

VOLUME 08 ISSUE 01

# Synergy

A BIOMEDICAL NEWSLETTER



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## EDITORS DESK

Warm greetings to everyone!!!

In this edition of the department's newsletter we share with you the great accomplishments of our students.

The department witnessed many exciting events like VIDHAAN, INVENTE, and specially organized workshops for students by the IEEE-EMBS student chapter.

With this we present to you the First issue of the eighth volume of our department newsletter, SYNERGY.

*May the New Year bring you an abundance of endurance and inspiration in the difficult road of success.*

*Happy New Year 2020.*

*Editorial board.*

## HOD'S DESK



*It gives me a great pleasure in releasing the first issue of the eighth edition of our department Newsletter, Synergy.*

*The issue highlights the various activities that happened in the department and the campus during the months of July to December 2019.*

*I congratulate the students and faculties for their accomplishments.*

*I would like to thank the faculties and students in the editorial board for their sincere efforts in helping to release this edition.*

*Wishing you all a very happy and Prosperous New Year 2020*

*Dr. A. Kavitha*

## CAMPUS UPDATE

### *Best CEO- Life Time Achievement Award*

**BUSINESS TODAY** felicitates **SHIV NADAR** with **BEST CEO –LIFE TIME ACHIEVEMENT AWARD**. The jury recognized **SHIV NADAR** for the rapid strides made by the HCL group companies under his leadership and his contributions to education through the SHIVNADAR foundations.



## CAMPUS UPDATE

### *Roshni Nadar malhotra featured at #54 in FORBES most powerful women list*

‘The Annual Forbes 100 the most powerful women list’ features the smartest women globally, who are creating solutions for some of the world’s biggest problems, and the list represents the female leaders across six categories- Business, Media, Technology, Finance, politics and Philanthropy; while ranking them on the basis of four metrics wealth, media mentions, impact and spheres of influence.



<https://www.forbes.com/profile/roshni-nadar-malhotra/#3326dbdb726c>

## CAMPUS UPDATE

### SSN MUN

The sixth edition of the Model United Nations took place in our college on 30<sup>th</sup> August 2019 - 1<sup>st</sup> September 2019. The event ever since its inception in 2014, has been renowned for the standards that it has established in the MUN circuit in terms of the quality of the participation of delegates and the Executive Board members who have been a part of our conference. This edition of the MUN simulated four committees namely United Nations- Human Rights Council (UN-HRC), United Nations General Assembly-Disarmament and International Security (UNGA-DISEC), United Nations General Assembly – Economic and Financial Committee (UNGA-ECOFIN), United Nations- Security Council (UNSC). The other committee which involved reporting events in the committee either through words or through pictures was the International Press. The agenda of the UNSC was the Ongoing situation in Libya, HRC was addressing the role of minorities in post- conflict reconstruction with specific emphasis on their inclusion in legal, political, and economic institutions, ECOFIN was addressing the macroeconomic policy question of international trade and development with regards to external debt sustainability and financial inclusion, DISEC was creating a framework for Disarmament, Demobilization and Reintegration (DDR) and Security Sector Reforms(SSR) inclusion, DISEC was creating a framework for Disarmament, Demobilization and Reintegration (DDR)and Security Sector Reforms(SSR). The Chief Guest for the opening ceremony was Dr. R.Kannan, an Alumnus of Loyola College, Chennai, University of Madras, University of Birmingham and Madurai Kamaraj University. He honored the event by interacting with the students. Dr. Sunita Nair, faculty convener for the event and the Principal Dr. S.Salivahanan, were present at the opening ceremony.

## CAMPUS UPDATE

The event was declared open by the secretary general. Following which, the delegates proceeded to their committees for discussion and deliberation. The Organizing committee for the MUN comprised of students from different departments and years who came together to make this event a success. The event saw over 250 participants from across the country debating over the agenda of their respective committee over the course of the three days of the MUN. The level of debate that was displayed at the MUN was exemplary. Each committee gave away awards for the Best Delegate, High Commendation, Special Mention, Honorable Mention and Verbal Mention. Overall the event was a grand success and saw a huge rise in participation compared to its previous edition.



Chief Guest Dr.R.Kannan addressing the Students.



## CAMPUS UPDATE

### INVENTE 4.0

INVENTE 4.0 is a National level technical symposium conducted by the SSN College of Engineering. The Symposium took place on 13<sup>th</sup> and 14<sup>th</sup> of September. This two day technical festival started with its inaugural graced by the presence of our honourable Chief Guest for the day, Smt.P Gomathy, Manager-Digital Transformation-IOT , Tata Motors ,Dr. S. Salivahanan, Principal SSNCE, Dr. V. G. Idichandy, the Chief Mentor of Incubation and Innovation Centre in SSN. The Techfest magazine, TechVibe was released during this event. The gathering was addressed by Dr. S. Salivahanan who explicated about the achievements of SSN institutions and expedition of Invente 4.0. The Chief Guest, Smt. P Gomathy inspired the assembly with her words of wisdom about innovation and current trends in education systems. Many students from different colleges participated. It is a two-day Techfest built around encouraging budding engineers to discover hidden interests and enticing technophiles to showcase their talents with unbridled enthusiasm. This is a space for the tech-savvy, the fun-loving, and the puzzle-solvers to flaunt their abilities to the world. SSN's national level technical symposiums of eight departments amalgamate to form this massive technical festival.



## CAMPUS UPDATE

### TEACHER'S DAY CELEBRATIONS

Teachers' Day Celebration was held on September 05, 2019 at Justice Pratap Singh Auditorium. Mr. R.B. Ramesh, Indian Chess Grandmaster has kindly consented to be the Chief Guest. SSN Best Teacher Awards and Cognizant Best Faculty Award was distributed during the function. From Biomedical Department, Dr.S.Bagyaraj, Asso.Prof /BME and Dr.K.Nirmala, Asso.Prof /BME received Best Faculty award 2019.



## DEPARTMENT VENTURES

### ABE Inauguration

The inaugural of association of Biomedical Engineers for the academic year 2019-2020 along with the inaugural of Vidhaan 2019 an intra-college biomedical tech Fest was held on the 20<sup>th</sup> of August, 2019. The chief guest, Mr. Arvind Srinivas, Business Head- Ultrasound, Philips inaugurated the event. The event kick started with the introduction of the office bearers of ABE followed by the lamp lighting ceremony by the Chief Guest, Dr.A.Kavitha, HOD BME, Ms. Dhanalakshmi, Asst.Prof /BME, Arvinth Swaminathan, President/BME and Kirthana.N, Secretary/BME.



Chief Guest, Dr.Kavitha, Prof & Head and Ms.M.Dhanalakshmi AP/BME lighting the Lamp

## DEPARTMENT VENTURES

### ABE Inauguration

The talk delivered by Mr.Arvind Srinivas was a run-through of his learning journey. He gave an insight into how being a 'Why' person and 'How' person was important rather than being just a 'what' person. Other concepts of discipline and what is required non-technically in terms of attitude and personality to procure a job (specifically in PHILIPS!) was conveyed.

Followed by this, the students were awarded for their academic excellence and contribution to various departmental activities in the past academic year. The chief guest presented them with the awards.

