Synergy

A BIOMEDICAL NEWSLETTER

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CONTENT

EDITORS DESK

Warm greetings to everyone!!!

Now that we're in remote mode, most of us are feeling a little extra-challenged in engaging with our work. As we're operating with much less structure in our life than usual, the increased stress of the outbreak, and less contact with others than we normally have, all of this can make it hard to stay motivated. Although this is a challenge, there are few activities that our department peers have taken to feel more inspired and keep themselves involved in the work.

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

This edition covers the happenings in the department from the months of January to June 2020. We highlight the achievements of the students and competitions and Hackathon, conferences and other Covid related work done by our department faculty and students.

Presenting to you the second edition of the eighth volume of SYNERGY

What lies behind us and what lies ahead of us are tiny matters compared to what lies within us. *—Ralph Waldo Emerson*

Stay home, stay safe and stay healthy

Editorial board.

HOD'S DESK

Hope you and your family are staying safe! We are in a situation where a big pause button is pressed to the happenings of the whole world due to this invisible enemy, the most spelt word of the year, the COVID-19, trying to engulf all the day to day activities of our beautiful world bringing it to a big stall. When it all started somewhere is some corner months back, we never imagined a situation like this. I remember sympathize the lockdown in Wuhan, totally unassuming of the fact that we would face similar situations. Such happenings make us realize how we keep running behind a totally uncertain life, all through our life. It is easy to get lost in depression when such unforeseen issues crop up. But it is wise to use the time very effectively and cheer our inner selves to build strength to fight anything that hinders your growth and peace. I am happy that the faculty and students of the department of Biomedical Engineering have stood strong and fought this viral slowdown by many fulfilling achievements in the technical front.

It gives me a great pleasure in writing the forward for our department's newsletter, SYNERGY. This issue highlights the notable activities in the campus and in the department of biomedical engineering. It also highlights the accomplishments of faculty and students during the months of Jan to June 2020. As I always say, after every achievement, "Way to go, BME!!"

Dr. A. Kavitha

CAMPUS UPDATES

Award for Excellence in Education to SSN Institutions | TNIE's Think Edu Conclave 2020

Chief Minister of Tamil Nadu ***Dr. Edappadi K. Palaniswami*** presented the award for "Excellence in Education" to SSN Institutions, Chennai for consistent efforts in providing quality education at the Think Edu conclave hosted by The New Indian Express (TNIE) at Chennai on 9th January, 2020**.** ***Ms. Kala Vijayakumar***, President, SSN Institutions, and ***Dr. S. Salivahanan***, Principal, SSN College of Engineering, have received the award on behalf of SSN. ***Ms. Smriti Irani***, Union Minister, ***Mr. K.P. Anbalagan***, Higher Education Minister, and ***Mr. Manoj Kumar Sonthalia***, TNIE Group Chairman were also present on the occasion.

Dr.Salivahanan and Ms. Kala Vijayakumar receiving the award from Dr. Edappadi Palaniswami in the presence of Mr. Manoj Kumar (left most), Ms. Smriti Irani (2nd from left) and Mr. K. P. Anbalagan (rightmost).

CAMPUS UPDATES

20th Graduation Day

SSN College of Engineering celebrated its Twentieth Graduation Day on Friday, the 21st February 2020. The Hon'ble Chief Minister of Tamilnadu, ***Dr. Edappadi. K. Palaniswami*** was the Chief Guest and delivered the Graduation Day address and distributed the degree certificates and medals to the graduands. Totally, 1009 graduands received their degrees, of which 790 students graduated first class and 157 secured first class with distinction. Furthermore, an impressive 51 graduands are University rank holders. The Hon'ble Minister for Higher Education ***Thiru. K.P. Anbalagan***, was the Guest of Honour, ***Ms. Apoorva, IAS,*** Principal Secretary to TN Government, Higher Education Department, ***Ms. Roshni Nadar Malhotra***, Executive Director and the CEO of HCL Enterprise and Trustee of the Shiv Nadar Foundation, ***Mr. R. Srinivasan***, Chairman of SSN institutions and ***Ms.Kala Vijayakumar,*** President of SSN Institutions were present. ***Dr. S. Salivahanan***, Principal of SSN College of Engineering presented the college profile. In his Graduation Day Address, Dr. Edappadi. K. Palaniswami said, Tamilnadu has made great progress in higher education and has achieved a Gross Enrolment Ratio of 49% which is far ahead of the national average. Recognizing the role of education in the development of the society, the Government is keen in promoting higher education further by opening more colleges and polytechnics. He lauded the efforts of the Shiv Nadar Foundation in promoting quality higher education including the various scholarship schemes to support meritorious students needing financial support. And this Foundation has both and is reflected in the Foundation's plan to start a school that will provide quality free education from 6th to 12th standard to students from economically challenged sections. The Chief Minister acknowledged that SSN is now well known not only in Tamilnadu and India, but in other countries as well. Recognizing the contribution of Shiv Nadar Foundation to the cause of higher education, he mentioned that the Tamilnadu Government has already passed an Act approving the establishment of a State Private University by the Foundation. Commending the graduands for having completed their graduation, he exhorted the students to be job-creators rather than job-seekers.

