Newsletter

Volume 8, Issue 7, July 2018

Aspire

Mechanical

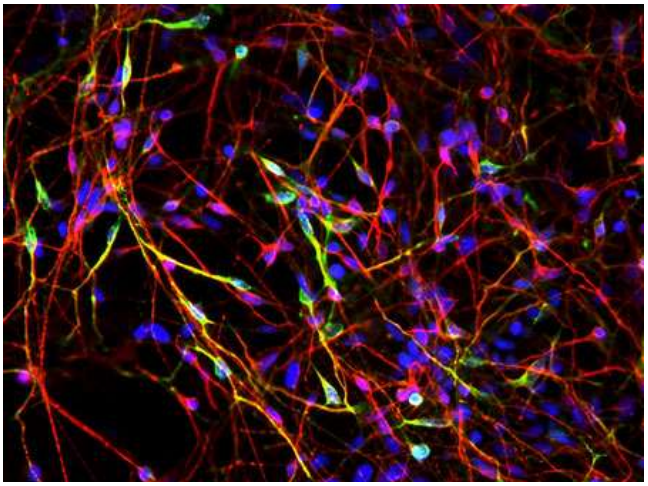
Achievements in Sports, Projects, Industry, Research and Education

All About Nobel Prize- Part 55

Mapping the Nervous System

The Nobel Prize in Physiology or Medicine has rewarded scientists for an amazing voyage of discovery inside the human nervous system - one that has revealed how the myriad tiny signals firing through nerve cells keeps us alive, thinking and moving.

Estimates vary wildly, since of course, no-one has counted them all, but there are some 100 billion separate nerve cells in the human brain - which is, by strange coincidence, around the same number as there are thought to be galaxies in the Universe. But this number, however awesome, doesn't begin to capture the almost miraculous complexity of the human nervous system. Each of those 100 billion cells can make hundreds and hundreds of separate connections with other cells - and unimaginably more alternative pathways - that allow nerve signals to crackle, fizz and buzz along as they make us jump up or sit down, laugh and cry, love and hate, sing, shout, swear, eat, drink and do everything that makes us human.



Nerve networks

Science is only just beginning to understand the brain's remarkable form of 'software' - the way it works as a whole to enable us to live and think.

One of the first of the great pioneers of nerve research to receive the Nobel Prize, a Spanish surgeon's son called Santiago Ramón y Cajal said, "The brain is a world consisting of a number of unexplored continents and great stretches of unknown territory." And towards the end of the 19th century that is how it must have appeared as the power of the microscope revealed just what a complex and amazing network the human nervous system is.

We know now that the nervous system consists essentially of the command centre in the central nervous system - the dense cluster of nerve cells in the brain and spinal cord - and the signalling network of peripheral nerves - fibres that stretch out into every corner of the body. But nerves are incredibly fine. A nerve fibre can be less than a hundredth of the thickness of a human hair, so with the microscopes available in the 19th century, nerve fibres were very hard to see indeed.

When they peered down a microscope, 19th century scientists could just about make out that the nervous system was made of what they took to be a network of nerve cells. But nerve cells looked like no others. Whereas most body cells are essentially parcels of some shape, nerve cells looked more like spiders with a bulky body off which spread countless thin threads, called 'processes'. They knew nerves played a part in signalling, so they guessed all these cell bodies and threads were fused together in one continuous network. But it was all so tangled and tiny that no-one could really see. Then in 1871, a young Italian anatomist named Camillo Golgi made a remarkable discovery in the hospital kitchen where he carried out his own experiments.

Golgi found that if he soaked a bundle of nerve fibres over a few nights in silver nitrate - an idea some suggest he may have got from its use in photographic film - a few of the nerve cells stained a dark and inky black and showed up clearly under the microscope. Suddenly, complete nerve cells revealed their full appearance for the first time, and Golgi saw how the processes consisted of a single long tail or axon and an array of spindly branches or dendrites that spread out from the spider-like cell body. But he still thought they were all part of a tangled, inseparable web of fused fibres through which signals must flow this way and that.
Working from a makeshift laboratory, Camillo Golgi developed a revolutionary silver staining method that allowed him to visualize individual nerve cells. Golgi continued to develop staining techniques and teach about them; here he is seen at the age of 77 in his laboratory at the University of Pavia, Italy.
Source: nobelprize.org

Info to Alumni- Campus Update

Info from Principal **SSN Incubation Centre Calls for Proposals**

SSN Incubation Centre invites proposals from budding entrepreneurs from the student body, alumni and other industry collaborators. B.E./M.Tech./Ph.D students are welcome to apply. Faculty can also apply as long as they have students/outside entrepreneurs as part of the founding team.
The SSN Incubation Centre has been approved by Ministry of Micro Small & Medium Enterprises (MSME).

Financial Support to the applicants

- Funding will be provided to 10 selected applicants. Each project will be funded to a tune of Rs. 4.5 lakhs to a maximum of 8 lakhs.
- Funds will be released 30 % at a time. 15% of the funds has to be brought in by the incubatee for micro enterprises and 25% for small enterprises.

Amit Tyagi writes.. **PM 's speech telecast in SSN**

Hon'ble Prime Minister, Shri Narendra Modi, interacted with the beneficiaries of Start-up India Program and Atal Innovation Mission on Wednesday, 6 June, 2018 at 9.30 am. The interaction was Pan India through Video Conferencing at NIC Centres, Incubators and Atal Tinkering Labs. The interaction was telecast live on Doordarshan, Facebook and PM office Website. SSN had made necessary arrangements to telecast the show at the admin conference hall.

Dr.Sashikant Albal writes.. **New Learning Management System**

I am happy to inform you that, effective June first, a new LMS server has been procured. It has been decided to configure and use Moodle as LMS instead of existing wiki. The existing wiki intranet will continue and we will move only the courses to Moodle.

