Department of Biomedical Engineering

SYNERGY

A QUARTERLY NEWSLETTER

Volume 3 Issue 1

JAN.FEB.MARCH 2014

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Volume 3: Issue 1

SYNERGY

JAN.FEB.MARCH 2014

INSIDE THIS ISSUE:

WATCH OUT FOR:

- Exciting articles
- Placement news
- High achievers

GET INSPIRED

MESSAGE FROM THE EDITORIAL DESK

We are happy to present to you the quarterly journal of the DEPARTMENT OF BIOMEDICAL ENGINEERING for Jan-Feb-March 2014.

The department has always strived to achieve excellence in all aspects of education and the editorial team works to bring you with a comprehensive, up-to-date coverage of happenings aggregated from all around the department.

We will be back with the next issue summing up bigger achievements of the department on June.

Best Wishes

-Editorial Team

DEPARTMENT ACTIVITIES

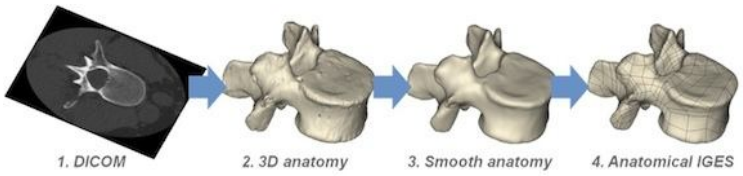
- The Centre for Health Care Technologies preinaugural talk was held on 7-1-2014. The chief guest, **Prof. Bing-Hao-Luo from Luosiana State University, USA**, presented a lecture on "***Biochemistry of Cell Signaling across the plasma membrane***". The welcome address was given by **Dr. A. Kavitha**., HOD/BME and the lecture was started by Prof. Bing about the structural basis of trans membrane protein integrin regulation and signaling across the neural cell plasma membrane and also about the variation in metal ion-dependent adhesion site regulates integrin αIIβ3 ligand binding affinity by the proteins. This lecture throws light on the students who want to pursue their higher studies in Bioengineering field. More than 200 participants attended this lecture including students, faculty and members of Centre for health care technologies. The lecture came to an end with the vote of thanks given by **Prof.V.E.Annamalai**, HOD, Dept of Mechanical Engineering, SSNCE and the program was organized by **Dr.Mallika Jainu,** AP/BME .

Prof. Bing.-Hao-Luo

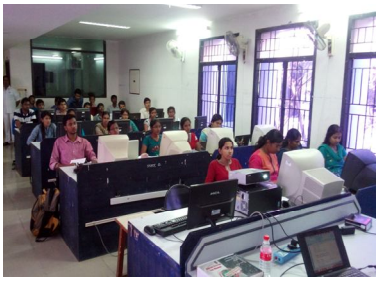
- **Institutional Animal Ethical meeting** was held on 6-2-2014 in BME seminar hall. The committee members are **Dr.S.Salivahanan**, Principal, SSNCE, **Dr.R.Sheela Devi**, HOD, Department of Physiology, Dr. ALM. P.G. Institute of Basic Medical Sciences, University of Madras, Taramani campus, **Smt.Prema Veeraraghavan**, CPCSEA Nominee, **Dr.R.Padmini**, Scientist from IIT Madars, **Dr. Stalin Velladurai**, Veterinary doctor and **Dr.Sachin Sarate**, IAEC member. In the meeting the research project presentation was given by the applicants such as Ph.D students from SSN, Bharathidasan University, Barathiyar University and UG/BME students. The proposals is about various research area such as Hepatology, Diabetes, Gastroenterology & Cancer biology. Finally animal research project proposals got sanctioned by the IAEC members for this academic year.The meeting is organized by **Dr. Mallika Jainu,** Scientist Incharge of Animal House.

WORKSHOPS

- The Department conducted a two-day hands on workshop on "**MIMICS INNOVATION SUITE: Engineering on Anatomy** " on 10-2-2014 & 11-2-2014.



This internal workshop witnessed an audience of 30 participants including faculty, students and research scholars from different departments. It was headed and conducted by **R. Jitendra Singh**, Application Engineer, MIMICS, Belgium who trained the participants in MIMICS (Base Module and design 3-matic module). The programme was co-coordinated by **Mr. P. Manoj Niranjan** (AP/BME).