CAMPUS UPDATES

During Graduation day

CAMPUS UPDATES

INSTINCTS 2020

Instincts 2020 is one of the largest cultural festivals amongst all colleges in India took place during the 5th, 6th and 7th of March 2020. The cultural fest was inaugurated by ***Mr. Jayam Ravi*** along with the principal ***Dr. S. Salivahanan*** along with the president of SSN institutions ***Ms. Kala Vijayakumar***.

The fest witnessed events performed by students and competition of students from other colleges in all forms of art such classical and western music hosted by the SSN Music Club (SMC), classical and western dance hosted by the SSN dance team, photography , quiz, film club , treasure hunt, entertainment and variety show performed by youtubers Black Sheep. On the three days the college witnessed a DJ night, a pro show performed by singer and actress Andrea Jeremiah and the band and a Choreo night.

The college celebrated women's day with a special event where many powerful women across the country came together along with the president ***Ms Kala Vijayakumar*** for a sit down talk show and gave powerful pieces of advice, and motivational talks to the audience .The speakers included India's first female motorcyclist ***Alisha Abdullah*** .

Speaking of motorcycling, a bike show took place on the 7th of March 2020. A lantern fest was arranged at the clock tower on the same day as a celebration of lights.

The cultural fest was sponsored by HCL, Times of India, Cinthol, Subway and entertainment partner Behind the Woods.

CAMPUS UPDATES

Actor Jayam Ravi as Chief Guest for the occasion

Students of SSN performing on the inaugural day

U. Sagayam, IAS Officer as Chief Guest for the Saaral (Tamil Mandram) event

CAMPUS UPDATES

Bidding Farewell to our Beloved Principal Dr. S.Salivahanan

After a long and very eventful association with SSN Institutions as the Principal of SSN College of Engineering, ***Dr. Salivahanan.S*** retired from his post on 30th June, 2020. In this regard, a virtual "Zoom party" was organised by president ***Ms. Kala Vijayakumar*** to celebrate Dr. Salivahanan's long innings with institution and to wish him the very best in his future endeavours.

"Great leaders don't set out to be a leader, they set out to make a difference. It's never about the role, it's always about the goal."

On behalf of BME department Faculty, Staff and Students we thank you for guiding, inspiring, motivating and supporting us all through .

Thank you Sir!

DEPARTMENT VENTURES

Invited Lecture

The department of BME organized an invited lecture. ***Prof. Ajit Yoganathan***, Regents' Professor, Wallace H. Coulter, Distinguished Faculty Chair in Biomedical Engineering, and ***Prof. Sathya Gourishankar,*** Professor of the Practice, Director of Biomedical Innovation and Development (MBID) Program from Georgia Institute of Technology, Atlanta, USA delivered lectures on the title ***"Bench to Bedside: When Engineering is the Best Medicine"*** to SSN students and faculty members on January 31st, 2020. After the lecture ***Prof. Ajit Yoganathan*** interacted with the UG students who presented their research work at Biomedical Instrumentation lab.

Guest interacting with students

DEPARTMENT VENTURES

Retreat on

"How to make India ready for 21 st Century Medical device revolution?"

SSN College Engineering organized a Retreat Programme on February 1st 2020 about, ***"How to make India ready for 21st Century Medical device revolution?"*** at the Career Development Centre, SSN Campus. The Department of Biomedical Engineering played a major role in bringing together, the experts in various field from India and abroad.

The President of the Institution, ***Ms. Kala Vijayakumar***, presided over the programme. The Programme was chaired by ***Prof. Ajit Yoganathan***, Regents' Professor, Wallace H. Coulter Distinguished Faculty Chair in Biomedical Engineering, Georgia Institute of Technology, Atlanta, USA and Co-chaired by ***Prof. Sathya Gourisankar***, Professor of the Practice, Director of Biomedical Innovation and Development (MBID) Program Georgia Institute of Technology, Atlanta, USA. The internal panel members included ***Dr. S. Salivahanan***, Principal-SSNCE, Prof. ***P. Ramasamy***, Dean Research and ***Dr. A. Kavitha*** Professor and Head of the Department of Biomedical Engineering, SSNCE. 21 External panel members from various fields of Medical devices were present. ***Dr. S. Pravinkumar AsP, Dr. S. Bagyaraj AsP, Dr. J. Vijay AsP, Ms. M. Dhanalakshmi AP*** and ***Ms. B. Divya*** *AP* of BME department participated in the event. The following presentations and discussions took place during the programme:

- Objective and focus of the Retreat by Dr. A. Kavitha
- Presentations by Clinicians – Their Perspectives on Unmet Clinical Needs for India.
- Presentations on Medical Device Regulations and Standards Education & Training of work Force for Promoting Medical Device innovation and Commercialization in India by Prof. Ajit Yoganathan and Prof. Sathya Gowrisankar
- Presentations by industry personnel on status review and challenges faced in Indian MedTech Industry & Start-ups Training Future Business Leaders for Indian Medical Device Industry
- Brainstorming on "How to make India ready for 21st century Medical device revolution?" Wrap-Up & Debrief of key takeaways and action items for follow up.

DEPARTMENT VENTURES

21 external panel members includes

1. ***Mr. Jayant Gangakhedkar,*** Asst. Drugs Controller, CDSCO, New Delhi
2. ***Mr. Balamurugan Ramasamy,*** Vice President, HCL Technologies, Chennai
3. ***Mr. Arvind Srinivas,*** General Manager & Business Head – Ultrasound, Philips India
4. ***Mr. Karthik Venkataraman,*** Business Manager &MedTech Mentor UL India, Whitefield, Bengaluru
5. ***Dr. N Ramachandran,*** Director, DCL software Ltd
6. ***Mr. Shanthakumar,*** Managing Director, Vital Bio-Systems Pvt. Ltd, Chennai
7. ***Dr. Udaykumar N.*** Senior Consultant Developmental Paediatrician, HEAD, KCDU,Sri Ramachandra Institute of Higher Education and Research, Chennai, India
8. ***Dr. Sudhir Ganesan,*** Consultant Spine Surgeon,Sri Ramachandra Institute of Higher Education and Research, Chennai, India
9. ***Dr. Gowrishankar Anjaneyan,*** Senior Assistant Professor, Dept of Anaesthesiology and critical care, Govt. Stanley Hospital, Chennai
10. ***Mr. Amit Kumar,*** Systems and Engineering Design Consultant-Medical Devices, Phoenix Medical Systems, India
11. ***Dr. Rajah Kumar,*** Ex. Chairman and CEO , Philips Electronics, Asia, Executive Advisor, Singapore
12. ***Dr. A. Sampath Kumar,*** Senior Consultant, Max Super Speciality Hospital, Vaishali
13. ***Mr. Baskar Balakrishnan,*** Assistant Director, KIHT-AMTZ, Vaizag
14. ***Prof. Supten. N. Sarbadhikari,*** Health Informatics Educationist Fellow and Faculty, PSG FAIMER Regional Institute
15. ***Cdr. Divya Prakash Joshi,*** Head, R&D, Medtronic India
16. ***Prof. Bhabatosh Biswas,*** Cardithoracic Surgeon R. G. Kar Medical College. Kolkata.
17. *Prof. Ravichandiran V.*, Director, NIPER KOLKATA, India
18. ***Dr. Vinoth,*** Cardiologist, Apollo Hospitals, Chennai
19. ***Dr. Kanagaraj Subramani,*** Professor in the department of Mechanical Engineering Indian Institute of Technology Guwahati
20. ***Dr. Siva kumar K.G.V,*** Scientist D, Division of Artificial Organs, Sree Chithra Thirunaal Institute
21. ***Dr. Manoj G.,*** Scientist D, Division of Artificial Organs, Sree Chithra Thirunaal Institute

DEPARTMENT VENTURES

Retreat – Reminiscences!!!

DEPARTMENT VENTURES

Retreat Reminiscences!!!

DEPARTMENT VENTURES

Pre Conference Workshop on REHABILITATION AND ASSISTIVE TECHNOLOGY

The department of Biomedical Engineering organized a Pre-Conference workshop on Rehabilitation and Assistive Technology on February 25th, 2020 and February 26th, 2020. Around 60 participants from various institutions took part in the event. Eminent speakers from academia, medical practitioners, and industry were invited to deliver lecture to give an insight in the field of Rehabilitation engineering. ***Dr. S. Sundar***, Medical Director, Prem Center for Physiotherapy and Rehabilitation Medicine, Chennai, inaugurated the event. ***Dr. S. Bagyaraj Asso.Prof, Dr. J. Vijay Asso.Prof, Dr. S. Arunkarthik Asso.Prof and Dr. K. Nirmala Asso.Prof*** organized the programme.

