENA N NIKHILA K M	Automatic fall detection identification and monitoring system for elder people	7 th National Conference On Innovations In Communication And Electrical Drives	16.4.2024	P.A. College Of Engineering And Technology, Coimbatore.
RAM CHANDAR S K SANTHI J SOWSHIGA K R YAZHINI K	Biogenic synthesis of pectin based nano microencapsulation and study of its antimicrobial, anti cancer activity	International Conference On Innovations In Life Sciences	12 th And 13 th Feb 2024.	SRM Institute Of Science And Technology, Kattankulathur
ARPUTHA S S NANDHINI S (29.07.2002) NANDHINI S (27.10.2003)	Biosynthesis of silver nanoparticles from the root extract of Arachis Hypogaea and its biomedical applications	International Conference On Innovations In Life Sciences	12&13 Feb 2024	SRM Institute Of Science And Technology, Kattankulathur.
SABARIKA B D SANTHIYA R SHIBICHANDRU S K	Cervical cancer detection using soft computing techniques	International Conference On Recent Trends In Science, Engineering And Technology	16.4.2024	Kamaraj College Of Engineering And Technology
AMRUTHA VARSHINI B JUSTIN SHYJU KEERTHI VENEKA J J	Design a Glove and Neckband Based System for OSA Monitoring and	6 th National Conference On Integrating Biomedical Excellence With Advanced	26&27 April 2024	Adhiyamaan College Of Engineering, Hosur.

MERCY I	Intervention Using Sensors and AI	Research And Innovations		
OVIYA M M SANDHIYA S SOWMIYA S SUPRITHA S	Design of vaccine storage monitoring and management system using IOT and blockchain technology for government hospitals	4 th ACE International Conference On Applied Science, Engineering, Technology And Management	3.5.2024	Alpha College Of Engineering, Chennai.
POOVARASAN I PRACHITHA S PRAVEENA P SUBARNA DHANAVANTHNI S	Detection and classification of oral potentially malignant disorders and oral health monitoring	International Conference On Newer Engineering Concepts And Technology	28.3.2024	K. Ramakrishnan College Of Technology, Tiruchirappalli.
PRAVEEN P PRIYADHARSHINI K SANKARALINGAM V SUBIKSHA A	Detection of human spine posture using a wearable monitoring system	9 th International Conference On Adaptive Technologies For Sustainable Growth	27.4.2024	Paavai Engineering College, Namakkal.
SIVASAKTHI A SOWBARNIKA SRY AP SURENDIRAN I THAMARAI SELVAN K	Efficient and eco-friendly menstrual waste disposal using microwave	National Conference On Innovations In Scientific Computing And Optimization Technique	30.4.2024	PMC Tech College, Hosur.
GIRUBHADHARAN D HRITHIKA A KAVIN KUMAR T NAVEENKUMAR G	Emotion - Aware Assistive Technology for Autism : A Glass Approach	12 th International Conference On Advanced Science And Engineering Research	7.5.2024	Al- Ameen Engineering College, Erode
PRAVEEN N SAI NHANDHINI C K SNEKA R VAISHNAVI V	Identification & classification of breast cancer from histopathological images using DL	9 th International Conference On Adaptive Technologies For Sustainable Growth	27.4.2024	Paavai Engineering College, Namakkal.
DHIKSHANA G JAGAN S KEERTHANA A LEENA A S	IoT enabled real time cardiac monitor system using LabVIEW	International Journal Of Innovative Research In Advanced Engineering	Apr-24	IJIRAE (Published)
BALAJI T DEEPIKA U DHARSHINI C MOHAMMED HARRISHN	IoT based Automated Rehabilitation Using 3D - printed hand and health monitoring for paralyzed patients	4 th ACE International Conference On Applied Science, Engineering, Technology And Management	3.5.2024	Alpha College Of Engineering, Chennai.
CHRISTINA JENIFER F DHARANIDHARAN R DURAIMURUGAN P LAKSMAN PRANAV S	Knee Care insight monitoring and Predictive Analytics using Machine Learning	Journal: Advances In Medical Science	2.5.2024	Elsevier (Submitted Manuscript)

AISVARYAA R ARUNA R BHAVADHARANI B	Low Cost Skin Sensory Hearing Assisted Device for Profoundly deaf individual	8 th International Conference On Engineering Technology And Science	20.3.2024	Muthayammal College Of Engineering
DEVADHARSHINI G FARHAA SABRIN F GOKUL R HARITHA J D	Multifaceted Analysis of Mental and Physical Stress Using an IoT Based System	International Conference On Newer Engineering Concepts And Technology	28.3.2024	K. Ramakrishnan College Of Technology
ELAVENDHAN M HEMANANDHINI J JANAPRIYA M NANDHINI S	PYTHON - Powered Hybrid Visual Cryptography for secure Cloud Transmission in the Banking Sectors	International Journal Of Multidisciplinary Research, Vol 6, Issue 2.	Mar-Apr 2024.	IJFMR (Published)
SABHARI GANESAN T S SRIMATHI R SUGEETHA M A UMAMAHESWARI M	Real time user control rehabilitation devices for hemiplegia patients	National Conference On Innovations In Scientific Computing And Optimization Technique	30.4.2024	PMC Tech College, Hosur.
SHARMIKA M,SONA B UVANANDHINI B VANATHI S	Smart knee pain detection through facial expression usign AI and TENS method	International Conference On Recent Trends In Science, Engineering And Technology	16.4.2024	Kamaraj College Of Engineering And Technology
AMARNATH S A	Smart Splint for Monitoring the Process of Fracture Healing	8 th International Conference On Engineering Technology And Science	20.3.2024	Muthayammal College Of Engineering, Namakkal

HOSPITAL TRAINING/INTERNSHIP/COURSE

NAME	TITLE	EVENT	DATE	VENUE
SHARAVANA K L	UI/UX FOR BEGINNERS	ONLINE COURSE	Aug-23	GREAT LEARNING ACADEMY
SHARAVANA K L	PYTHON	ONLINE COURSE	6.8.2023	GOOGLE FOR EDUCATION
RANJANI V	MACHINE LEARNING	30 DAYS MASTER CLASS	1.9.2023-30.9.2023	PANTECH eLEARNING PVT.LTD.
POOJA S,TAMIL S SANTHIYA M,SANDHIYA S NIVETHA M,POOVITHA S	PCMS & ULTRASOUND	HANDS ON TRAINING	25.2.2024-2.3.2024	INFINITY BIOMEDICALS
HEMAPRABHA K M	BIOMEDICAL INSTRUMENTS	HOSPITAL TRAINING	26.2.2024-27.2.2024	ABHI S K HOSPITAL P LTD.
SAKTHI MURUGAN P	BIOMEDICAL INSTRUMENTS	HOSPITAL TRAINING	27.2.2024-2.3.2024	Dr.RELA INSTITUTE & MEDICAL CENTRE
SHARAVANA K L	FULL STACK WEB DEVELOPMENT	TRAINING	29.2.2024	INTRNFORTE

SWATHI A	PCMS & ULTRASOUND	HANDS ON TRAINING	25.2.2024-2.3.2024	INFINITY BIOMEDICALS
SWETHA G, SIVASANKARI V PAVITHRA R, RAMYA A PRATHIKSHA, SOWMIYA V	RUDIMENTS OF BIOMEDICAL EQUIPMENT	TRAINING	26.3.2024	NANDHA ENGINEERING COLLEGE & ATHEENAPANDIAN PVT.LTD
DHARANISRI S	FUTURISTIC SCENARIO OF VR IN HEALTHCARE	BIOMEDICAL TECH-TALK MARATHON 2024	27.5.2024-31.5.2024	INTERNATIONAL FOVEAZ BIOMEDICAL ASSOCIATION



