

AMRITA University

EnVision

School of Engineering Newsletter

Amma's Message

The world of knowledge is limitless; the possibilities are as vast as the universe. Therefore, before deciding whether a discovery is beneficial or detrimental, we need to contemplate with a meditative mind



AMRITA
VISHWA VIDYAPEETHAM
UNIVERSITY
Established via 2 of UGC Act 1956

Knowledge...

Enriched by HUMAN VALUES



No.1 Private University in India



No.1 International Outlook in India



No.1 Private University in India



No.1 International Outlook in India



No.1 Private University

Amritapuri

Bangalore

Coimbatore

Dean's Message...

*I am delighted to present the newsletter of
School of Engineering, EnVision*



Dr. Sasangan Ramanathan,
Dean- Engineering

Over the past year, Our Academic and Research contributions have seen considerable and consistent growth. The Faculty, Students and Alumni have worked hard to maintain this phenomenal growth, which includes expanding our Honours courses, attracting World Class Academicians and increasing our research accomplishments.

We are proud to have accomplished the vision of positioning the University in Global Rankings for the second consecutive year. The Research and Academic accolades listed are oriented towards the Vision and Strategies of the University to maintain high position in the field of Engineering.

We look forward to keeping you posted on our progress and accomplishments on each of these vital fronts.

Amrita School of Engineering
was started in 1994 in
Coimbatore

In 2002, two additional Schools
of Engineering were established
in Amritapuri and Bengaluru

The Schools are approved by All
India Council for Technical
Education (AICTE), New Delhi

All three schools offer B Tech,
M Tech and Ph.D. Programs in
various disciplines

Over a 100 Sponsored Research
Projects being executed

Over 30 Centres of Excellence
for Research

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GLOBAL

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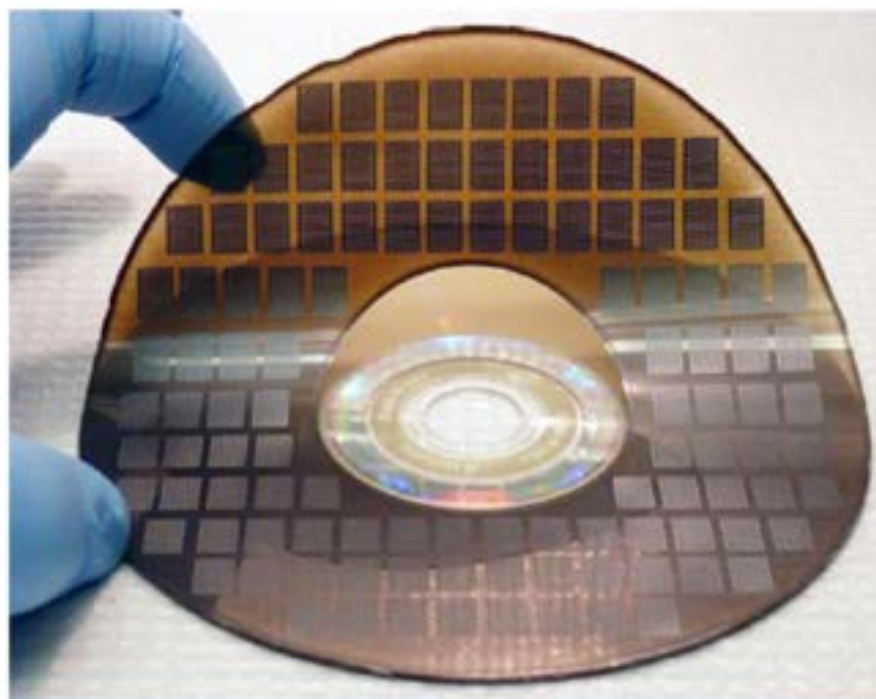
PUBLICATION 20

NANO COMPOSITES BASED ON GRAPHENE OXIDE AND TRANSITION METAL OXIDES AND CHALCOGENIDES SYNTHESIZED BY PEROXIDE ROUTE FOR SUPER CAPACITOR APPLICATION

Amrita University and Russian Academy of Sciences (Indo-Russian)

*Faculty: Dr. Sudip Kumar Batabyal,
Amrita Centre for Industrial
Research and Innovation*

A super capacitor is an energy storage device with high specific capacitance and high charge discharge capabilities. Their main application is in cars, buses, trains, cranes and elevators, where they are used for burst-mode power delivery. The project is to develop a conformal coating on graphene oxide by the metal chalcogenid, that would enhance the interface and subsequently increase the charge storage capacity of the Super capacitor. This in future can be used to in mobile phones that would increase the rate of charging. The increase in specific capacitance and charging time can



Fabrication Method for Micro-Scale Graphene-Based Super capacitors)

be used to develop a super capacitor based mobile phone that can be charged in few seconds.



