

EnVision

SCHOOL OF ENGINEERING NEWSLETTER

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THE WORLD UNIVERSITY RANKINGS 2020
No.1 in India
Private University

TOP 300
Medicine
TOP 400
Engineering

QS WORLD UNIVERSITY RANKINGS 2020
No.1 in India
International Faculty

nirf
National Institutional Ranking Framework
2020

4th Best
University
7th Best
Medical

Institution Of
Eminence
Govt. of India



Amrita Professors Among The World's Top 2% Of Top Scientists



In a subject-wise analysis carried out by Stanford University in the USA, Amrita professors, Dr. Maneesha Vinodini Ramesh, Dr. Shantikumar Nair, Dr. R. Jayakumar, Dr. Madhav Dutta and Dr. N. Radhika have been cited among the top two percent of scientists in the list available on Scopus.

Stanford University researchers created a publicly available science-wide database of 100,000 top scientists, that provides information on publication citations, h-index, co-authorship adjusted h-index, citations to papers in different authorship positions, and a composite indicator. In this database, the scientists were classified into 22 fields and 176 sub-fields, updated to the end-of-2019.



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Wishing you all a very Happy New Year!

Wishing all your loved ones good health and safety.!



I am immensely proud to present our semi-annual publication of “EnVision” Research newsletter from the School of Engineering. The past few months have been a unique challenge to each one of us and has forced us to look at the world with a different perspective. Despite the challenges, research has continued with the same vigour, thanks to our outstanding faculty and staff who have adapted professionally to the circumstances and have proved that nothing can deter their commitment towards expanding their research acumen and innovation. This edition is more special as our University has been recognised in the Global

Platform by placing 4 outstanding researchers from our various campuses in the top 2% slot of Top Scientist in the world. The edition also features our strategic partnerships and project collaborations with Industries globally that ushers us into a positive trend of growing globally. The edition showcases immense talent and recognition of our students in research and innovation from locking the top positions globally in various contests.

*Also, from this edition we are introducing two new sections **En Focus** and **En Meet**. En Focus, would introduce you to the research centres in our various campuses and their current research work and En Meet, shares with you the success story of our top innovator faculty.*

Wishing you all a better and safe year ahead.

Right now, we could all use a good dose of hope, and Engineering!

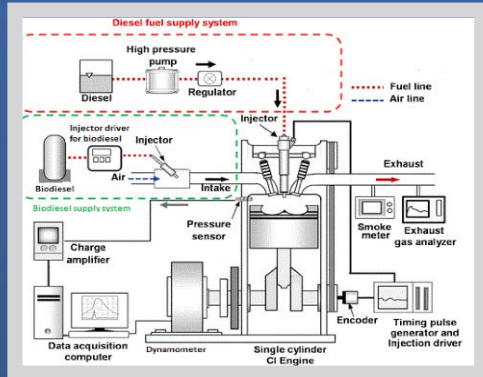
Dr. Sasangan Ramanathan

Dean-School of Engineering.

AMRITA AUTOMOTIVE RESEARCH & TECHNOLOGY CENTRE(AARTC)

Amrita Automotive Research & Technology Centre (AARTC) established in Collaboration with Automotive Test Systems (ATS), India is a Research Centre with a focus on Mobility Domain, under the Department of Mechanical Engineering. The Center assists the automotive industry in areas like vehicle evaluation, vehicle cooling and HVAC Studies, Road Load Data Acquisition, Emission, Simulation – Structural and CFD, Multibody dynamics etc.

There are various Investigative studies that cater to the automotive industry's needs. **The recent Investigation being performance and emissions of RCCI combustion with Biodiesel**



Internal combustion (IC) engines provide about 25% of the world's power and reducing fuel consumption and emissions has been the goal of engine researchers in the last two decades. The obstacles still faced by proposed alternatives, such as electric vehicles powered by batteries, which have tremendous cost, weight and other limitations, and which are hoped to be fuelled by renewables, such as wind and solar that currently represent only a miniscule fraction of the world's energy supply. The combustion engine will still play a

role, whether used for power generation or for powering the vehicle, even in strongly electrified powertrain configurations. Because of this, there is great interest in improving the thermal efficiency of IC engines with significant reduction in emission and fuel consumption. These goals can be achieved through improvements in combustion, after-treatment and control systems, and by partial electrification in the form of hybridization, together with vehicle weight reduction and more efficient ancillary systems. At AARTC, research has been carried out on improvement in combustion and reduction of emission through low temperature combustion technologies such as PCCI-DI, RCCI and HCCI with conventional fuels and Biofuels as well.

