



**DEPARTMENT OF BIOMEDICAL
ENGINEERING**

SYNERGY



Volume 6

Issue 1

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From the HoD's Desk

It gives me immense pleasure to pen a few words as prologue to our department newsletter - "SYNERGY". Each issue of our newsletter is a milestone that marks our growth, unfolds our imaginations, and gives life to our thoughts and aspirations. This episode brings in a note of the campus updates and the staff and student activities during the first quarterly of the year. The highlights of the recently held international conference is also shared with pride.

I would like to congratulate the entire faculty crew, for their involvement and sincerity in achieving great things which decorate this newsletter. My best wishes to all the faculty and students for reaching, " Higher and Higher" in all their forthcoming endeavours at SSN.



Dr A.Kavitha
Prof. & Head/BME

From the Editor's Desk

Each passing year brings with it a change. A handing down of the mantel. So here we are, with a new vision and a new look. Like always this issue of Synergy would bring forward the best and the brightest of the department. We are truly proud of them. We have a line-up of achievements and event happenings from all around the department featuring mainly the ICBSII, 2017.

This edition covers the events for the months of January, February and March 2k17. With a right proportion of academics and extracurricular development, the Department strives at excelling in all fields with team effort from students and faculties. And we, the editorial team will bring to you the best of these handpicked news to your sight.

The department also saw a host of lectures for the students taken by experts and they were inspirational. We would also like to wish the seniors passing out this year, the very best and hope that they shine in all their future endeavours.

Editors

Ms. Delpha.J AP/BME

Ms. Laxmi.N AP/BME

Contact us at— editorial.ssnbme@gmail.com

Campus Updates

PROGRAM ON ENSURING GENDER RESPONSIVENESS IN WORKPLACE

- ◆ A special program on “Ensuring Gender Responsiveness in Workplace” was organized on 07/01/2017. The speaker for the session was **Mr. K. Ragothaman**, **Superintendent of Police (Retd.) CBI**.
- ◆ The session focused on women safety and security that is of a great concern in the present day.

SSN ALUMNI MEET—TRIBUTE 2K17

- ◆ The 8th annual alumni meet of SSN Institutions "**Tribute 2K17**" was held on 7th January 2017, Saturday at SSNCE Campus, Chennai
- ◆ This year's edition of Tribute included an exclusive professional musical band performance by AGAM, one of the most popular progressive Carnatic rock bands.
- ◆ The Music band received huge compliments than anything else.

SSN RESEARCH DAY

- ◆ SSN Research Day was held on 23/03/2017 during which faculty, research scholars and students were felicitated for their technical contributions
- ◆ **Dr. P. Ramasamy**, Director, SSN Research Centre and his team was instrumental in making it a grand success.



Respected dignitaries include Ms. Kala Vijayakumar President- SSN Institutions ,
Dr. S. Salivahanan ~ Principal, Mr. B. Srinivasan ~ Director MBA and Chief Guest along with
Dr. P. Ramasamy ~ Director, SSN Research Centre .

Campus Updates

INSTINCTS 2017

- ◆ **INSTINCTS**, the annual extravaganza hosted by SSN College of Engineering, is one of the largest cultural festivals in South India.
- ◆ Over **500 colleges** participating and over 3.5 lakhs worth of prizes, were highlights in this year's Instincts, held at the SSN college campus on March 3rd to 5th 2017.
- ◆ In its 12th successful year, this edition of Instincts delivered more, in style. From rock stars to artists, realists to gamers, it provided the best platform for everyone to showcase their skills and gain exposure to a greater audience.



Actor Jiiva was the chief guest for Instincts 2017



Ms. Kala Vijayakumar giving the memento to Actor Jiiva



Dr. G. Gnanasambandan was the judge for Pattimandram



Instincts 2017 team



Mr. Tarun Vijay inaugurated Saral Tamil Mandram

Campus Updates

ARMET 2017

- ◆ A 2 day- National workshop on Advances in Radiation Monitoring & Environmental Technology (ARMET-2017) was organized by the Department of Physics, SSNCE in association with Indian Nuclear Society, Kalpakkam Branch and Indian Association for Radiation Protection, Kalpakkam Chapter on 27th and 28th March 2017
- ◆ The audience included Radiation technology professionals, Environmental Scientists, Entrepreneurs/stakeholders involved in applications of radiation technologies, Research scientists engaged in radiation research and Policy makers /regulators.



The demo of the radiological equipments by **Ms.Chitra** and **Mr.Arun** from **IGCAR Radiological safety Department** was phenomenal. We thank **Dr. A. Rajalakshmi, HoD, Physics Dept/SSNCE** and the organisers for giving us an opportunity to attend the workshop.

SSN SPORTS DAY

- ◆ The 18th Annual Sports day was held on 31.03.17.
- ◆ The Chief guest, **Mr. K. Sankar** (Former FIFA World Cup Referee) declared the meet open by lighting the Olympic torch .
- ◆ Many athletic events were conducted under various categories for both students, teaching and non-teaching staff.



FACULTY ACHIEVEMENTS**FACULTY PUBLICATIONS**

- ◆ Subramanian, M., **Geethanjali, B.**, Seshadri, N. G., Venkat, B., and Vijayalakshmi, R. published their paper titled “Visualization of Brain Activation During Attention-Demanding Tasks Using Cognitive Signal Processing” in the International Journal of Cognitive Informatics and Natural Intelligence (IJCINI), 11(1), 60-81. (SCOPUS/TR indexed)
- ◆ Anitha, R and **Subashini, R.**, presented the paper titled “Evaluation of antibacterial potency and phytochemical screening of seed extracts of Butea monosperma (lam.)” in the International Conference on Recent Advancements in Chemical, Environmental & Energy Engineering (RACEEE -2017).
- ◆ Vardhini, P., **Geethanjali, B.**, **Mahesh Veezhinathan**, presented their paper titled "Effect of Relaxation Stimuli on Mental Task Performance" in the Fourth International Conference on Signal Processing, Communications and Networking (ICSCN'17), held at MIT Campus, Anna University, Chennai during 16-18th March 2017.
- ◆ Atul Taneja, Vishal, S B., **Geethanjali, B.**, and **Mahesh Veezhinathan**, presented their paper titled "Virtual Reality based Neuro-Rehabilitation for mental Stress reduction" in the Fourth International Conference on Signal Processing, Communications and Networking (ICSCN'17), held at MIT Campus, Anna University, Chennai during 16-18th March 2017.
- ◆ Sivaranjini, S and **Nirmala, K.**, presented their paper titled "Breast Cancer Response post Neoadjuvant Chemotherapy using MRI measurements" in the Fourth International Conference on Signal Processing, Communications and Networking (ICSCN'17), held at MIT Campus, Anna University, Chennai during 16-18th March 2017.
- ◆ Anandha Sree, R., **Kavitha, A.**, presented their paper titled "Vowel Classification from Imagined Speech using Sub-band EEG Frequencies and Deep Belief Networks" in the Fourth International Conference on Signal Processing, Communications and Networking (ICSCN'17), held at MIT Campus, Anna University, Chennai during 16-18th March 2017.
- ◆ Chitra R., Krishna Bairavi, Vinisha, V., **Kavitha, A.**, presented their paper titled "Analysis of Structural Connectivity on Progression of Alzheimer's Disease using Diffusion Tensor Imaging" in the Fourth International Conference on Signal Processing, Communications and Networking (ICSCN'17), held at MIT Campus, Anna University, Chennai during 16-18th March 2017.