Photoelectrochemical water splitting cell

The existence of adverse climatic conditions and depleting fossil fuel resources increases the necessity for alternative energy technology. Hydrogen is a potential candidate

PHOTOELECTRO CHEMICAL SPLITTING OF WATER WITH N-DOPED GRAPHENE-HEMATITE COMPOSITES FOR HYDROGEN PRODUCTION

Department of Science and Technology and Research Council Norway (Indo Norway Scheme)

Faculty: Dr. Thirugnanasambandam G. Manivasagam

Centre of Excellence in Advanced Materials and Green Technologies

which can replace the existing hydrocarbon based fuels. Hydrogen production and hydrogen storage are the critical steps in hydrogen energy technology. Among various hydrogen production methods, hydrogen production through water splitting plays an important role. Photo electro chemical water splitting is a sustainable route to produce water using

sunlight. Platinum with its high electro catalytic activity is generally used as an electrode material for water splitting. But is an expensive metal and has to be replaced for on board applications. Hematite is an inexpensive and ecofriendly catalyst. Through this project hematite based composites are prepared and characterized pertaining to its photoelectron chemical behavior.

DESIGN AND EVALUATION OF DRFM MITIGATION SYSTEM

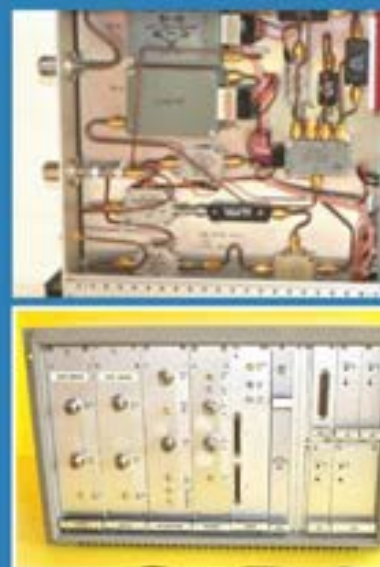
Amrita University and National Instruments Corporation (TX, USA)

Faculty - Drs. G A Shanmugha Sundaram, K P Soman, T Rajagopalan,

D S Harish Ram, B Binoy Nair, and R Gandhiraj, Department of Electronics and Communication Engineering and Centre for Computational Engineering and Networking

Capturing and digitizing broad swaths of the electromagnetic spectrum are now an essential functional attribute in many defense electronic systems. Because of the large amount of digital processing that is currently being performed in many radio frequency (RF) systems, platforms ranging from electronic intelligence (ELINT) and signal intelligence (SIGINT) to RADAR and electronic warfare (EW) systems can all benefit from fast digitizers

with broad, instantaneous bandwidths. Digital RF memories (DRFM) are used for the reproduction of complex, coherent signals usually associated with modern pulse compression RADARs, and are a potent ECM resource that defeat RADAR systems. This project seeks to advance the state of the art in terms of mitigation strategies, relying heavily on RADAR signal processing by deployed embedded algorithms in SWaPC optimized hardware platforms, in battlefield and airspace hostile target surveillance, detection and tracking applications, thereby qualifying as an ECCM tools in modern day warfare.



AUTOMATED SEIZURE PREVENTION DEVICES, TRANSLATIONAL SIGNAL ANALYSIS EVALUATING BRAIN-HEART CONNECTION USING COMPLEXITY METHODS

National Science Foundation Scheme with Pati Lab, University of Alabama

Faculty: Dr. Karthi Balasubramaniam, Department of Electronics and Communication Engineering



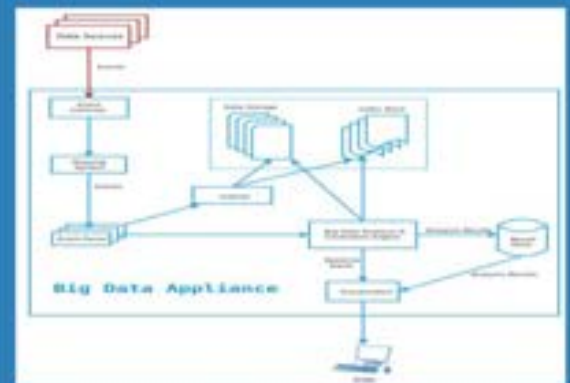
There is a wide-spread interest in studying the changes in the heart rate variability (HRV) that is caused due of epileptic seizures. An innate connection exists between this and the phenomenon of sudden unexpected death in epilepsy (SUDEP). This causal relationship between the heart and brain is studied using analytical methods of non-linear dynamics and possibility of early detection of SUDEP is being explored.

MACHINE LEARNING AND BIG DATA ANALYTICS FOR INFORMATION ASSURANCE

Amrita - Paramount Systems, Dubai

Faculty: Dr.K.P.Soman,

Centre for Computational Engineering and Networking



This project aims at developing a system for analyzing the Network and System events to perform Complex Event Processing using Machine Learning. This analysis helps in providing Information Systems Assurance by providing timely insights.

BIG DATA BASED SECURITY ATTACKS DETECTION SYSTEM USING INTERNET PROTOCOLS

Funded by Ministry of Electronics and Information Technology



Faculty: Dr. Prabakaran P, Centre for Cybersecurity Systems and Dr.K.P.Soman, Centre for Computational Engineering and Networking.

Project aims at developing a scalable architecture and distributed algorithms that can collect and process trillions of event data that are produced by core protocols of the Internet. These analyzed events produce security insight by detecting large scale Botnets etc.