Mr.Ganesh Prasad writes… **Solar PVs established at SSN**

Out of 300 KW capacity solar PV system installed over the terrace of BME and EEE Blocks, 200KW capacity inverter have been commissioned successfully yesterday, i.e., on 25th Jun'18 at 16.25 hrs. and connected to our SSN grid. The system has been checked for its performance and is working satisfactorily with 80% efficiency as of now. (There are plans to extend such systems to all departments-VeA)

Info to Alumni- Department Update

External Recognition

Dr. K.S. Vijay Sekar

Dr. K.S. Vijay Sekar, Associate Professor, conducted the PhD Viva Voce examination as the Indian Examiner, for a Research scholar of the Aeronautical department, Hindustan University, Padur [29.05.2018]

Dr.D.Ananthapadmanaban, Associate Professor, reviewed a paper titled Research on the influence of staggered basic units during multi-point stretch forming process for the 7th Global Conference CMSE 2018 to be held in November,2018 in Xian,Shaanxi,China [11.06.18]

Dr.D.Ananthapadmanaban, Associate Professor, reviewed a paper titled A Stress Corrosion Test Research on Bridge Cable Wire Based on Response Surface Method for the 7th Global Conference, CMSE ,2018 to be held in November ,2018 in China [11.06.18]

Dr.D.Ananthapadmanaban, Associate Professor, reviewed the following papers for the All India Manufacturing Technology, Design and Research AIMTDR to be conducted in December 2018 in Anna University ,Chennai [25.06.18]

Dr.D.Ananthapadmanaban

- Investigation on Performance of Aluminium 6061 Composites Reinforced With GGBS
- Effect of Graphene on Mechanical and Morphological Properties of Luffa Cylindrica Fiber Reinforced with Epoxy Polymer Matrix Composites
- Effect of Pre-Weld Solution Treatment on Mechanical and Microstructural Properties of µ-plasma Arc Welded Inconel 718

Dr. M S Alphin

Dr. M S Alphin, Associate Professor /Mech., Presented a invited Lecture for Faculty development Program on Vibration and Aero-elasticity conducted by Bharath Institute of Higher Education and Research, Chennai , 31-02 June 2018.

Research Publications

Dr. K. Babu

Dr. K. Babu(Associate Professor) co-authored a paper titled "An Experimental Investigation on Turning of AISI 4140 Using Minimum Quantity Lubrication with CNT Nanofluid", Proceedings of the International Conference on Automobile, Marine and Mechanical Engineering –ICAMME 2018, Sri Venkateswara College of Engineering, Chennai. [4.5.2018 to 5.5.2018]

Dr. K. Babu(Associate Professor) co-authored a paper titled "Quenching Performance of Low Carbon Steel in Graphene Nanofluids", Proceedings of the International Conference on Automobile, Marine and Mechanical Engineering –ICAMME 2018, 4-5 May, 2018, Sri Venkateswara College of Engineering, Chennai. [4.5.2018 to 5.5.2018]

Dr M S Alphin , Associate Professor, published a research paper “The sensitivity of contact stresses in the mandibular premolar region to the shape of Zirconia dental implant: A 3D finite element study”, Polish Journal of Medical Physics and Engineering, Volume 24: Issue 2, 55–63.
Co Authors: D Velmurugan, M S Alphin, B Jain AR Tony [28.06.2018]

Dr.M. Dhananchezian(Associate Professor), M. Rishaba priyan, G. Rajashekar, S. Sathya Narayanan, published a paper, Study the effect of Cryogenic Cooling on Machinability Characteristics during Turning Duplex Stainless Steel 2205, Materials Today: Proceedings 5 (2018) 12062–12070.


Dr.M. Dhananchezian

Dr.M. Dhananchezian(Associate Professor), Sharan Srinivasan, Suraj Jacob Chandy, Rohan R. Paul, Vinaya Krishna, Saran Prasanth RR, presented the technical paper,Beneficial effect of liquid nitrogen cooling on tool wear and surface roughness during turning Nimonic 90 alloy, International Conference on Automobile, Marine and Mechanical Engineering – ICAMME 2018, Sri Venkateswara College of Engineering, Chennai. [04-05.05.2018]

Dr.K.S. Vijay Sekar, Asso. Professor published a research paper titled" 3D Finite Element Analysis of Slot Milling of Carbon Fiber Reinforced Polymer Composite", (co-authored by his PhD scholar C.Prakash) ,in The Journal of the Balkan Tribological association,published by Scientific Bulgarian Communication, Indexed in Scopus and Annexure 1 list, Anna University Journals. [07.06.2018]


R.Vimal Samsingh

Dr.K.S.Vijay Sekar, Asso.Professor, published a research paper titled " 3D Finite element analysis of slot milling process for Titanium alloy Ti6Al4V", in IOSR Journal of Engineering, indexed in Google scholar and UGC, coauthored with his PhD scholar, C.Prakash. [11.06.2018]

R.Vimal Samsingh, Assistant Professor, Published a paper titled “Experimental Investigation on the Influence of Process Parameters in Thermal Drilling of Metal Matrix Composites “ FME Transactions (2018) 46, 171-176 (Indexed in Thomson Reuters.) [28.06.2018]

Project News

Dr.L.Poovazhagan (Assoc.Prof/Mech – Principal Investigator) and Dr.K.Rajkumar (Assoc.Prof/Mech – Co-investigator) submitted a funding proposal worth of Rs 20,66,075 to SERB under CRG scheme. [28.06.2018]


Dr.L.Poovazhagan


Dr.K. Rajkumar

Dr. R.Prakash

Dr. S. Rajkumar, Associate Professor and Dr. R. Prakash (Co – PI), Associate Professor submitted a project proposal on “Modeling and Experimental Investigations of Effect of Sustainable Fuels on Combustion and Emission Characteristics of Reactivity Controlled Compression Ignition (RCCI) Engine” to DST – SERB (Core Research Grant) for Rs. 34.71 Lakhs on 29.06.2018.

Dr. S. Rajkumar

Dr.K.S. Vijay Sekar, Associate Professor, submitted a project proposal titled " Design, Development and Optimization of Predictive Three-Dimensional Finite Element Models in Turning, Drilling and Milling of Titanium and Aluminium based Metal Matrix Composites”, worth 13.71 Lakhs, to DST (SERB) for External funding under Core research grant scheme.