Faculty Achievements

- ◆ K.P.S.G. Sugirtha and **Dhanalakshmi, M.**, presented their paper titled “Transliteration of Braille code into text in English Language” in the International conference on Nextgen Electronic Technologies: Silicon to Software, held at VIT University, Chennai on 25.3.17
- ◆ Barani, B., **Subashini R.**, presented the paper titled “Microstructural Characteristics Of Chitosan Deposited AZ91 Magnesium Alloy” in the International Conference on Advances in Materials, Manufacturing and applied Sciences (ICAMMAS-2017), at Sri Sairam Institute of Technology, Chennai on 30.3.17 –31.3.17

EXTERNAL FUNDING PRESENTATION

- ◆ **Dr. V. Mahesh Asso.Prof/ BME** was invited to present research work titled “Computer aided diagnosis for EMG and EEG” (PI: Mr. Saravanan, Xerion Labs, Chennai, Co-PI: Dr. V. Mahesh and Ms. B. Geethanjali (SSNCE as Incubation center)) in front of the task force BIRAC - Biotechnology Industry Research Assistance Council, New Delhi. Mr. Saravanan represented the team and presented the research work at BIRAC office on 15.2.17
- ◆ **Dr. V. Mahesh Asso.Prof/ BME** presented research work titled “Enhancement of Brain Cognition on Young learners through simplified Kundalini Yoga (SKY) based on Computational Neuro Physiological Models” (PI: Dr. Palaniyappan, St. Josephs college of Engineering, Co-PI: Dr. V. Mahesh and Ms. B. Geethanjali) in front of the task force DST-SATYAM - Science and Technology of Yoga and Meditation at North Cap University, Gurgaon on 21.2.17

EVENTS ATTENDED

- ◆ **Dr. A. Kavitha, Prof. & Head/BME** and **Ms. M. Dhanalakshmi AP/BME** attended SSN - Crest meeting held at SSN campus. Dr. B. Venkatraman, Outstanding Scientist and Associate Director, RSEG, IGCAR Kalpakkam and Dr. N. P. Rajesh, Prof/Physics led the discussion on the ongoing research work under CREST and other research possibilities.
- ◆ **Ms. Delpha.J AP/BME** attended a Two-day workshop on "Machine Learning Techniques for Image-Based Applications" at IT Department, SSNCE on 9.2.17 &10.2.17
- ◆ **Dr. R. Subashini, AP/BME** attended “Two days National workshop on Cellular & Molecular Diagnostics”, at Chettinad Academy of Research and Education, Kelambakkam on 10.2.17&11.2.17



Dr. R. Subashini at Chettinad Academy

OTHER ACTIVITIES

- ◆ **Dr. R. Subashini, AP/BME**, conducted the first Doctoral Committee meeting of her Full Time research scholar Ms. P. Meenachi (Reg No- 17244991105, Anna University, Chennai) at Dept. of BME, SSNCE on 09.01.2017
- ◆ **Dr. L. Suganthi, Asso.Prof/BME**, attended the first Doctoral Committee meeting of Ms. C. N. Savithri (Anna University, Chennai) in the Department of ECE, Sri Sairam Engineering College, West Tambaram, Chennai on 23.01.17
- ◆ **Dr. A. Kavitha, Prof. & Head/BME**, conducted the first Doctoral Committee meeting of her Part-Time research scholar Ms. Sathya Bharathy. S (Anna university, Chennai) at Dept. of BME, SSNCE on 28.1.17
- ◆ **Dr. V. Mahesh, Asso.Prof/ BME** was part of the SSN Cricket team that won the 3rd place in SSN cricket trophy on 12.2.17
- ◆ **Dr. A. Kavitha, Prof. & Head/BME** attended Board of Studies meeting for Regulation revision at CEG Campus, Anna University on 22.2.17
- ◆ **Dr. A. Kavitha, Prof. & Head/BME** attended a project proposal meeting with Dr. Udaykumar, Senior Paediatrician and Prof. S. P. Thyagarajan, Dean Academics, Sri Ramachandra Medical Centre on 27.3.17
- ◆ **Dr. N.P. Rajesh, Dept of Physics** and **Ms. Richa Malviya, AP/BME** along with students B.N. Shaalu Sree and S.Pavithra (III YR BME) had a research discussion with Dr. Venkatraman, Director of Health, Safety and Environment. The team also met Dr Menaka, Quality Assessment Division at IGCAR, Kalpakkam on 9.3.17

ADIEU TO MS KANCHANA.D

Ms. Kanchana.D joined full-time Ph.D in the Department of Applied Mechanics (Biomedical Engineering Group) at IIT– Madras under the guidance of Prof. Dr. S. Ramakrishnan.



Proud Moments—Alumni Achievements

SSN and the Department of BME is extremely proud of *Mr Sivakumar Palaniswamy*, our Alumnus for making it to the “Forbes list of Super Achievers!”

The team has found out a device that can detect jaundice in neonates using Optics principle. It has been noted that the rate of infants affected with jaundice is increasing at an alarming rate. Jaundice is one of the world’s most common problems and six out of every 10 new born babies, all around the world, have jaundice. If left untreated, it could lead to serious brain damage or even death, eventually. In order to detect the disease at an early stage and to decrease the complication for the infant, the same can be treated at an earlier stage. Neolight has filed a patent for the device. Our device costs only a fraction of the existing equipment, 90 per cent smaller in size, and runs on 2 per cent of the power that the existing devices need



Our Alumnus along with the co-founders of Neolight technologies

Few links to know more about the achievement,

Ray of hope- <http://www.thehindu.com/features/education/ray-of-hope/article6603057.ece>

Sivakumar (Shiva) Palaniswamy, Co-founder of Neolight at Third Annual Cure Corridor Event - <https://www.youtube.com/watch?v=H15rfBWMUwE>

Medtech's Rising Stars: Sivakumar Palaniswamy - <http://www.mddionline.com/blog/devicetalk/medtechs-rising-stars-sivakumar-palaniswamy>

NeoLight, a U.S. based start-up initiated by two Indians, hopes to play a key role in jaundice eradication.