The Best Performer for the academic batch 2015-2019 was awarded to 3 students:

1. Viswanath S
2. Praveen Kumar G
3. Om Prakash S

The following students were awarded for patent filing in the academic year 2018-2019:

1. Viswanath S
2. Praveen Kumar G
3. OM Prakash S
4. Apurva S

A certificate of appreciation was awarded to T Akshara Reddy, Yohanya.R, Prem Aravindan.J and Kavya V Kannan for their contribution to placement activities, innovation cell-in charge and as student editors respectively.

## DEPARTMENT VENTURES



Vishwanath S received Best performer for the academic batch 2015-2019



Yohanya. R received award for contribution to innovation cell in charge.



T Akshara Reddy received award for contribution to placement activities



Prem Aravindan. J received award for contribution as student editor.

## DEPARTMENT VENTURES

### Dr. John Sheets Visit

Meeting with Dr. John sheets, on 14<sup>th</sup> August 2019 at Sri Siva Subramaniya Nadar College of Engineering. John sheets has been a leader in the healthcare industry for the past 36 years. He has been recognized for innovation, change management and efficient product development. Known as a builder of strong collaborations within organizations and with customers, he is also known as being a mentor to his staff, many of whom have progressed to senior leadership roles.

John has served in senior management roles with the most respected names in healthcare. John was Senior VP, Corporate Research at Boston Scientific, and led Johnson & Johnson's ETHICON R&D as CTO. John also worked at US Food and Drug Administration, where he served as the Director, Office of Device Evaluation, which approves all medical device products in the US.

He is most recognized for his work in the field of ophthalmology, where is currently serving as President of Elisar Health, the innovation arm of Dr. Agarwals Eye Hospi- tals, the largest chain of eye hospitals in India and Africa. He also served as Global President of Hoya Surgical Optics, and achieved GMP certification and US FDA approval for their products. John has been an advisor to several start-ups and global companies and guiding InnFocus, a developer of a novel glaucoma treatment to a successful exit in 2016.

The meeting started with brief introduction about the College by **Mr.Amit Tyagi. Dr.A.Kavitha**, Prof & Head of Biomedical Engineering department briefed on the research activities carried out under Centre for Health care Technology and discussed the strength of the Biomedical engineering department. During discussion Dr. John Sheets insisted on the safety and effectiveness of the product that is to be developed and also suggested that students should have goal on the registration of the product and learn about patent search.

## DEPARTMENT VENTURES

He insisted that the technology must be patented instead of the product. He was interested in meeting the students and brief them on Bio control engineering and Material science He also discussed about few products like intraocular sensors that automatically switches power and another implant that stimulates the duct to secrete tear for the dry eyes.

John Sheets visited the department Lab facilities and interacted with the interns from Drexel University. During his visit he had discussion with the undergraduate.



Discussion with Dr. John Sheets

## DEPARTMENT VENTURES

### *Wall of fame*


*Dr.Kavitha, Prof & Head of the Biomedical Engineering department is recognized as one of the Top 20 Influential Women Educators in Tamil Nadu*

*uLektz Wall of Fame* is proud to announce "Top 20 influential Women Educators in TamilNadu". The initiative, which celebrates the achievements of female educators in TamilNadu, is split into two categories: Top 20 influential Women Educators and Most Promising Women Educators in Tamil Nadu.


The vision of this initiative is to celebrate the unique contributions of some of the finest women educators in the state of Tamilnadu, who have not only helped enhance education and enriched the lives of thousands of students but also played a key role in bringing the positive impact in the higher education.



**Dr. A. Kavitha Ph.D**  
Professor and Head  
SSN College of Engineering



**uLektz Wall of Fame**  
An initiative to identify, recognise and appreciate the contributors of higher education.



Dr. A. Kavitha, Professor and Head of Bio-Medical Engineering has over 19 years of teaching experience. She has 13 years of research experience in the field of Biomedical Instrumentation, Medical Image processing,



<https://www.ulectz.com/news/articles/ulectz-wall-of-fame-is-proud-to-announce-top-20-influential-women-educators-in-tamilnadu-/MTI4Mg==>



## DEPARTMENT VENTURES

*Research activity of the BME faculty has featured in the media.*

**Dr. B.Geethanjali**, Asso.Prof/BME and **Dr.V.Mahesh**, Asso.Prof/BME has tested if Indian classical music can alleviate hypertension. Their findings have been accepted for publication in the journal *Current Science*. Their study and analysis has featured in the magazine “*Research matters*”.

### **Can Indian classical music help in relieving hypertension? Yes, says study**



“

*"Listening to anonymous music from a different culture may curtail the emotionally rewarding path than listening to indigenous known music," says Dr B Geethanjali, one of the authors of the current study. She is an associate professor at SSN College of Engineering. "Apart from that, listening to classical music augments the intensity of neurotransmitters leading to pleasant feelings," she adds.*

“

*"The uccha swaras (or the consonants) and the laya swaras (or the dissonants) were very vibrantly spaced to create an experience that is both joyful and soulfully energetic in nature," states another author Dr Mahesh Veezhinathan, associate professor at SSN College of Engineering.*

<https://researchmatters.in/news/can-indian-classical-music-help-relieving-hypertension-yes-says-study>

## DEPARTMENT VENTURES

### Interns from DREXEL University

Two students from Drexel University, USA completed their summer internship at SSN, between 18<sup>th</sup> June 2019 and 24<sup>th</sup> August 2019. The details are given below:

1. Ms. Rheya Jain, completed her summer internship on synthetic larynx fabrication using 3D printing, Mentor: Dr. S. Pravin Kumar Asso.Prof /BME, Co-mentor: Ms. R. Nithya AP/BME.

2. Ms. Anna Masciantonio, completed her summer internship on “Virtual Reality as a Training Tool for Children with Neurodevelopmental Disorders”, Mentor: Dr. A. Kavitha, HoD/BME, Co-mentor: Ms.B.Divya AP/BME, Ms.S.Vidhusha, AP/IT.



Dr.A.Kavitha and BME faculty with the Interns from Drexel University

## DEPARTMENT VENTURES



BME faculty and student with the interns from Drexel University



# DEPARTMENT VENTURES

## VIDHAAN 3.0

Vidhaan, a biomedical tech fest held on the 20<sup>th</sup> of August, 2019 where the biomedical department comes together with mind boggling events both technical and non-technical. It is mainly aimed at introducing the inevitability of the biomedical domain in every engineer's work.

### EVENTS

#### TECHNICAL EVENTS

- Circuitrix
- Runtime Error
- Death note
- Rapid Logic

#### NON-TECHNICAL EVENTS

- Escape Room
- Mini Games
- World XI Auction
- Shutter Up

A total of around 280 participants participated in both technical and non-technical events. Overall cash prize of 10000 rupees was awarded to the winners of events.