The speakers of the session are:

- ***Dr. S. Sundar,*** Medical Director, Prem Center for Physiotherapy and Rehabilitation Medicine, Chennai.
- ***Dr. D.Suresh Kumar***, Scientist, Shoe and Product design centre, CLRI, Chennai.
- ***Ms. M. Dhanalakshmi,*** AP/BME, SSNCE about Demo of Knee Brace, Chin up Device
- ***Mr. R. Ranjith,*** Principal, MERF Institute of Speech and Hearing, Chennai.
- ***Mr.Vivek Mishra,*** Clinical Neuroscientist, Neuro Krish Consulting Pvt.Ltd., Chennai.
- ***Mr. Sankar Subbiah***, Assistive Technology and Accessibility Consultant, Agate Infotek, Chennai
- ***Mr. Siddharth Nair***, Founder, Xfinito Biodesigns, Bangalore.
- ***Dr. Basheer Ahamed Gulam***, Orthopeadic Surgeon, American mission Hospital, Behrain
- ***Mr.P.K.Kaviraj***, Area Manager, Medianalytika Pvt. Ltd, Chennai.

DEPARTMENT VENTURES

Pre Conference Workshop on REHABILITATION AND ASSISTIVE TECHNOLOGY

Coordinators felicitating the Speakers of the Pre conference workshop

DEPARTMENT VENTURES

Pre Conference Workshop on
REHABILITATION AND ASSISTIVE TECHNOLOGY

During the Pre-conference workshop

DEPARTMENT VENTURES

ICBSII 2020

The department of BME organized 6th International Conference on Bio signals, Images and Instrumentation (ICBSII 2020) in association with IEEE Madras section on February 27th, 2020 and February 28th, 2020. ***Prof. Ing. Eko Supriyanto***, Former director of IJN-UTM Cardiovascular Engineering Centre, Universiti Teknologi Malaysia and ***Dr. Justin Dauwels***, Associate Professor, Deputy Director of STE-NTU Corporate Laboratory, School of Electrical and Electronics Engineering, Nanyang Technological University, Singapore were invited as chief guests for the inaugural function. The conference received about 93 papers from various region across country and globally. After review by the expert members in biomedical domain, 28 papers were accepted for oral presentation. These papers will be forwarded for the inclusion in IEEE explore digital library.

The keynote address was delivered by the expert members in various topics on Mental health, Rehabilitation Engineering, Development of Medical Devices, Cardiovascular Management, and Clinical Engineering.

Dr. Justin Dauwels, Associate Professor, Deputy Director of STE-NTU Corporate Laboratory, School of Electrical and Electronics Engineering, Nanyang Technological University, Singapore gave talk on "Mental Health". ***Dr. Perungo Thirumaraichelvan,*** Surgeon, Asian Bariatrics hospital, Chennai, addressed the gathering on the topic "A Paradigm Shift in the Medical Field-Evolution of Biomedical Engineering". ***Dr. Deepak Joshi***, Assistant Professor, Centre for Biomedical Engineering, Indian Institute of Technology (IIT) Delhi, delivered a talk titled "Development of Medical Devices – A Road Map". ***Prof. Ing. Eko Supriyanto,*** Former director of IJN-UTM Cardiovascular Engineering Centre, Universiti Teknologi Malaysia, addressed the gathering on "Cardiovascular Management in Fourth Industrial Revolution Era". Followed by ***Dr. Basheer Ahamed Gulam,*** Orthopedic Surgeon, American Mission Hospital, Bahrain on the topic "Clinical Engineering: Evolution of a Discipline". Participants from other institution presented their research work in the paper presentation forum.

DEPARTMENT VENTURES

Glimpses of ICBSII 2020….

Inaugural of ICBSII'20

DEPARTMENT VENTURES

Glimpses of ICBSII 2020….

DEPARTMENT VENTURES

Dr. L. Suganthi Asso.Prof and ***Dr. K. Nirmala Asso.Prof*** organized three days value added course on ***Biosensors and Telemedicine using IOT*** in association with Galwin technology during February 20th to 22nd, 2020.

Guest faculty addressing the students

Dr. J. Vijay Asso. Prof., Dr. S. Bagyaraj Asso. Prof., and ***Dr. S. Arun Karthick Asso. Prof.,*** organized a two day webinar on ***Modeling and Simulation for Healthcare Innovators*** during June 01 - 02, 2020. The speakers for the webinar are as follows:

- ***Dr. Minimol B***, Asso. Prof., & Head, BME, Model Engineering College, Kerala. Title of the talk: ***ECG simulation by 2 D whole heart model***
- ***Dr. Ramesh Shankar***, MFG Account Manager, Autodesk India Pvt. Ltd., Bangalore. Title of the talk: ***Auto Desk Fusion 360 - Demonstration on medical device development***
- ***Dr Surendranath A***, Product Specialist -South Region, Carestream Dental, Mumbai. Title of the talk: ***Overview on 3D Imaging and Implant Integration Planning in Dentistry***
- ***Mr Jigyasu***, Application Engineer, Integrated Microsystem, Gurgaon. Title of the talk: ***Synopsys Simpleware software for 3D Anatomical Modeling, Segmentation and Meshing***