Dr.K.Rajkumar has submitted a project proposal titled 'Fabrication and Testing of Polymer blend composite LPG gas stove panel' to DST-SERB for a funding of Rs.30,00,500

Dr. B. Anand Ronald

Events Attended

Dr. B. Anand Ronald, Assoc. Prof., attended the Synopsis meeting for a Anna University registered Ph.D Scholar at Velammal Engineering College [21.06.2018]

Student Activity

K.Balaji, Third Year, Inplant Training, Carborundum Universal, Inplant Training, ICF [01-06-2018 to 14-06-2018]

Bala Kumar S S, Third Year, Internship at L&T, [14-06-2018 to 22-06-2018]

Arun Prakash M, Third Year, In-Plant Training in TNPL Pugalur [23-05-2018 to 29-06-2018]

Bala Kumar S S, Third Year, Inplant Training at Madras Atomic Power Station [28-05-2018 to 02-06-2018]

Joseph Anand Raj I G, Third Year, In-Plant Training in TNPL Pugalur [23-05-2018 to 29-06-2018]

Balaji. S, Third Year, Ashok Leyland - Inplant training [29-05-2018 to 02-06-2018]

Ashok. R, Third Year, Ashok Leyland - inplant training [29-05-2018 to 02-06-2108]

Karthik V, Third Year, In-Plant Training in TNPL [23-05-2018 to 29-06-2018]

S.Sakthivel, Final Year, Internship training, KCP Limited,Thiruvottiyur [20-05-2018 to 19-06-2018]

Manickavel M, Final Year, Beach Cleanup Activity [24-06-2018]

Faculty Write up

Our NSS Team bags external funding

Ms.P.Kaythry, Program Officer NSS (Asst Prof, ECE) has won a project of Rs.8 lakhs from DBT (Dept of Biotechnology) for a Nature Exploration project.

Dr. P.Kaythry

Attention Mech Students-
This is a clever usage of CAD for manufacture of the microscope.
It is worth understanding how CAD has been effectively used.
-- VeA

Foldscope

Foldscope is origami based Microscope. Foldscope is an ultra-affordable field microscope that is built from common materials such as paper and lens. It is designed to be produced affordably, to be durable, and to give optical quality similar to conventional research microscopes.

- The cost of Foldscope is less than 1 US dollar. A Foldscope is an optical microscope that can be assembled from a punched sheet of cardstock, a spherical glass lens, a light emitting diode and a diffuser panel, along with a watch battery that powers the LED.
- Once assembled, the Foldscope is about the size of a bookmark. The Foldscope weighs 8 grams and comes in a kit with multiple lenses that provide magnification from 140X to 2,000X. Interesting part of Foldscope is its compatibility.
- Foldscope can be attached to all camera phones; so, the images can be seen directly in camera phones and can be saved in the memory of the phone.
- Foldscope kit also includes magnets that can be stuck onto the Foldscope to attach it to a smartphone, allowing the user to take pictures of the magnification. Foldscope brings microscopy to new places, be it your kitchen or a mountain top.
- Foldscope was developed by Dr.Manu Prakash, Assistant Professor of Bio Engineering at Stanford University. The idea for creating a low-cost microscope came to Prakash in 2011 while he was at a field station in Thailand.
- He remarked that the station had a very expensive microscope but that everyone was afraid to use it because it was fragile and worth more than most people's salaries. He wanted to create an affordable microscope that would be versatile and sturdy enough to work in field conditions. He also wanted to create a device that people felt they had ownership of, which is part of the reason the Foldscope comes in a kit to be assembled. He developed the first prototype in 2014.
- In October 2015, Department of Biotechnology (DBT), Govt. of India, announced a program to make Foldscopes available across India for various research studies, as well as a teaching tool for students in schools and colleges. Under this Foldscope project, DBT has sanctioned 1 lakh rupees each for 100 schools selected throughout the country. 150 selected Colleges, Universities and research centers are sanctioned with 8 lakh rupees each for promoting Foldscope as research tool in the fields of Ecology, Agriculture, Human Health, Microorganism, Animal health, Sanitation, Environment and Pollution, Food and Nutrition, Biodiversity and Conservation, Medicinal plants, Drug development and Basic research.
- Our College is also one among the 150 colleges to make use of Foldscope as research tool. A workshop was organized on training, assembling and working on Foldscope by the experts at DBT and the CEO of Foldscope Instruments, Dr. Jim Cybulski on 17th April 2018 at Center for Genetic Engineering and Biotechnology, DBT, New Delhi.
- Initially to start the research work, 10 Foldscopes were provided during the workshop to each Principal Investigators. Based on the need, more number of foldscopes may be provide later by Foldscope Instruments.
- DBT, Govt. of India is promoting Foldscope so that it could be used by rural school students and common people for any purpose they want. As it is handy, they take it anywhere and study anything they want using the Foldscope.

- Anybody can access and make use of Foldscope in near future as another stationary product.
- P.Kaythry, NSS Programme Officer of SSN received amount of Rs. 8 lakh to take Foldscope to rural community as well as use it as a research tool.

Ideas are welcome to use Foldscope by the students. It is planned to organize workshop for the interested students, who want to work with Foldscope in their field of interest.

To know more about Foldscope, visit https://www.foldscope.com/

To view the images seen under Foldscope in various parts of the world, follow the link **http://microcosmos.foldscope.com**

Foldscope

Faculty Write up

REPORT ON VISIT TO CIPET,GUINDY

A write up by Dr.D.Ananthapadmanaban

I had the chance to visit CIPET(Central Institute for Plastics Engineering and Technology),Guindy on 12/06/18.I went there as an examiner for M.E(Project work).I realized that there is a lot of scope for joint initiatives with CIPET.

CIPET is a Central Government organization doing extensive research and consultancy on Manufacture, Development and Testing of Plastics. They may need help in fabrication of machines which could be useful for them. Our Department Staff and students could be of use here.

They have got state of the art Vacuum furnaces, an INSTRON Tensile testing machine, Fatigue testing machine, Selective Laser Sintering and Scanning Electron Microscopy(SEM). They have also got a large number of latest software for modelling purposes. These facilities are available for outsiders also. In addition, they give permission for Industrial Visit and internships. I have also contacted a few scientists at CIPET for guest lectures.

I valuated an M.E Project, where the students had manufactured a simple injection moulding machine, costing Rs. 25,000. I am sure that a similar set up can be made in our own campus, or in a joint venture, which will benefit both CIPET and SSN.

Student write up

Report on Technical Training Programme [June 18 – June 23, 2018]

- A report by Deva Prashanth, Placement Coordinator; with inputs from K. Deebak, Final Year

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With the placement season on the horizon, the last leg of placement training was organized by the management for all the students to help them develop their technical skills. The Department of Mechanical Engineering took this job upon themselves and with the help of their exemplary faculty, they had devised a Technical Training Programme; 6-day schedule with three sessions a day where they provided training on certain technical subjects to the Final year batch. Some of the various subjects covered were Basics of Design, Welding Technology, Material Sciences, IC Engines and Hydraulics and Pneumatics. The faculty had taken a particular interest in also addressing the queries from the students and also regarding the general placement processes. The students had a lot to take back from these sessions.