- The Hindu

My blurb for SSN

Everyone is talented in this world as long as they are nurtured timely with proper resources. And I am so happy that my 4 years at SSN not only provide me with world-class exposure to science but also taught me humility, hunger and hustle'



- Mr Sivakumar Palaniswamy

(2007-11) batch / BME

STUDENT ACHIEVEMENTS

AWARDS AND RECOGNITION

- ◆ **A.Diana Chris - II M.E** received the Best Paper Award for her paper titled 'Clinical Parametric Analysis of Fetal Heart Rate Using Cardiotocography' in the International Conference on Contemporary Engineering and Technology held on 24th & 25th, March 2017.
- ◆ **Sivaranjini.S - II M.E** received the Best Paper Award of the Session for a paper titled 'Breast Cancer Response Post NeoAdjuvant Chemotherapy Using MRI Measurement' in the 4th International Conference on Signal Processing, Communications and Networking held on 16th-18th, March 2017
- ◆ Anandha Sree, R., **Kavitha, A.**, received the Best Paper Award for paper titled "Vowel Classification from Imagined Speech using Sub-band EEG Frequencies and Deep Belief Networks" in the Fourth International Conference on Signal Processing, Communications and Networking (ICSCN'17), held at MIT Campus, Anna University, Chennai during 16th-18th March 2017
- ◆ **Viswath Narayan.R - II BME** was certified as a Delegate at Young India Challenge organized by Human Circle held on 4th-5th March 2017.

NRDC PROJECT CONTEST

National Research Development Corporation (**NRDC**) in collaboration with National Scientific And Industrial Research (**NSIR**), Ministry of Science and Technology, Government of India conducted "**National Contest for Demonstrating Innovative Prototypes for Start-Ups**" which mainly focuses on the new budding prototypes from various streams of engineering students and research scholars.

NRDC selected top **14 projects across India** out of which **2 projects** were selected from **SSNCE BME** and conducted a final Jury round of the contest at Indian National Science Academy (**INSA**), New Delhi

1. **R.Abirami, N.Megala and S.Thamizhamuthan** "Mass Screening Device for Osteoarthritis" guided by **Ms Delpha.J** won the **first prize with a cash award of Rs 50000**

2. **Nova Belle P N, Mohamed Ajmal R** "Design and Development of Electrogastrogram Device" guided by **Ms Delpha.J** and **Ms B.Divya** made it to the final.



2 teams from SSN-BME at INSA



Awarding the winners



Finalists along with the Jury from NSIR and NRDC

JUGAADATHON

- ◆ It is the India's largest Medical technology innovation event. It took place in 5 centres across the country
 - ⇒ IIIT-D, Delhi ; IKP Eden, Bengaluru; SINE - IIT-B, Mumbai; KIIT, Bhubaneshwar; MIT, Manipal
- ◆ **S.Thamizhamuthan** of final year participated in the event at KIIT Bhubaneshwar, He along with his team were the first runner up for their invention "**Low cost spirometer**"
- ◆ **A patent for the same is also filled by the team**



1 hr · 🌐

#1st_runners_up @CAMTechMGH @jugaadathon
#indiahealthhack
@KIIT_University KIIT TBI



More details of the event can be found in the following links :

<http://www.jugaadathon.com/#top>

<http://www.globalhealthmgh.org/camtech/portfolio-item/camtech-x-jugaad-a-thon/>

CSI PROJECT COLLOQUIUM

26 projects out of 80 were selected for poster presentation based on abstract submitted.

D.Ganesh Kumar, K.B.Dixit, S.Sakthivel "A PDA to quantify driver's attention using EEG biofeedback" guided by **Ms B.Geethanjali** was presented to six panel members currently working in **TCS and Cognizant**

They were awarded the **second prize** , the project details were submitted to Cognizant and TCS to take it to the industry level.



Dr. A. Chamundeswari, , Prof CSE/SSNCE giving the prize to the students

DST & TEXAS INSTRUMENTS INC. INDIA INNOVATION CHALLENGE DESIGN CONTEST

DST & Texas Instruments Inc. India jointly organized “**DST & Texas Instruments Inc. India Innovation Challenge Design Contest 2016**” and over 11, 000 participants from 624 colleges submitted their ideas to the DST & Texas Instruments Inc. India Innovation Challenge Design Contest 2016 , out of that they have shortlisted 428 teams for the quarterfinals of the IICDC 2016 our project was one among them

Project titled: “Assisting the driver in stopping the vehicle by sensing Myocardial Infarction” (Team id: 1083) was selected

Students: Vijay Mani Shankar.L; Kiran Kailash.S; Akash.P

PAPERS PUBLISHED AND PRESENTED

- ◆ **Sugirtha .KPSG - II M.E** presented a paper titled ‘Transliteration of Braille code into text in English Language’ in International Conference on NextGen Electronic Technologies: Silicon to Software organized by School of Electronics Engineering at VIT Chennai, during March 23rd-25th, 2017.
- ◆ **A.Diana Chris - II M.E** presented a paper titled ‘Clinical Parametric Analysis of Fetal Heart Rate Using Cardiotocography’ in the International Conference on Contemporary Engineering and Technology held on 24th&25th, March 2017.
- ◆ **Vardhini.P - II M.E** presented a paper titled ‘Effect of Relaxation Stimuli on Mental Task Performance’ in the 4th International Conference on Signal Processing, Communications and Networking , organized by Department of Electronics Engineering, MIT Campus, Anna University held on 16th-18th, March 2017.
- ◆ **Gopichandran.R , Mr.Suryaprakash.D, Mr Vaibhav.M - IV BME** presented a project titled ‘Low cost Dialysis Machine in Project Expo 2017 on 15th March 2017 at Sri Chandrasekharendra Saraswathi Viswa Maha Vidyalaya University ,Kanchipuram.
- ◆ **Atul Taneja - IV BME** presented a paper titled ‘Virtual Reality based neuro-rehabilitation for mental stress reduction’ in the 4th International Conference on Signal Processing, Communications and Networking , organized by Department of Electronics Engineering, MIT Campus, Anna University held on 16th-18th, March 2017.
- ◆ **Barani.B - II M.E** presented a paper titled “Microstructural characteristics of chitosan coated AZ91 Magnesium alloy” in the 2nd International Conference on Advances in Materials and Manufacturing and Applied Science, organized by Department of Mechanical Engineering , Sri Sai Ram Institute of Technology, held on 30th-31st, March 2017

INTERNSHIP ATTENDED

- ◆ **Balaraman.D, Kiran Kailash.S, Vignesh.R, Gokularam.I, Annamalai.M** ~ III BME completed their internship training at Kauvery Hospital, Chennai from 3rd to 13th January 2017.
- ◆ **Omprakash.S, Arun Kumar.K, Viswanath.S, Praveen Kumar.G, Sangeetha, Asha.R, Apurva, Abarna** ~ II BME completed their internship training at Kauvery Hospital, Chennai from 3rd to 13th January 2017.
- ◆ **Yamini Nandakumar, Meena Nisha.M, Kertana.S** ~ III BME attended 'One week Inplant Training' at M/s. Bio Vision Medical Systems, Chennai from 26th-2nd Jan 2017.
- ◆ **Narathana**– IV BME completed internship training in Appasamy Ocular Devices (P) LTD from 17th December 2016 to 5th January 2017.