COVID 19 – Related Work

Design and donation of 3D Printable Face Shield For Health Care Staff

Faculty and students from Biomedical Deaprtment have developed 3D printable protective face shields for front line healthcare workers. The first set of 100 face shields were delivered to Stanley Medical College and Rajiv Gandhi Government General Hospital. A team of three faculty members ***Dr. Kavitha A., Dr. Pravin Kumar S. and Ms.Nithya R.*** and three undergraduate students ***Sandhanakrishnan R., Kesavaraj V. and Rajkumar A.J***. from the department of Biomedical Engineering have developed the face shields. These transparent face shields are biocompatible and made of medical-grade 0.4 mm thick APET sheets (Amorphous-PolyEthylene Terephthalate, thermal plastic and part of the polyester product family). The space offs accommodate bigger respirators and larger goggles. Moreover, the shields can be reused after proper sterilization and do not cause skin irritation, infection or other health problems to doctors, when used for extended hours. In these unprecedented times, there is a massive demand for Personal Protective Equipment (PPE). The ordinary surgical masks do not give adequate protection against the highly contagious corona virus to frontline healthcare workers, while the N95 masks which can filter out the virus particles, cannot be cleaned or disinfected after use. Therefore, a face shield that provides full-face coverage and allows re-usage after being thoroughly disinfected is the need of the hour.

Dr. Gowrishankar, Stanley Medical College and Dr. Archana, Rajiv Gandhi Medical College wearing the face shields.

COVID 19 – Related Work

Few Clippings from the dailies

Dr. Gowrishankar from the COVID-19 isolation ward at Stanley Medical College, Chennaisaid, "*We appreciate efforts of the team from SSN College for their timely initiative and action. Since the material used is of medical-grade it is wrinkle-free, biocompatible and sterilizable. These face shields are comfortable and very protective while treating COVID-19 patients.*"

Ms Kala Vijayakumar, President, SSN Institutionssaid, "*SSN Institutions believes in providing the required assistance during such critical times. We are happy to lend a helping hand in safeguarding doctors working towards controlling the pandemic, as a social responsibility.*"

THE HINDU

Tue, 21 Apr-20; Hindu - Chennai; Size : 127 sq.cm.; Circulation:359498; Page : 4

College develops 3D printable face shields for healthcare staff

SPECIAL CORRESPONDENT
CHENNAI

Faculty and students from SSN College of Engineering have developed 3D printable protective face shields for front line healthcare workers. The first set of 100 face shields were delivered to Stanley Medical College and Rajiv Gandhi Government General Hospital.

The transparent face shields are biocompatible and made of medical-grade 0.4 mm thick APET sheet-sand can be reused after proper sterilization and do not cause skin irritation, it added.

Taking lead from Prusa, a 3D printing company based in Prague, Czech Republic, the face shields developed by the team from SSN College have been further modified in design on doctors' suggestions.

Star Health and Allied Insurance Company Ltd. donated 1.5 lakh 3 ply disposable face masks to A.K. Viswanathan, Chennai Commissioner of Police.

Charitable Trust Sevalaya's Tiruchi unit, handed over 100 Personal Protective Equipment (PPE) kits to the District Collector Mr. S. Sivarasu, for use by doctors and nurses treating corona patients, according to a statement.

Hyundai Motor India has made a donation of ₹7 crore to the PM CARES Fund.

Food for migrants

Southern Railway has been distributing food packets to thousands of migrant labourers and homeless people.

A senior official said cooked meals consisting of lunch and dinner packets were being distributed to the needy since the lockdown was announced. The meals were cooked using the base kitchens of IRCTC.

The packets were distributed at various railway stations all over the State such as Chennai Egmore, Central, Vellore and Tiruchi.

கோவிட் 19: தற்காப்பு முகக் கவசங்களை உருவாக்கிய எஸ்எஸ்என் பொறியியல் கல்லூரி

சென்னை, ஏப். 23- சென்னையில் உள்ள ராஜீவ்காந்தி அரசு பொதுமருத்துவமனை, ஸ்டான்லி மருத்துவக் கல்லூரி மருத்துவமனை ஆகியவற்றுக்கு 200 உயர்தர அதிநவீன முகக் கவசங்கள் அளிக்கப்பட்டுள்ளன.