The Department went a step further and dedicated one of the days to a session from an external personnel. Mr Eregamani, Consultant, HR, Bangalore, a pioneer in the field of Mechanical Engineering and Management with a work experience of over 20 years, was invited to conduct a session for the students, addressing the key aspects of placements, throw light on the industrial requirements and share his experience with the students. Mr.Eregamani, knowing the student's general disregard to advices, carefully masked his in the anecdotes he shared and thereby making it reach the students. At the end of day he conducted a mock interview with the student volunteers where he explained the importance of a person's conduct during an interview session. The day ended with a hearty informal discussion with him.

The TTP ended on June 23 with a Technical Aptitude test conducted by the Student Placement Coordinators with the help of Dr N. Lakshmi Narasimhan, Associate Professor and Faculty Placement Coordinator. The test comprised of 130 objective type questions gathered from previous year's placement questions. It was quite challenging for the students but they were nevertheless enthusiastic to take it upon. The programme served as an awakening for the students to start vigorously with their preparations for facing the placement season.

Student write up

Internship in the Field of CFD

A write up by Neil Ashwin Raj (4th Year Mechanical 'A')

Over the past month, I was working under Dr.N.Lakshmi Narasimhan (Associate Professor, Mech) , on a consultancy project with an OEM (Original Equipment Manufacturer). Our objective was to numerically simulate the mixture of gases in domestic gas burners and try to optimize the design to get the best possible air fuel ratio at the point where burning occurs.

To perform simulations we used Star CCM+ software. The initial designs were provided to us by the company. After performing some simulations, we were able to see that the optimum air fuel mixture was not being attained, in fact it was falling short of the optimum range.

Dr.N.Lakshmi Narasimhan

Neil Ashwin

Then I showed them some of my own modifications, which were designed to induce swirl to improve turbulence and thus mixing of the fuel and air. Further they provided their own improved design and asked us to work on its combustion model, in order to validate their experimental results. We are currently in this phase of the project now.

Student write up

Internship at TATA Consultancy Services

A write up by PB Anirudh (3rd Year Mechanical 'A')

Tata Consultancy Services is well known company in the field of Information Technology. Most people do not know that they are also an active participant in the manufacturing and design industry.

I am interning at Tata Consultancy Services for a period of two months and I am currently working on a project which helps design products for an industrial component manufacturing company in the United States of America. This retail company requires 3D modelling of the products sold by them.

This internship has helped me learn Solidworks and a bit of Catia and contribute to the designing of these products.
The models created help customers view their product from all angles and directions which helps them make the best decision before buying the product.
Tata Consultancy Services also has a separate division for Internet of Things where new developments are made in the automobile industry. From my internship here, I learnt a lot about the innovations in the automobile and manufacturing industry.

Mech Marvel – 43

Army researchers envision 'third arm' for Soldiers

When engineers from the U.S. Army Research Laboratory brainstormed on how to improve Soldier lethality, the idea of a third arm seemed like something that might help.

At the Aberdeen Proving Grounds in Maryland, the US Army Research Laboratory (ARL) is testing a prototype passive support system called Third Arm, which evenly distributes the weight of heavy weapons, allowing soldiers to use them with less fatigue and greater accuracy.

Mechanical engineer Dan Baechle has come up with a more advanced, more articulated, militarized version of the steadicam mount that can take the weight of a weapon off a soldier's arms. Third Arm is an unpowered, articulated frame made of composite materials that helps to distribute the weapon's weight while allowing enough range of motion to be practical on the battlefield.

"We've actually tested it with the M249 and M240B machines guns," says Baechle. "The M240B weighs 27 lb (12.2 kg), and we were able to show that you can take the weight of that weapon completely off of the soldiers' arms."

According to Baechle, the Third Arm is still in the early prototype stage and is undergoing a number of changes as feedback from users comes in. Recently, the rig was worn by a sergeant with an M4 type weapon. The latest iteration allowed him to aim the weapon with greater accuracy and dive into a prone position from a sprint.

The Third Arm is part of the Army's modernization program that includes a greater interest in exoskeletons that improve soldiers' load-bearing, shooting, movement, communications, protection, and sustainment in the field with less fatigue. Third Arm has already been subject to live-fire trials and Baechle is working to improve the design and make it capable of carrying heavier weapons.

Army Sgt. Michael Zamora assumes a prone fighting position using a prototype Third Arm exoskeleton device

"It falls in line with the direction that the Army wants to be heading in the future," says Baechle. "We get comments from Soldiers who tell us different things about the way it feels on their body, about the way it redistributes the load. Some like it, some give us tips about the ways it could be improved, and we're using that input to improve the device and improve the design so that it not only works well, but it also feels good."

Source: US Army

Corporate Story 43

MSME FOCUS

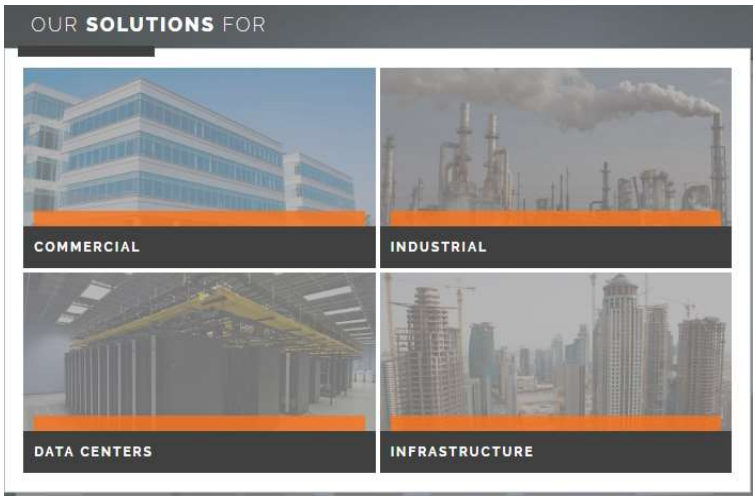
Startech Engineers
http://startech.co.in/

Startech Engineers is a leading brand providing comprehensive and cost-effective solutions in three key areas i.e. Safety, Technology and Security. Startech is an ISO 9001:2008 Certified Company and Class “A” licensed agency for Fire detection and Fire fighting works by The Directorate of Maharashtra Fire Services.