EVENTS ATTENDED

- ◆ **Sugirtha.KPSG & Sivaranjani.S** ~ II M.E attended the Two days Workshop on “Recent Trends in Medical Image Processing Techniques and Applications” organized by Centre for Medical Electronics, CEG Campus, Anna University held on 6th-7th, March 2017.
- ◆ **Vishnupriya.K** ~ II M.E participated in the hands on workshop on ‘ARDUINO’ during 10th-11th February 2017 at Department of Electrical and Electronics Engineering, SSN College of Engineering.
- ◆ **Vishnupriya.K, Sivaranjani.S & Diana Chris.A** ~ II M.E participated in the “2-Day Seminar on Statistical Methods for Bio-signal and Image Processing” organized by the Department of Biomedical Engineering, SSN College Of Engineering on 23rd & 24th February 2017.
- ◆ **Vardhini.P** ~ II M.E participated in the “2-Day Seminar on Statistical Methods for Bio-signal and Image Processing” organized by the Department of Biomedical Engineering, SSN College Of Engineering on 23rd & 24th February 2017.

SPORTS

- ◆ **Anjana.K.R. - II BME** is a **Tennis player**, following are her achievements in this semester,

NAME OF THE TOURNAMENT : State level inter university tournament

ORGANISED BY : DB Jain College (Chennai)

DATE : 2.01.2017-3.01.2017

SECURED : fourth place (represented the Anna university team)



NAME OF THE TOURNAMENT : LICET tournament

ORGANISED BY : Loyala ICAM (Chennai)

DATE : 19.01.2017-20.01.2017

SECURED : third place in women singles (represented SSN)

NAME OF THE TOURNAMENT : VNR_VJIET tournament

ORGANISED BY : VNR_VJIET - (Hyderabad)

DATE : 21.02.2017-24.01.2017

SECURED : 1st place in Women Doubles (represented SSN)



NAME OF THE TOURNAMENT : All inter university tournament

ORGANISED BY : Manipal University (Jaipur)

DATE : 23.01.2017-28.01.2017

SECURED : Quarter Finalist (represented the Anna university team)



NAME OF THE TOURNAMENT : Riviera , VIT tournament

ORGANISED BY : VIT University (Vellore)

DATE : 3.02.2017-4.02.2017

SECURED : Third place in women singles (represented SSN)

NAME OF THE TOURNAMENT : GECFEST'17

ORGANISED BY : Gudlalleru Engineering College (Gudivada)

DATE : 11.02.2017-15.02.2017

SECURED : 1st place in Women Singles (represented SSN)

Anjana K.R receiving the awards in various colleges

- ◆ **Srivathsan .P.B** was a member of Basket ball team who secured **Runners in Anna University Zonal Tournaments** for the year 2015-2016 held at SRR Engineering College.

SPORTS

◆ **Aniruddh Balaji.R - II BME** is a **Table Tennis player**, following are his achievements in this semester,

NAME OF THE TOURNAMENT : KL University Tournament

ORGANISED BY : KL University (Vijaywada)

DATE : 3.02.2017-4.02.2017

SECURED : First place in men Doubles (represented SSN)

NAME OF THE TOURNAMENT : GECFEST'17

ORGANISED BY : Gudlavalleru Engineering College (Gudivada)

DATE : 11.02.2017-15.02.2017

SECURED : 1st place in Men Singles and Men doubles (represented SSN)

NAME OF THE TOURNAMENT : VIE 2k17

ORGANISED BY : SBM Jain University (Banglore)

DATE : 20.02.2017-24.02.2017

SECURED : First place in team (represented as SSN)

NAME OF THE TOURNAMENT : SA trophy tournament

ORGANISED BY : SA Engineering College

DATE : 2.3.2017-5.3.2017

SECURED : First place in team (represented SSN)

NAME OF THE TOURNAMENT : Manipal
University tournament

ORGANISED BY : Manipal University

DATE : 8.03.2017-12.03.2017

SECURED : 1st place in Men team (represented
SSN)

Aniruddh Balaji.R - II BME during his
practice sessions



Student Achievements

EXTRA-CURRICULAR ACTIVITIES

- ◆ **Aishwarya Sri—III BME & Aashika Nandakumar P**
—III BME has participated in the following events
 1. IIM bangalore - Unmaad on 17th- 28th Jan 2017
 2. Instincts 2017 Choreonight on March 10th
 3. LIBA chrysalis 2017 - Loyola College on Feb 19th
 4. MCC Deepwoods 2017 on Feb 18th
- ◆ **Vismaya, Lavanya-IV BME and S. Gayathri-III BME**, was a part of 24-hour theatre festival organising committee which was conducted on 10th March. The event was a huge success with many colleges participating in it.
- ◆ **S. Gayathri-III BME** was a part of the Biomedical International conference which was held on March 17th-19th. The cultural event was conducted on March 18th for which she performed a song on stage.
- ◆ SSN's Lights out please put up a public show at Alliance Francaise on March 18th, 2017.

Actors: Lavanya Krishna, Vismaya M - IV BME

Director : Yamini Nandakumar - III BME



SSN Dance team



24 hours Theatre Festival team



Theatrical performance of Vismaya and Lavanya at Alliance Francaise



N. Yamini - Director of the play

HOSPITAL VISIT

- ◆ The Department of Biomedical Engineering, SSNCE, had arranged for a hospital visit on the 22nd of February, 2017 to “**Sree Balaji Dental College and Hospital**”. A total of 62 students visited the hospital. The visit was organized by **Ms. J. Delpha** and **Dr. R. Subashini**.
- ◆ The main objective of the visit was to collect information on the different types of biopsy and the staining procedures of the biopsy tissue.
- ◆ The students visited various departments of the hospitals, they were led by **Dr. Vidya Rani** and **Dr. Aravind**. The students were given a brief introduction on the different types of biopsies.
- ◆ The visit to the hospital was fruitful, as the students could witness the procedures in a real time environment. This helped the students to understand the concepts in a better manner

Dr. R Subashini AP/BME & Ms. Delpha,J AP/BME had research discussions with the following Deans and Department heads at Sree Balaji Dental College.

1. **Dr.S.Raghavendra Jayesh, Principal**
2. The **Director, Dr Aravind and Dr Vidya Rani - Center for Oral Cancer Prevention and Awareness and Research Institute & Department of Oral Pathology**
3. **Dr Faisal Tajiv, Dr Ganashanmughan, Dr Kannan Sabapathy and Dr Saravanan - Department of Orthodontics & Dentofacial Orthopedics**
4. **Dr Sanjna Nayr, Professor and Head- Department of Prosthodontics**



Second year students along with **Dr Vidya Rani, Dr R.Subashini** and **Ms Delpha,J** at Sree Balaji Dental College and Hospital

Student Achievements

INDUSTRIAL VISIT BY STUDENTS



KELTRON

Kerala State Electronics Development Corporation Ltd.