INFLUENCE OF PARTICLE IRRADIATION ON PHOTO-ABSORPTION AND CHARGE SEPARATION KINETICS IN ORGANIC SOLAR CELLS

Funded by: Indian Space Research Organisation

Faculty: Dr. G. N. Kumaraswamy, from Department of Physics,

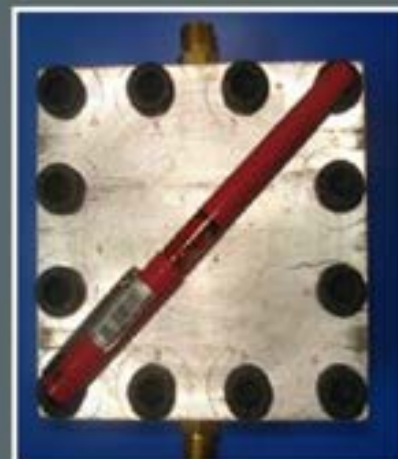
The major issues associated with Organic Photovoltaic

DEVELOPMENT OF A 10 KW COGENERATION UNIT BASED ON MICROCHANNEL HEAT EXCHANGERS FOR EFFICIENT UTILIZATION OF SOLAR ENERGY.

Funded by Department of Science and Technology- Clean Energy Research Initiative,

Faculty: Dr. Udaya Bhaskar Reddy Ragula, Department of Chemical Engineering and Material Sciences

To Develop a 10 kW Cogeneration (Power, Heating and Cooling) Thermodynamic cycle using Micro-Channel Heat Exchangers designed and developed at Amrita University. This project is aims at efficient energy of solar energy to develop a unit that would bring the cost of power produced from Solar energy per unit is expected be on par with the power produced from coal.



The Micro Channel Heat Exchanger with 200 times improved performance for solar based cogeneration application developed at Amrita

(OPV) cells are photo absorption, charge separation and carrier transport. The current project is aimed at address the limitations associated with photo absorption, through the techniques, such as introduction of plasmonic layer and patterned surfaces, with the help of ion irradiation. Also a controlled modification of microstructure of the active layer would be carried out through low energy ion irradiation technique. A detailed study of the influence of microstructure on the charge separation and carrier transport dynamics in these systems would help evolve with a model for the design of the devices with better efficiency.

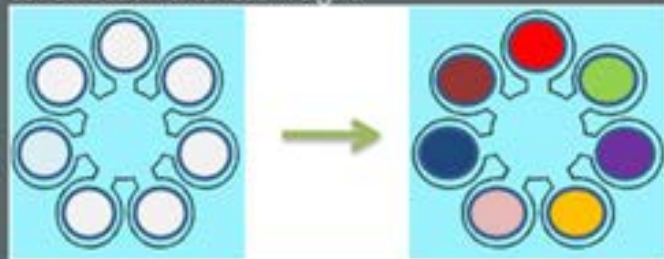
AFFORDABLE PAPER BASED MICROFLUIDICS POINT OF CARE TESTING DEVICE FOR LIVER FUNCTION

Funded by Department of Bio Technology,

Faculty: Dr.T.G.Satheesh Babu,

Department of Sciences

Liver function test is one of the commonly performed blood analyses. Colorimetric test for the estimation of liver enzymes and total proteins are well established. The objective of this project is to integrate all the colorimetric tests into a paper based micro pad that requires very low sample volume. The fabrication of low-cost microfluidic devices based on paper are increasingly popular as they are inexpensive, simple to use, allow passive transport of fluids without active pumping and can easily take advantage of existing analytical techniques. This design has advantages including small sample size, quick response, simple construction and less weight.



Paper based Micro-pad

UAV COMMUNICATION SYSTEM SIMULATOR FOR USER DEFINED TERRAINS, TRAJECTORIES AND ITS TESTING

Funded by Grant-In-Aid Scheme of Aeronautics

R & D Board.

Faculty: Dr. Dhanesh G. Kurup and Dr. Rakesh N., Department of Electronics and Communication Engineering)

In this proposal, the plan is to develop a flight simulator for UAV which will enable us to replicate real on-ground UAV operational scenarios in a computer and enables us to arrive at optimum component specifications given a geographic terrain and target application. This approach will enable us to save not only valuable development time but also cost and thereby avoiding unnecessary field trials. Out of all the building blocks in a communication system, physical layer components, which includes RF and channel, plays an important role in the signal degradation and power consumption in UAV. Therefore, we propose to model the components and channel in the physical layer to predict the signal power at various points in the UAV signal chain, thereby enabling us to predict the bit errors during real time video transmissions.

MALWARE ANALYSIS USING FPGA, SANDBOXING AND MACHINE LEARNING

Funded by IBM under Shared University Research (SUR) scheme

Faculty: Dr T Gireeshkumar,, Dr D S Harish Ram and Dr T Senthilkumar, Department of Electronics and Communication Engineering

The project seeks to investigate novel schemes for detecting malware in gigabyte server backbones. The design and development of high speed FPGA based

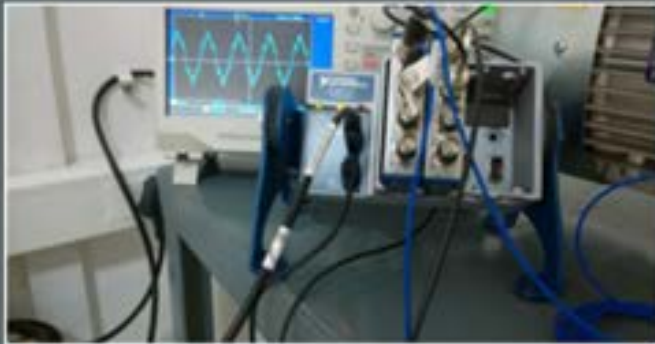


honey pots is one of the main focus areas of the project. Innovative sandboxing approaches integrated with deep machine learning schemes are being developed as part of the work. The project is a collaborative effort involving the departments of ECE, CSE and Centre for Cyber Security.