Startech is the only Fire and Security company to be bestowed with the prestigious Top 100 SME of India award. Startech created history by acquisition of AIGUA Sprinkler and Hydrant India Pvt. Ltd. (a wholly owned subsidiary of one of the global market leaders in fire safety and a US $40 Billion Fortune 500 Company). The acquisition included transfer of existing team and completion of more than 80 ongoing projects. Most of these are huge infrastructure projects in power, automobile, pharma, FMCG and IT sector.

As on their site:

Startech Engineers is a leading brand providing turnkey solutions in fire protection, electronic security system & Building Management System (BMS).



Vision:

Our vision is to be India’s most preferred and trusted partner for turnkey solutions in fire safety and electronic security. We will earn our customers’ trust through continuous upgradation and improvement, driven by the timely completion, integrity, teamwork and excellent service. Our core purpose is to create and sustain a safe environment.

Core Value:

Our core values are our foundation pillars giving direction to our work ethics. These values inspire our work, how we interact with each other, and the strategies we employ to fulfil our mission and goal.

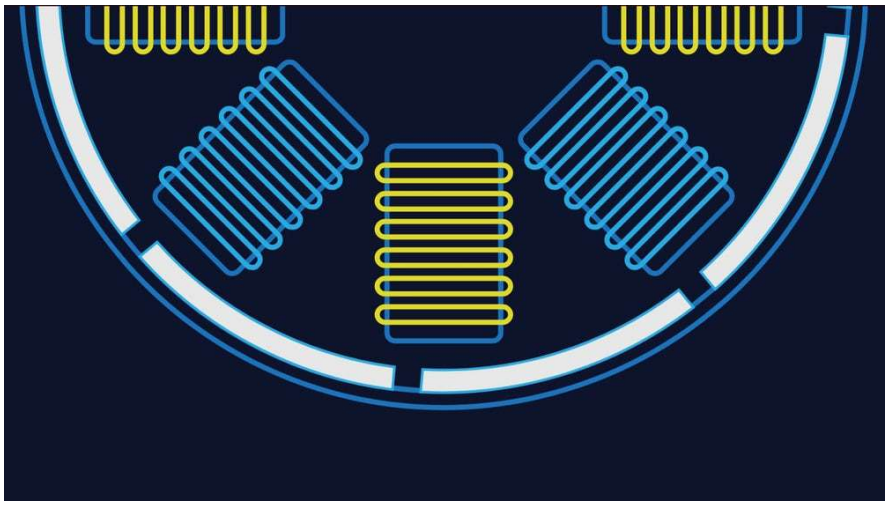
Work with Startech Engineers
Please mail your resume if you are interested**.** mail@startech.co.in

Amazing Innovation- 73

Interesting 4-stroke engine idea replaces the flywheel with a lightweight electric motor

Randy Moore of RK Transportation is working on an idea that replaces an engine's flywheel with a lightweight rotor with embedded magnets, to apply little pulses of electromagnetic torque just when they're needed in search of easier acceleration.

The problem, as Moore sees it, is everything that happens between the "bangs" of a four-stroke engine cycle. The power stroke sends the piston downward with considerable energy, but then the exhaust stroke, intake stroke and compression stroke all drag on the system.



The inertia and weight of a flywheel can help keep the whole thing spinning, and smooth out the power delivery somewhat. But inertia works both ways; the heavier the flywheel, the harder it is to accelerate as well as decelerate, so the engine might keep happily rolling through the three non-power strokes, but it's also going to struggle to pick up speed freely when you're on the gas.

Moore's idea is fairly simple: replace the flywheel with a lightweight disc, embed magnets in that disc, and hit those magnets with electromagnetic pulses to replace flywheel inertia with electric torque. Effectively replacing the flywheel with a rotor for a low-power electric motor that can apply torque in a precise and useful way.

Source: RK Transportation

Amazing Innovation- 74

Railways Builds 'Waterproof' Engine

In September 2017 that over 23 rakes were stuck on tracks due to heavy rains and over 155 coaches had to be put out of service after water flowed into them. Every second day would see a disruption in train services. Central Railways has decided to roll out a modified "waterproof" locomotive engine which will be equipped to run even in 12 inches of water!

The purpose of this modified engine is to move trains that are stuck on flooded tracks to avoid unnecessary delays. The main feature of this modified engine is that its motors are completely sealed which will prevent water from entering it, thereby avoiding engine failure.

It is also equipped with sensors to monitor any increase in motor temperature at all times.

Source: Mumbai Mirror

Fun fact: As little as four inches of water can bring a locomotive engine to a standstill until the tracks clear. After crossing four inches, the water enters traction motors at the bottom of the engine, which can cause an 'engine failure'.

Amazing Innovation- 75

Ultra-capacitor hybrid radically boosts power and efficiency of lithium batteries

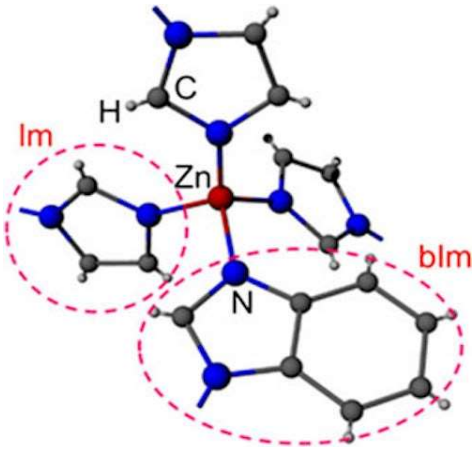
Combining the unique strengths of lithium batteries with crazy-fast charging, carbon ultra-capacitors could save a ton of weight and add significant range and power to electric vehicles, according to Nawa Technologies. Based outside Marseilles, this fascinating French startup is working on a new type of battery it believes could offer some huge advantages in the EV space, among many others.

"Nawa's ultra-capacitors only use carbon and aluminum. Our carbon comes from natural, sustainable sources. We don't need to mine. When I created Nawa, that was what I wanted to promote: a real, sustainable way. That's the dream. Building safer and cleaner batteries." Could you run a vehicle completely on Nawa's carbon technology? Yes, says Nawa CEO Ulrik Grape.. Nawa is currently testing and working with prototype units, but the team says by the second half of 2019, the company will have a full-scale production line in operation not far from Marseilles. The potential of these super-fast carbon ultra-capacitors sounds terrific. We look forward to seeing Nawa's technology tested in earnest.

Source: Nawa Technologies

Amazing Innovation- 76

New type of glass made of metal organic compounds breaks tradition



The glass we're most familiar with is made from silicon dioxide, but materials like boron, polymers and metals have also been used. Now, an international team of scientists have developed a brand new class of glass, made from metal-organic compounds. These new materials form glass more readily than other types, and are much more pliable.