# DEPARTMENT VENTURES

## Participants of Vidhaan 3.0



## DEPARTMENT VENTURES

### Ethical Committee Meeting

Second Ethical Committee meeting was conducted in the department and a list of 9 projects were presented before the committee. **Dr. A. Ruckmani**, Professor & HOD, Department of Pharmacology, Chettinad academy of Research and Education, (Chairperson), **D. Kumar, M.A., M.L.**, Advocate, High court, Chennai, (Legal expert ) **Mr. P. Shanmuga Sundaram**, Child Care Foundation, (One representative of non-governmental voluntary agency), **Dr. S. Pannerselvam**, Professor & Head, Department of Philosophy, Univeristy of Madras (One philosopher / ethicist / theologian), **Ms. Niranjani**, Asst Prof. Dept of Geography, Tourism and Travel Management, Madras Christian College (One Lay-person from the community) along with Principal, Dean and HoD were present during the meeting. The following projects were presented for ethical committee approval:

S.No	Project Title	PI / Co-PI
1	Development of Computer-aided Analysis for the diagnosis of Ocular Diseases using IR thermal imaging	Dr. N. Padmapriya / Dr. N. Venkateshwaran
2	Student Support Services, Self-Esteem and Self-Efficacy of first generation learners	Dr. S. Nanda
3	Investigation of Cognitive Ability for Neuro Degenerative Disorders using Virtual Reality	Dr. A. Kavitha / Ms. B. Divya
4	Design and development of composite blades for lower limb amputees.	Mrs. Dhanalakshmi M / Viswanath S, Praveen Kumar G, Om Prakash S.
5	A knee brace for Genu recurvatum.	Mrs. Dhanalakshmi M, / Kesiya M, Viswanath S
6	Analysis of Phonation Disorder	Dr. S. Pravinkumar
7	Analysis of muscle activity of muscles acting on ankle joint and movement of spine for designing an ergonomic chair	Dr. Sachin G. Sarate / Nivethitha M
8	EMG Analysis of Cricket Batsman forearm muscles while executing different phases of batting strokes	Dr. Sachin G. Sarate
9	Automated Weight Measurement Based on Anthropometry	Dr. V. Mahesh, Kavya Kannan, Kezia Sharon, Arvindh Swaminathan, Ananya, Vaishali, Jagadesh.

## DEPARTMENT VENTURES

### Guest lecture/Seminar/Workshop Organized

Research talk on "Spinal cord injury: Using combinational therapies to finding cure" was organized for BME students on 01.07.2019. **Dr. Anita Singh**, Associate Professor and Chair in the Biomedical Engineering Department at School of Engineering, Widener University Chester, PA delivered the talk and **Dr. A. Kavitha**, Prof & HOD/BME and **Dr.S. Bagyaraj**, Asso. Prof/BME Co-ordinated the event.

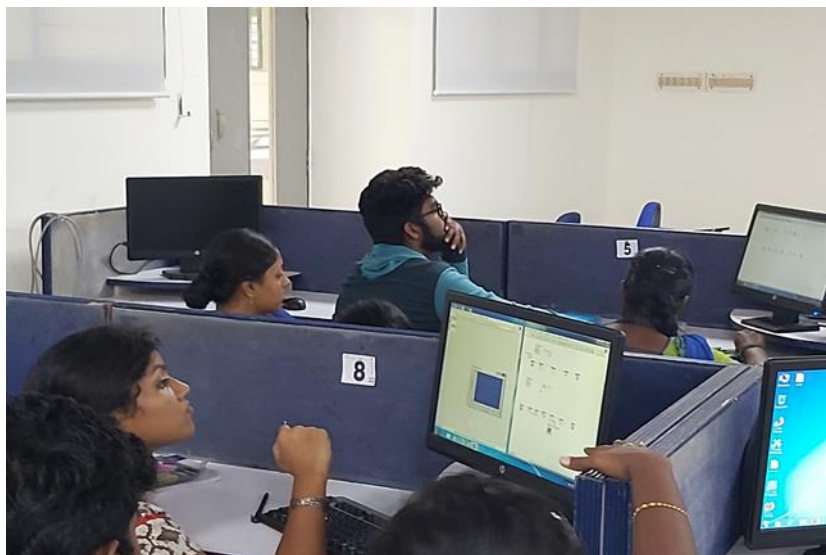


Dr. A. Kavitha, BME Faculty with the Chief Guest

## DEPARTMENT VENTURES

### Guest lecture/Seminar/Workshop Organized

One day hands on experience on “*Analog Discovery kit*” was given to third year Biomedical Students. The training was provided by **Ms. Anu** and **Mr. Kannaiya**, National Instruments, Chennai and Co-ordinated by **Dr.J.Vijay**, Asso.Prof /BME and **Dr. L. Suganthi**, Asso.Prof/BME.



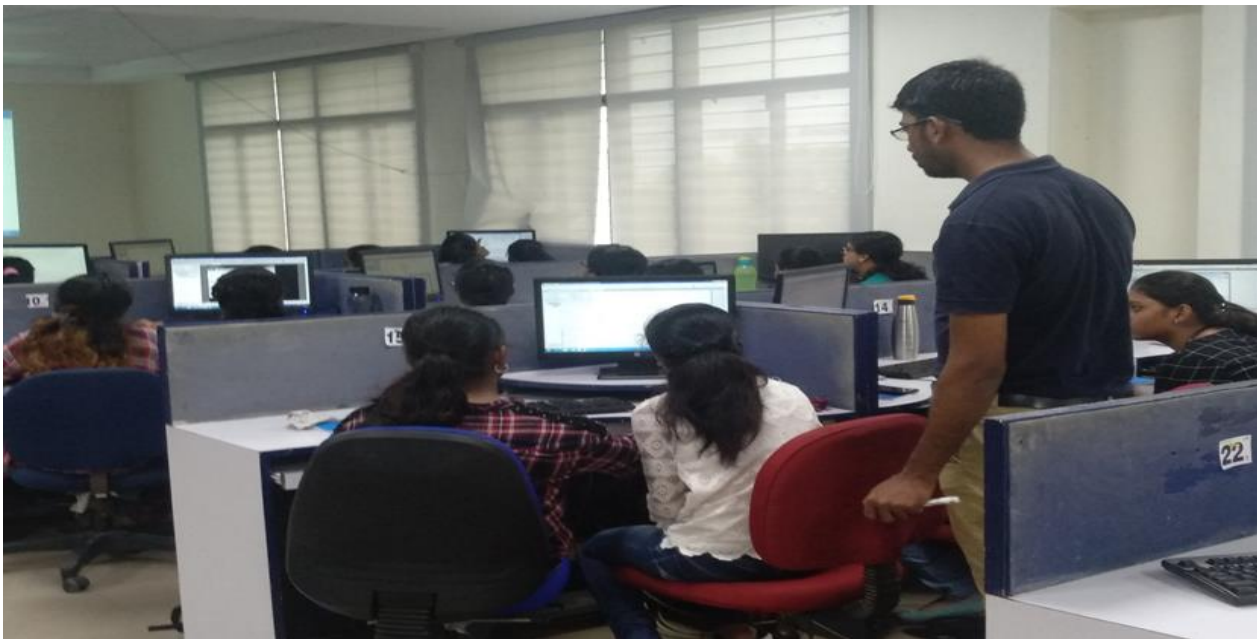
Third year students during the workshop



## DEPARTMENT VENTURES

### Guest lecture/Seminar/Workshop Organized

**Dr.S.Bagyaraj**, Asso.Prof/BME and **Ms.B.Divya**, AP/BME organized a two days' workshop on the topic "PCB designing using Altium designer" for third year Biomedical Engineering students on 6<sup>th</sup> and 7<sup>th</sup> August 2019. The sessions were handled by experts from Sai Incubation Center, Coimbatore. Altium designer is an electronic design automation software package for PCB, helps to design PCB from scratch just by dragging and dropping the components, it does not involve any tedious process to develop the same. The workshop had sessions for Basics of PCB, hands on session to work on Altium Designer Software and also methods for Etching, Drilling and Soldering.



Mr. Nagarajan helping the participants with working on Altium designer software.