PLACEMENT STATISTICS

ZIFO R & D SOLUTIONS



DEEPASHRI P



HARIHARAN P



KEERTHANA A



NIJAMUDEEN K



SANTHIYA R



SHARMIKA M



SOWBARNIKA SRY A P

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KGISL/COVITI

MRUDAAN MEDICAL TECHNOLOGIES

OM MEDICAL TECHNOLOGIES



AMRUTHAVARSHINI B



DEEPIKA U



BHAVADHARANI B



BHUVANESHWARAN A

MRUDAAN MEDICAL TECHNOLOGIES,
OMEGA HEALTHCARE SERVICESOMEGA HEALTHCARE SERVICES,
VANAVIL CALIBRATIONS PVT.LTD

OMEGA HEALTHCARE SERVICES/EPISOURCE



HEMANANDHINI J



SWETHA D



KAVYA S



SUBARNA
DHANAVANTHNI S



SAINHANDHINI
CK

SCAN CARE /
UDHAYAM MEDICARE
SYSTEMS

OMEGA HEALTHCARE SERVICES



MERCY I



SANDHIYA S



SOWSHIGA K R



SOWMIYA S



SUGEETHA M A

CLARUS RCM INFOTECH

ADONMED TECHNOLOGY SOLUTIONS

SCAN CARE ULTIMATE
HEALTH CARE SOLUTIONS



DHACHANA MOORTHY P



SINDUJA B



HARINI K



SANTHI J

GESCO HEALTH
CARE

CONSILIENCE
CONSULTANTS

NICE NEOTECH MEDICAL
SYSTEMS PVT. LTD

S3 MEDICAL SYSTEMS



JAGAN S



TAMILARASAN S



PRACHITHA S



PRAVEEN.K



KAVIN KUMAR T

UDHAYAM
MEDICARE SYSTEMS

KARTHIKEYAN
MEDICAL SYSTEMS

EPISOURCE

INFINITY
BIOMEDICALS



MOHAMMED
HARRISH N



MOHAMMED
MUSHFIQ S



JANAPRIYA M



SUPRIYA S



DURAI
MURUGAN P

MOLBIO DIAGNOSTICS
PRIVATE LIMITED

EMSENSING TEHNOLOGIES,AMTZ

ENDOCARE
PRIVATE LIMITED

FUSION
SANTE

SOLUTIONS



NAVEENKUMAR G



NIVETHA S B



GIRUBHADHARAN D



SABARIKA B D



JUSTIN SHYJU

EPISOURCE /COTIVITI

S & T ENGINEERS PRIVATE
LIMITED

NAT STEEL EQUIPMENTS



BALADHINESH M



SHAJNA A



SHIBICHANDRU S K



SUVISHESH E



AMARNATH S A

PHOENIX MEDICAL SYSTEMS

APPASAMY ASSOCIATES



ARPUTHA S S



SUBHASRI V



SABHARI GANESAN T S



POOVARASAN I



PRAVEEN P

SENTHIL MULTISPECIALITY
MEDICAL CENTER

SUNTEC MEDICAL SYSTEMS

VTITAN



DHARSHINI G



YASWANTH S

LAKSHMAN
PRANAV S





SHOBIKA T

THAMARAI
SELVAN K

PROFICIENCY WINNERS

2020 2024 BATCH



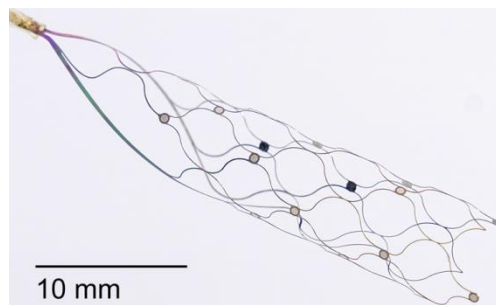
KEERTHANA A IV BME A		SHAJNA A IV BME B		KAVYA S IV BME A	
2021 2025 BATCH			2022 2026 BATCH		
					
PAVITHRA K III BME B	SANJURITHA S III BME B	KARISHMA SELVAM S II BME A	KAVYA S II BME A		

RECENT BIOMEDICAL ARTICLES



The Brain-Implant Company Going for Neuralink's Jugular

Until now, only about 50 humans have ever had BCIs implanted in their brains. And only a handful of those people have been able to leave the laboratory to use them in the real world, since most BCI implants involve wires protruding from the head. The new study is the largest human trial of a fully implantable, at-home BCI system. And no, the maker of this device isn't Elon Musk's Neuralink. It's a company called Synchron, and it is quietly leading the race to bring a BCI implant to market.



"Synchron is the very first to commercialize the concept of BCI [implants] in a meaningful way, and they're paving the way for the whole field," says Nick Ramsey, a clinical neuroscientist at University Medical Center Utrecht, in the Netherlands, who is not involved in the development of Synchron's device. It "might very well be on the market for a while before any [other] devices are competing with it," he says.

If Synchron's system works, it will provide an invaluable communication method to people with severe paralysis. Many potential users suffer from brain-stem stroke or degenerative diseases that have left them "locked-in": aware of their surroundings but with no way of communicating other than blinking. With a BCI implant, they will be able to do basic computer tasks—like sending messages and accessing digital health services—without moving a muscle.

Synchron first implanted its device in four people in Australia. Then the company moved its operations to Brooklyn, N.Y., and it's now in the middle of a U.S.-based feasibility study involving six more people. By June the company expects to submit its data to the U.S. Food and Drug Administration for review. If the results are good, the company will seek the agency's blessing to move forward with a larger study that will determine whether this BCI gets approved for clinical use.

One big advantage of the Synchron device: It doesn't require open brain surgery. Instead, it's delivered like a stent. A 16-electrode array, trailing a lead behind it, is inserted into the jugular vein in the neck and snaked up a blood vessel near the brain's motor cortex. When it reaches its destination, it springs out into a tubelike scaffold that fits against the inside wall of the blood vessel. There, the Stentrode records electrical activity coming from nearby brain tissue. The Stentrode is connected by the lead to a small receiver-transmitter in the chest, which wirelessly sends data to an external digital device. To communicate with a computer, a user of Synchron's system thinks about a specific motor movement, such as moving his or her leg. Even though the user cannot physically move, these thoughts generate electrical activity in the motor cortex that's fairly easy to detect. The external device then translates that data into a simple computer command.

The only computer commands Synchron's system can currently generate are clicks and a scrolling function. The click command can be used in conjunction with special assistive software that slowly scrolls through Web pages highlighting different areas of interest that the user can click on. Synchron is limited to these two commands because of the quality of the brain signals that can be detected from inside a blood vessel. "We are recording population-level signals from neurons, not single-unit-level signals," says Tom Oxley, CEO of Synchron.

This setup is considerably less sophisticated than the BCIs coming from other companies and academic groups. "The current research is geared toward capturing more signals from a larger patch of cortex so that you are decoding more complex movements or speech," says Ramsey, who is credited with testing the very first implantable BCI in a human in 2016. "To decode speech, you need at least 100 electrodes."

Synchron's competitors include Elon Musk's Neuralink and rival Precision Neuroscience. Neuralink's BCI features 1,024 electrodes distributed across 64 ultrathin threads, which must be surgically implanted by a custom robot. The company has tested it in animals and in May 2023 said that it had received a green light from the FDA to test it in humans, after the agency initially rejected the request. Precision Neuroscience's BCI features 1,024 electrodes on a one-square-centimeter flexible film. In 2023 the company conducted pilot studies in humans in which the film was placed temporarily on the surface of the brain while people were undergoing unrelated tumor surgery. But the complexity of these devices and their implantation procedures may add years of clinical testing while Synchron speeds toward regulatory approval.

"We are leaning into the simplicity feature of our system," says Synchron's Oxley. The brain signals that represent motor movement are predictable and similar in every person, he says, so the patterns can be immediately decoded; the user doesn't have to spend weeks or months training a deep-learning algorithm to recognize the person's unique brain patterns. "Our device works on day one," he says.

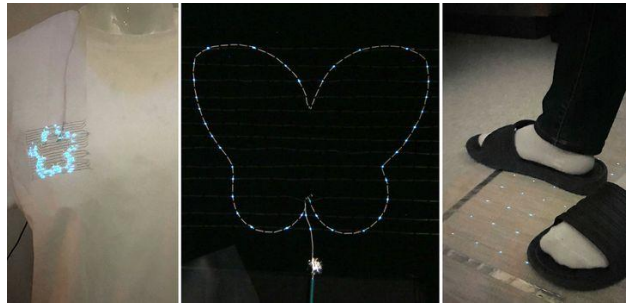
NIJAMUDEEN K

VCET

IV BME A

Glowing Threads Illuminate New Prospects for Clothing

In the case of this new prototype, the thread can be sewn using a standard embroidery machine and was tested to survive at least 50 washing cycles. Part of what made the electroluminescent thread possible, Lee says, was designing threads that could hold up to the stresses of embroidery. “Their compatibility with standard embroidery machines necessitates high tensile strength and a suitable elongation at the breakpoint, ensuring they can be seamlessly incorporated into fabrics without compromising their integrity,” Lee says.



