



Department of Biomedical Engineering

SYNERGY

INSIDE THIS ISSUE:

BEST CITIZEN

FACULTY CORNER

STUDENT'S CORNER

DEPT ACTIVITIES

UPCOMING EVENTS

TECH ARTICLES

TEAM

VOLUME 4

ISSUE 2

AUGUST EDITION

2015

EDITORIAL DESK

Greetings!

It gives us great pleasure to present to you, the August issue of our department newsletter, **Synergy**.

Once in every three months, we try to bring you the most exciting news from the department and the bio-medical world. A wide range of topics, starting from student faculty activities to the latest developments in the field have been covered. We hope you find it an interesting read.

Cheers,

The Editorial Team



THE FIRST CITIZEN



The whole nation mourned the loss of **Dr. APJ ABDUL KALAM**, our former President. It is saddening to write about such a vibrant personality in the past tense. He was one of the simplest people to have walked the earth certainly the most humble. His heart and mind were in sync working for the country. He had the power to ignite the young minds through his speeches.

"You have to dream before your dreams can come true.

To succeed in your mission, you must have single-minded devotion to your goal."

He is the one person; most students in India looked up to. He followed what he propagated till his last breath. He sacrificed everything to science and this nation of ours. His was a life well lived. Dr.Kalam was principled, a true leader among men, who lived his life to the fullest. The hope he had for the country was unmitigated and his love for students unparalleled. It would have been a boon if he had had a few more years but what amount of time he had accounted to something great. The immense amount of faith in students is just one example.



**"You cannot change the future,
But you can change your habits.
And surely your habits can change your future"**

We will miss you dearly Sir.

Faculty publications

*Sivaramakrishnan Rajaraman, Guruprakash Subbiahdoss,

Gnanaprakash Dhakshinamoorthy, Subashini Rajakannu, published a paper in international journal titled '[Ocimum sanctum extract coating on biomaterial surfaces to prevent bacterial adhesion and biofilm growth](#)', Asian Journal of Pharmaceutical and Clinical Research, vol. 8, no. 3, 2015.



*Aarthi.R, Anitha.R, Rahul.M and **Mahesh V.**, published a paper in international journal titled "[Human Gait Parameter Estimation Using MEMS Sensor for Various Walking Speeds](#)" International Journal of Science and Innovative Engineering & Technology, Vol.1, May 2015, ISBN 978-81-904760-6-5.



***Dr. Mallika Jainu**, AP, S.Krishna Mohan, V. Vishnu Priya , published a paper in international journal titled "[Effect of pioglitazone, quercetin, and hydroxy citric acid on VEGF mRNA expression in experimentally induced nonalcoholic steatohepatitis \(NASH\)](#)" in Turk J Med Sci, (2015) 45: 542-546.



*The following paper is presented in a National Conference: Vaishali Gupta, Vyshnnavi Parthasarathy, Shree Shyamalee V R, **Pravin Kumar S** and **Mahesh Veezinathan**, "[Respiratory Sound Based Illness Detection Tool](#)", Fifth National Conference on Computational Intelligence, Security and Systems (NAC-CISS' 2015), Salem, TN, India.

*The following paper is presented in an International Conference: Pramila and **Mahesh Veezhinathan**, "[Comparision of Multivariate Adaptive Regression Splines and Random Forest Regression in Predicting Forced Expiratory Volume in One Second](#)" - LosAngeles, USA.



***Mr.R.Yuvaraj**, AP has completed his Ph.D. viva voce examination on the title "[Electroencephalogram based emotion recognition in Parkinson's disease using non-linear methods](#)" at University Malaysia Perlis, Malaysia.

Faculty activities

- * M. Dhanalakshmi AP, attended a two-day Workshop on "[Technologies for Speaker and Language Recognition](#)" organized by the department of ECE and IT at SSNCE.
- *Ms. K. Nirmala, AP has participated in "[One day Symposium on Present and future of HealthCare Instrumentation: Clinical and Technical Perspective](#)" organised by NHHID, Anna University, Chennai on 23.5.2015.
- *The Centre for Health care Technologies (CHT) had meeting with Prof. Balakrishnan, and Prof. K. R. Ramakrishnan of IISc, Bangalore on 4.5.2015 and discussed on ongoing research activities. Dr.V.Mahesh, Asso.Prof, gave the presentation and roadmap for research initiatives for the next five years.
- *Dr. Mallika Jainu AP, started a collaborative research work on diabetes with Dr. Vasudharani, Cell biologist from University of Baroda on 15.5.2015.
- *The department of BME organized a workshop on "[Two Days Workshop on Embedded Development Module Using Lab VIEW](#)" on 31.3.2015 and 1.4.2015. Dr.V.Mahesh Asso.Prof, Dr.S.Pravinkumar, Asso.Prof and Mrs. B. Geethanjali, AP co-ordinated the program.