Reactivity Controlled Compression Ignition (RCCI), a dual fuel combustion system has been established by modification of intake of a diesel engine. Studies were carried out on the existing engine with Conventional Diesel Combustion (CDC) and performance and emission parameters were recorded. Cotton seed biodiesel (COME) as low reactive fuel was injected

into inlet manifold through a port fuel injector and diesel as high reactive fuel is injected in the cylinder through direct injection. Modified engine was tested for performance and emission characteristics. Simultaneous reduction in NO_x and smoke emissions were observed with introduction of COME. CO₂ emissions decreased marginally and unburnt hydrocarbons(UHC) decreased at lower percentages of COME. An increase in the Brake Thermal Efficiency (BTE) of the engine is observed at all loads. Exhaust Gas Temperature (EGT) and Brake Specific Fuel Consumption (BSFC) are lower in RCCI mode as compared to CDC. The optimum operating range of COME is observed with 10 - 20% of COME, which has 22% of average decrease in NO_x and 30% decrease in the smoke emissions. In order to reduce the number of test trials on engines, use of Machine learning techniques for predication of engine performance are currently explored and considerable progress has been established.



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INTERNATIONAL INDUSTRY PARTNERSHIPS

AMRITA- LAM RESEARCH, USA COLLABORATION ENHANCED WITH MORE PROJECTS

The University has bagged two more projects with LAM Research, USA under the Unlock Ideas 2020. The institution is also the only one to be funded by LAM Research, USA for the same professor for two consecutive years (2019 and 2020) and two different proposals in a single year.



DESIGN OF A COLD PLATE FOR SEMI-CONDUCTOR WAFER FABRICATION SYSTEMS



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Research Team from, the Department of Chemical Engineering and Materials Science are working on a project titled, “Study on Flow Patterns and Correlations for Two-phase Heat Transfer in Microchannels for Improving Rate and Response in Wafer Fabrication Systems”. This is the second consecutive project for them in a single year. The Project summary and Objective : The heat transfer coefficient critically depends on flow type (viz. annular flow, slug flow etc.,) during two-phase heat transfer. These flow types depend on fluid properties such as

flow rate, viscosity, vapor pressure, surface tension and density & channel dimensions, wall roughness. These characteristics can usually be determined using relevant dimensionless numbers. The objectives of the proposed work are a) Design a microchannel cold plate for high heat loads as specified by Lam Research with high temperature uniformity. b) Vary the channel configuration and study the improvement in heat transfer c) Characterize different two-phase flow types based on different channel characteristic and its effect on heat transfer.

ARTIFICIAL INTELLIGENCE FOR IMAGE PROCESSING



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As part of their Global University Engagements LAM Research, USA is working on a Project titled “Generic Bayesian Network Model for Detection of Etch Profile from Electron Microscopy Images”. The objective of the project is to build a single algorithm to automatically identify and differentiate the region/edges of each material in SEM/TEM images using artificial intelligence techniques. The aim is to improve SEM/TEM image feature de-

tection using automated machine learning models working with the Image processing team of LAM Research. The purpose of the project is to save time spent on the images by experts and get additional insights for faster analysis, better product design and improved product design variations. Finer details of the images are to be coded including prior expert knowledge to capture product design features with better accuracy.



CENTRE FOR CYBER SECURITY SIGNS PARTNERSHIP FOR INTERNATIONAL CERTIFICATIONS AND RESEARCH



Centre for Cyber Security, has signed strategic partnerships with International Organizations such as Skills-DA, EC-Council, FORTINET and CompTIA. The engagement will serve as a platform for Students to enhance their skills and career opportunity. Students will benefit from hands-on experience and also latest tools and technologies that would place them in Global platforms for their career growth. Students will be given advanced training and would get International Certifications from these organisations. These collaborations are further being explored for Internships and Job opportunities and also reviewed for integration of curriculum and relevant content both at the Bachelor's and Master's levels. The primary areas being focused are related to Networking, Computer Science, Cybersecurity and Emerging Technologies such as Artificial Intelligence, Data Science, Blockchain, IoT etc.

COLLABORATION WITH HPCL GREEN R&D CENTRE TO DESIGN AND TEST A HEAT INTEGRATED MICROCHANNEL REACTOR FOR HYDROGEN PRODUCTION.