- The Department conducted a two days National level workshop on "**Embedded System Design using TI MSP-430**" on 12.2.2014 & 13.2.2014. This internal workshop with 52 participants was handled by **Mr.Vijay,** Application Engineer, Trident Tech Labs, Chennai and the workshop was co-coordinated by **Dr.V.Mahesh**, Ass. Prof/BME.

- **Dr.V.Mahesh**, arranged a guest Lecture for 4th Sem Students on **Verilog Codes and Its Applications**. The talk was given by Mrs. **P.V. Pramila**, Asst. Prof, Dhanalakshmi College of Engineering, Chennai.

NATIONAL CONFERENCE ON BIOELECTRONICS, BIOMATERIALS AND MEDICAL DEVICES

- The Department of Biomedical Engineering organized **National Conference on Bioelectronics, Biomaterials and Medical Devices (NCBBM 2014)** on 21-3-2014. The chief guest of the day was **Dr. Neeradha Chandramohan**, Director, National Institute for Empowerment of persons with multiple disabilities, Ministry of social justice and empowerment, Govt. of India and the Guest of honor was **Mr.C.J.Ravishankar**, Vice president, Life sciences and Healthcare, HCL Technologies Ltd. The inaugural welcome speech given by **Dr. S.Salivahanan**, Principal, SSNCE, followed by the chief guest introduction by **Dr.A.Kavitha**, HOD/BME. Dr. Neeradhaa Chandramohan gave a inspired speech about the need of assist devices for multiple disabilities patients and possible research project collaboration with NIEPMD. The guest of Honor, **Mr.C.J.Ravishankar** covered various aspects of health care products development in HCL, Health care division. The inaugural session was followed by presentation of papers by research scholars.

More than 15 participants presented their technical papers in the conference NCBBM-2014. The conference papers were categories into three sessions such as Medical devices, Biomaterials and Image & Signal processing . It provided a platform for PG and Ph.D students to showcase their research findings and also paved the way for budding UG students to continue their journey on the highway of research and knowledge. This was followed by the valedictory function which was presided by our HOD. The certificates were presented to the participants and the best papers were awarded. The programme was co-ordinated by, **Dr. S. Pravin kumar and Dr. S. Guruprakash** and other conference organizing committee members were Dr.V.Mahesh., Mr.Manoj Niranjan., Dr. Mallika Jainu., Ms.R.Nithya, Ms.Dhanlakshmi., Mr. Sivaramakrishnan, Mrs. B. Geetanjali., Dr. R. Subashini., Dr. L. Suganthi and Dr. Sachin.

NCBBM-2014 inauguration

Paper presentation by research scholars

Certificate Distribution by HOD/BME

STAFF CORNER

PUBLICATIONS:

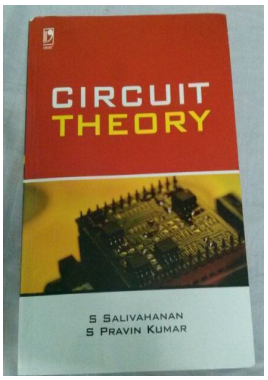
- Krishnamohan and **Mallika Jainu** (AP/BME) published a research paper titled "***Pioglitazone and Hydroxy Citric Acid Effect On Hepatic Biomarkers in Non-Alcoholic Steatohepatitis (NASH)***" Pharma Research, 2014-Vol 6, Issue 2: 1-10 (IF: 4.3)
- Krishnamohan and **Mallika Jainu** (AP/BME) published a journal paper titled "***Effect of Quercetin On Lipid Profile and Lipoproteins experimentally induced Non-Alcoholic Steatohepatitis***" IJPER, 2014-Vol 48(1), 32 -38.
- **Sivaramakrishnan** Rajaraman (AP/BME) and Arun Chokkalingam published a journal paper titled "***Lukasiewicz logic based fuzzy similarity classifier for Denver group chromosomal classification***" Biosci. J., Vol: 30, n. 3, p. 843-852, 2014. (IF: 0.27)
- Supraneni krishna mohan & **Mallika Jainu**. (AP/BME) published a journal paper titled "***Comparative Effect Of Pioglitazone, Quercetin And Hydroxy Citric acid On Lipid Peroxidation And Antioxidants In Experimental Non Alcoholic Steatohepatitis*** (NASH)"**.** Journal of Physiology & Pharmacology 2014: 65(1): 67-74. (IF: 2.48).
- **Sivaramakrishnan** Rajaraman (AP/BME) and Arun Chokkalingam published a paper entitled "***Chromosomal Edge Detection using Modified Bacterial Foraging Algorithm*****"** published in the International Journal of Bio-Science and Bio-Technology Vol.6, No.1 (2014), 111-122.
- Priya Ebenesan and **Mallika Jainu** (AP) a research paper titled "***VASCULITIS TREATMENT INTERVENTION THROUGH INTRAVENOUS IMMUNOGLOBULINS***" published in the proceedings of International Conference FOCIS 2014, Spotlight on Translational Immunology, Chicago, Illinos.
- Santhosh, Lavanya, Sasikala**,** final year students and **Mahesh Veezhinathan.,** Asso.Prof paper titled "***GSM Based Artificial Pacemaker Monitoring System***" was presented in International Conference on Biology and Biomedical Engineering (Europment 2014) @ Venice, Italy.
- P.V. Pramila and **Mahesh .V,** Asso.Prof paper titled "***Evolutionary Computing Optimization based Extreme Learning Machine for Pulmonary Data Classification***" was presented in International Conference on Biology and Biomedical Engineering (Europment 2014) @ Venice, Italy.
- **Dr. R. Subashini** (AP) presented a paper titled "***Comparative Evaluation Of Garcinia Mangostana Linn Extract And Silver Nanoparticles Using Antimicrobial And Antioxidant Property***" in the International Conference on Materials and Characterization Techniques held at VIT University, India.