[A Govt. of Kerala Undertaking]

II –BME students went for an IV during 23th to 26th January, 2017, visited “Keltron in Cochin”



III –BME students went for an IV during 26th to 29th January, 2017, visited “Skanray Technologies, Mysore”

EVENTS ORGANIZED

IEEE—ICBSII—2017

- ◆ The Department of Biomedical Engineering in association with the Center for Healthcare Technologies (CHT) organized the 3rd IEEE sponsored International Conference on bio signals, images and instrumentation on 16th to 18th March 2017.
- ◆ **Mr. Omar Saleh**, Founder and CEO of Recyl3D Planet and **Ms. Nicole McCallum**, Executive Director, Recycl3D, Calgary, Alberta, Canada graced the event as Chief Guests along with **Dr Laxmi Iyer** Co-founder and Managing Director Biotechin.Asia Singapore. and **Dr G.Sudhir** Ortho Spine surgeon, SRMC
- ◆ The conference turned out to be a forum for scientists and researchers all over the world to share their ideas, experiences, findings and conclusions of their work in due course of their scientific research.



Chief guest lighting the Kuthuvilakku



Release of the ICBSII
2017 Proceedings

ICBSII—2017



The Chief guests—Mr. Omar Saleh, Ms. Nicole McCallum along with Dr. Sudhir (1st from left), Dr. Laxmi Iyer (2nd from right) and



Ms Nicole McCallum addressing the gathering

KEYNOTE SPEAKERS

Dr. G. Sudhir

- ◆ Sudhir pursued MBBS from the Thoothukudi Government Medical College, under the Tamil Nadu Dr. MGR Medical University, and DNB in Orthopedics from the prestigious Ganga Medical Centre, Coimbatore, Tamil Nadu under National Board of Examinations. His high academic record includes many distinctions and gold medals like University second in pathology, top rank in anatomy, medicine, surgery, distinction in ophthalmology and pharmacology.
- ◆ He received Dr. Balu Sankaran Gold Medal for securing All India First Rank in DNB Orthopedics in 2011.



Power packed lecture by Dr Sudhir Biomedical Engineering and Spine Surgery – where we are and what is the future

ICBSII—2017

Dr. Laxmi Iyer

- ◆ **Dr. Laxmi Iyer** is the Managing Editor and Co-founder of Biotechin. Asia, part of Biotech Media Pte Ltd, a Singapore-based media tech company that focuses on offering simplified, curated, fact-based news for all stakeholders in the biotech and healthcare ecosystem.
- ◆ She has been a science and conservation enthusiast all her life and was finally able to give some direction to it, when she co-founded her present company serendipitously.



Dr Laxmi Iyer sharing her experience as an entrepreneur

Dr. Devanathan Raghunathan

- ◆ **Dr. Devan** works with Start-ups and SMEs in Strategic Planning and Business Development capacity. He Holds an MBA in Finance from S.P. Jain School of Global Management, in addition to an M.Tech in Knowledge Engineering from NUS Singapore, Ph.D. from the Max Planck Institute of Biophysical Chemistry, and a M.Sc. in Chemistry from IIT Madras.
- ◆ He is currently the Chief Medical officer at Advanced First Aid Research Pte Ltd, Singapore since November 2015. Advanced First Aid Research Pte. Ltd. is a Medical Device company headquartered in Singapore.



Dr Devanathan motivating the students by sharing excerpts from his venture.

ICBSII—2017

Dr. Debdoot Sheet

- ◆ **Dr. Debdoot Sheet** is an Assistant Professor of Electrical Engineering at the Indian Institute of Technology Kharagpur and founder of Skin Curate Research. He was born in Kharagpur, India in 1986 and has spent his life across Kharagpur and Kolkata in India and Munich in Germany. He received the B. Tech degree in electronics and communication engineering in 2008 from the West Bengal University of Technology, Kolkata, MS and PhD degrees from the Indian Institute of Technology Kharagpur in 2010 and 2014 respectively
- ◆ His current research interests include computational medical imaging, machine learning, and visualisation. He is also a DAAD alumni and was a visiting scholar at the Technical University of Munich during 2011-12. He is a member of IEEE, SPIE, ACM, IUPRAI and BMESI and serves as an Editor of IEEE Pulse since 2014.



Dr Debdoot giving a detailed explanation on Deep learning.

Mr. Hrushikesh Garud

- ◆ **Mr. Hrushikesh Garud** is a Senior Software engineer in Texas Instruments (I) Pvt. Ltd. in Bengaluru and a Doctoral researcher in IIT Kharagpur. He received his B.E degree in electronics from Dr.Babasaheb Ambedkar Marathwada University, Aurangabad in 2005, M.Tech in Electronics and Electrical Communication engineering and Ph.D in Medical Science and Technology from IIT Kharagpur, India in 2008 and 2013 respectively.
- ◆ His research interests include the algorithm development in Radiological imaging modalities, Image analysis system for breast FNAC diagnosis and enhancement in digital pathology



Mr Hrushikesh shared his knowledge on breast cancer image segmentation

ICBSII—2017—POSTER PRESENTATION



As a part of the conference, internally funded students displayed their project as poster. The same was presented to Dr Salivahanan– Principal, Prof. Dr V.G.Idichandy, IIT Madras, Mr Amit Tyagi and Dr A.Kavitha.



Participants with the Organizers and Chief Guest

Guest Lectures and Other Events

BIOMETRIC APPROACH TOWARDS FACE AND HAND GEOMETRY RECOGNITION



**Dr. Umarani Jayaraman, ad-
dressing the gathering**

- ◆ **Ms. B Divya AP/BME** of the Department of Biomedical Engineering organized a seminar on “Biometric approach towards Face and Hand Geometry Recognition” by **Dr. Umarani Jayaraman, AP of Computer Science, IITD&M Kancheepuram** on 17.02.2017.
- ◆ Facial recognition techniques were explained and the mathematical derivation of Principal Component Analysis (PCA) with MATLAB coding was explained.

MEMS - MICROFLUIDIC SYSTEMS



**Dr Prita Nair felicitating the guest
speaker.**

- ◆ **Ms.Laxmi N AP/BME** of the Department of Biomedical Engineering had organized a seminar on “MEMS– Microfluidic Systems” by **Mr. Vigneswaran Narayanamurthy, Universiti Malaysia Pahang** on 01.02.2017.
- ◆ The talk focused on Bio-MEMS with the various types of Micro Machining processes, Designs of Micro-fluidic chip, Imaging & Future scope.

REHABILITATION ENGINEERING



Dr. Sunder addressing the students

- ◆ **Ms. Divya B AP** of the Department of Biomedical Engineering had organized a seminar on “Rehabilitation Engineering” by **Dr. Sunder, MBBS, MD - Physical Medicine & Rehabilitation , Founder Medical Director of the PREM Center for Physiotherapy and Rehabilitation Medicine** in Chennai on 06.02.2017.
- ◆ He is the author of the text book “Rehabilitation Medicine” .