The new metal-organic glass is made of zinc and two organic compounds, known as imidazolate and benzimidazolate. The material has the same atomic structure as silica glass, forming a pyramid shape with a zinc atom at the centre and four molecules of the organic compounds surrounding it. The researchers called their creation ZIF-62.

Traditionally, silica glass is known to have the best glass-forming ability, but according to the team, ZIF-62 has it beat. In fact, it outperformed 50 existing types of glass, and is far more pliable than silica-based glass. Tweaking the recipe, the researchers found that the more benzimidazolate they added, the better the material's glass-forming ability became.

There are still kinks to be ironed out though. The process for manufacturing silica glass benefits from thousands of years of refinement, and it's hard for ZIF-62 to compete with that at this early stage. To make the new metal-organic glass, the organic compounds first need to be synthesized, then mixed with hydrous zinc nitrate and a solvent. Then, it all needs to be heated to about 800° F (427° C) for long enough to completely melt – but if it hits 980° F (527° C) it will start to vaporize.

Finding ways to scale up production is a key area of future work, as is learning more about the glass itself. So far the researchers have experimented with ZIF-62's optical and mechanical properties, but there's plenty more still to learn, the team says.

Source: Pennsylvania State University

Alumni Info

(Source: LinkedIn)

Alumni Update

Tamilarasan Ravindrakumar of 2014-17 batch, is now a Mechanical Design Engineer at Rotork. Rotork is the market leading actuator manufacturer and flow control company that operates in any market where the flow of gases or liquids needs to be controlled. It has established manufacturing facilities, a global network of local offices and agents.

His activities in college include: Certification Committee Head in National Level Tech fest SSN 'INVENTE',Organiser for the Event Treasure Hunt in the Symposium SSN Crank-X,Idea Innovation "Rural development Projects" presented on NSS Day

He attended an inplant training in Wheels India LTD.

He did his Diploma in Mechanical Engineering from Rajagopal polytechnic college.

His profile reads:

I am a self-motivated, sincere person starting my career path according to my area of interest and to enhance my knowledge through experience along with organizational development.

Anish Pasumarthy, 2012-2016 is working as an Associate Mechanical Engineer at The Dow Chemical International Pvt. Ltd.

Activities in college: SAE Collegiate Club, EDC, Association of Mechanical Engineers, Mach Racing Team, Team Precisio, Math Club

He was a Program Chair of SAE India
His experience include:

Intern - Trainee at Sundaram Fasteners Limited – India June 2015

Summer Intern June 2014

In-plant Trainee at Brakes India Limited December 2013

In-plant Trainee at Ashok Leyland July 2013

Diwakar Manickavelu, 2012-2016 batch, is now working as an Upper body Vehicle Architect and Geometer at Renault Nissan Technology and Business Centre India Pvt. Ltd.

His profile reads:
I have an experience in leading large teams to achieve the set goals and have proved my excellence in negotiations many instances with good communication skills.
My involvements so far:

Vehicle Architecture (Integration and Planning), Vehicle Geometry and Fit & Finish, Vehicle Technical Convergence, Vehicle Technical Documentation, Vehicle Mass Management, Research in Grinding wheels, Design and Fabrication of Automotive functional parts

He is responsible for packaging the interior parts of the vehicle and an expert in the Vehicle Fit and Finish.

Forthcoming events

Workshop/FDP

July 2018

- Indian Institute of Information Technology Design and Manufacturing (IIITDM), Kancheepuram, Chennai (under Ministry of HRD, Govt. of India) is organizing a Short Term Practical Training Program(STTP) on " PLC, SCADA, Industrial Automation and Control (Hands on Training) (IAC-2018) " from **5-7 July 2018.**
  Further details of the course content and registration visit the website:
  http://iiitdm.ac.in/img/Events/IAC_2018_new.pdf

- Department of Mechanical Engineering, S.A. Engineering College Campus is organizing 2 Days DRDO sponsored National Workshop on "Recent trends in Fabrication & Characterization of Nano Composites" on **5th & 6th July 2018** in S.A. Engineering College Campus. Email: workshopmech@saec.ac.in

- **TEQIPIII** sponsored five day Faculty Development Program(FDP) on Inverse problems and Applications to be held during **9th-13th July, 2018 at NITK Surathkal**. The FDP covers the basic theoretical concepts of the inverse problems and their applications in the field of Mechanical engineering and image/signal processing. Eminent experts from **IITs, IISc and industries** are expected to deliver lectures in the workshop.
  The online registration is open at :
  https://docs.google.com/forms/d/e/1FAIpQLScsMXsqhHZiNzr6gjFx3tKbPwoCXcaj8aDylXssv_qy_8Txug/viewform?c=0&w=1&usp=mail_form_link

Conference

August 2018

- Bannari Amman Institute of Technology is organizing a Two day National Conference on “Energy, Ecology and Environment" on 2nd & 3rd August 2018 with an opportunity to publish the article in UGC approved/Scopus Indexed Journal. The conference covers wide spectrum of Topics in the emerging field of energy and environment with a multi-disciplinary approach.
  Faculty members/research scholars and PG/UG students can participate.

February 2019

- 6th international conference on Recent Advances in Composite Materials (ICRACM-2019) will be held at Indian Institute of Technology (BHU), Varanasi-221005, India from 25th to 28th February. The ICRACM-series aims at bringing together the academicians and researchers in various disciplines to share knowledge and exchange views, for useful industrial applications of composite materials. Contact: www.iitbhu.ac.in/institute/notification/ICRACM-2019.pdf
  Last date for submission: 25 August 2018

March 2019

- The 2nd International Conference of Computational Methods in Manufacturing (ICCMM) will be organized at IIT Guwahati, India during March 8-9, 2019. The 2nd ICCMM conference details are available at www.iitg.ac.in/iccmm2019/.
  The details about paper submission is available in the webpage. The registration details will be updated in due course. The last date for full paper submission is **August 30, 2018.**

Challenges/Contests

July 2018

- Tech Brief presents "Create The Future Design Contest 2018"
  Submission deadline - **July 2, 2018**

  Choose one of seven categories for your entry:

  - **Aerospace & Defense**
  - **Automotive/Transportation**
  - **Consumer Products**
  - **Electronics/Sensors/IoT**
  - **Robotics/Automation/Manufacturing**
  - **Medical**
  - **Sustainable Technologies**