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हिन्दुस्तान पेट्रोलियम



AMRITA
VISHWA VIDYAPEETHAM
DRMED TO BE UNIVERSITY

Researchers from the Department of Chemical Engineering and Materials Science have collaborated and have received funding from HPCL Green R & D Centre, Bangalore for their project titled “Design and Testing of an Efficient Microchannel Reactor for Hydrogen Production via Heat Integrated Combustion and Steam Reformation of Methane”. Hydrogen is a major utility in all the refineries. Currently it is produced from either partial oxidation or steam reformation of methane or naphtha. The steam reformation is an endothermic reaction, and therefore requires energy supply. The energy required is generally supplied by combustion of hydrocarbons coupled with heat integration. The Research team proposes to produce hydrogen by using heat integrated microchannel reactor. The primary objective of this project is to Design and Develop a microchannel reactor for heat integrated Oxidation and Steam Reformation of Methane for 3600 slph of Hydrogen Production using a suitable catalyst deposited onto microchannel reactor with an extremely high selectivity. It is anticipated that, the size of the reactor would be only 10% of the conventional reactors for the same productivity.

PROCESS DESIGN FOR SEPARATION OF MIXED SALTS



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Department of Chemical Engineering and Materials Science along with Cheenu Saltern, a Tamil Nadu based Industry is working on a project titled, "Separation of Mixed Salt (or Metal Cations from Textile / tannery / common effluent treatment plant and other industries". Common Mixed salts from various industries such as Textiles, Tannery, Pharmaceutical and Chloro-alkali have Sodium Chloride and Sodium Sulfate in common. The presence of Sodium Sulfate results in operational problems due to the presence of Sulfate ions and must be removed to improve the overall performance of the plant.

Safe disposal of mixed salt is also deep concern also it pertinent to mention that the dyeing units in Tamil Nadu have sought help from National Institute of Ocean Technology (NIOT) to explore the options to dispose the mixed salt sludge in deep sea. The objectives of the project is to tackle two issues a) Set up a pilot project as for the separation of mixed salts / metal cations and perform the process optimization involved in each stage of the process and b) Provide a viable solution for the separation and safe disposal of the mixed salts from textile / tannery/ common effluent treatment plant and allied industries.

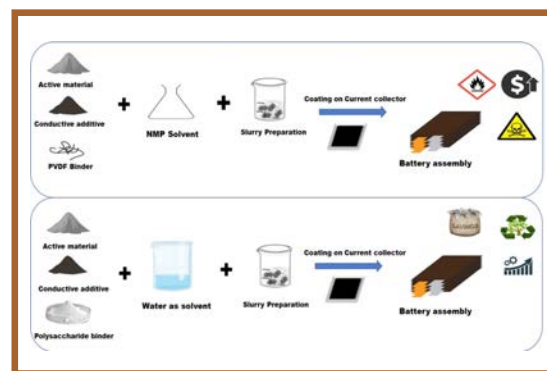
WATER-BASED ANODE AND CATHODE COATING FOR LITHIUM-ION-BATTERIES



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The Centre of Excellence in Advanced Materials and Green Technologies along with ACSEN ELECTRIC Pvt Ltd is working on a project titled Water-based anode and cathode coating for lithium-ion batteries. Currently, lithium-ion battery (LIB) manufacturing involves complex slurry mixing procedures (NMP and PVDF) and N-methyl pyrrolidone (NMP) solvent recovery which increases the

cost ₹/kWh. Polyvinylidene fluoride (PVDF) binder is widely used as a binder material while fabricating electrodes for lithium-ion batteries however, NMP a highly toxic solvent must be used to dissolve the binder and separate the cathode material. Alternatively, water-soluble polysaccharide binders such as Xanthan gum, Carboxy methylcellulose and sodium alginate possesses numerous outstanding advantages (1) cost reduction owing to solvent-less processing, elimination of solvent recovery process and reduction in capital equipment (2) environmental friendliness, and (3) easier battery manufacturing plant. This project focuses on optimizing the water-based coating for anode and cathode materials for lithium-ion batteries. The Investigating team is proceeded to fabricate 2032-coin cells with Li metal as counter electrode and LFP, Graphite as working electrodes. Charge discharge studies, EIS, GITT, Cyclic voltammetry are executed to evaluate the performance of the cell

SPONSORED PROJECTS

IMPROVED TECHNIQUES FOR BETTER UNDER WATER ACOUSTIC SIGNAL DETECTION



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Centre for Excellence in Computational Engineering and Networking

Researchers from the Centre for Excellence in Computational Engineering and Networking funded by the Naval Physical & Oceanographic Laboratory (NPOL), Government of India, Ministry of Defence are working on a project titled “Development and Implementation of a Robust Pre-Processing Technique for Detection Improvement in Passive Sonar “In underwater signal processing, Self-Noise Cancellation (SNC) is the process of removing the ship noise. The SNC is required to detect the targets, which may emit weaker signals of those targets lying within the surroundings

of the ship. It is necessary to enhance the performance of classification system which works based on the input signal received from the targets. The challenge is to detect the targets by noise suppression. The proposed work is to apply one of the popular data driven mathematical modelling known as Dynamic Mode Decomposition (DMD) for SNC to work on Detection Improvement.