கோவிட் 19 வைரஸ் தடுப்புப் பணியில் முன்னணியில் இருந்து பணியாற்றும் சுகாதாரப் பணியாளர்களுக்காக முப்பரிமாண தற்காப்பு முகக் கவசங்களை எஸ்எஸ்என் பொறியியல் கல்லூரி பேராசிரியர்களும், மாணவர்களும் உருவாக்கியுள்ளனர். இந்த முகக் கவசங்களில் தலா 100 கவசங்கள் ஸ்டான்லி மருத்துவக் கல்லூரி மருத்துவமனைக்கும், ராஜீவ்காந்தி அரசு பொது மருத்துவமனைக்கும் அளிக்கப்பட்டுள்ளன. இந்த முகக் கவசங்களை பேராசிரியர்கள் முனைவர் கவிதா, முனைவர் பிரவின் குமார் மற்றும் ஆர்.நித்யா ஆகியோருடன் உயிரி மருத்துவ பொறியியல் துறை மாணவர்கள் ஆர்.சந்தானகிருஷ்ணன், வி.கேசவராஜ், ஏ.ஜெ. ராஜ்குமார் இணைந்து முகக் கவசங்களை உருவாக்கியுள்ளனர். இந்த முகக் கவசங்கள் முகத்தையும், கழுத்தையும் முழுமையாக வைரஸின் நேரடி தாக்குதலில் இருந்து காக்கக் கூடிய அளவில் உருவாக்கப்பட்டுள்ளது.

செக் குடியரசின் தலைநகரான பிராகாவைச் சேர்ந்த முப்பரிமாண பிரிண்ட் நிறுவனத்திடம் இருந்து எடுக்கப்பட்ட தொழில்நுட்பத்தைக் கொண்டு எஸ்எஸ்என் கல்லூரியைச் சேர்ந்த குழுவானது முகக் கவசங்களை உருவாக்கியுள்ளது.

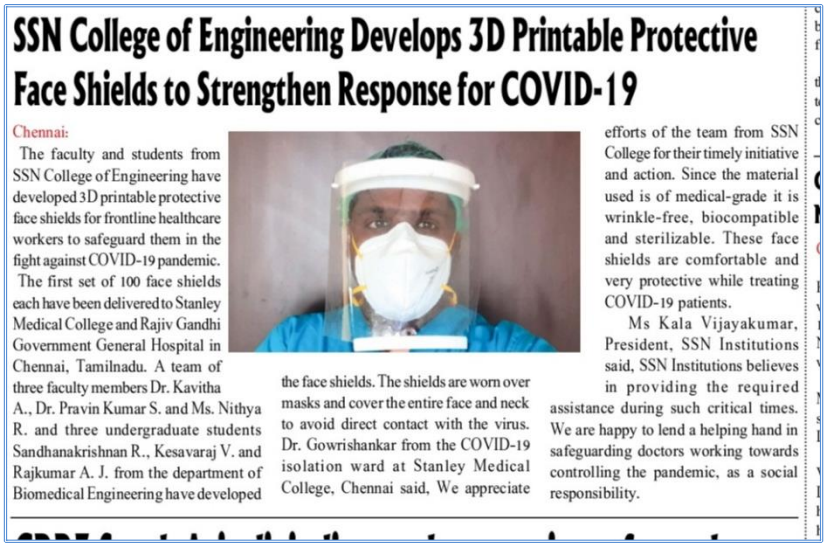
மருத்துவர்களின் ஆலோசனைகள்படி, அவர்களுக்கு ஏற்ற முறையில் முகக் கவசங்களின் தொழில்நுட்பம் மாற்றியமைக்கப்பட்டுள்ளது.

வெளியே நடப்பவற்றை அப்படியே பார்த்து அறியும் வகையிலான இந்த முகக் கவசங்கள், 0.4 மில்லிமீட்டர் அடர்த்தி கொண்டதாகும். இதுபாலியஸ்டர் குழுமத்தில் இருந்து எடுக்கப்பட்ட பாலி எத்திலினைக் கொண்டு தயாரிக்கப்பட்டுள்ளது. இந்த முகக் கவசங்கள் எளிதாக மூச்சு விடும் வகையில் மிகப் பெரிய காப்புக் கண்ணாடியைக் கொண்டிருக்கிறது.

இந்த முகக் கவசத்தை உரிய முறையில் கிருமி அழிப்புக்குப் பிறகு மீண்டும் பயன்படுத்தலாம். இந்த முகக் கவசத்தை நீண்ட நேரம் பயன்படுத்தினாலும் உடல் பாதைகளோ, தோல் அரிப்புகளோ ஏதும் ஏற்படவாய்ப்பில்லை என்பது குறிப்பிடத்தக்கது.