MACHINE INDEPENDENT FAULT DIAGNOSIS A UNIFIED APPROACH

Funded by Department of Science and Technology

Faculty: Dr.K.I.Ramachandaran, Centre for Computational Engineering and Networking



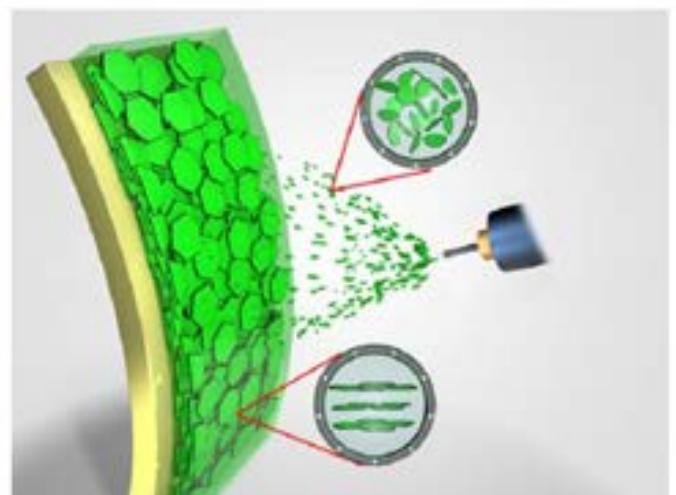
Integrated vehicle health management (IVHM) is receiving a lot of attention in the industries of late for its ability to improve safety through the use of diagnostics and prognostics. As IVHM is evolving as a new health management framework, several technologies are required for its development. A Platform, for testing the various technologies is essential without causing any risk to human life and security. System dependent fault diagnosis is in which diagnosis of faults is carried out depending on the system from which data is acquired. An alternative to this approach is the system independent and system adaptive fault diagnosis wherein, faults are diagnosed irrespective of the system from which data is collected. In the proposed project work, it is intended to explore on developing machine/system independent fault diagnosis systems. The aim is to develop a unified model for the fault diagnosis systems that will be capable of detecting the faults in the machines irrespective of the machine from which data is collected.

NANOSTRUCTURED IRON-BASED MIXED METAL OXIDE PHOTOVOLTAIC THIN FILMS.

Funded by Science and Engineering Research Board, Department of Science and Technology

Faculty: Dr.G.Uma Maheswari, Department of Sciences

Materials that are cheap, abundant and having large light absorption coefficient and carrier concentration with band gap energy around 0.31–3.18 eV is needed to serve as an alternative material for fabrication of new generation photovoltaic thin films. This is because organic and other semiconductor based PV thin films requires p-n junction for generation of photo-induced charge carriers and consequently the open circuit voltage is band gap limited. In this context, iron-based and mixed-metal oxide materials are cheap, abundant and stable, and possess ferroelectricity and magnetism which eliminate the need for p-n junction and lowers the band gap (~1.1 eV to 2.7 eV). Consequently they can harvest the solar energy efficiently than conventional semiconductor-based solar cells. The project helps in understanding the photovoltaic property of iron-based mixed metal oxide nanostructures and fabricates thermally stable nanostructured iron-based mixed metal oxide PV thin film by spray technique a cost effective approach that would lead to development of large area fabrication.



EARLY/YOUNG FACULTY RESEARCH GRANT

Dr. Sudip Kumar from Amrita Centre for Industrial Research and Innovations received Early Career Research Grant from the Science and Engineering Board, of the Department of Science and Technology for the project "Understanding the device physics of solution processed solar cell from earth abundant $\text{Cu}_2\text{ZnSn}(\text{S}/\text{Se})_4$ materials". The overwhelming demand of energy for Advanced technology resulted in the development of Renewable energy. The challenge is more where such energy need to be made available to the common man, which involves complex technology and affordability. This project aims at developing a simple solar cell from Chemical Solution or Nanomaterials. The main focus of the project is to fabricate solution based thin film solar cell from earth abundant non toxic materials. The developed solar cell will be much more cheaper than the existing Silicon(Si) based solar cell and will be available for efficient utilisation for domestic purposes.

Dr. Sankar Prasad Bhuniya from Amrita Centre for Industrial Research and Innovations received Early Career Research Award from the Science and Engineering Board, of the Department of Science and Technology for the project "Design and Synthesis of Organelle Specific Reactive Fluorescent Probes for Chemoselective Bioimaging". A new fluorogenic imaging tool will be developed that enables to provide cellular information of tumor tissue at a very early stage. The existing methods of diagnosis such as MR, CT, PET, optical tomography are too expensive, have a time consuming process and do not provide cellular information at the early stage of cancer. This new strategic tool may enable to distinguish tumor tissue from other inflammatory diseases at a very stage

Dr. V. Rathnakishore, from Department of Mechanical Engineering, received Early Career Research Award from the Science and Engineering Board, of the Department of Science and Technology for the project "Measurement of burning velocities of hydrocarbon hydrogen mixtures and application to premixed laminar burner design." Hydrogen is proposed to be the most important energy carrier. One of the possibilities of effective utilization of hydrogen is, mixing hydrogen with hydrocarbon fuels. The knowledge of fundamental combustion characteristics like laminar burning velocity is essential for the design of burners applicable to hydrocarbon- hydrogen fuels. The flame heights are defined based on the laminar burning velocity. The reaction mechanisms are validated using the experimental values of laminar burning velocity. Experimental facilities will be developed to measure the laminar burning velocities.