BORON CARBIDE CEMENT CONCRETE FOR NEUTRON SHIELDING



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Funded by the Board of Research in Nuclear Sciences (BRNS) and collaborating with Indira Gandhi Centre for Atomic Research (IGCAR), the Department of Civil Engineering, is working on project studying the application of Boron Carbide cement for Neutron Shielding. The project was initiated with the concept of identifying

even the smallest contribution towards neutron attenuation and developing a special type concrete for neutron shielding applications in nuclear reactors. A water content of 7% in concrete is more than enough to slow down the neutrons having intermediate energy. However, dense concrete with high water content

will drastically decrease the compressive strength and increase the workability and hence lead to segregation.

Boron and its compounds find application in nuclear industry owing to its high neutron absorption cross section. Since cement concrete is rich in hydrogen element, the

combination of boron carbide results in a material that is capable of shielding neutrons effectively. However, concrete density decreases as the percentage of boron carbide in the mix increases, which in turn reduces the strength. To overcome this problem, it is proposed to incorporate mineral admixture micro silica/fly ash which is pozzolanic in nature, which can contribute to strength, workability, density, permeability etc. Accordingly, micro silica/fly ash along with boron carbide in the cement concrete is expected to exhibit excellent neutron shielding capability without compromising the other properties.



EnMEET

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Early Days

Material Sciences fascinated her while pursuing her technical education. Her mentors were encouraging and supportive and guided her to participate in various knowledge sessions in her area of interest. The mentors also were instrumental in her choosing an academic career with inclination towards research. She chose the field after her Masters and completed her Ph. D. in Mechanical Engineering in 2012.

At Amrita

She joined the Department of Mechanical Engineering at Amrita Vishwa Vidyapeetham in 2006, after an experience of three years with other leading institutions. The research environment at Amrita gave her immense opportunities for her to build her research interest. She bagged funded projects from Government agencies such as Department of Science and Technology (DST), Defence Research and Development Organisation (DRDO) and Aeronautical Research and Development Board (ARDB) as Principal Investigator.

Tribology Lab @ Amrita

Her Research Journey at Amrita Strengthened her research interests in the area of materials and tribology. The Funding agency support was instrumental in establishing a Tribology Lab which is now a core research group at the Department of Mechanical Engineering. The lab has representation from UG and PG students, Research Scholars and Faculty.

Publications and Awards


Her consistent efforts in research led to her publishing more than 100 Research Papers in reputed International Journals. She received the “Best Researcher Award” in 2017 from Amrita Fraternity in recognition of her efforts.

A Feather in the cap, came in the form of a recognition as top 2% Scientist across the globe in the field of Mechanical Engineering and Transports as per the study conducted by Stanford University in the year 2019. The overwhelming recognition has instilled more confidence to grow more and research more.

PATENTS & PUBLICATIONS

US PATENT FOR FLUORESCENT EXOMARKER PROBES FOR HYDROGEN SULFIDE

AuthorS : Dr.Sankar Prasad Bhuniya and his team of researchers Dr.Nandita Mishra, Dr.Nithya Velusamy; Anupama Binoy, Kondappa Naidu Boppa, Divya Nedungadi. U.S. Patent 15 / 956 , 4742018.



US10502742B2

(12) **United States Patent**
Bhuniya et al.

(10) **Patent No.:** US 10,502,742 B2
(45) **Date of Patent:** Dec. 10, 2019

(54) **FLUORESCENT EXOMARKER PROBES FOR HYDROGEN SULFIDE DETECTION**

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(72) Inventors: **Sankarprasad Bhuniya**, Coimbatore (IN); **Nandita Mishra**, Kollam (IN); **Nithya Velusamy**, Coimbatore (IN); **Anupama Binoy**, Kollam (IN); **Kondappa Naidu Boppa**, Coimbatore (IN); **Divya Nedungadi**, Kollam (IN)

(73) Assignee: **AMRITA VISITWA VIDYAPEETHAM**, Coimbatore (IN)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 41 days.

(21) Appl. No.: **15/956,474**

(22) Filed: **Apr. 18, 2018**

(65) **Prior Publication Data**
US 2018/0306792 A1 Oct. 25, 2018

(30) **Foreign Application Priority Data**
Apr. 18, 2017 (IN) 201741013739

(51) **Int. Cl.**
G01N 33/84 (2006.01)
G01N 33/574 (2006.01)
G01N 33/58 (2006.01)
C07F 9/655 (2006.01)

(52) **U.S. Cl.**
CPC **G01N 33/57411** (2013.01); **C07F 9/65522** (2013.01); **G01N 33/582** (2013.01)

(58) **Field of Classification Search**
None
See application file for complete search history.