The threads themselves were made with a durable nylon fiber core doped with copper or manganese for color and coated with a flexible layer of silver nanowires for conductivity. They were also coated in an additional protective layer—the researchers used Gorilla Glue—to prevent water damage.

“Durability is not just a matter of maintaining the aesthetic or functional aspects of the textiles; it’s essential for ensuring that these innovative fabrics can be integrated into everyday consumer products, ranging from fashion to emergency signaling wear, without necessitating frequent replacements or special care,” Lee says. “This resilience thus significantly broadens the scope of their use, making them more sustainable and user friendly.”

Gone are the days of humdrum fibers that do nothing beyond holding together the clothes we wear and bags we carry. In a paper published on 3 January in *Science Advances*, researchers from Purdue University, in Indiana, have created a new prototype of electroluminescent thread that can glow blue, green, and yellow while maintaining its shape, even under the rigors of machine embroidery.

Chi Hwan Lee is an associate professor of biomedical and mechanical engineering at Purdue and the senior author on the new paper. He says that electroluminescent thread offers an opportunity to incorporate smart features and detectors into clothing and wearables that traditional fibers or even LEDs alone can’t accomplish.

“This research aims to solve the challenge of integrating light-emitting elements into textiles in a way that preserves the inherent qualities of the fabric, such as flexibility and washability,” Lee says. “This approach not only enhances the aesthetic possibilities of light-emitting textiles but also extends their practical applications, such as in emergency signaling.”

Previous attempts to include light sources on garments have either compromised the integrity of the fabric—for example, reducing its flexibility or washability—or required extreme temperature or vacuum conditions to be successful. In the case of this new prototype, the thread can be sewn using a standard embroidery machine and was tested to survive at least 50 washing cycles.

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necessitates high tensile strength and a suitable elongation at the breakpoint, ensuring they can be seamlessly incorporated into fabrics without compromising their integrity,” Lee says.

To mimic the kind of collisions a player might experience on the field, the team exposed the helmet to collisions with a 13.5-kilogram (30-pound) dumbbell from varied impact angles. In these tests, the impact sensor successfully lit up in the direction of the collisions, which Lee and colleagues write could be a helpful indicator for sports physicians to better assess players for concussion or other cranial damage after sustaining a blow on the field.

Beyond concussion management, Lee says that the opportunity for incorporating these threads into daily life is vast, including designing light-changing home decor and clothing, as well as providing high-visibility clothing or emergency alerts and visibility for night workers or commuters. “Additionally, in health care, they can be integrated into wearable technology, potentially serving as visual indicators for health monitoring,” Lee says. “These applications not only showcase the threads’ versatility but also highlight their potential in transforming everyday items into interactive, functional, and fashionable pieces, aligning with the growing trend towards smart, personalized products.”

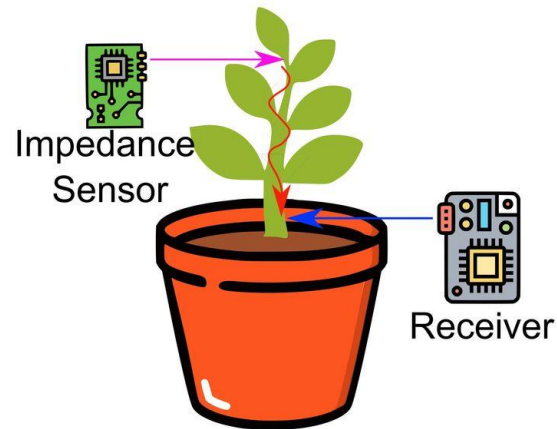
SABARIKA B D
IV BME B

Crop Health Sensor Runs on Solar, Microbe Power

As climate change causes many regions of the world to dry up, smart agriculture is one means to adapt to the crisis, and make every last drop of water count. To support this effort, a group of researchers in Italy have created a wearable, low-cost sensor for plants that monitors their water levels, and which is powered via solar energy and electrical energy from microbes in the soil. Umberto Garlando, an assistant professor at the Polytechnic University of Turin in Italy, was involved in the study. He notes that agriculture consumes a considerable amount of water. “Looking directly at the plants to estimate the water needs in agriculture could lead to water savings and a better use of this resource,” he explains, noting this could increase yield and facilitate better food security for everyone.

Therefore, his team set about creating their small, low-cost sensor that is connected directly to the stem of a crop with stainless steel needles just 0.4 millimeters long, acting as electrodes. The sensor measures the electrical impedance of the plant stem, which indirectly measures moisture in the plant based on ions and conductivity. More conductivity along the stem indicates that the plant is better watered.

The sensor has a miniature solar panel for energy harvesting and a supercapacitor for energy storage, which Garlando says are enough to power the device and support continuous operation. The data is transmitted down the stem of the plant as an electrical signal to a receiver placed in the soil. The receiver, which is powered by a Plant Microbial Fuel Cell (PMFC) that extracts energy from the electrical signals of microbes in the soil, reads the signal frequency and then transmits the data to a remote site for processing and analysis.



The researchers first tested their sensor in tobacco plants in a controlled environment, where the sensor's impedance measurements were confirmed using standard laboratory equipment. Garlando says results suggested the sensor can use electrical impedance to infer the water potential of the plant with 85 percent accuracy. After initial validation of the method, Garlando's team moved the sensor to apple trees for a nearly year-long test in the field, where he says the sensor's readings clearly correlated with times of water scarcity. He notes a lot of advantages of this sensor, including its small dimensions, low power consumption, low cost, wireless capability, and ability to directly monitor plants in the field. "Furthermore, thanks to the flexibility of the designed sensor, it is possible to adapt it to different species of plants. The same device was used both on tobacco plants and apple trees," he says.

Garlando notes that more research is still needed before he will consider commercializing this technology. His team is partnering with experts at other research institutes to improve the sensor's resolution and understand what additional information they can extract from this sensor. For instance, he says, they might also be able to infer the concentration of various nutrients in the plant's stem. He adds that his team would like to reduce the sensor system's overall cost to enable sufficient numbers of sensors to be affordably placed across large fields.

"Another next step will be the introduction of machine learning and artificial intelligence in the data analysis," says Garlando. "In the long term, microelectronics will be adopted to integrate the sensor into a single chip. In this way, the cost will be reduced, and it will be possible to miniaturize the sensor."

**ANJANA K
III BME A**

Micro-Supercolliders Scale Out for 3D Chip Scanning

Until recently, there were only two operational U.S. particle accelerators capable of producing electron beams with energies of 10 billion electron volts or more, machines that are both roughly 3 kilometers long. Now, in a new study, researchers have unveiled one just 10 centimeters long. The powerful compact particle accelerators that could result from this advance might find applications such as cancer therapies and 3D imaging of new 3D chip designs, the scientists add.

The concept behind the new device was first described in 1979. An extremely powerful laser strikes a gas, producing a plasma, while waves in the plasma kick electrons out in a high-energy beam. The laser coalesces a petawatt of power—1,000 times the installed electrical power in the U.S.—into a mere 150-femtosecond pulse—one billionth the duration of a lightning bolt. These "wakefield accelerators" are capable of imparting inertia to individual electrons at some 1,000 times the efficiency of what is possible using conventional, kilometer-scale particle smashers. Scientists have long suggested that wakefield accelerators could shrink kilometer-scale facilities to room-size or smaller.

A key problem that wakefield accelerators face is how much their electron beams can fluctuate in their properties due to small variations in the laser and gas conditions. In the new study, the researchers sought to improve the stability of wakefield accelerators using nanoparticles. The researchers started by shooting a laser pulse at an aluminum plate inside a chamber filled with helium. This generated a cloud of aluminum particles, each roughly 10 nanometers wide inside the gas.