CAREER DEVELOPMENT DISCUSSION

Dr Kumar Rajamani, Manager (technical) Robert Bosch, Bangalore addressed students about the opportunities and expectations of the Biomedical Industry on 25.2.17 in the BMI Lab, BME Department. The session was organised by **Ms Delpha.J AP/BME**

Discussion included topics such as:

- ◆ Tips to attend interviews in reputed companies.
- ◆ Information on Internship programmes was given.
- ◆ Certification courses for career development – Coursera, EdX, NPTEL, etc.
- ◆ Ideas for pursuing higher studies- Master Degree and Doctorate.
- ◆ Recommendations for obtaining a successful career in Industries.
- ◆ Individual doubts were clarified – Resume preparation, Project ideas and Solutions.



Dr Kumar Rajamani addressing the Individual doubts of the students



Students eagerly listening to the career guidance given

IEEE EMBS - 2 DAY SEMINAR ON STATISTICAL METHODS FOR BIO- SIGNAL AND IMAGE PROCESSING

On the 23rd and 24th of February Two day workshop was conducted with five sessions on “Statistical Methods for Bio-signal and Image Processing”. The session was organized by **Ms Delpha J.** and **Ms Divya B.**

DAY 1: Session 1& 2

- Topic: Basic Theory of Wavelets and their Implementation By **Dr Ganesh Murthy C.N.S., Principal Engineer, Mercedes-Benz Research and Development India, Pvt Ltd, Bangalore.**
- An introduction on signal and wavelet analysis and hands on session on DWT in MatLab was conducted



Dr Ganesh Murthy addressing the gathering on the theory of Wavelets



Dr Ganesh Murthy quoting real time examples



Hands on session on Wavelets by
Dr Ganesh Murthy CNS in the DTE
Lab



Participants implementing the DWT codes



Dr. M. Kayalvizhi thought provoking
session on Mathematical approaches



Dr Suganthi S.S sharing her insights
with the participants on Deep Learning



Dr Kumar Rajamani explaining about
Image segmentation

2. DAY 2: Session 3

- ◆ **Dr.M.Kayalvizhi**, Head, Department of BME, Agni College of Technology, Chennai discussed on Mathematical approach towards Bio-signal and image Processing
- ◆ Insights on the Applications of Image signal processing and Time Series Analysis

3. DAY 2: Session 4

- ◆ **Dr Suganthi S.S**, Technical Lead Tata Elxsi, Chennai delivered a talk on Current trends in Medical image analysis using Artificial Intelligence, Machine learning and deep Learning.
- ◆ The talk focused on Medical Image Analysis and Neural Net architecture

4. DAY 2: Session 5

- ◆ **Dr Kumar Rajamani**, Architect, Robert Bosch, Bangalore delivered a lecture on Feature Based Medical Image Segmentation and Classification Techniques using Random Forests
- ◆ The session included Introduction of decision tree and Advanced Classification algorithms.

PAEDIATRIC INJURY BIOMECHANICS

- ◆ **Dr. Sriram Balasubramanian**, Ph.D. Associate Professor in the School of Biomedical Engineering, Science and Health Systems at **Drexel University in Philadelphia**, USA gave a Guest Lecture on Paediatric Injury Biomechanics on 28.3.17 by 10.00am in the BME Seminar Hall. The event was co-ordinated by **Dr A.Kavitha HoD/BME**.
- ◆ The session had an overwhelming response from the students and the faculty of different departments.



**Dr. Sriram Balasubramanian
addressing the gathering**



Dr. K.S. Vijay Sekar -Asso Prof/Mech, **Dr. M.S. Alphin** ~ Asso Prof/Mech, **Dr Sachin** ~ AP/BME, **Dr A.Kavitha** ~ Prof & Head/BME, **Dr Sriram** ~ Asso Prof/Drexel University **Mr. A. Balasubramanian** ~ AP/EEE and **Dr V.Mahesh** ~ Asso Prof/BME had an interaction after the session

INSPIRE CAMP

Inspire camp was organized in BME department on 9th February,2017 for class 11 students. The event was organized by the faculty members, both UG and PG students actively participated in this event. As part of the programme, the students were taken to various labs in the department for a practical knowledge sharing session in various fields.

At the **Bio-Chemistry laboratory**, the students taught the working of centrifuge, spectrophotometer and their potential applications in this field. Blood group estimation, hemoglobin concentration, hematocrit estimation were also demonstrated.

In **Biomedical Instrumentation lab**, the students demonstrated the working of various equipments used in medical field like Ultrasound Doppler, patient monitoring systems, ECG and EEG recordings. A basic knowledge about the working of DSO and the potential use of biotelemetry in transmitting the data in various locations were discussed.

In **Medical Software lab**, the students gave an insight on the MATLAB techniques used to generate various signal waveforms. Apart from these, they were also shown the working behind 2 familiar concepts: traffic light control and motor control.

In **Diagnostic and Therapeutic Equipments lab**, BME students demonstrated the working of few important critical care equipments used commonly in hospitals to measure various human parameters. These include spirometer, ventilator, defibrillator, infusion pump, ultrasound diathermy and BIOPAC software.

The students found the Inspire Camp very interesting and informative. This provided them a platform to relate practically to the theoretical concepts they may deal with in future.





UPCOMING EVENTS

- ◆ KINOTOMIA'17 a National Level Technical Project Expo conducted at Vel Tech, scheduled on 5th April 2017—<https://docs.google.com/a/ssn.edu.in/forms/d/e/1FAIpQLSfRSKHdPf-pqM74ZaSJtRykPbIS4YhqBs-053BwXnyuMItjQ/viewform>
- ◆ ISOI convention 2017 at KLN of engineering scheduled on 6th April 2017—<https://www.campuskarma.in/events/event/view/153171/iso-convention-2017>
- ◆ ICTTE 17 International Conference on Trends in Technology and Engineering scheduled on 7th April, 2017—<http://www.knowafest.com/college-fests/events/2017/02/1715-4th-international-conference-trends-technology-engineering-ictte-17-arjun-college-coimbatore>
- ◆ 10th International Conference on Precision, Micro, Meso and Nano Engineering COPEN 10, 2017 in IIT Madras, Chennai is on 7-9th December 2017—<http://web.iitm.ac.in/copen2017/>
- ◆ Aavartan 2k17 a Technical Fest at NIT Raipur, Raipur is scheduled on 7-8th October 2017—<http://www.aavartan.org/>
- ◆ 2017 BIO International Convention conducted by Biotechnology International Organization at San Diego, United States. Submission starts on Jun 19th 2017—<http://convention.bio.org/Register/>