WORKSHOP ON EMBEDDED DEVELOPMENT MODULE USING LABVIEW



- *Ms.J.Delpha, AP and Mr.R.Yuvaraj, AP attended one dayworkshop on [Moodle LMS Usage](#) held in CAD lab, Dept. of Mechanical Engineering, SSNCE on 16-5-2015.
- *Ms.R.Nithya, AP and Dr.Sachin AP, attended two weeks AICTE sponsored summer school on '[Computer aided product design](#)' organized by Dept. of Mechanical Engg., SSNCE.
- * **Mr. R. Sivaramakrishnan**, AP has completed his Ph.D. viva voce examination on the title "[Novel chromosomal image processing techniques for performance enhancement of automatic karyotyping](#)" at RMK Engineering College on 18.5.2015.

Warm Greetings



The Biomedical department extends a very warm welcome to the two new members who have joined the ranks of the teaching fraternity.

Ms.K.Nirmala, Assistant Professor in the Department of Biomedical Engineering has 12 years of teaching experience. She has completed her under graduation in Bio-Medical Instrumentation Engineering from Avinashilingam Deemed University, Coimbatore in 2000 and her Post-graduation in Medical Electronics from College of Engineering, Anna University in 2002. Her areas of interest include Image processing, Medical electronics, Bio-medical Instrumentation. She is currently pursuing PhD in Anna University, Chennai.



Dr. R. Yuvaraj, has done B.E. in Electronics and Communication Engineering from Anna University, M.E. in Bio-Medical Engineering (Gold Medalist) from the same university and Ph.D in Bio-Medical Electronic Engineering at the School of Mechatronic Engineering, University Malaysia Perlis (UniMAP), Malaysia, in April 2015. His research interests include EEG signal processing, computational neuroscience, affective computing and cognitive neuroscience. He has received innovative research awards (1), medals (4) and certificates on excellent publications and research. He has published several papers (8).





STUDENT'S CORNER



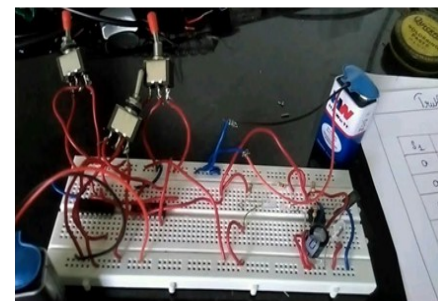
* Haripriya, Sandhya and Bhargavi, second year won the **circuit designing contest held by the SSN-EMB Society** while Abinaya and Nagavarshini, second year were the runners up and Mohammad Ajmal, Madhumitra and Nova Belle, III yr were placed third.

*Atul Taneja and Vishal Eswaran, third year won third place in the **'Socket' circuit designing event at Corona** conducted by the ECE Department of SSN College of Engineering.

*Sunanda and Kiruthiga Manickavel of third year attended the **Kaizen Robotics Workshop** conducted by Lema Labs at IIT Research Park.