The scientists then fired one of the world's most powerful pulsed lasers, the Texas Petawatt Laser in Austin, at the mix of gas and nanoparticles in the chamber. The machine can fire a single petawatt laser pulse every hour. The burst coalesces that single petawatt—1,000 times the installed electrical power in the U.S.—into a mere 150-femtosecond pulse—one billionth the duration of a lightning bolt.

The nanoparticles help boost the energy delivered from the plasma waves to the electrons. This gets more electrons surfing the waves when and where they are needed, says study senior author Bjorn Manuel Hegelich, a physicist at the University of Texas at Austin.

Hegelich's group's new accelerator was capable of delivering 10 billion electron volt (10-GeV) electron beams. It could also generate lower-energy beams in the 4 GeV to 6 GeV range. Based on previous results with a smaller laser, the scientists expected more modest results. "Instead, we saw a five times higher energy," Hegelich says. He is also founder and CEO of TAU Systems, which holds the exclusive license for the patent applied for this new device.

Near-term applications for lower-energy beams include 3D imaging of new 3D chip designs, electron therapies for cancer, radiation testing of space-bound electronics, "and also diagnostics, where it enables new methods like X-ray induced acoustic computed tomography," Hegelich says. The big application for a 10 billion electron volt beam is to drive X-ray-free electron lasers, which are "the ultimate X-ray microscopes, achieving molecular resolution in both space and time," Hegelich says. "They'll become the cutting-edge research tools for everything from material science, bio, chemistry, and more. They will enable critical research for new batteries, solar cells, designer pharmaceuticals, vaccines, drugs, and hundreds of other industries."

There are currently only a few of these lasers available worldwide, "which means there is very limited access and available time on them," Hegelich says. He adds that their research could shrink these machines "from campus to lab size, so you could have one at every large university and even in companies. This will democratize access, making beam time accessible to more research and industry than ever previously possible."

The main challenge the scientists faced in the course of their research was the fact that the Texas Petawatt Laser only fires about four to five times per day, and laser parameters such as energy and pulse duration "can fluctuate quite a bit, as parts of the system are quite old," Hegelich says. "We typically get only one or two good shots per day, and overall statistics are quite poor."

In the future, the scientists want to repeat their research using a smaller laser with a higher shot rate to gather data that can help them "precisely control this new mechanism," Hegelich says. They would like to increase the shot rate "from one shot per hour to about 100 shots per second and then more than 10,000 shots per second," Hegelich says. Such research could scale this nanoparticle-based accelerator "down to a lower laser-pulse energy whilst retaining the advantages we observed," Hegelich says. "This will allow us to reach higher electron energies with a given laser, or reach a target electron energy with a smaller laser."

MOULI SURYA M

VCET

Mesh Wearables Meld Microsensors and LoRa Smarts

As health care wearables for various medical conditions and situations proliferate, patients inevitably want their wearable tech as inconspicuous and worry free as possible. As a case in point, consider a new wearable mesh health monitor that does away with the “box and a strap” architecture that is still the industry’s de facto commercial design standard. This tech, developed by researchers at the University of Arizona, features long-range, low-power data transmission and receiving as well as wireless power charging. As a result of its portability, the device looks to be a compelling choice for remote health monitoring in isolated areas.

Philipp Gutruf, who directed the research, says his team is working to address the need for clinical-grade health monitors that are made “accessible in all kinds of areas on the globe [while] retaining the imperceptible nature of the device.” Gutruf is an assistant professor of biomedical engineering at the university. “There is no large rigid island in this device. All the electronics are distributed in this mesh.”

The device measures heart rate and body temperature using a form-fitting, lattice-like mesh of thermoplastic polyurethane. The team 3D printed it, but Gutruf says other manufacturing methods can be used as well. Also part of the kit are a lightweight battery, a duplexing antenna that allows both data transmission and wireless power charging, and sensors, none more than 6 millimeters in diameter. About 15 centimeters long, the device is worn around a user’s forearm. Gutruf likens it to wearing a sock with the toe end cut off, except the mesh is extremely lightweight and comfortable to the point of being almost forgotten. He calls it “biosymbiotic.”

Design boosts the wearable’s wearability, its chief advocate says. “There is no large rigid island in this device,” Gutruf says. “All the electronics are distributed in this mesh.” It doesn’t rely on adhesives either, he says, but instead conforms to the user’s body. “That allows us to go well beyond the three to four days a patch can do,” Gutruf adds. Blood-flow and blood-volume monitoring are furthermore available in the new technology via a technique called photoplethysmography (PPG).

Traditional PPG sensors, Gutruf says, have a small mass in it that measure acceleration. This tech, by contrast, uses its body-conforming profile to eliminate what he calls the traditional “brick” strapped to a PPG sensor. The device’s sensor, he says, “Is on a tiny node embedded in the mesh that conforms very well to your skin. So we can drop some of the filtering requirements, oversampling, additional accelerometer processing, and so on...because we have a very good signal to begin with.”

Better LoRa with LoRaWAN

In addition to the comfort factors, Gutruf says, the mesh design achieves a better operating efficiency than a typical commercial wearable. To improve transmission via small packets, the device does onboard computing of the raw sensor data. And it uses the long-range (LoRa) communications protocol, which the researchers demonstrated at 24 kilometers point-to-point in an isolated mountainous area. “LoRa has kind of the best community already existing,” he says. “Yes, there are other technologies. But considering the already existing networks in the regions we made this device for, it was pretty much a no-brainer to pick LoRa.”

LoRa is one of the mainstay technologies in Internet of Things (IoT) deployments. Originally architected in 2009, the modulation technology is based on a wideband, chirped-pulse standard (chirp spread spectrum) that excels at transmitting small data packets—up to a theoretical maximum of 256 bytes, though that varies by region and application—at long range using little power. LoRaWAN, the media

access control (MAC) protocol that sits atop the LoRa physical layer, was developed and maintained by the LoRa Alliance beginning in 2015. The Internet Engineering Task Force (IETF) published RFC 9011, the standard specifying the use of Internet protocols with LoRaWAN, in 2021.

LoRaWAN is already well established in health care. Calgary, Canada-based Tektelic offers a remote monitoring device called eDOCTOR, which straps around the chest and monitors temperature, respiration, heart rate, body position, and chest expansion. Christian Ulrik, vice president of sales and business development at Tektelic, says the device is ideal for monitoring patients who have been recently discharged from the hospital. Recent U.S. government statistics show that 13.9 percent of all patients discharged from a hospital between 2016 and 2020 were readmitted within 30 days.

These LoRaWAN technologies plus a range of others, Gutruf says, provide hope for those the global health care system has otherwise been unable to treat adequately. “The more technologies we make available, the more obvious it becomes for the medical community, and the easier it becomes for the medical community to do this,” he says. “The quicker we get acceptance of this, the better we can serve those who would usually have trouble getting quality health care.”

BRINDHAISSWARYA S
II BME A

Sandpaper + Machine Learning = Better X-ray Images

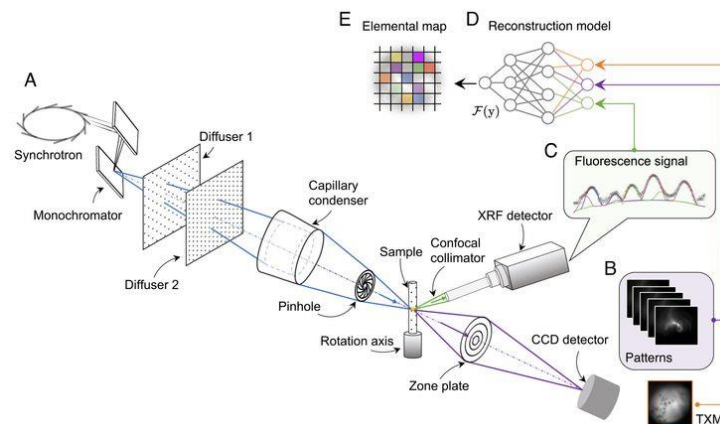
To build a better battery, you might start by improving the materials inside. Researchers often do that by first inspecting new materials and chemicals with high-powered X-rays from a synchrotron. But that's a slow and tedious process. A surprising solution to speeding things up has recently emerged—sandpaper. “The major motivation actually is trying to overcome the limitations of the traditional chemical imaging approach,” says Jizhou Li, an engineer at City University of Hong Kong and one of the researchers behind the work. The sandpaper slots into the X-ray beam's pathway, scrambling the illumination pattern it casts upon the material under investigation. After the X-rays pass through the sample, a machine-learning model uses both the sandpaper-scrambled pattern and the resulting image to reconstruct the sample's chemical structure. This sandpaper-enhanced setup may let researchers attain that valuable chemical resolution rather more quickly.