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CN 106279278 A 1/2017

26 Claims, 13 Drawing Sheets

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ABSTRACT

A fluorescence probe with mitochondrial targeting and two-photon property, its preparation method and application in detecting and tracking endogenous H₂S in samples or living cells. The fluorescent probe is prepared by a four-step preparation method and demonstrates a UV-vis absorption increment λ_{max} 395 nm and ~43 fold higher fluorescence intensity in the presence of H₂S. The probe further demonstrates stability, selectivity for H₂S over competing agents and sensitivity as low as 20 nm. A method of detecting endogenous H₂S rapidly in the absence of any external stimulators is provided. Samples are contacted with the probe and the changes in fluorescence are monitored to detect H₂S levels. The disclosed probe is non-toxic and suitable as a biomarker and therapeutic molecule in cancer and other diseases.

A fluorescence probe with mitochondrial targeting and two-photon property, its preparation method and application in detecting and tracking endogenous H₂S in samples or living cells. The fluorescent probe is prepared by a four-step preparation method and demonstrates a UV-vis absorption increment λ_{max} 395 nm and ~43 fold higher fluorescence intensity in the presence of H₂S. The probe further demonstrates stability, selectivity for H₂S over competing agents and sensitivity as low as 20 nm. A method of detecting endogenous H₂S rapidly in the absence of any external stimulators is provided. Samples are contacted with the probe and the changes in fluorescence are monitored to detect H₂S levels. The disclosed probe is non-toxic and suitable as a biomarker and therapeutic molecule in cancer and other diseases.

Amrita collaboration with Penn State University on locust swarm based collision avoidance published as a paper in Nature Electronics



A simple undergraduate Engineering project with the Lab at Penn State and the Students were part of the Student Exchange Program. Both the students are now pursuing their Ph.D in the Lab. The researchers report in the (August 24) issue of Nature Electronics. Aaryan Oberoi and Darsith Jayachandran, Students of Amrita, now Alumni worked at Dr.Saptarshi Das's lab at Penn State University for their Undergraduate Project that has turned into a publication. Dr.Balakrishnan Shankar, Amrita School of

Engineering collaborates with the Lab at Penn State and the Students were part of the Student Exchange Program. Both the students are now pursuing their Ph.D in the Lab. The researchers report in the (August 24) issue of Nature Electronics. Aaryan Oberoi and Darsith Jayachandran, Students of Amrita, now Alumni worked at Dr.Saptarshi Das's lab at Penn State University for their Undergraduate Project that has turned into a publication. Dr.Balakrishnan Shankar, Amrita School of

FACULTY PUBLICATION IN HIGH IMPACT JOURNAL



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Dr. Rasana N, Department of Chemical Engineering and Materials Science has co-authored an article entitled 'Ultrasensitive detection of cytotoxic food preservative tert-butylhydroquinone using 3D cupric oxide nanoflowers embedded functionalized carbon nanotubes' and was published in Journal of Hazardous Materials (Cite score: 13.1, Impact factor- 9.03, Q1- 98 percentile).

BOOK ON SMART GRIDS

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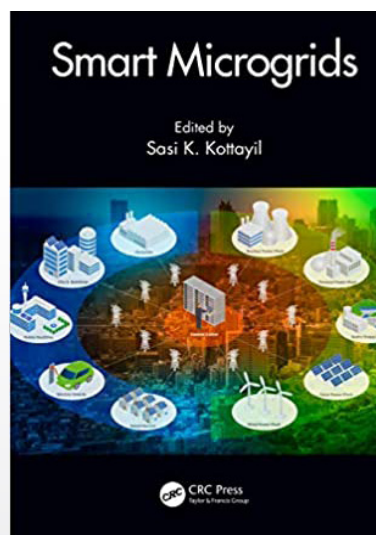


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students along with Professionals in the area of power, power systems, and power electronics.