4) Dr.Vinoth Kumar, from Department of Computer Science and Engineering, received Early Career Research Award from the Science and Engineering Board, of the Department of Science and Technology for the project, "Stability and Stabilization of Random Impulsive Control systems". The main focus of this project is to make the unstable nonlinear differential systems stable by using random impulsive perturbation. We use the theory and methods of Lyapunov functions, Razumikhin technique and linear matrix inequality to find the stabilization of the nonlinear control systems. Further, we will examine the robust stability of uncertain control systems together with random impulse perturbations. This type of problems has rich applications in engineering and sciences.

5) Dr.Vivek Menon, received Early Career Research Award from the Science and Engineering Board, of the Department of Science and Technology for the project, "Video Analytics based Identification and Tracking in Smart Spaces". This research proposes to integrate people identification and tracking technologies with spatio-temporal reasoning so as to answer queries about the whereabouts of the occupants. The proposed work has applications in in traffic management and analysis of customer behavior, wide-area surveillance using video cameras, as well as in homeland security-related applications.



CONFERENCES AND WORKSHOPS



SCICON 2016 (INTERNATIONAL CONFERENCE ON ADVANCED MATERIALS)

International Conference on Advanced Materials, SCICON 16, a highly interdisciplinary initiative, was organized at Coimbatore. The objective of the conference was to serve as a platform for scientists and researchers across the globe to exchange and

brainstorm ideas in the field of advanced materials, which find application in every field of human activity. The conference was successful with plenary lectures, invited talks, oral presentations and poster presentations. The Conference aimed at consolidating

the research findings in the specialized areas and facilitate transfer of these findings into possible prototypes and products which will enhance the quality of life in tune with the theme of the conference.

SEMINAR ON "NEW-AGE TRANSPORTATION ELECTRIFICATION AND E-MOBILITY: OPPORTUNITIES AND CHALLENGES"



Power Electronics Society (PELS), the Student Branch Chapter organized a seminar on by Dr. Sheldon S. Williamson, Associate Professor at the University of Ontario, Institute of Technology, Canada. The presentations were focused on advanced power electronics solutions for Electric Vehicle, traction, batteries, ultra-capacitors, plugged and wireless charging and inductive power transfer technologies. Novel motor drive technologies and its controller designs for high voltage DC power on board electric mass transit, trains and trams were also presented.

SENSORS AND SMALL SATELLITE TECHNOLOGY FOR DISASTER MANAGEMENT (SSTDm 2016)



The Amrita Center for Wireless Networks and Applications (Amrita WNA) co-hosted an Indo-US workshop with Lockheed Martin Space Systems and CANEUS International on Sensors and Small Satellite Technology for Disaster Management (SSTDm 2016). The goal of the workshop was to discuss the needs and challenges of SSTDm technologies with a vision to create a collaborative Indo-US SSTDm Center of Excellence. The workshop was co-funded by the Indo-US Science and Technology Forum (IUSSTF) and was inaugurated by Sri A.S. Kiran Kumar, Chairman of the Indian Space and Research Organization (ISRO).



WORKSHOP ON 5G INTERNET OF THINGS

School of Engineering organised a workshop on "5G Internet of Things (IoT) along with the 25th Series of Global ICT standardization Forum for India (GISFI). The objective of the workshop was to increase the awareness on recent trends and developments in 5G and Internet of Things with regards to Cellular Communication and explore the prospective area of emerging applications.

AMRITA PROFESSOR SPEAKS AT ARMY TECHNOLOGY SEMINAR, NEW DELHI



Dr. Shantanu Bhowmik, Professor, Department of Aerospace Engineering was invited as a speaker for the Army Technology Seminar held at India Habitat Center, New Delhi. He was invited to speak on "Composites - The New Game Changer" in the session, titled "Advanced Materials for Land Sys and Soldiers." Leveraging technology will be a key determinant in future warfare. The Indian Army has identified technology as a major focus in their Capability Development Program. The industry has been in the forefront of innovation and will be a vital link in realization of cutting edge technology. In view of this, an 'Army Technology Seminar' was conducted as an annual forum for interactive exchange and to incubate research for long term requirements of the Indian Army.