Li and his colleagues worked with an X-ray beam in the SSRL synchrotron at SLAC National Accelerator Laboratory in Menlo Park, Calif. They collected two types of imaging data: A charge-coupled device detector captured a two-dimensional image of a sample's structure from the X-rays that pass through it, and a second detector measured the sample's fluorescence—the secondhand X-rays emitted by atoms excited by the beam.

This two-pronged approach is fairly common in X-ray imaging. Researchers can use a sample's fluorescence signal to probe the chemical elements inside the sample. But because a fluorescence signal has only one dimension instead of an image's two, it can be slow and inefficient to collect it. For instance, say you want to use X-rays to reconstruct the chemical composition across a sample to form a 2D image. You might have to individually focus the X-ray beam, point by point, or raster-scan it across the sample. Li's team discovered that sandpaper can solve this slowdown. The researchers modified the beam setup by sliding two sandpaper diffusers between the X-ray source and the sample. The sandpaper's grit turns an X-ray beam into a nebula-like X-ray smear.

The first step of the setup's computational side, then, is to build a pixel-by-pixel estimation of what that smear pattern should be. Then a 2D smeared-X-ray image of the sample is taken, along with the one-dimensional fluorescence signal—no rastering needed. The next stage is where self-supervised machine learning enters the picture, quite literally. The researchers feed the 2D image, the sandpaper-scrambled

illumination pattern, and the 1D fluorescence signal into a neural network. The network then predicts the fluorescence signal at each pixel to generate a map of the elemental composition in the image. The researchers compare the process to enhancing blurry faces in a group photo.



Seeing battery chemistry and more

The sandpaper is a critical part of their algorithm. To piece together the chemical image, the machine-learning model relies on the pseudorandom patterns the sandpaper casts on the sample to create what are called structured X-rays. “We can make use of the randomness,” Li says. By swapping in different slides of sandpaper with different grit sizes, researchers can create different illumination patterns and image the same sample multiple times. Li and his colleagues tested the technique on a battery sample. This battery’s cathode was a potpourri of three different lithium-containing materials. But the sandpaper trick picked out nanoscale particles of each of the three.

Li says his own prior experience with studying batteries motivated the researchers to use a battery for a proof of concept. He believes that the technique can pick out not just elements but likely also their oxidation states, which makes it optimal for imaging a battery. He adds that the technique has plenty of other uses: biomedical research, for instance, which uses synchrotron X-rays to image cells, tissues, and more. The structured X-ray method is an example of how researchers can apply computation to create better imaging without significantly changing the colossal and costly underlying infrastructure that generates X-rays. Li wants to make the technique more accessible to scientists by testing the technique using laboratory-scale X-ray sources instead of rare bright synchrotrons like SLAC.

SUBHASHINI M
II BME B

Study unveils dual roles of TNF- α receptors in tissue regeneration and cell death

A study published in *The EMBO Journal* opens new perspectives to better understand how the molecular mechanisms involved in regenerative medicine work. The study focuses on tumor necrosis factor- α (TNF- α) and its receptors TNFR, molecules of key interest in biomedicine due to their involvement in multiple diseases such as obesity-related to type 2 diabetes mellitus, inflammatory bowel disease and several types of cancer. The study, highlighted in the *News & Views* section of the journal, is led by Professor Florenci Serras, from the Faculty of Biology and the Institute of Biomedicine of the University of Barcelona (IBUB). The work also involves experts from the UB's Biodiversity

Research Institute (IRBIO), the Centre for Genomic Regulation (CRG) and the August Pi i Sunyer Biomedical Research Institute (IDIBAPS).

The findings indicate that tumor necrosis factor- α (TNF- α) — a cellular activity modulating protein — has two TNFR receptors that can display completely opposite functions in response to biological tissue injury: specifically, one receptor enhances cell survival and regeneration, while the other can promote cell death. The study, carried out using the *Drosophila melanogaster* study model, could contribute to the design of TNFR receptor agonist and antagonist molecules that stimulate the regeneration of epithelial tissues in patients with severe burns, or affected by inflammatory bowel diseases and some cancers.

Drosophila: a model for studying human diseases

Communication between cells is a decisive process in the development and physiology of organisms. One of the pathways of cell communication is the secretion of molecules — e.g. tumor necrosis factor (TNF- α) — that have specific functions in biological cells, tissues and organs. In the mammalian genome, there are nineteen TNF molecules and twenty-nine TNFR receptors, which reveals the great complexity of their study in the case of the human species. However, some organisms such as the *D. melanogaster* fly have only one tumor necrosis factor (called Eiger, Egr) and only two TNFRs, which are the Grindelwald (Grnd) and Wengen (Wgn) receptors. "Thanks to this simplicity, and adding the multiple genetic tools of *Drosophila*, we have been able to use this model organism to study the regulation and function of TNF- α /TNFR", says the researcher.

Receptors with opposing functions

Although TNF- α and TNFR receptors are linked to acute and chronic diseases, "it is still not well understood how these components regulate such opposing cellular processes as cell death or cell survival, and even cell proliferation", Serras stresses.

This study, which will be included in the doctoral thesis to be defended by PhD student José Esteban-Collado, provides evidence that supports the different and opposing functions of TNFR Grnd and Wgn. "On the one hand, the Grnd receptor promotes cell death (apoptosis) to eliminate damaged cells through a TRAF2-dTAK1-JNK signalling pathway in a TNF- α Egr-dependent manner", says Serras. "In contrast, the Wgn receptor promotes cell survival and regeneration to keep tissues healthy and in good condition, via the TRAF1-Ask1-p38 signalling pathway and without the need for TNF- α Egr", he adds.

"That is, the first receptor needs the ligand to bind to the receptor, while the second can be activated without interacting with the ligand. Therefore, each TNFR promotes its signalling to achieve different functions", explains Florenci Serras. "Thus, the communication mechanisms of TNFRs must generate a balance between the activities of the different TNFRs, the molecular signals they set in motion and their dependence — or not — on the ligand (TNF- α)", he points out.

Damaged cells give off molecular signals in healthy cells

When a cell is dying or damaged, it communicates with healthy cells to replace the non-functional cell with a new one and initiate regeneration of the affected tissue. The research describes how dying cells release reactive oxygen species (ROS), which functional cells in their environment pick up to drive the regeneration process of the affected tissue.

"In a pathological situation or tissue damage, both receptors show different responses. First, the affected tissue produces TNF- α Egr, which binds to Grnd on the membrane. This is internalized and promotes suicide by cell death (apoptosis). At the same time, these cells produce ROS, which spread and reach healthy cells as an alarm signal indicating tissue deterioration", explains Serras. "The ROS signal activates Wgn in healthy cells directly, without the need for Egr, and consequently triggers the signalling pathway that promotes tissue survival, protection and regeneration", notes Serras.

The results of the new study support the model in which ROS from damaged tissue can activate Wgn-dependent signalling in healthy surrounding cells to promote their regeneration. Using an elegant binary system that allows manipulation of a gene in tissue-specific domains, the authors have also determined an essential role for TNFR Wgn — but not Grnd — in the activation of p38 kinase. "In healthy cells, this p38 will be responsible for setting in motion the entire genetic machinery for tissue repair", concludes Florenci Serras.

ARPUTHA S S
IV BME A

Overcoming cancer relapse with CAR-Enhancer therapy

Even as they have revolutionized the treatment of certain forms of cancer, CAR T-cell therapies have been shadowed by a significant limitation: many patients, including those whose cancer goes into full remission, eventually relapse. In a new study, Dana-Farber Cancer Institute researchers report on a technique with the potential to eliminate that problem.