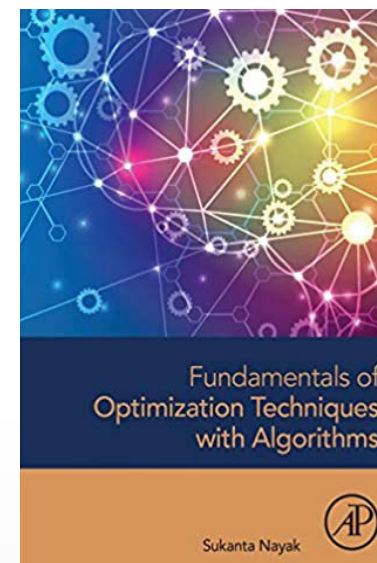
The book addresses the need to understand the development, use, construction, and operation of smart microgrids (SMG). Covering selected major operations of SMG like dynamic energy management, demand response, and demand dispatch, it describes the design and operational challenges of different microgrids and provides feasible solutions for systems. The book caters to the needs of Graduate and Research

BOOK ON FUNDAMENTALS OF OPTIMIZATION TECHNIQUES WITH ALGORITHMS

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The book provides various traditional and advanced optimization techniques along with a variety of example problems, algorithms, and MATLAB codes for the same in a comprehensive manner. This book includes optimization techniques, for linear and nonlinear single variable and multivariable models, as well as multi-

objective and advanced optimization techniques. It presents both theoretical and numerical perspectives in a clear and approachable way. To help the reader for applying optimization techniques in practice, the book is devised to detail program codes and computer-aided designs concerning real-world problems. It may serve as the first coursebook for masters, research scholars, and academicians as well as a textbook for undergraduate students of mathematics, science, and various engineering branches.

FACULTY RECOGNITION



AMRITA VISHWA VIDYAPEETHAM AWARDED UNESCO CHAIR FOR EXPERIENTIAL LEARNING FOR SUSTAINABLE INNOVATION AND DEVELOPMENT.

The United Nations awarded Amrita Vishwa Vidyapeetham its second UNESCO Chair - UNESCO Chair for Experiential Learning for Sustainable Innovation & Development - on June 12, 2020. Through this new Chair, the university will develop a comprehensive framework for academic engagement to build sustainable communities by designing a curriculum based on experiential learning. This curriculum will enable the academic community to acquire the knowledge, skills, attitudes, and values necessary to implement sustainable solutions among vulnerable and rural communities. The Chair will be held by Amrita for the next four years under the guidance of Dr. Maneesha V. Ramesh, Dean of International Programs, and Director of the Center for Wireless Networks & Applications.

IEEE UNDERGRADUATE TEACHING AWARD 2020 FOR AMRITA FACULTY.



Dr. Rajesh Kannan Megalingam, Director, Humanitarian Technology (HuT) Labs and Assistant Professor, Department of Electronics and Communication Engineering, School of Engineering, received the prestigious IEEE Undergraduate Teaching Award 2020 on October 23, 2020, from the IEEE President 2020, Dr. Toshio Fukuda in a grand event at the flagship conference of IEEE Education Society, Frontiers in Education (FIE 2020), in Sweden, held online from October 21-24, 2020. He also delivered a keynote address on “Undergraduate Mentoring and Research at HuT Labs, A Case Study” on the occasion. 2020 IEEE Undergraduate Teaching Award citation reads thus: “for his exemplary role in encouraging undergraduate engineering

students to take up research for developing innovative solutions for the society”. Out of 27 awards given since 1992, only two faculties from outside the USA have won this award.

FACULTY AMBASSADOR FOR NATIONAL SCIENCE, TECHNOLOGY & INNOVATION POLICY 2020



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Dr. Prashant R. Nair, has rendered service as a Faculty Ambassador for the National Science, Technology & Innovation Policy (STIP) 2020 of the Government of India. In this capacity, he has organized a STIP 2020 consultation event of the International professional body, IEEE as also publicized various STIP2020 events

in the university & professional circles. He has also contributed inputs towards policy formulation in STIP 2020 Track 1 consultation of the secretariat which functions under the aegis of Department of Science Technology (DST) and Office of Principal Scientific Advisor (PSA) to the Government of India.

INDIAN MATHEMATICAL SOCIETY AWARD FOR FACULTY

Dr.Prakash, has been awarded the A.M.Mathai



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Award-2020 by Indian Mathematical Society. The award is in recognition of his single-author research publication titled “New exact solutions of generalized convection-reaction-diffusion equation,” published in The European Physical Journal Plus, Springer.

AMRITA FACULTY RECOGNISED AS TOP INNOVATION MENTOR BY ATAL INNOVATION MISSION (AIM), NITI AAYOG



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Dr.Prashant R. Nair, was recognized as the Top Innovation Mentor by Atal Innovation Mission (AIM), NITI Aayog. The recognition comes for online mentoring and coordination of the Atal Innovation Mission (AIM) of NITI Aayog activities and initiatives in the state of Tamil Nadu.

BEST SESSION AWARD BY CEN FACULTY IN THE WORLD CONFERENCE ORGANIZED BY THE SOFT COMPUTING RESEARCH SOCIETY (SCRS), NEW DELHI, INDIA.