FACULTY ACTIVITIES:

- **Dr. S. Pravin Kumar.,** Asso Prof attended Doctoral Committee meeting for the scholar Ms.V.J.Subashini at Jerusalem College Of Engineering on 8-1-2014.
- **Dr.A. Kavitha,** HOD attended Doctoral Committee meeting for the scholar **Ms.R.Nithya**, AP/BME at Anna University, Chennai under the guidance of supervisor **Dr.N.Venkateshwaran**, Prof, Dept. of ECE, SSNCE on 20-1-2014.
- **Mr. C. J. Ravishankar**, Vice President, Healthcare and Life Science Division, HCL Technologies, visited Dept. of BME for possible collaborations on 29-1-2014.
- **Dr. S. Guruprakash.,** Asso Prof attended International Workshop "Coatings and Surfaces in Biomedical Engineering at IIT Madras" on 16-2-2014 to 19-2-2014.
- **Mrs.B.Geethanjali, Mr.P.Manoj Niranjan, Mr.R.Sivaramakrishnan.,** AP attended 4 days Faculty development programme on SPSS held at advance career center SSNMSIT on 5-3-2014 to 8-3-2014.
- **Dr.A.Kavitha.,** Asso Prof/HOD was invited as conference chair for the National conference on 'Recent trends in power, control, networking, embedded and communication engineering' held at Karpaga vinayaka college of Engineering and technology on 27-3-2014.

- Our Principal **Dr. S. Salivahanan** and **Dr. S. Pravin Kumar,** Asso Prof authored a book on "**Circuit Theory**" published by Vikas Publications in the month of January 2014 .
- **Mrs. L. Suganthi** AP completed her public via-voce examination in the month of March 2014 at IIT-M for the award of the degree of **Doctor of Philosophy** in the Department of Applied mechanics, Biomedical division**.**

"May today's success be the beginning of tomorrow's achievements."



Dr.S.Salivahanan

Dr. S. Pravin Kumar

Dr. L. Suganthi

STUDENTS ACHIEVEMENTS

- **Sarah Rajitha, T.S.Ranjani, A.Hemaprabha, S.Vinutha** III yr, **Dr.Mallika Jainu** presented a paper titled "***Alphalinolenic Acid, a potent inhibitor of fatty acid synthase- antimycobacterial agent***" in 2nd International Science Symposium on HIV and infectious Diseases (HIV SCIENCE 2014) conducted by YRG Care and earned 25 Credit points from Tamil Nadu Medical Council on 30-1-2014 to 1-2-2014.

A. Banusaranya, II yr

- **C. Pooja** and **A. Banu Saranya** of II yr presented a paper titled "*Role of Buckminster Fullerenes in preventing Allergies*" won **1st place** (cash prize Rs. 2000) in PAPER PRESENTATION in Kurukshetra 2014 held in CEG, Anna university, Chennai on 1-2-2014.