## DEPARTMENT VENTURES



Participants of the Workshop



## DEPARTMENT VENTURES

### Guest lecture/Seminar/Workshop Organized

**Dr. A. Kavitha** Prof & Head/BME organized a lecture on "Biomedical Engineering Innovation" by Mr.Shreyas Dighe, Consure Medical, New Delhi on 23.8.19. Following the lecture a meeting was scheduled with faculty members to discuss the research initiatives of Biomedical department. **Dr. S. Bagyaraj** Asso.Prof/BME coordinated the programme.



BME faculty members with Mr.Shreya Dighe



## DEPARTMENT VENTURES

### Guest lecture/Seminar/Workshop Organized

**Dr.S. Arun Karthick** Asso.Prof/BME and **Dr.L. Suganthi** Asso.Prof/BME organized a guest lecture on "Nanocoatings for Biomedical Applications" by **Dr. P. Kuppusami**, DAAD & JSPS Fellow, Senior Scientist, Centre for Nanoscience and Nanotechnology, Sathyabama Institute of Science and Technology, Chennai.



Dr. P.Kuppusami, DAAD delivering his lecture on "Nanocoatings for Biomedical Applications"

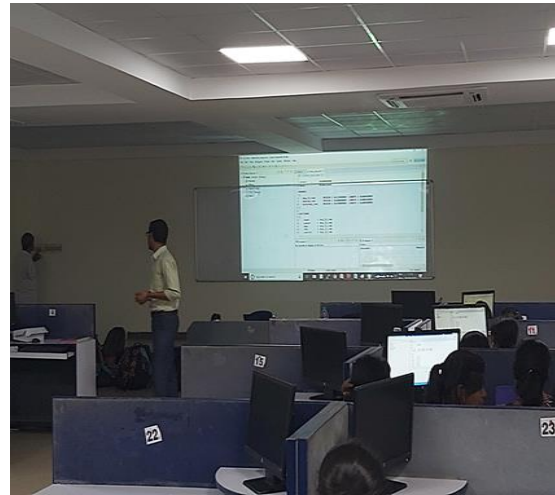


## DEPARTMENT VENTURES

### Guest lecture/Seminar/Workshop Organized

One day workshop on "Digital Signal Processor Applications with TMS320C6748 (OMAP L-138)" was arranged for Third Year BME students. **Mr. Mohammed Hussain G S**, Technical Manager from Starcom Information Technology Limited, Bangalore had given hands on exposure about DSP kit to the students. The event was organized by **Dr. J. Vijay** Asso.Prof/BME and **Dr. L. Suganthi** Asso.Prof/BME

The workshop made students to learn the applications of Digital Signal Processor and its importance along with hands on session of Digital Signal Processor TMS320C6748 (OMAP L-138) and its applications .



Mr. Mohammed Hussain G S, explained the students about the different aspects of Digital Signal Processor and it's importance

## DEPARTMENT VENTURES

### Guest lecture/Seminar/Workshop Organized

The department of Biomedical Engineering organized a two day workshop on "Statistics using SPSS tool for Biomedical Applications". **Dr. R. Ramanan**, Principal, Presidency College, Chennai, Treasurer, Indian Society for Probability and Statistics (ISPS), India, handled the sessions. He has about 25 years of research, consultancy and teaching experience in the application of Statistics to Bio-statistics. **Dr. L. Suganthi** Asso.Prof/BME, **Dr. S. Bagyaraj** Asso.Prof /BME and **Ms. B. Divya** AP/BME organized the event.

Statistics is used in day to day life in every field and in every sphere. The statistical analysis is required for a meaningful interpretation of available data by using appropriate statistical tools and software packages like SPSS. This workshop aims to provide simple ways of data analysis through interactive and practice sessions along with theory behind.

The workshop had sessions based on importance of Statistics in Biomedical Applications such as performing Parametric and Non-Parametric tests and techniques for performing Univariate, Bivariate and Multivariate Analysis.



Participants of the Workshop

# FACULTY VENTURES

## FACULTY INTERACTIONS

### Workshop/seminar/FDP/Seminar /training attended

1. **Dr. L. Suganthi**, Asso.Prof and **Ms. B.Divya**, AP attended EBSCO and IEEE online resource training program in Central Seminar Hall.
2. A workshop on "Accreditation" by **Dr. Ganesh Shankar Samudra**, Professor, NUS, Singapore is organized in CDC for faculty members of SSN. **Dr. A. Kavitha** HOD, **Dr. S. Pravin- kumar** Asso.Prof, **Dr. S. Bagyaraj** Asso.Prof, **Dr. L. Suganthi**, Asso.Prof, **Dr. K. Nirmala** Asso.Prof and **Ms. M. Dhanalakshmi** AP attended the programme.
3. **Dr. S. Bagyaraj**, Asso.Prof attended a workshop on "BME GATE awareness workshop for Biomedical Engineering Faculty" at IIT-Madras, organized by IIT-Madras and Center for Medical Electronics, Anna University, Chennai.
4. **Dr. S. Pravin Kumar**, Asso.Prof has attended the AusInoVex – II, an Indo Australian technical program bioprinting in medical applications at Kalam Convention Centre in AMTZ, Visakhapatnam.
5. **Dr. S. Arun Karthick**, Asso.Prof and **Dr. S. Bagyaraj**, Asso.Prof have attended a GIAN course on "Integration of Biomechanics, Control and Neurophysiology" held at NIT Trichy from 3.10.19 to 7.10.19.
6. **Dr. J. Vijay**, Asso.Prof participated in AICTE - ATAL workshop on Robotics for Healthcare organized by the Department of Biomedical Engineering, North Eastern Hill University, Shillong from 4.11.19 to 8.11.19.
7. **M. Dhanalakshmi**, AP attended a 6 day FDP on "Speech and Vision Enabled Intelligent Systems" organized by IEEE signal processing society-Madras chapter and Dept. of ECE, SSNCE from 18.11.19 to 23.11.19.

## FACULTY VENTURES

### Interaction with other organization

1. **Ms. B. Divya** AP, Ms. S. Vidusha AP and Ms Anandhasree Research Scholar visited NIEPMD and had discussions with Dr. Himangshu Das (Director/ NIEPMD), Shri. S. Sankara Narayanan (Deputy Registrar) and Shri. S. Karthikeyen (Head/Dept. of Clinical Psychology) related to research collaborations.
2. **Dr. J. Vijay**, Asso.Prof, has been appointed as Doctoral committee member by SRM University and attended first DC meeting at the school of Bioscience.
3. **Dr. J. Vijay**, Asso.Prof, visited Healthcare Technology center, IIT Madras Research Park and met Ms. Prathistha Jain, Incubation Manager, IITM HTIC MedTech Incubator to discuss the testing and calibration training facilities to PG Medical Electronics students.
4. **Dr. V. Mahesh**, Asso.Prof, visited Kauvery Hospital Chennai and had Research Discussion with Dr. Bhuvaneshwari, Consultant Neurophysiologist and Neurology.
5. **Dr. L. Suganthi** Asso.Prof, attended confirmation meeting for Ms. C. N. Savithri at Sri Sairam Engineering College.