INNOVATIONS

DESIGN OF LEMON GRASS OIL DISTILLATION UNIT USING SOLAR ENERGY

Dr. Udaya Bhaskar Reddy Ragula, Dr. Sriram Devanathan, Mr. Mahesh Reddy and Mr. Prithivi, Department of Chemical Engineering & Materials Science, have developed a Lemon Grass distillation Unit using solar energy. Lemon grass oil is an essential oil used in the manufacture of soaps, beauty & spa products, and as mosquito repellent. The village of Valaramkunnu where lemon grass is available lies on the top of a hill in the district of Wayanad in the state of Kerala and leads the production in India due to consistent rain fall in the western ghats and soil quality. Lemongrass oil is produced via steam distillation. Since, the villagers are not allowed to enter the forest to cut the trees, the production of lemon grass oil was considered to for income of the village. A team of Amrita faculty and students have developed a sustainable lemon grass oil distillation using solar energy. The team has designed a prototype for efficient lemon grass distillation for a 10 kg lemon grass distillation. The novelty of the work is to send steam continuously to overcome equilibrium separation. The prototype consists of a solar steam generation unit, distillation unit and an oil-water separator.



SOLAR AUTO RICKSHAW



Students from the Department of Mechanical Engineering developed a solar auto rickshaw, fully driven by solar energy. The Auto has a capacity to carry three people, including the driver. The maximum speed will be 50 km/hr. It travels a distance of about 110 to 130 km at a cruising speed of 40 km/hr with full charging of the battery. The battery charging time under the sun is about 5-6 hours.

AMARAN , COCONUT CLIMBER

Coconut plucking job is no longer a conventional job, thanks to the increase in literacy and the societal welfare programs.



The result is the rise in price for coconut and coconut based products. There is a risk involved in climbing the tree also. A First version of coconut climber was developed, the wired climber with one DOF arm for cutting coconuts. The second version uses wireless smart phone based control with 3 DOF arm for cutting coconuts. This version has a camera attached to the climber which can send the live video of the coconuts at the top of the tree, which helps the user in positioning the cutter precisely to cut the coconuts.

INNOVATIVE YOUNG MINDS

PRIDE OF AMRITA, MS.SHRADHA PRASAD

Ms. Shradha Prasad from II year Mechanical Engineering, has been shortlisted to the final 100 for the MARS one mission. She is one of the three Indians in the shortlisted 100 applicants for the one-way trip to MARS in 2024.

is the youngest university to reach the top three positions in the list. Each selected student will receive a stipend of US \$5500 (3.67 Lakh INR) from Google Inc. and a two month internship in popular Open Source projects. Students will receive a total amount of US \$88,000 (58.73 Lakh INR).



AMRITA UNIVERSITY TEAM AT THE UNITED KINGDOM'S UNIVERSITY ROVER CHALLENGE 2016

Rover Phoenix is a multidisciplinary team comprising students from Mechanical, Electrical, Electronics and Computer Science Engineering. The team mainly focuses on using the robotics technology for SPACE exploration and humanitarian applications. The Team participated in the University Rover Challenge conducted by Mars society at Mars Desert Research Station, Hanksville, Utah, United

States and secured 20th position and then team was selected for the United Kingdom's University Rover Challenge (UKURC) as part of European City of Science 2016 and got the 4th position in the UK



AMRITA STUDENT ATTENDS GRACE HOPPER CELEBRATION OF WOMEN IN COMPUTING (GHC), HOUSTON, TEXAS

Fourth year student, Anjali Menon, attended the three day Grace Hopper Celebration of Women in Computing (GHC) representing Amrita University, held at Houston, Texas, a program of the famous Anita Borg Institute. The Grace Hopper Celebration of Women in Computing (GHC) is the world's largest gathering of Women Technologists.



AMRITA STUDENTS WON GOOGLE SUMMER OF CODE 2016 & OUTREACHY'12 INTERNSHIPS

Amrita Students were selected for Google Summer of Code's and Outreachy project internships. Google Summer of Code (GSoC) is an initiative by Google Inc. to promote and encourage student participation in open source development and the University nationally stands 3rd in the number of Google Summer of Code selects among other universities. Amrita

AMRITA UNIVERSITY STUDENTS DESIGNED RACING CAR WINS AWARDS AT SUPRA 2016, SAE INDIA



AMRITA UNIVERSITY STUDENTS WIN TATA CONSULTANCY SERVICES (TCS) BEST STUDENT PROJECT AWARD 2016



Tata Consultancy Services(TCS) Best Student Project Award 2016 was presented to 3 students of the Department of Computer Science and Engineering for the project titled, "A Robust Approach for Improving the Accuracy of IMU based Indoor Mobile Robot Localization. Students presented this work in ICINCO 2016--the 13th International Conference on Informatics in Control, Automation and Robotics in Lisbon, Portugal. The award carried a Cash Prize and a Gold Medal for each student.

The Formula category racing car designed and built by our students won multiple awards, including the National Award for 'Best Appearance at SUPRA 2016, a national engineering contest organized by SAE India. The car also received third place overall and bagged the second prize in design and cost estimation categories. Thirty-six teams from top universities participated in the annual competition which presents students from engineering institutes with the challenging task of designing, simulating and modelling a formula-category racing car. The team designed and developed the prototype car, called Student Formula Vehicle (SFV), and showcased its racing capabilities at the Buddh International Circuit near Delhi. The Team developed a 500cc, 5-gear petrol engine capable of a top speed of 105 kmph. The car was subjected to rigorous static tests by the judges for tilting, noise and brakes. This was followed by dynamic testing including acceleration, skidding, endurance and manoeuvring the car in a zig-zag fashion. The car was then driven on the Buddh International Circuit.