T. Nandhini

M. Muthuvijay

- **T.Nandhini and Muthuvijay** of II yr presented a paper titled "*Quantum Dot Based Bioconjugates in Cancer Treatment*" won the **Best Paper Award** on 1-2-2014 in the International Techo-Management Fest- "Kurukshetra 2014" held at CEG, Anna Univeristy, Chennai under the guidance of **Dr. Mallika Jainu**.

- **Dhivya Bharathi. S, Shajana.R, Thirumagal.K** final year students have secured **second place** with a cash award of Rs.7000 in Techknow 2014 organized by AIMO (All India Manufacturers Organisation) and Anna Univerity on 22-2-2014. The project was co-cordianted by **Ms.R.Nithya**, AP/BME. The students have also received an opportunity to intern in an industry and carry out their research related to the project for a period of six months.

- **Sadhani, L, Sona and J.Kavitha.,** final year students got **first prize** in the student symposium, for their presentation on "*An integrated system for performing Cardio Pulmonary Resuscitation (CPR) on neonates*" at Alpha college of Engineering, Thirumazhisai, Poonamallee, Chennai, guided by **Mr. R. Sivaramakrishnan**, AP/BME on 1.3.2014.

A. Suryakumar R. Rajesh A. Abigail

- A.**Suryakumar, A.Abigail Roseona Lutherine, R.Rajesh.,** final year students won **consolation prize** for the project '*Silent Speech Recoginition System using Semg*' in TI innovation challenge India Analog design contest 2014. The project is guided by Mrs. **B.Geethanjali** and **Dr. S.Pravinkumar**.

Visali. M ,III yr

- **Visali Mathavan** of IIIrd year was adjudged as one of the **finalists of "Materialise 3D printing in cricket "** competition along with Adithya.G of Mechanical Engg., SSNCE.

STUDENT ACTIVITIES:

- **Prasanna Bharati** of IIIrd year interned at Nuclear Magnetic Resonance center of IISc, Bangalore.
- **V. Sri Smruthi and S. Saravana Prakash** of II year participated in **C2000 workshop** held as a part of KURUKSHETRA 2014 at CEG, Anna University, Chennai, 2014.
- Few students from III year attended **IET seminar on TELEMEDICINE** conducted by Department of Biomedical Engineering, **Shree Motilal Kanhaiyalal Fomra Institute of Technology,** Kelambakkam.

- **Hemanath, Siva.A, Kuldeep Surana, V.Nagasai and VijayaBalaji** of IIIrd year presented their projects at the **National Conference on Indian Medical Devices and Plastic Disposable Industry 2014.**

National Conference on Indian Medical Devices and Plastic Disposable Industry 2014.

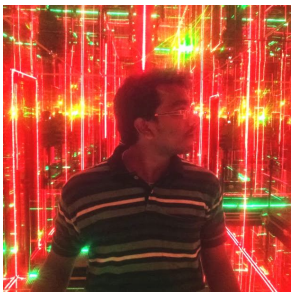
- **Hemavardhini.S, Harini.V, Vardhini.P** interned at Saveetha Medical College and Hospital, Poonamallee from 24th Dec- 18th Jan, 2014.
- **Keerthana.D, Poongavanam.P, Akshayadevi .R** interned at Saveetha Medical College and Hospital, Poonamallee from 30th Dec- 18th Jan, 2014.

- **Keerthana.D and Poongavanam.P** interned at Apollo Cancer Speciality Hospital, Chennai from 23-31st Dec, 2014