## FACULTY VENTURES

### Interaction with other organization

6. **Dr. S. Bagyaraj**, Asso.Prof visited MS Ramaiah University of Applied Sciences, Bangalore and had a discussion with Dr. Preetham Shankapal, Professor, Dept. of ECE regarding on- going DRDO LSRB funded project.
7. **Dr. S. Pravin Kumar**, Asso.Prof visited Speech, Language and Hearing Department at Sri Ramachandra Medical University for the clinical observation of the current practices in the diagnosis and therapeutic procedures for voice disorders.
8. **Dr. L. Suganthi**, Asso.Prof attended research meeting with Dr. Karikal Chakaravarthi, Institute of surgical gastroenterology and liver transplant , Stanley medical College, Chennai regarding research proposal and data collection on 12.11.2019.
9. **Dr. S. Bagyaraj**, Asso.Prof attended an interactive session on “Funding opportunities for Biotech innovators at and beyond proof-of-concept” held at TV Lounge, Ground floor, IITM Research Park, Chennai on 19.10.19.
10. **Dr. S. Pravin Kumar**, Asso.Prof participated in the DBT Global Bio-India Roadshow held at Healthcare Technology Innovation Cell at IITM Research Park, Chennai on 22.10.19.

## FACULTY VENTURES

### Invited talk

1. **Dr. Sachin AP** gave a guest lecture at SMK Fomra Institute of Technology on "Physiology of Nervous System".
2. **Dr. L. Suganthi**, Asso.Prof delivered an Invited talk on " Design and Implementation of Signal and Image Processing Algorithms for biomedical Applications " and reviewed paper presentation as session chair in National conference on Diagnostic imaging in healthcare screening (DICON 19) organized by Department of Biomedical Engineering, School of Biology and Chemical Engineering, Sathyabama Institute of Science and technology association with GE healthcare Bangalore on 5-6 September 2019.



Dr.L.Suganthi Asso.Prof during Guest Lecture at Satyabama Institute of Science and Technology

## FACULTY VENTURES

### Invited talk

3. **Dr. V. Mahesh**, Asso.Prof gave a talk on “Course Opportunities & Career Guidance Through Planning”, during one day workshop on Holistic Personality development Programme at Higher Secondary School & Oriental Higher Secondary School, Kumbakonam for rural school and college students on 13.10.19.



Dr.V.Mahesh Asso.Prof addressing the School student

4. **Dr. J. Vijay**, Asso.Prof was invited as a resource person for the AICTE sponsored FDP on "Soft computing techniques and it's applications", organized by Anand Institute of higher education and technology, Chennai and he delivered a talk on the title "Machine learning approaches for Medical image retrieval and classification system" on Nov25,2019.



Dr.J.Vijay Asso.Prof honoured at Anand Institute of Higher Technology

# FACULTY VENTURES

## Faculty Research Activities

### Achievement

1. Smart India Hackathon 2018 committee selected project titled “Noninvasive blood glucose and hemoglobin concentration monitoring system” to build a startup out of the innovation and an amount of Rs.10 Lacs was sanctioned by the competent authority of the council/MIC for further development of the project. The project is guided by **Dr. L. Suganthi**, Asso.Prof.
2. The team titled “**Bioses**” mentored by **Dr.V.Mahesh**, Asso. Prof won the first prize in Smart India Hackathon 2019 hardware Edition at held at GE Healthcare, BSDU, Jaipur.
3. The team titled “**Techdocs**” mentored by **Dr.B.Geethanjali**, Asso. Prof won the first prize in Smart India Hackathon 2019 hardware Edition at held at GE Healthcare, BSDU, Jaipur.

### Patents Applied

1. Thalappil Pradeep, Anagha Yatheendran, Ramesh Kumar, and **S. Arun Karthick**, "An enhanced carbon dioxide sorbent nanofibre membrane and a device thereof", Application Number: PCT/IN2019/050555, 2019.
2. Mahalakshmi Nachiappan, **Vijay Jeyakumar**, and Thenmozhi A, “Implantable Baton Antenna using coplanar waveguide (CPW) feed”. File No.: 201941035032, 2019.

# FACULTY VENTURES

## Faculty Research Activities

### Conference Publications

1. **A. Kavitha**, Sucharitha S Prakash, Sreeja P, and Ancy Carshia S “Investigations on the Functional connectivity disruptive patterns of progressive neurodegenerative disorders”, IEEE-EMBC, Berlin, Germany, July 22-27 2019.
2. **A Kavitha**, Viswath Narayanan R, Yaamini D and Vidhusha S, “Cognitive Attention in Autism using Virtual Reality Learning Tool”, IEEE-EMBC, Berlin, Germany, July 22-27 2019.
3. Vidhusha S, **Divya B**, **A Kavitha**, Viswath Narayanan R and Yaamini D, “Cognitive Attention in Autism using Virtual Reality Learning Tool”, 18th IEEE International Conference on Cognitive Informatics and Cognitive Computing, Polytechnic Milano, Italy, July 23-25 2019.
4. Jan G. Svec, **S Pravin Kumar**, Ketaki V. Phadke, Jit-ka Vydrová, Adam Novozámský, Aleš Zita and Barbara Zitová, “Evaluation of Mucosal Waves Through Sharpness of Lateral Peaks in Videokymographic Images”, PEVOC - Pan-European Voice Conference, August 27-30 2019.
5. Kesiya M, Viswanath S, and **M Dhanalakshmi**, “A knee brace for Genu Recurvatum”, National Conference on Assistive technology for all 2030, Bangalore, August 2 & 3 2019.
6. S Viswanath, G Praveen kumar, and **M Dhanalakshmi**, “An external aid for cerebral palsy and drooping head syndrome”, National Conference on Assistive technology for all 2030, Bangalore, August 2 & 3 2019.

## FACULTY VENTURES

### Conference Publication

7. S Viswanath, G Praveen kumar, S OmPrakash, and **M Dhanalakshmi**, “Composite blades of lower extremity amputees”, National Conference on Assistive technology for all 2030, Bangalore, August 2 & 3 2019.
8. Jaba Deva Krupa Abel, Dhanalakshmi Samiappan, Kumar R and **S Pravin Kumar**, “Multiple Sub-Filter Adaptive Noise Canceller for Fetal ECG Extraction”, 2<sup>nd</sup> International Conference on Recent Trends in Advanced Computing, DISRUP-TIV INNOVATION, VIT, Chennai, Nov 11 & 12 2019.
9. **Mahesh Veezhinathan, Geethanjali B**, Sundereswaran and Vardhini, "Graph Theoretical Approach in Analyzing the effect of Alpha music on stressed participants", International Conference on Graph Theory and Its applications, SSNCE, Nov 20 & 21 2019.
10. **S Bagyaraj**, Kavya V Kannan, Premaravindhan, Suhashine, “Non Invasive Device for Extraction of Jugular Venous Pulse” International Conference on Engineering in. Medicine and Life Sciences (*ICEMLS - 2019*), PSG Tech, Coimbatore, Dec. 20 & 21 2019. (**Won Best Paper Award**).
11. Saritha Balu, **Vijay Jeyakumar**, “A Study on Feature Extraction and Classification for Tongue Disease Diagnosis”, Intelligence in Big Data Technologies - Beyond the Hype Proceedings of ICBDDCC 2019, Karunya Institute of Technology and Sciences, Coimbatore, India
12. **S Bagyaraj**, J Premaravindhan, Sanshanakrishnan R, Aishwarya R, Durgadevi SE, “Non Invasive Device for Extraction of Jugular Venous Pulse”, International Conference on Engineering in. Medicine and Life Sciences (*ICEMLS - 2019*), PSG Tech, Coimbatore, Dec. 20 & 21 2019.