COVID 19 – Related Work

Few Clippings from the dailies



SSN College of Engineering Develops 3D Printable Protective Face Shields to Strengthen Response for COVID-19

Chennai:

The faculty and students from SSN College of Engineering have developed 3D printable protective face shields for frontline healthcare workers to safeguard them in the fight against COVID-19 pandemic.

The first set of 100 face shields each have been delivered to Stanley Medical College and Rajiv Gandhi Government General Hospital in Chennai, Tamilnadu. A team of three faculty members Dr. Kavitha A., Dr. Pravin Kumar S. and Ms. Nithya R. and three undergraduate students Sandhanakrishnan R., Kesavaraj V. and Rajkumar A. J. from the department of Biomedical Engineering have developed the face shields. The shields are worn over masks and cover the entire face and neck to avoid direct contact with the virus.

Dr. Gowrishankar from the COVID-19 isolation ward at Stanley Medical College, Chennai said, We appreciate efforts of the team from SSN College for their timely initiative and action. Since the material used is of medical-grade it is wrinkle-free, biocompatible and sterilizable. These face shields are comfortable and very protective while treating COVID-19 patients.

Ms Kala Vijayakumar, President, SSN Institutions said, SSN Institutions believes in providing the required assistance during such critical times. We are happy to lend a helping hand in safeguarding doctors working towards controlling the pandemic, as a social responsibility.

சென்னை, வியாழன், ஏப்ரல். 23. 2020

தற்காப்பு முகக் கவசங்களை உருவாக்கியுள்ளது

எஸ்எஸ்என் பொறியியல் கல்லூரி

சென்னை, ஏப். 23- கோவிட் 19 வைரஸ் தடுப்புப் பணியில் முன்னணியில் இருந்து பணியாற்றும் சுகாதாரப் பணியாளர்களுக்காக முப்பரிமாண தற்காப்பு முகக் கவசங்களை எஸ்எஸ்என் பொறியியல் கல்லூரி பேராசிரியர்களும், மாணவர்களும் உருவாக்கியுள்ளனர். இந்த முகக் கவசங்களில் தலா 100 கவசங்கள் ஸ்டான்லி மருத்துவக் கல்லூரி மருத்துவமனைக்கும், ராஜீவ்காந்தி அரசு பொது மருத்துவமனைக்கும் அளிக்கப்பட்டுள்ளன. இந்த முகக் கவசங்களை பேராசிரியர்கள் முனைவர் கவிதா, முனைவர் பிரவின் குமார் மற்றும் ஆர்.நித்யா ஆகியோருடன் உயிரி மருத்துவ பொறியியல் துறை மாணவர்கள் ஆர்.சந்தானகிருஷ்ணன், வி.கேசவராஜ், ஏ.ஜெ. ராஜ்குமார் இணைந்து முகக் கவசங்களை உருவாக்கியுள்ளனர். இந்த முகக் கவசங்கள் முத்தையும் முழுமையாக பார்த்து அறியும் வகையிலான இந்த முகக் கவசங்கள், 0.4 மில்லி மீட்டர் அடர்த்தி கொண்டதாகும். இது பாலியஸ்டர் குழுமத்தில் இருந்து எடுக்கப்பட்ட பாலிஎத்திலினைக் கொண்டு தயாரிக்கப்பட்டுள்ளது. இந்த முகக் கவசங்கள் எளிதாக மூச்சு விடும் வகையில் மிகப்பெரிய காப்புக் கண்ணாடியைக் கொண்டிருக்கிறது. இந்த முகக் கவசத்தை உரிய முறையில் கிருமி அழிப்புக்குப் பிறகு மீண்டும் பயன்படுத்தலாம். இந்த முகக் கவசத்தை நீண்ட நேரம் பயன்படுத்தினாலும் உடல் பாதைகளோ, தோல் அரிப்புகளோ ஏதும் ஏற்பட வாய்ப்பில்லை. இதுகுறித்து, சென்னை ஸ்டான்லி மருத்துவக் கல்லூரியில் உள்ள தனிமைப்படுத்தப்பட்ட வார்டின் மருத்துவர் கௌரிசங்கர் கூறியது: கோவிட் 19 வைரஸ் தாக்குதல் ஏற்பட்டுள்ள சூழலில் தகுந்த