EXTRA-CURRICULAR ACCOLADES

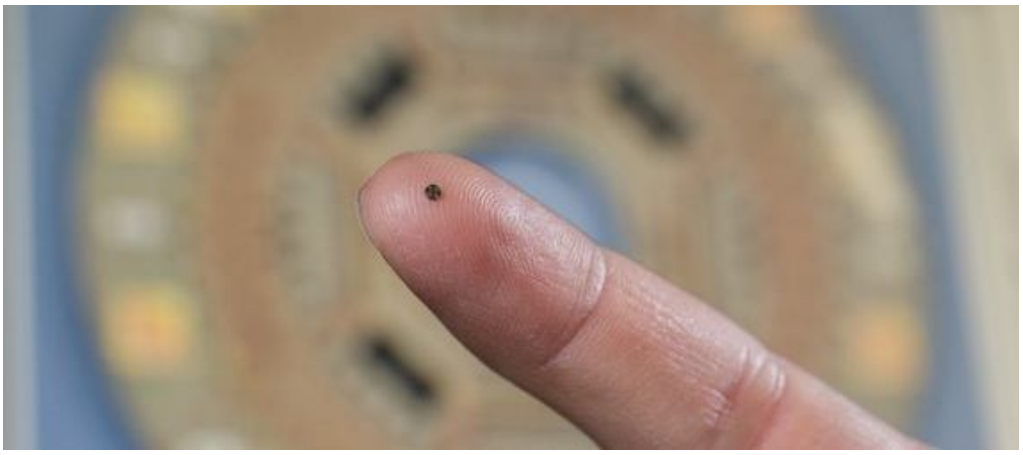
- **Vardhini.P , Aarthy.B , Akshayadevi .R** (III year) won **FIRST** place in TREASURE HUNT event in Technical symposium named “JET POTENTIAL” organized by St. Joseph’s College of Engineering.
- **Poongavanam.P , Harini.V , Keerthana.D** (III year) won **FIRST** place in ADZAP event in Technical symposium named “KERNEL 2K14” organized by St. Joseph’s College of Engineering.
- **Aarthy.B, Poongavanam.P, Keerthana.D, Akshayadevi. R, Vardhini.P** (III yr) won **FIRST** place in HARDCORE CHALLENGE event in Technical symposium named “JET POTENTIAL” organized by St. Joseph’s College of Engineering.
- **Sanjana .S** (III yr) was involved in organizing FARHAN LIVE concert at Wesley Grounds , Chennai as an ambassador of Ayamara, an event management company.
- A Short film "Paalam" directed by **V.D. Deepak** and team comprising of **V. Loganathan, P. Prabanjan, S. Namasivaya Naveen, A. Mohammed Ikram and B. Akshaya Krithri** (II yr) won **First** prize (cash award of Rs, 3000) in the event" Milan” in SRM university ", also won **First** prize (cash award of Rs, 3000) in Dhanalakshmi Srinivasan College of Engineering's "SPARCADEUS" and was also nominated in various colleges like MIT, MGR University and VIT.
- **V.D. Deepak** (II yr) won the **third** prize in the event "**Who will be the next Wolf of the Wall Street?"** conducted by the Entrepreneurship Development Cell of SSNCE.
- **T. Nandini, S. Muthumeenakshi, R. Vijayalakshmi, V. Loganathan, A. Mohammed Ikram** (II yr) - participated in the "Neeya Naana" debate show.
- **M. Raagavi, A. Jothilakshmi, M. Gundhavi Devi, P.J. Raagavi** (II yr) took part in the NSS camp in Eechangulam near Tiruporur from 26-01-2014 to 1-02 -2014.

A short film “Paalam” by V.D. Deepak attracted the attention of may colleges

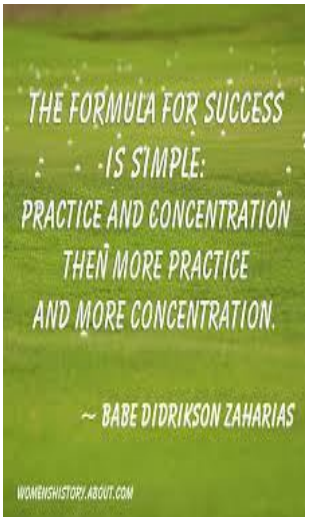


V.D. Deepak, II yr

GUESS WHAT?



KEEP THINKING. WE'LL UNCOVER THE MYSTERY IN THE LAST PAGE



SPORTS LAURELS

- **Alagusala.G of 2nd year** secured 1st place in **CHESS** competition in TIES-2014 Tournament held **at Kongunadu College of Engineering and Technology**, Thottiam, Trichy from 11th to 26th Feb, 2014 and in **12th JETS 2014** conducted by **St. Joseph's College of Engineering.**
- **Vaishali of 3rd year** secured the silver medal (table tennis) in the prestigious **TIES(Tamil Nadu Inter Engineering Sports)**. She also secured the silver medal in the table tennis event at an inter-engineering college sports fest organized by SA College of Engineering on 28th January, 2014.
- **Visalatchi of 3rd year (**secured gold medal chess) in the prestigious TIES (Tamil Nadu Inter Engineering Sports) and JETS tournament conducted this year. She also secured the 2nd place in the annual sports fest conducted by Manipal Institute of Technology, Manipal.
- **C.R. Imayan and P. Prabanjan** of 2nd year won gold medal in the Inter zonals Squash tournament on 9-01-2014 held at Anna University and won gold medal in the Inter year tournament 2014 on 12-02-2014 at SSNCE.
- **C.R. Imayan** was part of the Anna University team in the All India Inter University Squash tournament conducted by University of Mumbai during 21-01-2014 to 23-01-2-14.
- **Subash Raja** of 3rd year , a part of SSNCE Basketball Team was the semi finalist in **Special GECFest '14** conducted by Gudlaveluru Engineering College, and tournament conducted by Sri Venkateshwara Engineering College, Quarter finalist in the prestigious **TIES '14** and **12th Jets '14** conducted by St. Joseph's College Of Engineering,.