# FACULTY VENTURES

## Journal Publications

1. Chengaiyan Sandhya & **A Kavitha**, “Analysis of speech imagery using brain connectivity estimators on consonant-vowel-consonant words”, International Journal of Biomedical Engineering and Technology, Vol 30, Issue 4, 329-343, July 2019.
2. **Suganthi L, Nirmala K**, Shaalu Sree B N, Pavithra S, & Yashvantha N, “Detection of Breast Cancer from Thermography Images”, International Journal of Engineering and Advanced Technology, Vol 8, Issue 6, 677-682, Aug 2019.
3. Gobi Nallathambi, Devi Baskar, **S Arun Karthick**, “Preparation and characterization of triple layer membrane for water filtration”, Environmental Science and Pollution Research, Aug 2019. (IF:2.914)
4. Barani B, Lakshminarayanan AK & **Subashini R**, “Microstructural characteristics of chitosan deposited AZ91 Magnesium alloy”, Materials Today: Proceedings, Vol 16, Issue 8, 456-462, Aug 2019.
5. Sandhya Chengaiyan, Anandha Sree Retnapandian, **A Kavitha** HOD, "Identification of vowels in consonant–vowel–consonant words from speech imagery based EEG signals", Cognitive Neurodynamics, October 2019. (IF:3.021)
6. **K Nirmala** and Vinoth Kumar Chinnababu, "Hybrid feature vector based detection of Glaucoma" Multimedia Tools and Applications, October 2019. (IF:2.101)
7. **S Arun Karthick**, Devi B and Gobi N, “Layer by layer nanocomposite filter for ABC filtration”, Chemical Engineering Communication, Dec 2019. (IF:1.431)

## FACULTY VENTURES

### Projects Applied for External Funding

1. **Dr. S. Pravin Kumar** Asso.Prof, (CZ): Dr. Jan G Svec, Co-PIs: Dr. A. Kavitha, Dr. Prakash Bhoominathan (Sri Ramachandra Medical University) and Dr. Ravikumar (Sri Ramachandra Medical University) submitted a project proposal titled “Development of a Speaking Machine and Tools for Simulating and Evaluating Vocal Fold Vibrations” for financial support to Department of Science and Technology under International Cooperation (Bilateral) Division.
2. **Dr. Geethanjali** Asso.Prof and **Dr. V. Mahesh** Asso.Prof submitted a project proposal titled “Automated Pacing External Pacemaker based on Physiological Signals” to BIRAC – BIG. Industry Partner: Mr. Arvind Savargaonkar, CEO, Streben Healthcare Private Limited. The project duration is 18 months and the budget amount is Rs. 49.9 Lakhs.
3. **Dr. S. Bagyaraj**, Asso.Prof, **Dr. S. Arun Karthick**, Asso.Prof and Dr. Dinesh Bhatia, submitted a project proposal titled "Development of an Integrated Continuous Wave Near Infrared Spectroscopy and Surface Electromyography System for Studying the Muscles During Different Activities" under UGC-STRIDE program with a budget of Rs.49.73 Lakhs.
4. **Dr. V. Mahesh**, Asso.Prof, **Dr. B. Geethanjali** Asso.Prof, Dr Griselda Calabrese, Mr Alyksandr Skye and Mr Graham Fellows submitted a proposal titled “Developing a VR-based method for enhancing Brain Cognition on Young Learners through Analysing EEG” under SPARC program with a budget of Rs.87.48 Lakhs.



## FACULTY VENTURES

5. Dr. R. Sundereswaran, Prof. Andrew Vince, Prof. Vince Vetter and **Dr. V. Mahesh**, Asso.Prof submitted a project proposal titled “Vulnerability parameters of graphs and their applications in Biomedical Engineering” under SPARC program with a budget of Rs.88 Lakhs.
6. **Dr.J.Vijay**, Asso.Prof, Dr.N.Venkateswaran, Prof/ECE and Ms.R.Nithya, AP submitted a project proposal titled “An Automated Medical Image Retrieval and Classification System in PACS” under SERB-CRG with a budget of Rs.19.56 Lakh.
7. **Dr.S.Bagyaraj**, Asso.Prof, **Dr.S.Arun Karthick**, Asso.Prof and Dr. Dinesh Bhatia, submitted a project proposal titled, “Determination of optimization parameters to study the efficacy of repetitive Transcranial magnetic stimulator rTMS and Neurofeedback NFB devices as a therapeutic intervention for post stroke movement restoration in elderly and disabled population” under DST-TIDE program with a budget of Rs 55.12 Lakhs.
8. **Dr.S.Arun Karthick**, Asso.Prof submitted a project proposal titled “Nasal Filter for Respiratory Protection by Molecularly Functionalized Nanofibrous Matrix against PM2.5” under SERB with a budget of Rs 15.29 Lakh.
9. **Dr.R.subashini**, AP/ and Dr. P.Senthil Kumar submitted a project proposal titled “Exploration of Chitosan hydrogel /Nano Zinc Oxide dressing for wound healing applications” under SERB-CRG with a budget of Rs.32.1 Lakh.
10. **Dr.A.Kavitha**, Prof, **Ms.B.Divya**, AP and Ms.S.Visdhusa, AP/IT submitted a project proposal titled “Virtual Reality for Autistic Care” under TNSCST- Science and Technology Project scheme with a budget of Rs.4.75 Lakh.

## FACULTY VENTURES

### External Project Update

- **Dr. S. Pravin Kumar** Asso.Prof presented the research proposal titled “Objective Diagnostic Measures with Computational and Experimental Modelling of Self-Induced Vibration of Vocal Folds and Influence of their Impairments on Human Voice” in the SERB meeting held at New Delhi.
- The first review meeting for the LSRB sponsored project titled, “Design and Development of Biosignal Controlled Hand Exoskeleton”, was held on 4/07/19 at 2.30 pm in the Conference Hall, Department of Biomedical Engineering. **Dr. A. Kavitha** HoD was the PI and **Dr. S. Bagyaraj** Asso.Prof & **Ms. R. Nithya** AP was the Co-PI of the project. During the meeting the following members came from DEBEL, Bangalore.
  1. Mrs. Manimozhi Theodore, Director-DEBEL
  2. Mr. Anandan, Additional Director-DEBEL
  3. Mr. K. Mohanavelu, Joint Director-DEBEL



## STUDENT PURSUITS

### *Smart India Hackathon 2019-Hardware edition*

Two teams from biomedical department has won Rs.1 Lakh each in Smart India Hackathon Hardware edition held at GE Healthcare, BSDU, Jaipur.

#### ***Team Bioses: Weight measurement for right dosage.***

#### **The problem definition:**

Measuring the human weight for right dosage administration for critically ill, traumatic patients with MRI compatible.

- **Abstract:** The idea was based on anthropometric measurement. Developed a system with IR sensor to measure the anthropometric measurement and calculated the weight of the participants.
- Mentor: **Dr. V. Mahesh**, Asso.Prof and Srilogeshwaran, Tata Elxsi (BME Alumni).
- Team members (IV yr BME)
  1. Aravindh Swaminathan
  2. Kavya Kannan
  3. Kezia Sharon
  4. Vaishali
  5. Ananya

# STUDENT PURSUITS



Smart India Hackathon 2019- Hardware Edition

## STUDENT PURSUITS

### 2. Team Techdocs:

Problem statement: Continues non-invasive measurement of BP without cuff.