The approach, described in a paper published online today in the journal *Nature Biotechnology*, works by spurring CAR T cells to be more active and persist longer in the body, enabling them to remain in battle mode until all tumor cells are eliminated. The technique – creates what researchers dub a CAR-Enhancer (CAR-E) therapeutic platform – also causes CAR T cells to form a memory of the cancer cell, so they can spring back into action if the cancer recurs. In experiments in patient-derived laboratory cancer cell lines and other studies, CAR-Enhancer treatment succeeded in eradicating all tumor cells, clearing the way for clinical trials of this approach in human patients. Researchers hope to launch the first trial in the near future.

"CAR T-cell therapies have been a breakthrough treatment for B-cell hematologic cancers such as B-cell leukemias and lymphomas and multiple myeloma," says the study's senior author, Mohammad Rashidian, PhD, of Dana-Farber. "Most of the research to address this challenge has focused on re-engineering the CAR T cell itself – for example, by introducing or eliminating genes to keep the cell active for longer," he continues. "While these approaches hold great promise, they have yet to show much effectiveness in the clinic. We decided to come at the problem from a completely different perspective."

Instead of trying to alter the inner workings of CAR T cells, Rashidian and his colleagues developed an approach that works from the outside – by delivering to the cells' doorstep a molecule that extends their lives and prompts them to form memory. The vehicle for accomplishing this is a fused-together "platform" unlike any other used in medical treatment.

CAR T cells are genetically enhanced versions of a patient's own cancer-fighting T cells. They're made by removing a few million T cells from a patient's blood and genetically equipping them to produce a special structure, called a chimeric antigen receptor, or CAR, on their surface. The CAR is designed to latch onto a specific marker, or antigen, on a patient's tumor cells. The cells, now called CAR T cells, are grown in a lab until they number in the hundreds of millions. When the cells are infused back into the patient, their specially designed receptor locks onto the tumor cell antigen and triggers an immune system attack on the cancer.

"The attack destroys nearly all the tumor cells, but a tiny percentage remains," Rashidian explains. "The CAR T cells are effector cells: they live to kill cancer cells. When they can't find any more to kill, they act as if their job is done and go away. The remaining tumor cells, however, can set the stage for a resurgence of the cancer." To prolong the CAR T cells' assault and endow them with memory, the Dana-Farber researchers developed a completely novel therapeutic agent, the CAR-E platform. It consists of a weakened form of the immune-signaling molecule interleukin-2 (IL-2) fused to the very antigen the CAR is designed to bind to.

That precision targeting is accomplished by fusing IL-2 to a specific antigen. In CAR T-cell therapies for multiple myeloma, the CAR binds to an antigen called B-cell maturation antigen (BCMA) on myeloma cells. It is that antigen that is affixed to IL-2 in the new therapy. "Just like weak IL-2, the BCMA antigen by itself doesn't affect CAR T cells, but, together, they have a synergy whose impact was well beyond our expectations," says the study's first author Taha Rakhshandehroo, PhD, of Dana-Farber.

CAR-E therapy not only causes CAR T cells to proliferate but to diversify – to generate different types of CAR T cells with different properties – researchers found. "It generated not only effector T cells, which most patients already have, but also stem cell-like memory T cells, central memory T cells, effector memory T cells – a complete repertoire of the kinds of T cells needed for an effective immune response to cancer," Rashidian remarks. In laboratory cultures of myeloma cells and in animal models of the disease, CAR-E therapy brought about the complete clearance of tumor cells – an erasure of any sign of the cancer – researchers found.

There were other benefits as well. Researchers discovered that the long-lasting CAR T cells generated by the therapy could be re-stimulated by re-administering CAR-E. This suggests that patients who relapse after CAR T-cell therapy could be effectively treated with additional doses of CAR-E treatment. CAR-E also raises that possibility that patients could be treated with smaller numbers of CAR T cells than at present.

The current practice of allowing CAR T cells to multiply into the hundreds of millions is a time-consuming, expensive, resource-heavy process that requires patients to wait many weeks before receiving an infusion of the cells. The large quantities are partly responsible for one of the most common side effects of CAR T-cell therapy: cytokine release syndrome, in which an over-aggressive immune response results in fever, nausea, rapid heartbeat, neurological problems or other issues. With CAR-E, it might be possible to skip the CAR T-cell expansion process altogether: CAR T cells would simply be made and infused into patients, followed by treatment with CAR-E.

"In animal studies, we infused mice with very low numbers of CAR T cells and found that weren't able to clear the cancer," Rashidian relates. "When we gave them the CAR-E treatment, the CAR T cells expanded and were able to clear the cancer." One of the first goals of a clinical trial of CAR-E therapy will be to ensure safety and to determine the best dose and schedule of administration. Initially, they expect that the treatment would begin about a month after patients are infused with CAR T cells. Treatment would consist of a weekly dose of CAR-E therapy for three or four weeks.

"The most exciting part of this therapy is how easily it can be integrated into the care of patients receiving CAR T-cell therapies," Rakhshandehroo says. "It's such an elegant solution to the problem of CAR T-cell depletion. We're eager to begin testing it in clinical trials." "IL-2 has a strong effect on T cells – activating them and causing them to proliferate – but it can also be highly toxic to patients," Rashidian remarks. "For that reason, we used a very weak form of it. On its own, it has no effect on normal T cells but has a stimulatory effect on CAR T cells when targeted specifically to them."

SANTHIYA R
IV BME B

AI model boosts cancer gene prediction and patient prognosis

The artificial intelligence (AI) model GPT-4, known from its application in ChatGPT, shows impressive capabilities in biomedical research and can be used in many ways for simulations. A simulator developed at MedUni Vienna and based on GPT-4 shows increased accuracy in classifying the importance of genes in cancer cells, as well as in the prognosis of cancer patients. The results of the study were published in the journal *Computers in Biology and Medicine*.

Large language models such as GPT-4 have proven to be extremely useful in various fields, including biomedicine. A research team from MedUni Vienna's Institute of Artificial Intelligence and the CeMM Research Center for Molecular Medicine, led by Matthias Samwald and Christoph Bock, has shown that a large language model such as GPT-4 can be used effectively as a simulator for biological systems. The study tests the hypothesis that the stepwise simulation of biological and medical processes with GPT-4 leads to better results. This is relevant for future application in biomedical research as well as for the understanding of these new models.

Computer simulations of biological processes are an important tool for biomedical research, but usually require a lot of expertise and manual adjustments. The research team has developed "SimulateGPT", a knowledge-based simulation method through structured inputs in GPT-4. This method has been tested and validated by experts in various scenarios such as mouse experiments, sepsis treatment support, prediction of essential genes in cancer cells and progression-free survival of cancer patients. The method is designed for basic research and is not intended for clinical use.

Structured inputs and targeted instructions

Language models such as GPT-4 are driven by text input, so-called "prompts", to perform specific tasks or solve problems. Modern models such as ChatGPT/GPT-4 respond directly to simple questions, but have difficulty solving more complex scenarios that are common in biomedicine. In the study, the scientists configured GPT-4 with structured inputs and targeted instructions so that it simulated given scenarios in detail with text. The study showed that this GPT-4-based simulator achieved significantly better results. The study's experiments demonstrated that biomedical experts preferred Simulate GPT's

predictions over direct GPT-4 responses. In addition, SimulateGPT improved accuracy in both determining essential genes in cancer cells and predicting progression-free survival of cancer patients compared to traditional GPT-4 responses.

KOKILA PRIYA S

II BME A

Existing drug shows promise for treating common liver disease

The University of Barcelona has led a study that suggests using the drug known as *pemafibrate* to treat liver disease associated with metabolic disorders, the most common liver pathology in the world, which affects one in four people. The drug has long been marketed in Japan for another use: improving blood lipid levels in patients with hyperlipidaemia, a common condition in diabetics. Now, however, it could help address this serious liver disease, which still has no specific treatment.