Vaishali. R

Visalatchi. S

C.R. Imayan

STUDENT EXPERIENCES

♦ **Prasanna Bharathi on her Internship at IISc :**

"My experience at the Nuclear Magnetic Resonance center of IISc was a rather novel one. I worked under Dr.S.Raghothama, ,Principal research scientist to learn the complexities involved in Magnetic Resonance Imaging .(MRI)

My work essentially involved studying the intricate structures of various compounds including proteins and nucleotides. NMR at IISc being a national facility, had samples for testing from all over the country and overseas as well. A typical day at work involved interactions with leading scientists, Phd's and other academicians of the nation.

At the end of my tenure, I was equipped with the skills of 1D spectroscopy using NMR technique of a wide range of proteins. It was a truly enriching experience that helped to channelise my interests and explore the depths of the field. I'm happy to share with you hat I have been offered the summer internship by Dr Raghothama himself after my 10 days work "

GTP nucleotide tested by Prasanna

Prasanna Bharathi, III yr

♦ **Visali Mathavan on being a finalist of Materialize 3D Innovation Challenge:**

"Last month, Materialise held the grand finale of the Asia Pacific Conferences in **New Delhi.** A definite highlight of the 2 day conference was the **Materialise 3D printing in cricket competition.** Amongst participants from a wide spectra of entrepreneurs, companies and workshops, we were the only student team comprising of myself , Visali.M from BME with Adithya.G from Mechanical, SSNCE to present our idea. We designed a cricket ball which would provide reverse swing in the early overs of the game by shifting the center of gravity. The project by itself was a challenge since we couldn't compromise on the conventional design and parameters of the cricket ball and are really happy that the judges noticed the technical intricacy in our design and selected us as one of the finalists along with TATA motors, Imaginarium (India's leading 3D printing company) and XYZ Workshop, Australia. The conference featured key industry leaders who are driving innovative breakthroughs with additive manufacturing in their fields, namely Frank Stephenson, Design Director of McLaren, John Barnes, Leader of the Titanium Technologies Theme for CSIRO, Australia and Jennifer Loy of Griffith University, Australia. The designs submitted by the finalists were printed and used in the real game of cricket and for the first time in the history of cricket and 3D printing, a 3D printed helmet (imaginarium), stumps (xyz workshop), ball (SSNCE) and toe pad (TATA motors) were used to play the game. The judges reviewing the submissions were Wilfred Vancraen, CEO of the Materialise group, Wim Michiels, EVP Materialise, Terry Wohlers, author of Wohler's report and Frank Stephenson, design director of McLaren. Although, the winners declared were the Imaginarium team, it was still a great experience to spend time amidst such honorable people who shared their knowledge of 3D printing with us. It was a great opportunity to interact with the renowned panel of judges and get their insights about our design and indeed a proud moment to be the only student team to attend the conference."

Visali Mathavan ,III yr

3D printed helmet (Imaginarium), stumps (xyz workshop), ball (SSNCE) and toe pad (TATA motors)

Techknow '14

Techknow 2014, organized by AIMO (All India Manufacturers' Organization), is a platform that aims in identifying and rewarding students' projects and to help them in every way possible to emerge as successful entrepreneurs. Around 10,000 participants participated with 4000 projects in total and a Jury panel was asked to select the best of the projects. 720 projects were shortlisted in the first stage and it came down to just 70 projects during the second stage. Of the 70 teams from nine domains, 17 teams from six domains were finally selected and rewarded. Our project **"Design of Orthotic Assistive Exoskeleton for Human Hand"** was selected as the **Second Prize** under **"Healthcare and Biotechnology"** category and we were rewarded with an award and a cash prize of Rs.7000. The Inaugural Function was graced by **His Excellency The Governor of Tamil Nadu Dr.K.Rosaiah** and the awards were presented on 22nd February by **Prof. H.Devaraj , Vice Chairman, UGC Delhi and Dr. M.Rajaram, Vice Chancellor, Anna University**. We also got an opportunity to work with an Industry and carry out research regarding our project for a period of 6 months. We were glad to be a part of Techknow and to win this competition was a huge success for us.