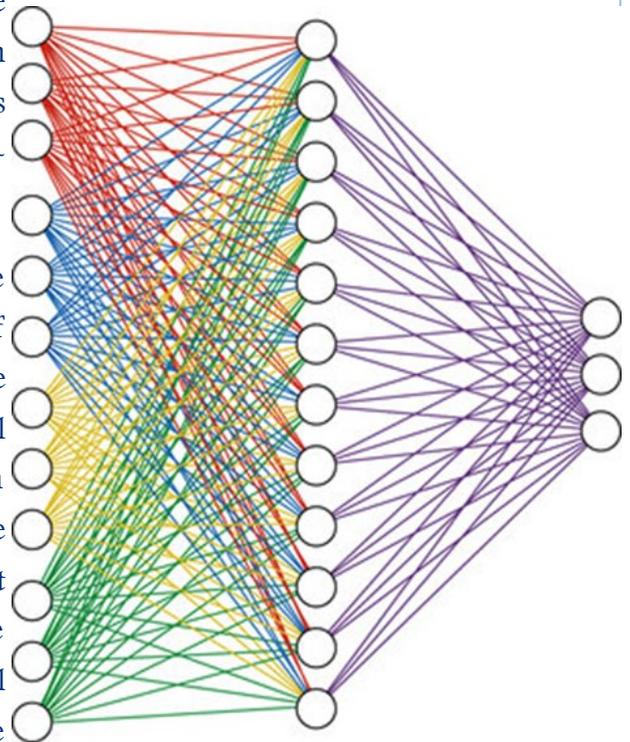
AUSPICIOUS MACHINE LEARNING

The accelerating diagnostic power of deep learning will soon empower physicians.

Perception is not uniquely a human ability. Computers running deep convolutional neural networks and other types of machine-learning algorithm can also recognize objects in pictures and discriminate subtle differences in otherwise similar patterns. Today's phones make use of machine learning to, for example, make sense of the owner's words and accurately translate text between languages — tasks that only a few years ago were exclusively done by humans. Beyond allowing mobile-phone users to offload easy tasks (such as tagging faces in photos) and perform jobs that require vast amounts of knowledge (such as finding the least busy route to a destination), machine learning will soon help us to live healthier and longer.

Deep convolutional neural networks loosely imitate the multi-layered organization of the visual cortex. They can be thought of as a stack of interconnected layers of nodes, each node carrying out a computation: a predetermined smooth mathematical function that takes in the dot product (an algebraic operation) of the inputs and the weights of the connections carrying the inputs. On the whole, neural networks transform input volumes of data (for example the pixels in an image) on the basis of the weights of each connection, which are determined a priori by training the network with known input and output volumes. Essentially, training involves finding the weights that minimize the difference between the known inputs and the desired outputs

The deeper the convolutional network — that is, the larger the number of layers — the greater the levels of abstraction in the representation of the data, and the more accurate its 'perception'. Modern convolutional networks consist of 10–20 layers and over 100 million nodes, weights and biases (the values of nodes when the inputs are zero), and can be used with techniques that prevent overfitting — that is, the fitting of any noise present in the training dataset. Naturally, neural networks are hungry for training data — the bigger the



dataset, the better they will perform when presented with new data. For example, about 130,000 clinical images of skin lesions¹ and of retinal images² were recently used to train convolution networks to classify skin cancers¹ and detect diabetic retinopathy², with accuracy comparable to expert dermatologists and ophthalmologists. Yet, can convolutional networks help with rare diseases, for which data are scarce?

AUSPICIOUS MACHINE LEARNING

For congenital cataracts — a rare disease that leads to clouded vision in children — the answer is yes. As reported by Long et al. (article no. 0024) in this issue, a neural network with five convolutional layers trained with 886 ocular images was able to perform just as well as individual expert ophthalmologists in diagnosing the disease, in determining its severity (according to three parameters for eye-lens opacity) and in suggesting treatment (surgery or follow-up). Notably, the study was carried out in real-world settings: a clinical trial run by a network of hospitals as well as a ‘needle in a haystack’ test with a realistic ratio of the incidence of congenital cataracts (~1% of the general population). Moreover, the machine-learning algorithm was implemented in a bespoke cloud-based platform for multihospital collaboration. In a News & Views, Wang and Shen (article no. 0032) note that the software platform could improve the management of rare diseases, especially in care centres with insufficient resources.

Machine learning can also help to diagnose brain tumours. Orringer et al. (article no. 0027) report in this issue that a multilayer perceptron (another type of deep machine learning) is able to categorize brain-tumour subtypes from images of brain tissue, rapidly generated from stimulated Raman scattering microscopy of fresh surgical samples, that visually resemble those images acquired from the stained, frozen or fixated tissue sections processed by pathology laboratories. By using such ‘virtual histology’, neuropathologists diagnosed brain tumours as accurately (over 90%) as when using conventional tissue sections. Stimulated Raman microscopy may thus rapidly provide key diagnostic information to surgeons after tumour resection, as noted by Figueiredo and Rutka in a News & Views (article no. 0033).

The utility of machine learning goes beyond medical diagnostics. As demonstrated by Farina et al. (article no. 0025), a support vector machine (a machine-learning algorithm for sorting data) is able to categorize into discrete classes the activity of spinal motor neurons surgically redirected into muscles of the chest (known as targeted muscle reinnervation) in upper-limb amputees. The classified data can be mapped into control commands for the eventual control of a prosthetic. In a News & Views (article no. 0034), Ortiz-Catalan remarks that the decoding of motor-neuron activity should also enable the monitoring of the progression of muscle reinnervation.

Ultimately, computer-aided classification or diagnosis should reduce inevitable fallibilities and inherent diagnostic variabilities in healthcare (especially in routine tissue pathology), provide guidance (above all, in settings where expert physicians are not available), and speed up decision-making, in particular in the operating room. The seemingly vast and promising opportunities that machine learning will bring to healthcare will also advance precision medicine and disease management at the level of individual patients.

Soon enough, today's machine-learning algorithms will resemble what the mobile phones of the 1990s are to today's smartphones. Software powered by machine learning will be able to drive cars, make the best personal concierges and discover new drugs. A physician's touch will however remain unique.

TURNING BREATH INTO WORDS

A new device which transforms paralysis victims' breath into words – believed to be the first invention of its kind – has been developed by academics from Loughborough University.

Billed as a tool to help bring back the art of conversation for sufferers of severe paralysis and loss of speech, the prototype analyses changes in breathing patterns and converts 'breath signals' into words using pattern recognition software and an analogue-to-digital converter. A speech synthesizer then reads the words aloud.