**Circuit Designing-
Winning team**



**Corona 2015-Third place
winning circuit**

INTERNSHIPS

- * Saravana Prakash of final year interned at **IIT Madras** in Neuromechanics
- *Banu Saranya of final year interned at **IIT Madras** in development of multimodal contrast agent
- Shraddha Suresh Menon of final year did a Summer research fellowship in **IISER, Kokata**
- *Deepak V D of final year interned as a Graphic designer in **Gapoon, Bangalore**
- *Haritha S, Pavithra M, Sruthi M, and Vallabhi Venkatesh of final year completed an in-plant training at **Biometric Cables, Ekkatuthaangal.**
- *Shilpa PA of final year interned at **Perfint Healthcare Pvt.Ltd.**
- *Shraddha S and Gayathri Mohan Kumar of final year interned at **DRDO, Bangalore**
- *Varsha and Alagu Sala of final Year interned at **IIT Madras**
- *Ahila Adaikammai and Prathyusha Ravichander of third year attended 7 days internship Program hosted by **Billroth Hospitals, RA Puram.**
- *Chandramouli Ramesh, Gopichandran, Krishnapriya Arulmurugan and Tamizhamuthan, third year took up an internship at **Apollo Hospitals, Vanagaram.**
- *Chitra Ravi, Vaishnavi Gopalakrishnan and Vinisha Venugopal, third year attended an internship program at **Right Hospital.**
- *Krishna Bairavi Soundarajan, third year was an intern at **Perfint Healthcare Pvt.Ltd.**
- *Maduvanathi Soundirarajan and Sushmitha Sampath, third year were interns at **Frontier Lifeline Hospital** for a week.
- *Monica Ashokumar of third year was involved in an internship program at **Sri Ramachandra Medical Centre.**
- *Rosheema Bala of third year worked with **Tuscano Equipments Pvt.Ltd** for three weeks.

PLACEMENT

SSN

Job

Zifo Technologies is a **Specialised Research Data Management Service provider**. Zifo provides specialised services in **Clinical Data Solutions, Discovery & Lab Informatics and Technology Services for regulated environment**. Students placed in Zifo:

- Archana S
- Banu Saranya A
- Nandini T
- Settipalli Dinesh Kumar Reddy

Mu Sigma is a **management consulting firm** that primarily offers analytics services. Students placed in Musigma :

- Bhavana V
- Haritha S

HIGHER STUDIES

Passed out batch 2015

Sanajana S :Master of Engineering Management
Duke's University, North Carolina



Sneha priya



R.S. Gayathri

I. Yuvadarshini : M.S. Biomedical Engineering
Nanyang Technological University
Singapore



S.Sanjana



Yuvadarshini.I

R.S. Gayathri : M.S. Biomedical Engineering
Arizona State University

Sneha priya : M.S. Bioengineering
University of California, San Diego

S. Divyalakshmi : M.S Biomedical Engineering
Texas University, Arlington



S.Divyalakshmi



Master Minds



COLLABORATION, COMRADRIE AND CIRCUITS

On the 15th of July, 2015, a Circuit designing event was organized by the IEEE-EMBS student chapter of SSN. It was an intra-department contest which had second and third year biomedical students battle it out in two rounds.

The first round of preliminary selections focused on just the overall design of the circuit. A problem statement was issued and the contestants were required to solve it and come up with a clever circuit without the use of microcontrollers. The circuit was judged on the basis of four important criteria:

- Relevance to issued statement
- Economic viability
- Efficiency
- Appearance.



Preliminary round



Final round



Your Projects - A Gateway to the Industry

Department of Biomedical Engineering organized a technical meeting on [July 04, 2015](#) under the banner of *IEEE EMBS student chapter*. Thirty two members including II & III year UG students participated and get benefitted. The meeting began at 09.30 am and ended at 12.30 p.m. The meeting was coordinated by Dr. S. Pravin Kumar, and Dr. V. Mahesh.

Mr. Sri Logeshwaran, an alumnus of the SSN BME department, working in HCL Medical Devices Business Unit discussed about industry relevant project ideas that can be worked upon and about how to proceed further. He also spoke about the job opportunities available for biomedical engineers. His earlier UG projects in association with Aries Biomed Technology Pvt Ltd., were also discussed about, which was quite inspiring. After the discussion, all the technical queries posed by the students were answered by him.

INTERACTIVE SESSION ON MEDICAL INSTRUMENTS

An Interactive Technical Q&A Session was held on the 14th of July, 2015 with the Technical Consultant of Health Care Technologies and Innovation Centre, Mr .Jayaraman Kiruthivasan. SSN IEEE EMBS Students involved in projects with Sri Ramachandra Medical University attended the session.

The key topics covered were:

Wearable ECG device

Discussions revolved around the advantages of the existing Bluetooth method, recent boards used and also on the processing part and app development. Few software were also suggested to fasten the project.

Non-invasive Glucometer

The discussions involved the choice of sensors and current technologies. Students were advised to not only focus on the Engineering point of view but also the Medical point of view.