-S**upervisor:** Ms. R.Nithya, Assistant Professor, BME

R.Nithya, AP

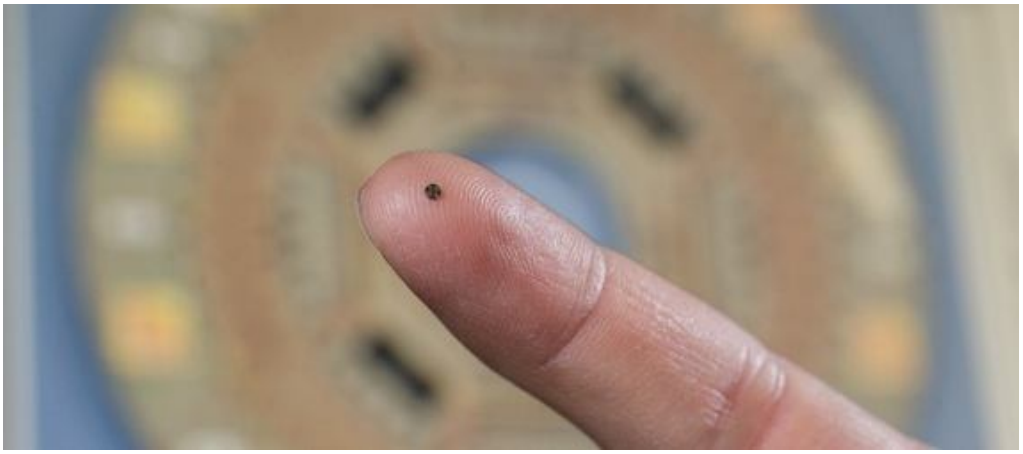
PLACEMENT CORNER

"Contrary to popular belief, not all the firms who come for on-campus recruitment want programmers or coders. We had a fair share of analytics and management firms coming in this year. Here's a look at the placement statistics this year. Three final years got placed at Mu Sigma Business Solutions and three at Latent View Analytics. Both these firms weren't too particular on prior knowledge of any serious coding and were quite thorough in their hiring process (A written aptitude test, followed by a video synthesis and Group Discussion and two rounds of interview at Mu Sigma and an aptitude test followed by three rounds of interviews in Latent View). Then came our mass recruiters, CTS, Wipro and Infosys. Ten of them clinched dual placement offers and the individual offers stood as follows: 5 in CTS, 12 in WIPRO and a staggering 23 at Infosys. We were then in for a surprise, when a core company, Zifo Technologies expressed their interest in conducting their on-campus recruitment right in the middle of our study holidays. Zifo is relatively a new firm which works on building services and does analytics for the biomedical and the pharmaceutical industries. Recently, 4 people were offered a six-month long internship at Akas Medicals. A piece of serious advice for those who are concentrating on placements: Be confident of yourselves. Appear confident, brush up your basics. You might work a lot on improving your language and etiquette but in order to get to the interview, you need to clear the aptitude tests. Focus on all the middle school math you ever learn. Be blatantly honest and it sure does help. Remember, you are either going to work along with them or never see them in your life again, do not hold back, be quite frank with them and express yourselves really well. And if you ever want any help, please do feel free to contact any of us, we'd be more than glad to help you out in every way possible! Good Luck"

"Be blatantly honest and it sure does help"