The study, carried out on laboratory animal models and published in the journal *Biomedicine & Pharmacotherapy*, was conducted by a team led by Professor Juan Carlos Laguna, from the UB's Faculty of Pharmacy and Food Sciences, the UB Institute of Biomedicine (IBUB) and the Physiopathology of Obesity and Nutrition Networking Biomedical Research Centre (CIBEROBN). The study has been carried out in collaboration with the research group of Professor Conxita Amat, from the Department of Biochemistry and Physiology of the same UB faculty, and the UB's Nutrition and Food Safety Research Institute (INSA-UB), based at the Torribera Food Campus.

Drug repurposing: a new life for medicines

Metabolic dysfunction-associated steatotic liver disease (MASLD) is a condition formerly known as non-alcoholic fatty liver disease. It is a multisystem disorder, with a very heterogeneous origin and a diverse course that can degenerate into cirrhosis, liver cancer or liver failure. It usually has no clear symptomatology and the early stages can last for decades.

Today, pemafibrate is used to treat alterations in blood cholesterol and triglyceride levels (dyslipidaemia). According to the new paper, it could also open a new therapeutic avenue to address MASLD in the context of drug repositioning, i.e. the use of known and approved drugs in clinical practice to treat other pathologies. This strategy makes it possible to fully exploit the therapeutic potential of drugs and thus reduce the time and economic costs of bringing another drug to market to treat diseases without effective therapy.

In an experimental model of SLD in female rats, pemafibrate prevents the development of hepatic steatosis, increases fatty acid catabolism and cholesterol clearance in the liver, and shows a good safety profile. As the preclinical study was conducted in female rats, the findings could also help to identify sex differences in the physiology of chronic diseases and thus reduce gender bias in biomedical research.

"Pemafibrate is a new modulator of the transcriptional activity of the nuclear receptor PPAR- α (peroxisome proliferator-activated receptor alpha), which increases the hepatic oxidation of fatty acids, necessary for the synthesis of triglycerides and cholesterol esters which accumulate pathologically in the liver in SLD and also for bile acids, which favours the elimination of cholesterol from the body", the researcher explains.

These results suggest that pemafibrate is a good candidate for therapeutic repositioning to treat SLD. "To our knowledge, this drug has not been used in the context of pharmacological repositioning, apart from a few exploratory clinical studies on its effects in liver pathology. Now we want to study its efficacy and safety in experimental models of more advanced liver disease, with the presence of inflammation and fibrosis in metabolic associated steatohepatitis (MASH)", concludes Professor Laguna.

RANJANI V

II BME B

Maternal morbidity and pregnancy risks higher for gestational carriers

Gestational carriers, also known as surrogates, experience an elevated risk of severe maternal morbidity and adverse pregnancy outcomes compared to women who conceive naturally or through in vitro fertilization (IVF), according to new research presented today at the ESHRE 40th Annual Meeting in Amsterdam. The population-based study analyzed 937,938 singleton births in Ontario, Canada between 2012 and 2021, comparing outcomes among unassisted conceptions, IVF conceptions and gestational carriers.

The findings uncovered marked variations in outcomes across the different conception methods. Gestational carriers faced a severe maternal morbidity rate of 7.1%, notably higher than the rates observed in unassisted conceptions (2.4%) and IVF conceptions (4.6%). Specifically, gestational carriers experienced elevated rates of postpartum hemorrhages and hypertensive disorders, both serious complications during pregnancy. Among gestational carriers, rates of postpartum hemorrhages were 13.9%, compared to 5.7% in unassisted conceptions and 10.5% in IVF conceptions. Similarly, hypertensive disorders, the most common medical problem encountered during pregnancy [2], affected gestational carriers at a rate of 13.9%, compared to 6.6% in unassisted conceptions and 11.6% in IVF conceptions.

"While some literature proposes that gestational carriers are carefully chosen based on favourable characteristics for a healthy pregnancy, our cohort did not consistently reflect this idea", furthers Dr Maria Velez, study supervisor and senior author. "Gestational carriers were also less likely to be in the highest income bracket, and we know that lower socioeconomic status is associated with higher serious maternal morbidity rates. However, sociodemographic characteristics were accounted for in the analysis, and the results were similar, which suggest potential different mechanisms."

A gestational carrier is defined as a woman who bears a genetically unrelated child for another person or couple. Typically, IVF is used to fertilize the intended parent's egg, and the resulting embryo is placed in the gestational carrier's uterus. Since the introduction of this method, the use of gestational carriers has been on the rise due to a number of factors, including increasing levels of infertility, a growing number of male same-sex couples seeking to have children, greater social acceptance of different family forms, advancements in medical technology and an increase in fertility clinics worldwide.

Despite the elevated risk of severe maternal morbidity and adverse pregnancy outcomes, the study did not find any significant difference in health outcomes for babies up to 28 days old between

gestational carriers, unassisted conceptions, and IVF conceptions. Serious health problems were present in 6.5%, 6%, and 9.1% of neonates, respectively.

Marina Ivanova explains, "Even with the increased risk of severe maternal morbidity among gestational carriers, we were surprised to find no significant increase in severe neonatal morbidity compared to unassisted conceptions. While gestational carriers experience more complications, these do not necessarily lead to worse outcomes for the newborns, which is a positive finding. In contrast, among women from the general population, severe maternal morbidity is associated with a higher risk of severe neonatal morbidity. This difference therefore warrants further investigation."

Professor Dr Karen Sermon, Chair of ESHRE, explains, "These results highlight the impact of socioeconomic status on our reproductive health, and the need to surround candidate gestational carriers with the best standard of care. It is reassuring – and also intriguing – that children born to gestational carriers do not seem to be impacted by the higher pregnancy risks."

**YASWANTH S
IV BME B**

Novel compound amplifies naloxone's power to reverse overdoses

In a Stanford Medicine-led study, researchers combed through billions of compounds to find one that could enhance naloxone's ability to fend off more potent opioids, with promising results in mice. Every great superhero needs a sidekick. Now, scientists may have found a drug-busting partner for naloxone. Naloxone is an opioid antidote that has saved tens of thousands of lives by rapidly reversing opioid overdoses in more than 90% of cases in which it is used. But its powers are temporary, lasting only 30 to 90 minutes. The rise of potent, long-acting opioids such as fentanyl means that someone brought back from the brink can still overdose after the naloxone wears off.

In a new study, Stanford Medicine scientists and collaborators have discovered a novel compound that can work alongside naloxone, supercharging its life-saving effects. When tested in mice, adding the compound to a miniscule dose of naloxone made it as powerful as the conventional dosage, with the added benefit of milder withdrawal symptoms. Naloxone, which is given as a nasal spray or injection, works by seizing opioid receptors, kicking out opioids and taking their place. (Naloxone has no addictive properties of its own.) The researchers found that the new compound – known for now as compound 368 binds next to naloxone on opioid receptors and helpfully holds naloxone in place.

A new type of drug

The new compound belongs to an unusual class of drugs that don't directly target the active site on receptors. Instead, they bind elsewhere on the receptor but trigger a structural change that alters the active site. Known as allosteric modulators (allos meaning "other" in Greek), they create new possibilities in drug development, but are trickier to identify, O'Brien said.

"Allosteric modulators are not common yet, and they're a lot more difficult to discover and to work with," he said. Compound 368 is the first known allosteric modulator that can help turn off opioid receptors. The researchers picked out compound 368 from a library of 4.5 billion compounds. Using advanced high-throughput techniques, they were able to screen the entire molecular library in just two days. To identify potential allosteric modulators that could cooperate with naloxone, they selected for compounds that bind only to receptors already saturated with naloxone. Compound 368 an otherwise

rather unremarkable compound, O'Brien said- stood out for its ability to tightly bind to opioid receptors only in the presence of naloxone. Like a loyal sidekick, it doesn't work with other drugs, and it doesn't work alone.

Powers combined

When researchers exposed cells with opioid receptors to compound 368, they found that the compound alone made little difference. But when cells were given the compound with naloxone, the combination was a powerful deterrent against opioid binding. The more compound 368 they added, the better naloxone was able to block opioids, including morphine and fentanyl. "The compound itself doesn't bind well without naloxone," O'Brien said. "We think naloxone has to bind first, and then compound 368 is able to come in and cap it in place." Indeed, using cryoEM imaging to visualize frozen molecular structures, the researchers found that compound 368 docks right next to naloxone on the opioid receptor, forming bonds that secure the drug in place and slow its natural degradation by the body.