SOFT COMPUTING RESEARCH SOCIETY

Registered under the societies registration act XXI of 1860



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Dept. of Computational Engineering and Networking

Amrita being a leader in providing innovative solutions in smart healthcare, faculty from AMRITA got an invitation to organize a special session on “Artificial Intelligence for Smart Healthcare” as a part of Congress on Intelligent Systems (CIS-2020), World Virtual Conference held during Sep 05-06, 2020, organized by Soft Computing Research Society (SCRS) in association with Springer Publications. The Faculties from the centre organized this special session along with their collaborators Dr. Vinayakumar , alum from the centre, currently working as a Post-doctoral Fellow in Cincinnati Children’s Hospital Medical Center, USA) and Dr. Chinmay Chakraborty from Birla Institute of Technology. The session was awarded the first runner-up prize in the best session category considering the relevance of the theme, the intensity of the peer review process, and the quality of the papers presented in the session.

FACULTY INVITED AS RESOURCE PERSONS FOR FDP AT AICTE TRAINING AND LEARNING (ATAL)



Dr. K.P Soman

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Mr.Premjith

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Amrita, known for its innovative pedagogical approach was invited to lead the AICTE Training and Learning (ATAL) Sponsored Faculty Development Programme on “Data Sciences” organized by NIT-K, Surathkal. Faculty members Dr. E. A. Gopalakrishnan, Dr. V. Sowmya, Mr. Vijay Krishna Menon and Mr.Premjith from Amrita Center for Computational Engineering & Networking were part of the invite to handle sessions on different aspects of data science during the FDP. Innovations such as In-Class Computing, Lab in a Pocket, project-based evaluations as against the traditional pen & paper exams, computational experiments involving the state of the art tools & techniques, spiral learning, and a highly interdisciplinary pedagogy are being implemented in AMRITA for almost a decade now with a soul aim of making the graduate industry ready. Amrita with a upper hand in the approach was glad to be part of the initiative to support in facilitating the upcoming trends to the faculty community.

STUDENTS INNOVATE



Internship at Microsoft through
MICROSOFT ENGAGE PROGRAM 2020



Fourteen Students from the Department of Computer Science (2018-22 -Batch)
secured Internship at Microsoft through the Microsoft Engage 2020 program.
Students will intern at the Microsoft Development Centre with a monthly stipend of Rs.80,000/-



Varun Nair



Prajwal CP



Heeraj Nair

Varun Nair (MCA, Batch: 2019), *Heeraj Nair* (Alumni, B.Tech. CSE, Batch of 2014-18), *Prajwal C. P.* (B.Tech CSE, Batch 2020-24), part of Team bi0s, won first place with 6270 points at the Capture-The-Flag cybersecurity event and were awarded a cash prize of 100000 rupees and vouchers from TCM Security Academy. The event was organized by Yet Another Security (YAS). This team was mentored by Prof. Vipin Pavithran, Assistant Professor, School of Engineering.

Team Emerges Winner At SMART INDIA HACKATHON 2020.



CHAMPIONS
INTERNET OF THINGS

INSTITUTION'S INNOVATION COUNCIL (Ministry of IITD Initiative)
MHRD'S INNOVATION CELL (GOVERNMENT OF INDIA)
SMART INDIA HACKATHON 2020 SOFTWARE EDITION
Ministry of Petroleum and Natural Gas (Government of India)

Creative and Innovative solution for Ministry of Petroleum & Natural Gas, Govt. of India

TEAM NAME
INFINITY GEMS

Digital Solution Linking Hardware and Software Aiming to Estimate the Quality and Quantity of Petrol Delivered to a Customer in Real Time

Student MEMBERS

 U.Sivakarthykeyan (ECE)	 R.Dhanya (ECE)	 Kuttralam V C (CSE)	 Mohana Priya A S (CSE)
 Balachander S (ECE) Team Lead		 G.Kalyana Abenanth (ECE)	

Faculty Mentor
Mr. Sabarish Narayanan
Asst. Professor, Dept of ECE.