Shyamalee R –Placement Representative. shyamalee93@gmail.com

TINY CHIP DEVICE TO TRANSMIT 3-D IMAGES FROM INSIDE HEART ARTERIES



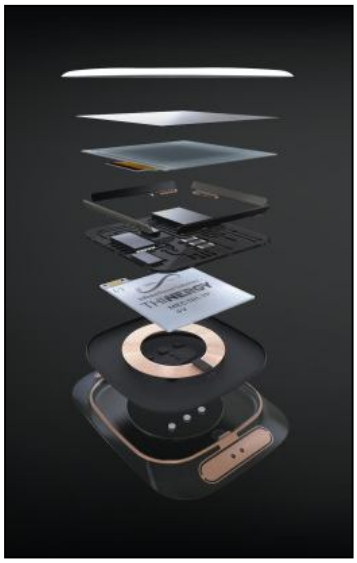
A team of researchers have developed the technology for a catheter-based device that would be able to provide real time, 3-D imaging from inside a persons' heart, coronary arteries and peripheral blood vessels. This innovative device could offer better guidance during heart surgery and enable more clearing of clogged arteries to be done without the necessity of major surgery. Integrating ultrasound transducers with electronics on a single 1.4 millimeter silicon chip, this on-chip processing of signals facilitates data transmission from more than a hundred elements on the device via only 13 tiny cables, allowing it to easily travel through circuitous blood vessels. These forward-looking, device-generated images would provide considerably more information than existing cross-sectional ultrasound. During testing this prototype was capable of providing image data at 60 frames per second, and as a next step, researchers plan to conduct animal studies that could lead to commercialization of the device. F. Levent Degertekin, a Professor at the Georgia Institute of Technology explained that this device would allow doctors to see the whole volume in front of them within a blood vessel, giving cardiologists the equivalent of a flashlight to visualise blockages in occluded arteries ahead of them. The single chip device combines capacitive micromachined ultrasonic transducer (CMUT) arrays with front-end CMOS electronics technology to provide three-dimensional intravascular ultrasound (IVUS) and intracardiac echography (ICE) images. The dual-ring array includes 56 ultrasound transmit elements and 48 receive elements. When assembled, the donut-shaped array is just 1.5 millimeters in diameter, with a 430-micron center hole to accommodate a guide wire. Power-saving circuitry in the array reduces the amount of heat generated inside the body, with the ultrasound transducers operating at a frequency of 20 megahertz (MHz). By miniaturizing transmission elements and carrying out some of the processing on the probe itself, the team of researchers was able to obtain what they believe are clinically-useful images with only 13 cables. As his next project, Degertekin envisages the development of a device version capable of guiding interventions in the heart under magnetic resonance imaging (MRI). Other plans include further reducing the size of the device to place it on a 400-micron diameter guide wire.

Source– HealthManagement.org

"To know that we know what we know, and to know that we do not know what we do not know, that is true knowledge."

WAY BEYOND A WATCH

Way beyond a watch: Sensor + app + bracelet combo is the future of wearables.

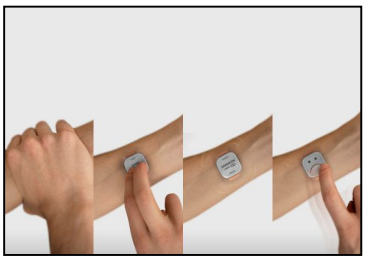


Health monitoring devices of the future will not just be biometric tracking devices or journaling apps or detection and alerting systems, but all of the above as part of one comprehensive solution. Designers at Artefact set out to think up a solution that would address the entire experience of living with epilepsy. It's a complex and often misunderstood condition that affects nearly 3 million Americans. Seizures are unpredictable, and triggers are complex. Artefact's concept, Dialog, would use a wearable sensor and smartphone app to address some of those challenges.

The design of the wearable itself is pretty incredible. It would contain a hydration sensor, thermometer, accelerometer, pulse oximeter, pressure sensor and microphone, and would be worn on the wrist or stuck on the skin under clothing. Bluetooth connectivity would allow it to communicate sensor readings to a smartphone app. The user would manually enter data about triggers and thresholds, and the app would be able to use the sensor data to pick up on early signs of a seizure. It would alert the user so he could get to a safe place if possible and would record the time and duration of a seizure if it happened. If the user needed help during a seizure, he could squeeze the device to trigger the pressure sensor and initiate a 911 call.

> "Hydration sensor, thermometer, accelerometer, pulse oximeter, pressure sensor and microphone, and would be worn on the wrist or stuck on the skin under clothing"

Here's where things really come full circle. If it detected a seizure, the app would pull up instructions for a bystander who may come to help. And when it detected that the seizure was over, the app would display the details it had just recorded, to help people get reoriented if they lost consciousness during their seizure. It would have a small touch screen when someone could swipe up or down to indicate their mood, or double tap it to record that they feel an episode coming on. All of that data would be accumulated over time and made viewable through the app or by the user's physician on an online dashboard. An Artefact rep says that the firm thinks the technology for a platform like Dialog is already out there. What's needed now is an investment in engineering and product development, followed by clinical testing and validation. Meanwhile, other groups like the company SmartMonitor and the nonprofit RTI International are at work on mobile alert and monitoring systems for seizures.



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