Boosting naloxone

Next, collaborators in McLaughlin's lab tested the new compound in mice that had been given morphine. Because opioids reduce pain sensation, the researchers observed how quickly a mouse removed its tail from hot water. The stronger the opioid antidote, the faster a mouse would take its tail out of the water. When mice on morphine were treated with compound 368 alone, nothing changed.

"The compound in mice, at least from the assays we've run, does nothing on its own," O'Brien said. "They don't observe any off-target effects. They don't see anything happen to the mice even when they inject a massive amount of compound 368." This was exactly what the researchers had predicted from their molecular work and a good sign of the compound's safety, he added. When they also gave the mice a small dose of naloxone an amount that typically would have no effect -; the pairing with compound 368 dramatically improved naloxone's effects. "When we start to give them more and more of compound 368 with that low dose of naloxone, they take their tail out of the water pretty quickly," O'Brien said.

Other effects of opioids, such as respiratory depression (the usual cause of death in opioid overdoses), were also reversed by a small dose of naloxone enhanced with the new compound. Remarkably, the combination of compound 368 with a half dose of naloxone was strong enough to counter fentanyl, which is about 100 times more potent than morphine and the main culprit of overdoses in the United States.

By requiring less naloxone, the new compound could also ease the withdrawal symptoms that opioid users experience after overdose treatment. These symptoms including body aches, shivering, nausea and diarrhea are immediate and can be extremely uncomfortable, O'Brien said. The researchers found that a low dose of naloxone plus compound 368 could reverse the effects of opioids with much milder withdrawal symptoms in mice, this meant less teeth chattering, jumping and diarrhea.

Saving lives

The team, with the Majumdar lab's expertise in medicinal chemistry, is now tweaking compound 368 so it can help naloxone counter strong opioids for longer durations. "We're still working on optimizing the compound's properties for those longer-lasting effects," O'Brien said. "But first showing that it works cooperatively with these low doses of naloxone suggests that we're on the right track." O'Brien is optimistic that this track will lead to trials in humans. Overdoses from synthetic opioids, primarily

fentanyl, continue to surge, killing nearly 74,000 Americans in 2022. "The more tools at our disposal, the better we'll be able to fight this epidemic of fentanyl overdoses," he said.

BOORVASANTHYA K

II BME A

AI technology offers hope for faster stroke detection

Strokes, which affect millions of people globally, occur when the blood supply to part of the brain is interrupted or reduced, which prevent brain tissue from getting oxygen and nutrients. A few minutes of delay can result in permanent damage to the brain cells. A team of biomedical engineers at RMIT University developed the AI capabilities behind the software technology and has published their results in Computer Methods and Programs in Biomedicine.

Strokes can be difficult to spot

Symptoms of stroke include confusion, partial or complete loss of movement control, speech impairments and diminished facial expressions. "Studies indicate that nearly 13% of strokes are missed in emergency departments and at community hospitals, while 65% of patients without a documented neurological examination experience undiagnosed stroke," Kumar said.

"Many times, the signs are very subtle. On top of that, if first responders are working with people who are not their race or gender – most notably women and people of colour – it is more likely that the signs will be missed." This rate can be even higher in smaller regional centres. Given that many strokes occur at home and initial care is often provided by first responders in non-ideal conditions, there is an urgent need for real-time, user-friendly diagnostic tools."

How the technology works

The novel AI-driven technology uses the power of facial expression recognition to detect stroke by analysing facial symmetry and specific muscle movements, known as action units. The Facial Action Coding System (FACS), initially developed in the 1970s, categorises facial movements by the contraction or relaxation of facial muscles, providing a detailed framework for analysing facial expressions.

"One of the key parameters that affects people with stroke is that their facial muscles typically become unilateral, so one side of the face behaves differently from the other side of the face," de Oliveira said. "We've got the AI tools and the image processing tools that can detect whether there is any change in the asymmetry of the smile – that is the key to detection in our case." Video recordings of facial expression examinations of 14 people with post-stroke and 11 healthy controls were used in this study.

Next steps

The team plan to develop the smartphone tool into an App in collaboration with healthcare providers so that it will be able to detect other neurological conditions that affect facial expressions. "We want to be as sensitive and specific as possible. We are now working towards an AI tool with additional data and where we are going to be considering other diseases as well," Kumar said. "Collaboration with healthcare providers will be crucial to integrate this App into existing emergency response protocols, providing paramedics with an effective means of early stroke detection."

LOGESHWARI M

III BME B

VCET

New omega-3 therapy shows promise in treating newborn brain injuries

In the present study, researchers evaluated the efficacy of a novel n-3 diglyceride (DG) lipid emulsion in neonatal HI brain injury. They produced n-3 DG oils through reverse glycerolysis reactions and prepared 10% lipid emulsions by mixing n-3 DG or TG-DHA oils with egg yolk phosphatidylcholine. Next, the average particle size, polydispersity index (PDI), and zeta potential of emulsions were determined. Oxidative measurements were made using the p-anisidine assay. The emulsions were incubated with a buffer with or without bovine lipoprotein lipase (LpL). Human plasma containing apolipoprotein C-II was added to the mixture. Released free FA (FFA) was measured.

Experiments were performed with increasing LpL levels. C57BL/6J neonatal mice (eight days old) were intraperitoneally injected with DG or TG emulsion; changes in plasma glyceride levels were evaluated. Blood samples were collected after injection. In addition, another group of mice aged 10 days were subjected to HI insult. Mice received two doses of DG or TG emulsion, one shortly after the HI insult and the other an hour later; controls were injected with saline (two doses).

Further, Wistar rat pups aged seven days also underwent a similar procedure for HI brain injury. Rats received a single dose of saline, n-3 DG, or Omegaven (commercial TG-based emulsion) immediately after the HI insult. One group of rats received TH for five hours post-HI insult. Negative geotaxis and righting reflex performances were evaluated 24 hours after the injury. Twenty-four hours after reperfusion, mouse brains were obtained (immediately after behavioral tests), and infarct sizes were computed. Eight days after reperfusion, rat brains were obtained; hematoxylin and eosin staining were performed to analyze brain area loss. Immunofluorescence was performed for astrocyte and microglia markers.

Findings

n-3 DG preparations had smaller particle sizes than Omegaven or n-3 TG. n-3 DG and n-3 TG emulsions were homogeneous with low PDI values. Further, n-3 TG emulsions showed FFAs at 4–8 weeks, suggesting spontaneous hydrolysis, whereas n-3 DG emulsions did not. In addition, there was no detectable deterioration in the DG emulsion at six months. The p-anisidine values of all oils and emulsions were below 20 mEq/l. The zeta potential was -50 mV for DGs and -35 mV for TGs. Basal FFA levels (without LpL) were similar between DG and TG emulsions. The highest lipolysis was observed in n-3 DG emulsion, with over 1.5-fold more FFAs released than n-3 TG emulsions.

Plasma glyceride levels in neonatal mice were substantially elevated one hour after n-3 DG injection; glyceride levels peaked at two hours with a three-fold increase compared to baseline and returned to baseline levels by four hours. In contrast, glyceride levels at one hour after n-3 TG injection were similar to baseline levels but increased at later time points (2h and 4h). Further, neonatal HI injury mice treated with n-3 DG showed a significant decline in infarct size (87%), whereas n-3 TG treatment reduced the damage by 43%.

Likewise, n-3 DG was the most effective in the rat model. Moreover, the reflex performance of neonatal HI mice after n-3 DG treatment was similar to age-matched naïve mice, suggesting that n-3 DG preserved neurofunctional outcomes. In the rat model, astrogliosis was significantly reduced seven days

after HI injury with n-3 DG treatment compared to saline. Moreover, microgliosis was also significantly attenuated in the n-3 DG treatment group relative to the saline group.

Conclusions

The researchers showed that n-3 FAs in DG lipid emulsions are more beneficial than n-3 TG in reducing brain injury. The n-3 DG emulsion was superior in decreasing infarcts than TH, the current standard of care, and it also attenuated astrogliosis and microgliosis during the sub-acute phase of the injury. Therefore, n-3 DG confers neuroprotection and activates cytoprotective mechanisms in response to brain injury.

**ANJANA K
III BME A**