- Abstract: A system based on EMF to measure BP continuously without cuff.
- Mentor: **Dr. B. Geethanjali** Asso.Prof Industrial mentor Mr. Zuber, GE health care.
- Team members: BME
  1. Subashini-4th year
  2. Varshini-3rd year

For both the teams: Dr. Ravi from IIT Kanpur acted as design mentor.

### **SIH Team Visit to GE healthcare, Bangalore**

GE healthcare invited, winners of SIH and its mentors **Dr. V. Mahesh** Asso. Prof and **Dr. B. Geethanjali** Asso.Prof for a 2 day visit to its facility centre in Bangalore on 16.09.2019 17.09.2019. The students Kavya, Ananya, Kezia Sharon, Aravind, Jagadesh, Vaishali from final year BME and Varshini from third year BME attended the programme. The visit was mainly to discuss about the next stage of the SIH work and also to intake students as intern at GE.



Photo taken during GE healthcare, Bangalore Visit

# STUDENT PURSUITS

## IEEE –EMBS Student Chapter

- IEEE - EMBS organized “Think Engineer”- a talk by Smart India Hackathon hardware edition winners on 01.08.2019. Student Coordinators: Venkatramanan GR, Bhavadharini T, Mayura Balagurunathan of III yr BME, Faculty Coordinator: **Dr. S. Pravin Kumar** Asso.Prof.
- A one day technical talk on Ventilators SV900c and portable ventilator was organised by SSN IEEE EMBS student chapter on the 22<sup>nd</sup> of February, 2019. The aim of the talk was to explain and demonstrate the working of ventilators, thereby helping them to study it practically and gain exposure to the real working conditions. The speaker demonstrated the procedures for calibrating and setting different modes of operation. The talk was well received by the participants, who also expressed their interest for future events. Apart from getting to know the mechanism of working of ventilators, the participants were encouraged to contribute to set different modes of operation, to improve and hone their skills in handling medical equipment. There were 4 members belonging to the organizing committee from SSNCE IEEE EMBS, whose contributions were important in making this event greatly successful.



During the Session

# STUDENT PURSUITS

## IEEE –EMBS Student Chapter

- A one day Workshop on PCB Designing using Altium software was organised by SSN IEEE EMBS student chapter on the 7<sup>th</sup> of September, 2019 as a part of the technical symposium called “INVENTE”. The aim of the workshop was to provide hands-on experience on the Altium software used for designing PCB digitally. The speaker educated the participants with the knowledge on how to use the software for designing and simulating PCB. The hands-on was well received by the participants, who also expressed their interest for future events. There were 4 members belonging to the organizing committee from SSNCE IEEE EMBS, whose contributions were important in making this event greatly successful.



- A two day technical talk on testing and calibration of various medical equipment was organised by SSN IEEE EMBS student chapter on the 6<sup>th</sup> & 7<sup>th</sup> of September, 2019. The aim of the talk was to explain and demonstrate how medical equipment like Defibrillators, diathermy machines, drug delivery pump, ventilator, patient monitor and ECG machines are calibrated and tested for safety in the medical field, thereby helping the students understand the importance of the same. There were theoretical and practical sessions presented by Mr. Dinesh Kumar and team to gain exposure to the real working conditions.



## STUDENT PURSUITS

### Industrial Visit

The students of the third year BME visited M/s. Accura Medical Systems, Cochin from 21.09.2019 to 23.09.2019 as part of their academic (Industrial Visit) to get exposed to medical equipment peripherals and accessories used for various purposes. **Dr. J. Vijay**, Asso.Prof and Ms. J. Suganthi accompanied with the students.



Third year students at Accura medical Systems, Cochin

### Alumni Interactions

**Ms. B. Divya AP** arranged an alumni Interaction with third year students. 2019 passed out students Mr. Pravin Kumar, Mr. Viswanath and Mr. Omprakash shared their experiences and motivated the students to undertake projects in the early semesters.

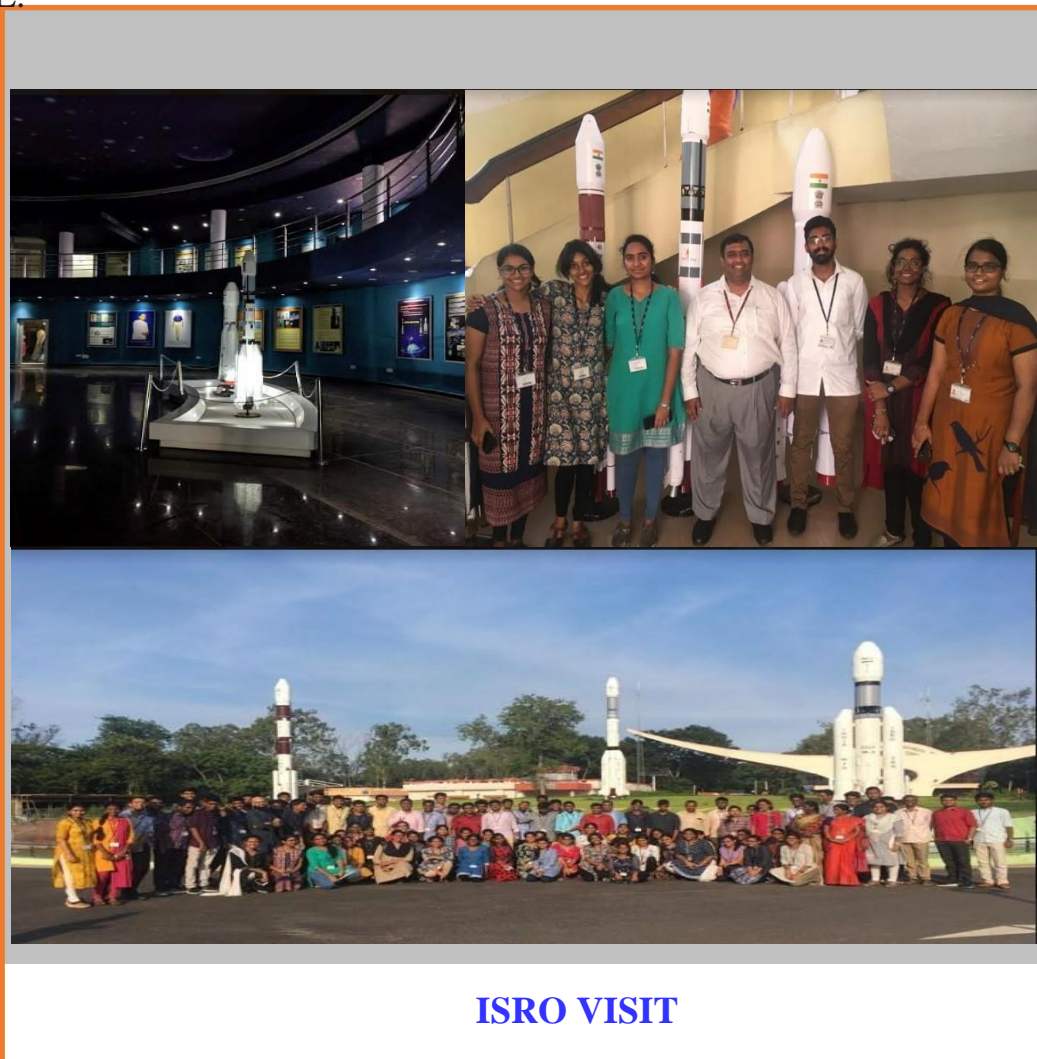
### ISRO VISIT

Students from every department were selected to visit the Satish Dhawan Space Centre (SDSC), ISRO-Sriharikota on 23<sup>rd</sup> September, 2019. Around 100 people,



## STUDENT PURSUITS

including the faculty members from each department, were taken to the SDSC by the college. The students visited the Mission Control Centre, ISTRAC (ISRO Telemetry, Tracking and Command Network), Launch pads and the museum. Various technical aspects of assembly, transportation, integration and launching of satellites and missiles were explained to the students and faculty members. Sai Kavya Neharika M C, Varsha Seshadri and Anjana A from 2<sup>nd</sup> year and Srinithi.R, Aarthi.R and Pranav from 3<sup>rd</sup> year were selected from the Biomedical Department along with **Dr. Sachin Gaurishankar Sarate**, Full-time doctor, Assistant Professor/ BME.