MRI Metal Scanner

The discussions involved validation of the student's ideas, and critical analysis of the problem statement given.

Urea and Creatinine Monitor

The existing ideas and trending work were critically analyzed and suggestions on how to proceed were given.

Dialysis Membrane and Machine

Discussions involved ideas of making the machine economical, the membrane smaller and reusable.

Insulin Pump

Discussions revolved around how to separate the project from existing technologies and the sensors to be used.



Events in the near future



- **Srishti**, a national level symposium of the Biomedical Department will be conducted on 3rd September, 2015.

The poster for SRISHTI 8.0 is a dark-themed graphic with a central brain icon. It lists various activities and prizes. At the top, it says 'SSN COLLEGE OF ENGINEERING ASSOCIATION OF BIOMEDICAL ENGINEERS PRESENTS A National Level Technical Symposium'. The title 'SRISHTI 8.0' is in large, glowing letters. Below the title, there are two columns of activities: 'TREASURE HUNT', 'MATH ATTACK', 'CONNEXIONS', 'GAMING', 'QUIZ IT!', 'ONLINE PHOTOGRAPHY', and 'BLACK AND WHITE' on the left; and 'PAPER PRESENTATION', 'POSTER PRESENTATION', 'CIRCUIT DEBUGGING', 'CODEZILLA', 'ROAD RUNNER ROBOT', 'PROJECT EXPO', and 'WORKSHOPS' on the right. In the center, it says '₹75K Worth Prizes THURSDAY 3rd SEPTEMBER 2015'. At the bottom, there are contact details: 'DEADLINE: Abstract submission for Paper and Poster presentation 25.08.15', 'CONTACT: LOGANATHAN 95000 42520, ARCHANA 96295 13624', and social media links: 'www.fb.com/ssnsrishti', 'srishtibme@gmail.com', and 'www.srishtissn.com'.

- **Two workshops** are to be conducted on the 3rd of September, as a part of the technical symposium, Automation and Robotics workshop and Matlab workshop
- **Global Wireless Summit 2015** will be held in Hyderabad, India during December 13-16, 2015.
- **International Conference on Nanoscience, Nanotechnology and Advanced Materials** will be held at Vishakapatnam, India from 14th to 17th of December, 2015 .
- **MAMI 2015- International Conference on Man and Machine Interfacing** will be held at Bhubaneshwar, India from the 17th of December to the 19th of December.

BIOMEDICAL ENGINEERING DEPARTMENT INAUGURAL CEREMONY REPORT - 2015

The Annual Inauguration of The Association of Bio-Medical Engineers for the year 2015 was held on the 29th of July in a grand manner.

The Promo video and the poster for the Technical Symposium SRISHTI version 8.0 was released as a part of it.

The chief guest Dr M.M.YUSUF, Cardiothoracic surgeon of Global Hospitals, Chennai, graced the occasion with his presence. The dignitaries Dr.A.Kavitha, the head of the department, the Dean Dr.Kasturi and the student coordinator Mrs.M.Dhanalakshmi added glory to the function by their presence.



Our Department President V.Loganathan shared the Glory of the Department and the achievements of the Srishti version 7.0 in his presidential address. He also introduced the Association members of the Srishti 2k15 :

- President - V.Loganathan.
- Vice President - S.Archana.
- Secretary - M.Geetha Priyaa.
- Treasurer - K.Karpaga Priya.
- Event Coordinator - R.Harikrishnan.

Fitness headband adds body temperature to movement and heart rate monitoring

The Spree Fitness Monitor from Hothead technologies functions as both a traditional sweatband and fitness tracker, and is claimed to be the first monitor to track body temperature in addition to movement (time, speed, and distance) and heart rate.

Various studies have shown that elevated body temperature can adversely affect physical performance and reduce the benefits of exercise. In operation, the Spree Fitness Monitor - in conjunction with a free Spree app running on any Bluetooth v4.0 (which includes Bluetooth low energy as a hallmark feature) enabled smart phone or tablet computer enables users to monitor their optimal temperature movement-heart rate workout zone in real time.