  Provide a description of your entry (up to 500 words) in the form of a technical abstract, in English. Your description should cover how the entry works, what makes it novel, how it would be produced, and where it would be applied. Contest Website: https://contest.techbriefs.com/

- **International Design Competition**
  The James Dyson Award supports budding design engineers at the start of their careers. If you're a current student or recent graduate with an idea that solves a problem, we want to hear about it. We'll be equally impressed by rough-and-ready prototypes as we will by mass market-ready samples.
  The James Dyson Award is open to current university students of engineering, product design and industrial design – and those who have graduated in these subjects in the last four years. We'll ask to see official documentation that proves it.
  https://www.jamesdysonaward.org/home/
  Last date to apply: July 20
  (Find the entries of past winners in the Annexure)

September 2018

- KPIT Sparkle gives you an opportunity to imagine, ideate and develop technical innovations with high social impact to solve existing blind spots within the energy and mobility disciplines. We invite registrations from students across the nation to come ahead and be a part of revolution where innovation lies at the epicentre. Visit https://sparkle.kpit.com/ for more details.

May 2019

- Fentress Global Challenge

  In line with the speculative nature of the competition, participants should seek to improve every dimension of the airport terminal building. All entries should delve into one or more broad topic related to airport architecture and the future of aviation such as mobility, urbanization, globalization, technology, flexibility, security, project feasibility, and passenger experience in 2075.

  For more details, visit https://fentressglobalchallenge.com/competition-brief

  Last date for submission: 31 May 2019

Research News from MSP

1. DST - Indo-Russian Joint Research Call for Proposals - 2018

DST and RSF invite active Indian and Russian scientists / researchers, aged below 40 years, to submit proposals for Joint Research Project in the following areas of basic sciences under DST-RSF cooperation:

· Mathematics, Computer and Systems Science
· Physics and Space Science
· Chemistry and Material Science
· Biology and Life Science
· Basic Research for Medicine
· Agricultural Science
· Earth Science
· Engineering

Last date for submission of Project Proposal: **14th September 2018.**
The size of one grant of the RSF shall range from 4 (four) to 6 (six) million roubles annually. The size of one grant from the Department shall range up to 6 (six) million Indian rupees annually.
Website Links:
http://www.dst.gov.in/callforproposals/indo-russian-joint-research-call-proposals-2018
www.dst.gov.in

2. Summer Internship Program, 18-20 July 2018 Department of Nanoscience and Technology, Sri Ramakrishna Engineering College

The internship will provide exposure in interdisciplinary areas of

- Science, Engineering and Technology in broad areas like
- Mechanical
- Electronics and Communication
- Electrical and Electronics
- Biotechnology
- Medical
- Agricultural
- Basic Sciences.

The event will be an eye opener for those who are interested in stepping into the nano world. The program will cover key note address by an expert member followed by technical presentations from the faculty members of the Department of Nanoscience and Technology.

Registration Details:
Registration Fee: Rs. 2950/-
Payment: DD in favor of "The Principal, Sri Ramakrishna Engineering College" payable at Coimbatore.
Kindly send the registration details with DD in the following format to eventsnano@srec.ac.in on or **before 11.07.2018**, Wednesday, 4.00 pm.

3. DST - India - Thailand Joint Call for Project Proposals – 2018

Department of Science & Technology (DST), Government of India and Ministry of Science & Technology of the Kingdom of Thailand, invite Indian and Thai scientists / researchers to submit proposals for joint research projects in the following areas:

i. Human Health sciences
ii. Renewable Energy covering solar cells and PV reliability
iii. Photonics covering elastomeric optics and optical devices
iv. Geospatial Technologies covering creation of GIS of towns in Thailand for urban development
v. Astronomy & Astrophysics

Last date for submission of project proposal: **16th July 2018**

Website: http://www.dst.gov.in/callforproposals/india-thailand-joint-call-proposals

4. DST - Project Based Personnel Exchange Programme with India - Indo-German Joint Research Collaboration – 2018

University professors, scientists/researchers and post-doctoral researchers from German and Indian universities and those in permanent positions at public funded research institutes are eligible to apply.

The programme is open to academics in the disciplines of agricultural sciences, veterinary medicine, forestry, engineering, earth sciences, mathematics, theoretical computer science, informatics, medicine, life sciences, health sciences, animal sciences, nutritional medicine, physics, material sciences and chemistry.
University professors, scientists/researchers and post-doctoral researchers from German and Indian universities and those in permanent positions at public funded research institutes are eligible to apply.

The applications shall be evaluated on both sides by independent selection committee. The final selection shall be made jointly by DST and DAAD.
Last date for submission of project proposal: **31st July 2018**

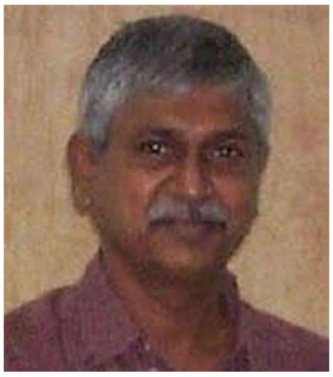
Website Links:
http://www.dst.gov.in/callforproposals/dst-daad-2018-call-personal-exchanges-between-india-and-germany
http://www.dst.gov.in/sites/default/files/DST_DAAD_PPP_2018-19%20Announcement.pdf

5. International Meeting on Energy Storage Devices (IMESD-2018), 10-12 December 2018

Indian Institute of Technology (IIT Roorkee), Roorkee is organizing an International Meeting on Energy Storage Devices **(IMESD-2018)** from **10-12 December, 2018** at Indian Institute of Technology Roorkee, located in the northern India nearby New Delhi.
Our institute is oldest technical institute established in 1847 in British India by the lieutenant governor, Sir James Thomason. Since its establishment (in 1847), the Institute has played a vital role in providing the technical manpower and know-how to the country and in pursuit of research.
The Institute ranks amongst the best technological institutions in the world and has contributed to all sectors of technological development.

Website link:
www.imesd18.in

Inspiring Life Stories



Mr. Kishore Babu

Schwing Stetter

I once stayed in a job where I was underpaid, but my manager was so fantastic I found it hard to leave. Employees are loyal to their boss before they are loyal to the organization. Since employees interact mostly with their manager, this relationship plays a big part in their decision to stay or leave a company.