# STUDENT PURSUITS

## PLACEMENTS 2020

This year's placements began with a great amount of energy from the students, placement cell and the department!

First off, Super dream companies started coming followed by core companies, dream companies and etc. The students of the department of Biomedical Engineering have proved themselves in the past 3 months by setting a good placement record.

The first company where our department student got placed is Mckinsey and company, which is one of the top business consultancies in the world. L. An. Lindhiya got placed with them as a Junior Research Analyst for a super dream offer. Following that came latent View infotech, looking for data analysts. Four data enthusiasts of our department - Kiruthika N, Niharika G, Shwetha Madhavan and Sutheshnna D got a dream offer from the renowned firm. Given the strength of the department, 4 offers out of the 18 offers, was a positive sign in- deed.

Thus grew the impetus and enthusiasm shown to placements by our students and faculty.

Next up was a core company called Zifo which is a pharmaceutical research oriented company. Kavya Vijaya Kannan, Vindhya M, Suvetha G, Ruba M and Vaishali H bagged offers after a rigorous interview process. This was followed in parallel by the campus process of ZoomRx, where Vaishali H and Vindhya M got placed as business and community associates respectively.

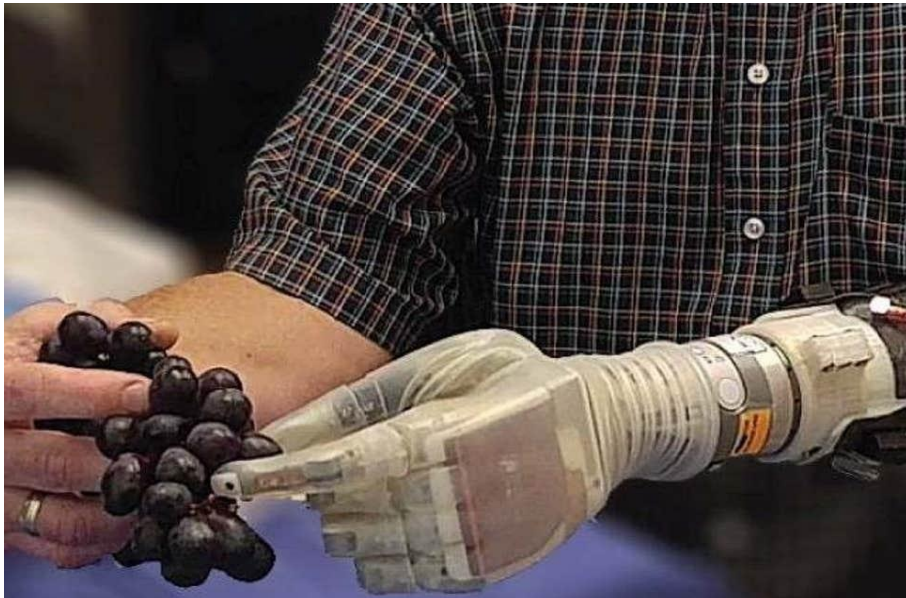
## ARTICLE

### The Star Wars-inspired LUKE Arm - Prosthetic arm that detects touch

-ANJANA A

In a breakthrough development from the University of Utah, a team of biomedical engineers has created a prosthetic arm that could restore the sensation of touch to amputees. Powered by a myriad of electrodes implanted into the muscles and connected to the brain, the high-tech prosthetic prototype has already proved successful in human clinical tests.

Keven Walgamott, an amputee who lost his left hand to an electrical accident almost two decades ago, was one of the first patients to test the prosthetic. Thanks to the inclusion of bionic fingers that can be controlled by the brain, Walgamott was able to successfully pick up a raw egg without cracking the shell, as well as carry out other complex hand movements. The team was led by Gregory Clark, Biomedical Engineering Associate Professor at the University of Utah. He pioneered the development of the LUKE Arm, which is named after the robotic hand gifted to Luke Skywalker in *Star Wars: The Empire Strikes Back*. By implanting electrodes into the muscles of amputees, Clark and his team were able to send signals to the brain and recreate the way a human hand touches and feels objects.



## ARTICLE

We changed the way we are sending that information to the brain so that it matches the human body; explains Jacob George, co-author of the study and biomedical engineering doctoral student at the University of Utah. And by matching the human body, we were able to see improved benefits he adds. We are making more biologically realistic signals. & of amputees, Clark and his team were able to send signals to the brain and recreate the way a human hand touches and feels objects. We changed the way we are sending that information to the brain so that it matches the human body, explains Jacob George, coauthor of the study and biomedical engineering doctoral student at the University of Utah. And by matching the human body, we were able to see improved benefits, he adds. We're making more biologically realistic signals.

### BRAIN ORGANOIDS PRODUCED IN LABS

-Elakiya Sivakumar (II year)

Scientists in the University of California, San Diego have managed to develop models of brain organoids in vitro. These organoids emit waves that are similar to human preterm infants. Head Scientist of the project, Allyson Moutri predicts organoids with much more sophisticated circuitry in about 10 years. The scientists used pluripotent stem cells from human skin to prepare the organoids. These stem cells were kept in an artificially designed environment that mimicked the developing conditions for the human brain. This resulted in the pea-sized organoids with neuron, synapse and ever-growing circuitry that emitted a single frequency brain wave in two months. After ten months, these organoids were able to emit waves of all frequencies an infant would. This however plateaued.

This is attributed to the fact that human brains have input which further develops the synapse and networking in the brain. The researchers attached the organoid to spider robots to get input and scientist Moutri said given time these organoids can

## ARTICLE

even develop a conscious. This is an important breakthrough in the field of medicine and biomedical engineering because frequency brain wave in two months.

After ten months, these organoids were able to emit waves of all frequencies an infant would. This however plateaued. This is attributed to the fact that human brains have input which further develops the synapse and networking in the brain. The researchers attached the organoid to spider robots to get input and scientist Muotri said given time these organoids can even develop a conscious. This is an important breakthrough in the field of medicine and biomedical engineering because scientists often trace the cause of several syndromes to brain development, including epilepsy, autism and schizophrenia. “The organoid is still a very rudimentary model – we don’t have other brain parts and structures. So these brain waves might not have anything to do with activities in real brains,” Muotri explained. “It might be that in the future, we will get something that is really close to the signals in the human brains that control behaviours, thoughts or memory.

This neural network malfunctions may even be fixed.

“The organoid is still a very rudimentary model – we don’t have other brain parts and structures. So these brain waves might not have anything to do with activities in real brains,” Muotri explained. “It might be that in the future, we will get something that is really close to the signals in the human brains that control behaviours, thoughts or memory.

## UPCOMING EVENTS



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