AMRITA STUDENTS WON FIRST PRIZE , CISCO'S FIRST- EVER "GREAT DIGITAL INDIA CHALLENGE – IDEATE" - AN EVENT FOCUSED ON INTERNET OF THINGS (IOT) BASED IDEATION CHALLENGE FOR INDIA 2016



A Team of students from Department of Electrical and Electronics Engineering, 3rd year participated in the event and evolved a near practical solution to track the water pollution in real time and continuous scale with the help of lot of data analysis and machine learning techniques. The team proposed a novel technique to collect the various parameters of water (pH, dissolved oxygen, temperature, conductivity, etc.) only at certain locations of the water body that have to be analyzed, and to generate a hypothesis function through machine learning that would predict the parameter values at all the other locations. A technique also was framed that would generate the quality state (choropleth map of each parameter) of the water body after a month, or even a year. This methodology enables to foresee the future state of the water body in advance so that necessary measures can be taken to save the water bodies. This is a novel technique and likely the first of its kind. The prototype was successfully built and tested in many water resource. This project was triggered by a contest called Grand IoT challenge called "IDEATE" conducted by Cisco India in which various prestigious institutions. The Team won 1st place

STUDENTS DEVELOP A GLOVE FOR THE DISABLED TO COMMUNICATE

Four students under Amrita Robotics Research Lab (ARRL) have devised a wearable glove "MUDRA". In a vision to bridge the gap between normal and speech disable, they have developed a glove that converts the hand gestures to voice output. This team at ARRL has come up with the first working prototype.



Students win Robert Bosch Makeathon'16.

Students from Second year ECE have won the second prize in Robert Bosch Makeathon'16 which spanned for 36 hours without break. It is a product making contest with BME 280 sensors from Bosch. 23 teams were shortlisted out of 200 and 3 teams (2 from ECE/ 1 from CSE) from Amrita have been qualified out of 200 teams. The team emerged second competing with startup companies. The team used BME 280 sensors in these baskets to sense condition of the goods in the basket using their temperature and humidity. The perishability is monitored and wastage of goods minimized. The status is updated to an android application. Robert Bosch has even taken the copyright of the idea.



ALUMINI

AMRITA ALUMNA WINS 2015 KTH MASTERS CHALLENGE INDIA AND SECURES RS. 23 LAKH SCHOLARSHIP



Neha Kumari, a Graduate of the Department of Electrical and Electronics Engineering, Amrita School of Engineering, won first place in the KTH Masters Challenge India competition in the field of

Electric Power Engineering. Neha competed against applicants from the IITs, NITs, and other highly ranked universities throughout India and was the only female finalist in the entire competition. As the first place winner, Neha secured a fully funded scholarship for a two year masters degree at the internationally reputed KTH-Royal Institute of Technology (Sweden) sponsored by ABB worth Rs. 23 lakhs, a living allowance sponsored by ABB worth Rs. 12 lakhs, and an opportunity to do a summer internship at ABB in Stockholm, Sweden.

RISEING STAR AWARD BY ROYAL ACADEMY OF ENGINEERING LONDON

C M Parvathy (2007 - 2011) was awarded "Rising Star" by Royal Academy of Engineering London in July 2015. This prestigious award is given to the rising stars of global engineering and individual engineers who have made remarkable contribution to engineering and Parvathy receives this award in recognition to her work at Petrofac



AMRITA ALUMNUS AT GOOGLE SUMMER OF CODE (GSOC) MENTORS SUMMIT 2016, SUNNYVALE, CALIFORNIA



Tony Thomas, 2016 graduate and an alumnus of FOSS @ Amrita, had the opportunity to attend the Google Summer of Code (GSoc) Mentors Summit at Google Tech. A total of 2,524 mentors were involved, and only around 300 of them were invited by Google for the Mentors Summit at Sunnyvale, California.

AMRITA ALUMNUS "JUST FOR KICKS" SOCEITAL OUTREACH PROGRAM.

Santosh Nanduru, is the Regional Head of Just for Kicks, which he helped elevate from a pilot project to a successful organization making a big change in children's lives. With the motto "Everyone Plays", Just for Kicks intervenes in low-income public and private schools to support children to succeed socially and professionally, while leading healthier lives through its motor skills and football program. It also serves as a Launchpad for grassroots talent given its school based intervention model. Just for Kicks has impacted 1500 children in both private and public schools- providing them with resources, intense training, and opportunity to participate in the youth league/tournament through its football program.

SOCIETAL OUTREACH AND ACADEMICS

WORKSHOP ON 'ROLE OF UNIVERSITIES IN EMPOWERING INDIAN VILLAGES'



A national workshop on the 'Role of Universities in Empowering Indian Villages' was held at Amrita School of Engineering. The event was conducted by the Department of Electronics and Communication Engineering. The event had experts attending that had a tree plantation drive by the faculty and students of the department. Reputed speakers from various domains talked about the empowerment of Indian villages through technology and the role Universities can play in developing low-cost assistive technologies to address the challenges and requirements of villages, and translate them into academic research that can be oriented towards the needs of society, especially to empower the villages.

NAAC SPONSORED NATIONAL SEMINAR ON DESIGN OF CURRICULUM FOR SUSTAINABLE & SOCIETAL DEVELOPMENT HELD AT AMRITA.