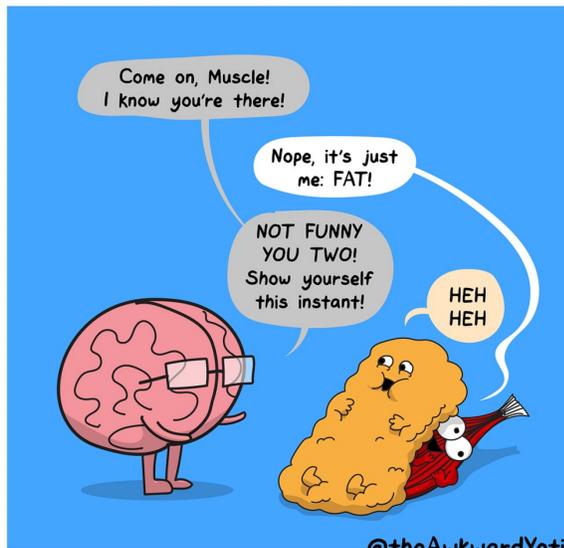
The Augmentative and Alternate Communication (AAC) device is designed for patients with complete or partial loss of voluntary muscle control who don't have the ability to make purposeful movements such as sniffing or blinking – gestures which previous AAC devices have come to rely upon.

Dr. David Kerr, Senior Lecturer in the School of Mechanical and Manufacturing Engineering, and Dr Kaddour Bouazza-Marouf, Reader in Mechatronics in Medicine, said the device learns from its user, building up its knowledge as it goes. It allows the user to control how he or she wishes to communicate – effectively enabling them to create their own language by varying the speed of their breathing. The academics have been joined in the project by Dr Atul Gaur, Consultant Anaesthetist at Glenfield Hospital.

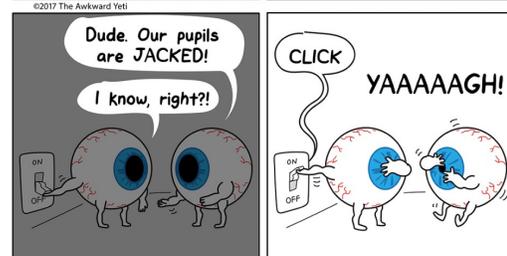
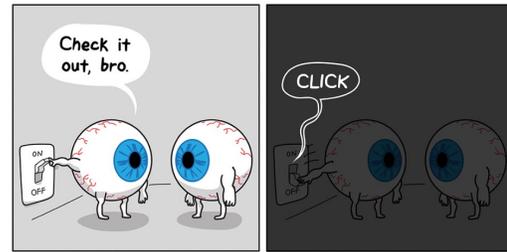
‘What we are proposing is a system that learns with the user to form an effective vocabulary that suits the person rather than the machine,’ said Dr Kerr.

Courtesy—<http://www.nature.com/articles/bdjteam2015128>

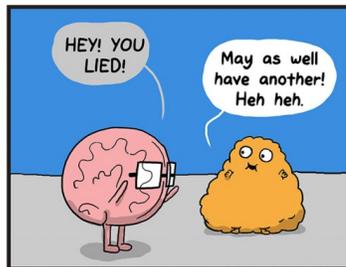
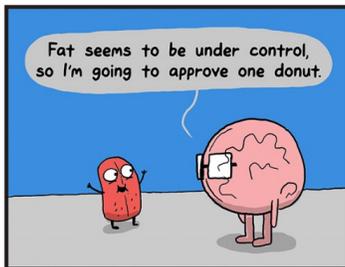
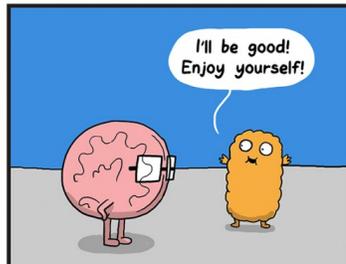
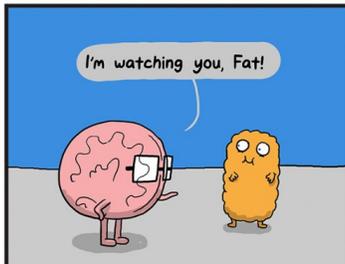
COMIC ZONE



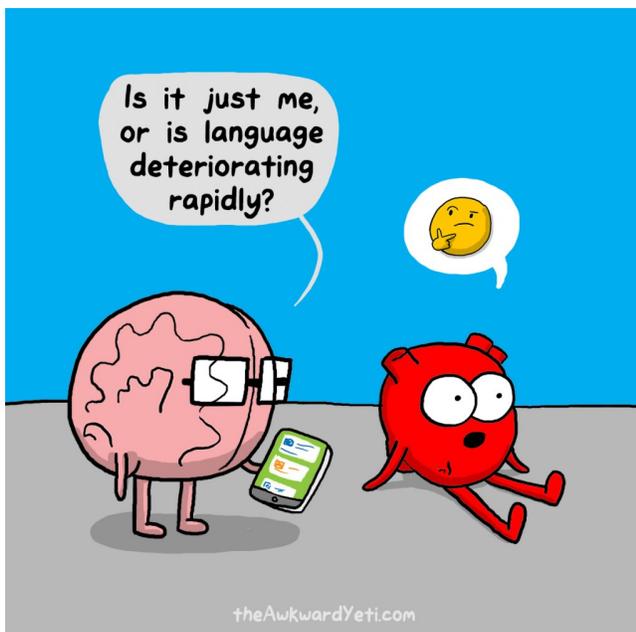
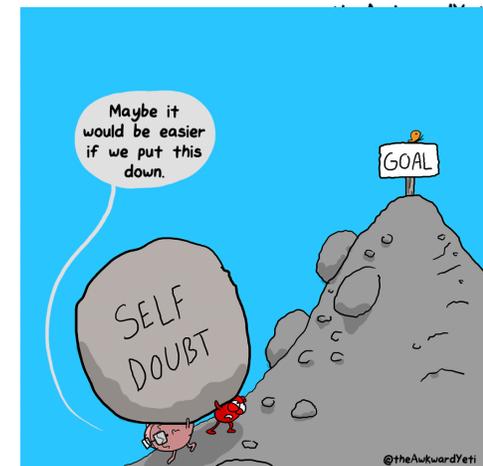
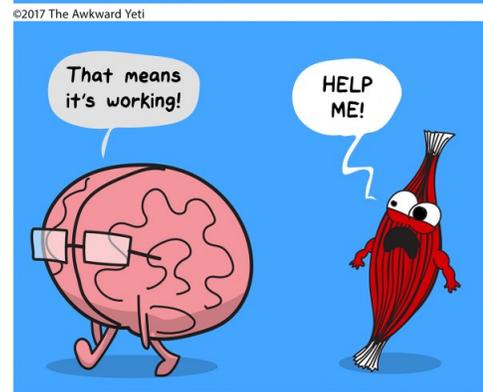
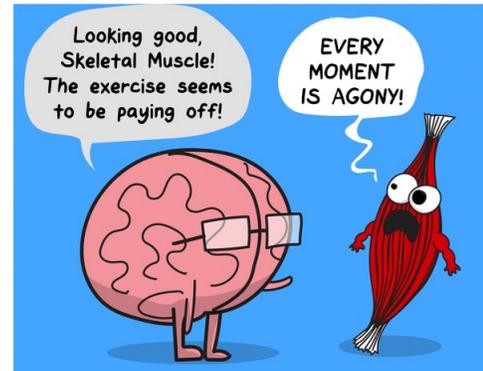
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