Bad managers are abundant, and they leave an impression. Almost everyone can relate to the sense of dread about coming to work when a manager makes an otherwise good job feel like a dead end.
A boss creates fear, a leader confidence. A boss fixes blame, a leader corrects mistakes. A boss knows all, a leader asks questions.
A boss makes work drudgery, a leader makes it interesting. - Russell H. Ewing
Most companies don't currently think about great managers as a benefit or publicize that benefit to prospective employees but it is the best incentive in retaining good employees. Good bosses inspire and empower employees to give their best. They genuinely care about their people and this makes all the difference in building relationships and commitment. Employees can determine your authenticity in your actions. It is so basic and it is sad that many managers don't get this.

- *If you trust employees, you will not micromanage them.*
- *If you care about employees, you will show them empathy.*
- *If you respect employees, you will not intrude on their personal time by asking them to work late or contact them after hours.*
- *If you appreciate employees, you will value their contributions.*

A truly great boss is hard to find, difficult to part with and impossible to forget Lauralee emailed me this:

"I worked for a company in Brussels a few years ago when my brother (who was living in the USA) had cancer. In that year, I had 10 weeks leave visiting him & then, when he died, attending his funeral). When I asked my boss, Eric how I repay the company for all these extra holidays, he simply replied "they weren't holidays, don't worry about it". This attitude was not isolated & reflected the company culture . . . to this day, it was the best company I ever worked at & Eric was the best boss I ever had . . . I would walk over hot coals for him!"
Studies show having a bad boss raises a worker's chance of having a heart attack by as much as 60 per cent.
Working for a bad boss was actually more of a risk factor for heart disease than smoking, lack of exercise, or being overweight, the researchers calculated. High levels of stress is directly linked stress with atherosclerosis, the disease of the arteries that in turn causes heart disease. What was it about a bad manager that increased the risk of heart disease? The stress and anxiety caused by unfeasible targets, lack of support, unfair practices and threats of punishment.
Employees yearn for good bosses. A recent study says that 56% of employees would turn down a 10% raise to stay with a great boss.
Moral of the story: There is nothing like having a boss who has your back. They make the working experience so much better. It's time that companies realize that a good boss is the best incentive of all. All the money or benefits in the world will not retain good staff if they have a bad boss who makes their time on work miserable.

Contribution: Mr. K.S. Raja Rajasekar, DGM-BU HR Head, KONE Elevators India Pvt. Ltd.

Thanks & Regards –

Kishore Babu
HR - Department
SCHWING Stetter India Private Limited

Corporate Wisdom 55

Managing Stress

Most of us often keep complaining about the Stress or talking about the stress in life and wondering how to manage the stress.

In life we manage things which are precious to us –Our career , business, our family, our money, our wealth, health, our children etc. Why should anyone manage stress? We believe and conclude that stress is part of our life. That is the starting point and this continues.

Stress is not a part of our life. It is just our inability to manage our own system. Stress happens not because of the nature of your work, life etc. The Prime Minister is complaining of stress , the peon is also complaining of stress. In between, every other person is saying his or her job is stressful. And those who are unemployed also find their situation stressful. So we conclude that we are suffering our job- if we get fired , will we be joyful ?

The answer is no. So stress is obviously not about our job.

It is just that we do not know how to manage our body, our mind, our emotions, our energy and our chemistry- we do not know how to manage anything. We are functioning by accident, so everything is stressful.

If we get into car where if you turn the steering wheel one way, the car goes in the opposite direction, we will be stressed , Is it not ?

Right now that is the kind of mechanism we are driving. Without understanding anything about it, just by chance, we are blundering through life- so we will be stressful.

Stress is not because of the nature of the activity that we are performing or because of life situations. Stress is simply because we do not know how to manage our own system.

What is stressful for one person, someone else breezes through – this is true.

Reframe to reduce suffering

Although not easy to practice, it is possible to suffer less than we usually do. This requires reframing our relationship with our circumstances and connecting with our true self. Here are five leads that might be helpful.

1. Cultivating acceptance

Given the above equation between suffering, pain and resistance, it's evident that the key approach to minimizing suffering is to minimize resistance. Put another way, it is to enhance acceptance. When we accept our painful experiences as an integral part of human life, we don't suffer as much.Besides, it helps to remember that deep down we are spiritual beings merely going through a human experience. Whatever we are experiencing is for our highest good and is helping our spiritual self in its greater evolution. In fact, our painful experiences in this lifetime might be the richest opportunities for us to progress on our spiritual journey.

2. Letting go of our false self-image

Secondly, we need to let go of our false sense of an ideal self. Instead of constantly seeking perfection, we need to accept and love who we are. It's not that happier people have a perfect life; it's just that they are more at peace with their imperfections.

We need to stop judging others and ourselves against commonly popular notions of success and failure, gain and loss, and pleasure and pain. As Rudyard Kipling suggested, we ought to *meet with triumph and disaster and treat those two imposters just the same*. We don't take things personally then and are more open to all our experiences. We don't get attached to our proud moments and not be so averse to the low ones.

3. Knowing that this too shall pass

Further, it's useful to remember that all thoughts, feelings and events are transient. They arise and unless we get attached to them, pass away – even though in painful moments it doesn't seem so at all. By choosing to give our painful experiences time to heal and not get embroiled in overthinking about them, we reduce the extent of our suffering.

4. Altering our relationship with time

Recognizing the truth about time and space can be liberating. Our usual sense of time is completely misplaced. We measure it in the limited time-space continuum that we can relate to in our physical form.

What if our core self, our spiritual being, is on a journey of a million years, spanning thousands of lifetimes? Eighty years of this lifetime would then be equivalent to merely a few hours in our soul's journey. Would you be as obsessed about pleasure and as averse to pain in that hour? Would you be as pressured for time and as hurried in your life?

5. Sharing and seeking help

Lastly, sharing our challenges with friends and well-wishers lightens our pain. Seeking help from friends and professionals can be very helpful too. Besides, joining support groups or choosing to offer help to others experiencing pain can be therapeutic.

#WishingMostAndMore

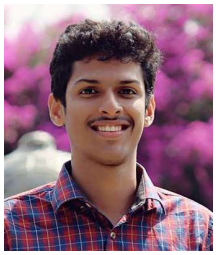
Have a great day & wonderful weekend

R.Ramakrishnan

This issue has an Annexure-
James Dyson Award (Past Winners)

The purpose of adding an Annexure
is to enable forwarding specific content
to persons who may be interested
without the need to send the whole Newsletter
----------VeA

This edition of Aspire was compiled by Nitin Joy, with support from Sowmya K and CT Alagappan


Nitin Joy


Sowmya K


CT Alagappan