A national seminar titled "Design of Curriculum for Sustainable and Societal Development" was held at the University. Over 150 higher education experts from all over India participated in the event that was sponsored by the National Assessment and Accreditation Council (NAAC). They discussed and showcased various strategies and success stories that can enable institutions of higher learning to develop a curriculum focused on sustainable development and needs of the planet. In her inaugural speech, the Chief Guest Dr. Sheela Ramachandran, former Vice-Chancellor of Avinashilingam University for Women, said: "While ancient India promoted learning for life and sustainability, modern education is merely an employment guarantee scheme. The challenge

before educators is to face the innovative disruptions and technological infiltration which wean students away from sustainable development needed for a meaningful life. Educational institutes need to develop a curriculum which encourages students to use their head (cognitive), hands (skills) and heart (values)."



CAPACITY BUILDING TRAINING PROGRAMME ON STRENGTHENING THE SKILLS OF RESCUE PROCEDURES OF CHILDLINE FUNCTIONARIES

Amrita in partnership with UNICEF conducted Capacity building training session for Representatives of Child line India Foundation, a non-governmental organization supported by Ministry of Women and Child Development, Government of India, run in all states across the nation. The topic focused on "Strengthening the skills of Rescue Procedures of Child line Functionaries." The Child line functionaries work with the children who were abused or neglected. The Training program focused on rescue procedure, follow up and rehabilitation of vulnerable children. There were Presentations, Group Discussions, Experience Sharing and to enhance their efficiency in rescue procedures, counseling and psychosocial care.



Live-in-Labs™

Empowerment of TRIBAL COMMUNITY to Generate Sustainable Livelihood Options and Forest Conservation in Siruvani Hills, Coimbatore



During this project sustainable livelihood options are being generated by transferring the technology in furniture and craft making using Lantana wood and by capacity building of tribal community in marketing of the finished products. Lantana camara, an exotic weed of South American origin is invading different forest areas and posing serious threat to native vegetation in Western Ghats including Siruvani area in Coimbatore. In this project tribal community is involved in mechanical control of Lantana by manually cutting & at the same time tribal community is being trained in making low cost furniture, handicraft, toys & other utility articles using Lantana wood. ATREE, Bangalore is our major partner organization in this project.

During last one year training on lantana furniture making was provided to 50 tribals in Singampathy and Kalkolpathy hamlets for 90 days. The training will be also provided to tribals in other 9 hamlets during next two years.



Assistance would be provided to communities in marketing of the products in potential market areas in India. Market linkages are being established in Coimbatore and other major cities in India with the help of Tribal Cooperative Marketing Development Federation of India (TRIFED).

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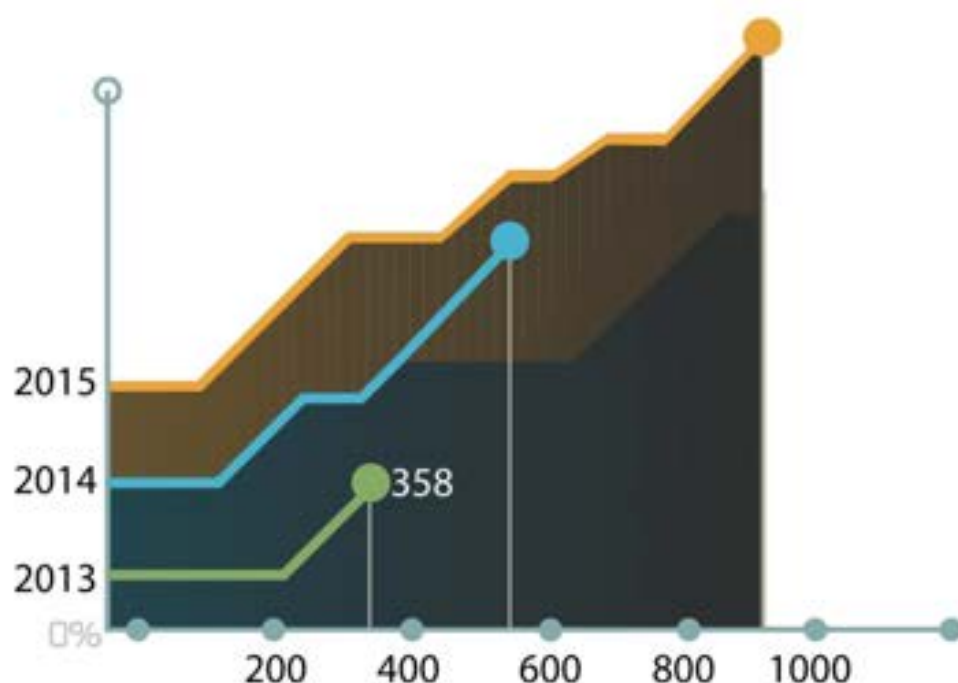
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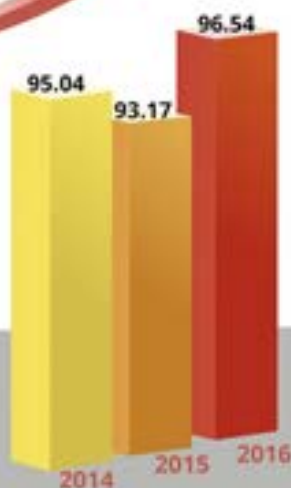


Recruiters



Placement Graph

B. Tech



M. Tech





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