A small 'Performance Optimization Device' or 'POD' that fits securely into a water-resistant silicone elastic headband, measures temperature from the forehead via a thermistor, heart rate via a 'photoplethysmograph' optical blood volume measurement technology employed in most emergency room pulse oximeters, and motion via a triple-axis accelerometer. Developer Hothead technologies says this makes the Spree far more accurate than existing wrist or foot worn devices, while eliminating the discomfort (especially for women) of traditional heart rate chest straps.



Wristband securely identifies users from unique heart beat signature

Canadian startup Bionym's plastic wristband measure's the unique electrocardiogram(ECG) characteristics of a user's heart beat so accurately that its developers claim it can be used to provide secure three-factor security identification. Bionym suggests the wristband could eliminate the need to punch passwords and codes into mobile devices.

Called the 'Nymi', the device works by placing a finger on a topside sensor on the wristband to contact a sensor touching the user's wrist..This action completes an electrical circuit and triggers an ECG scan. After a successful scan, the Nymi vibrates, flashes LEDs and authenticates the user's identity with any paired device using *Bluetooth* low energy wireless connectivity.

Paired devices remain 'authenticated' until the Nymi is taken off. The unit also has motion sensing and proximity detection allowing users to perform remote, gesture-specific commands, that according to Bionym, could include the wearer twisting their wrist in order to, for example, unlock a car door.

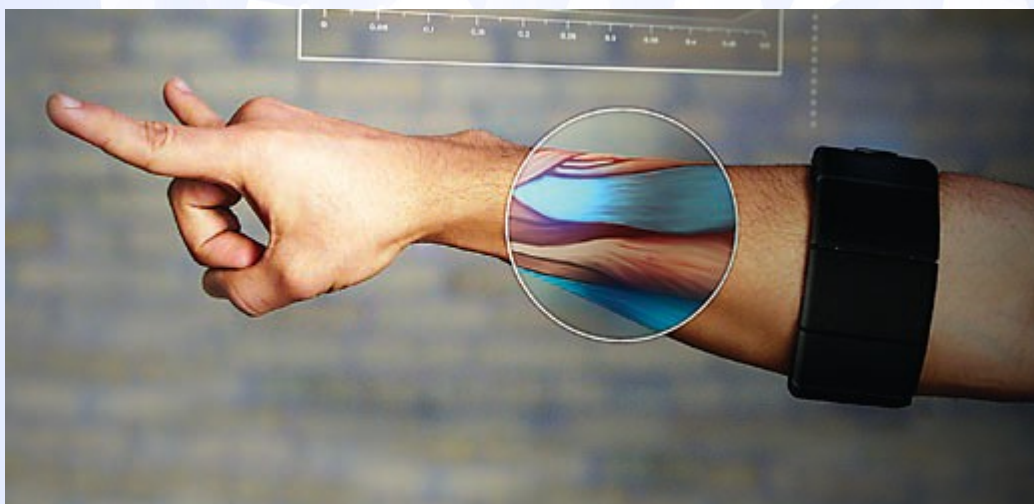


Wireless gesture control for Smartphones and Computers

The \$149 Myo armband from North American startup Thalmic Labs enables wireless gesture control using *Bluetooth* low energy technology of any computercontrolled device by ‘reading’ hand and arm movements alone. Myo is a wearable armband that fits over a forearm and reads electrical signals produced in the muscles of the user’s arm. These signals are cross referenced with data from a 9-axis inertial measurement unit (IMu), which includes a gyroscope, magnetometer and accelerometer.

Potential applications include business presentations, gaming, remote control, healthcare, safe industrial machinery and automation control, and assisted-living products for the elderly or disabled.

The Myo is powered by an on-board rechargeable lithium ion battery and uses a Nordic nrF51822 SoC for its wireless connectivity. The nrF51822’s ultra low power consumption is said to extend battery life. The device is available now in the market.



Thalmic Labs was recognized in the “CNN 10: Startups to watch” list in June this year.



EDITORIAL TEAM

STAFF EDITORS

Dr. A. Kavitha

Dr. Mallika Jainu

STUDENT EDITORS

Muthu Meenakshi S, Final year

Nandini T, Final year

Archana S, Final year

Deepak V D, Final year

Deepika Raman, Third year

Lavanya Krishna, Third year

Tanushree Devi, Third year

Nandhakumar V, Second year

mail us at:

editorial.ssnbme@gmail.com

SSN