AMRITA VISHVA VIDYAPEETHAM
Amrita School of Engineering, Coimbatore
Department of Electronics & Communication Engineering
Department of Computer Science & Engineering

4th BEST PRIVATE UNIVERSITY in India on Innovation
ARIIA ATAL RANKING OF INSTITUTIONS ON INNOVATION ACHIEVEMENTS

A six member Student Team emerged as Winners in the Software Edition of the Smart India Hackathon 2020. The Team, named Infinity Gems worked on the theme Software for Smart communication and developed a prototype of hardware and software , that measures the quantity and quality of the gasoline being delivered to a customer at the petrol station, in real-time. The gasoline is graded based on its quality and then sent to the customer’s phone by scanning the QR code through the Android App developed. The team worked on the prototype for the problem statement, Technological Advances for Retail Outlets from Ministry of Petroleum and Natural Gas. The team was led by Mr. Balachander S and had members Mr.G.Kalyana Abenanth , Mr. U.Sivakarthykeyan , Ms. R.Dhanya from the Department of Electronics and Communication Engineering and Mr. Kuttralam V C, Ms. Mohana Priya A S from Department of Computer Science and Engineering. Mr. Sabarish Narayan, Assistant Professor, Department of Electronics and Communication Engineering mentored the team along with Mr. Sharon Sebastian, Senior Associate NASSCOM who acted as an Additional Mentor through CISCO Thinkbator. The team won INR ₹1,00,000 for developing this prototype



Top 9 Sole Contributors @ Microsoft MARS COLONIZATION PROGRAMME -Artificial Intelligence Programming Contest-



Ms. Harshavardhini B



Mr. Harish K

Ms. Harshavardhini B and Mr. Harish K from the Department of Computer Science and Engineering, were placed among the Top 9 sole contributors at the Artificial Intelligence Programming Competition- Microsoft Mars Colonization Programme 2020. Microsoft Engage is a program created by Microsoft engineers, in association with Ace Hacker, for students to work on projects with live interaction and help from engineers and mentors at Microsoft. Students can be a part of this program by qualifying through Codess, Codefunfo, or through the Engage qualification test itself. This year, the projects were based on the theme -Mars Colonisation.



STUDENT TEAM EMERGE AS CHAMPIONS OF SCILAB TOOLBOX HACKATHON 2020 ORGANIZED BY IIT MUMBAI

Two Students, *Mr.Sundeep Akella (Department of Computer Science and Engineering) and Mr.Aditya Dhinavahi (Integrated M.Sc. Data Science)*, represented Amrita and emerged as champions at Schilab Toolbox Hackathon 2020, organised by Indian Institute of Technology, Mumbai. The Hackathon organised by the FOSSEE, Centre of Excellence had 700 participants comprising of Student Teams and Start-ups. The Student Team from Amrita, called themselves Scipandas, worked on a project to Interface Python Data Analysis Library (Pandas) for Scilab toolbox, which is an open-source alternative to Matlab, used by researchers world-wide. They were mentored by Prof. Prashant R. Nair, Associate Professor-CSE @ AMRITA.

TEAM NAME
SCIPANDAS

Project Description:
Interfacing Python Data Analysis Library (Pandas) for Scilab toolbox

Student Members

SUNDEEP AKELLA
2017 - 2021
B.Tech Computer Science & Engineering (CSE)

ADITYA DHINAVAH
2018 - 2023
Integrated M.Sc Data Science

Faculty Mentor
Prof. Prashant R. Nair, Associate Professor - CSE

AMRITA
VISHVA VIDYAPEETHAM
Department of Mathematics
Department of Computer Science & Engineering

4th
BEST PRIVATE UNIVERSITY
in India on Innovation

ARIITA
RANKING OF INSTITUTIONS
FOR INNOVATION AWARD



Amrita Team Na-Sarathy Ranks No. 2 in World for IAC Social Media Challenge

Team Na-Sarathy of Humanitarian Technology (HuT) Labs, Department of Electronics and Communication Engineering, School of Engineering, was ranked No.2 in the world for Indy Autonomous Challenge (IAC) Social Media Challenge. The team also was placed 12th in the world ranking in the Hackathon 2 of Indy Autonomous Challenge (IAC), organized by Energy Systems Network (ESN) and

the Indianapolis Motor Speedway (IMS). The hackathon was held for a week from September 12 - 19, 2020. Amrita is one of the only two universities which qualified for this race car competition from India and one of five from Asia. The team was led by Dr. Rajesh Kannan Megalingam, Director, HuT Labs and Assistant Professor, Department of Electronics and Communication Engineering, School of Engineering.

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- No Ads, No Logins

STUDENT DEVELOPS 'BayJDO'- AN APP TO BEAT XENDER AND SHAREit BAN



Following the ban of the 59 Chinese apps by the Government of India, Ashwin Shenoy, second-year student of the Department of Computer Science Engineering, has developed an application named "BayJDO". It is a lightweight, simple yet fast, and secure web application, that allows us to transfer files directly between devices, without requiring users to install dedicated apps or create a special WiFi Hotspot. The app would be ad-free and Open Sourced. Since the source code is Open Source and publicly reviewable, this also eliminates security and privacy concerns through transparency



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