வைரஸின் நேரடி தாக்குதலில் இருந்து காக்கக் கூடிய அளவில் உருவாக்கப்பட்டுள்ளது. செக் குடியரசின் தலைநகரான பிராகாவைச் சேர்ந்த முப்பரிமாண பிரிண்ட் நிறுவனத்திடம் இருந்து எடுக்கப்பட்ட தொழில்நுட்பத்தைக் கொண்டு எஸ்எஸ்என் கல்லூரியைச் சேர்ந்த குழுவானது முகக் கவசங்களை உருவாக்கியுள்ளது. மருத்துவர்களின் ஆலோசனைகள்படி, அவர்களுக்கு ஏற்ற முறையில் முகக் கவசங்களின் தொழில் நுட்பம் மாற்றியமைக்கப் பட்டுள்ளது. வெளியே நடப்பவற்றை அப்படியே தருணத்தில் செயல்பட்ட எஸ்எஸ்என் கல்லூரி குழுவுக்கு எங்களது மனமார்ந்த பாராட்டுகள். மருத்துவத் தரத்துடன் உருவாக்கப்பட்டுள்ள இந்த முகக் கவசங்களை அணியும் போது முகத்தில் சுருக்கங்கள் ஏற்படுவதில்லை. மேலும், கிருமிகளை அகற்றி விட்டு அவற்றை எளிதாகப் பயன்படுத்தலாம். கோவிட் 19 தாக்கிய நோயாளிகளுக்கு சிகிச்சை அளிக்கும் போது வைரஸ் தாக்குதலில் இருந்து நம்மை தற்காத்துக் கொள்ள இந்த முகக் கவசங்கள் சிறந்த முறையில் வசதியாகவும், பயனுள்ளதாகவும் இருக்கின்றன என்றார்.

Date	Headlines	Publication	Edition
April 21 2020	College makes, donates 3D-printed face shields to hosps[html] [pdf] [jpg] [spdf]	The Times Of India *Circulation: 273,000*	Chennai
April 21 2020	College develops 3D printable face shields for healthcare staff[html] [pdf] [jpg][spdf]	The Hindu *Circulation: 397,589*	Chennai
April 21 2020	College develops 3D printable face shields for healthcare staff	The Hindu *Viewership: 12,457,000*	https://www.the nadu/college-dev healthcare-staff/a
April 21 2020	College develops 3D printable face shields for healthcare staff	NewsR *Viewership: 69,000*	https://www.new ge-develops-3D-p
April 21 2020	SSN College of Engineering Develops 3D Printable Face Shields	Higher Education Plus*Viewership : 30*	https://higheredu engineering-deve
April 21 2020	3D Printable Protective Face Shields developed by SSN College of Engineering	Curriculum magazine *Viewership: 930*	http://www.curri protective-face-sh engineering/

COVID 19 – Related Work

Automatic Sanitizer Dispenser

The corona virus COVID-19 pandemic is defining global health crisis of our time and has become one of the greatest challenges to handle for the entire mankind in recent times. A simple step that should be followed by the public is to frequently use hand sanitizer to kill the virus. The best way to remind our citizens to use hand sanitizer is by making it easily accessible and always available within sight. It's important to place hand sanitizer near and around high-touch surfaces and public places. An automatic sanitizer dispenser can be of great use in this situation. The main idea behind this project is to build a cost effective automatic sanitizer dispenser that can be installed in public places to ensure hand hygiene and thereby prevent the transmission of the virus. Most hand sanitizers contain anywhere from 60% to 95% isopropyl or ethyl alcohol mixed with water and gels like glycol and glycerine to prevent drying out users' skin. Due to increase in awareness of personal hygiene among people, developing a no-touch automated hand sanitizer dispenser would be highly beneficial for the public. If it is available in cheaper value it could be used by a very large cross section of the society so, the dispenser has a high research value. Keeping all this in our mind we, (***Ms.B.Divya, Assi. Prof/BME, Dr. L. Suganthi Asso.Prof/ BME, Ms. Sivabala, Ms. Srinithi of third year BME and Ms. Varsha Seshadri of second year BME***) have started discussions in the early days of lockdown about implementing an automatic hand sanitizer dispenser. Initial discussions were to make an automated system which is cheap which could be made easily and given to nearby Govt schools which would be helpful during the upcoming examinations. After research, we came up with a conclusion and the idea is selected for presentation at IDEACON v1.0, a unique competition for UG students of all Engineering colleges organized by IEEE Student Branch STB-29741, Kongu Engineering College, Perundurai. Once we were back to college, we understood the importance of the same at our department office where we mark our biometric attendance. ***Mr. Sivananthan, Lab Assistant of BMI*** joins hands with us to make our thoughts in to reality.

COVID 19 – Related Work

Infrared sensor is used as an obstacle detector to find whether user placed their hands to get sanitized. If hand is placed, the sensor detect it and hence pump will be turned on to dispense the required amount of sanitizer liquid. Power supply module and On-off switch control are attached with sensor module which helps to use the automated system uninterruptedly.

Automatic sanitiser Dispenser at BME office

FACULTY VENTURES

FACULTY INTERACTIONS

Workshop/seminar/FDP/Seminar /training/webinar attended

1. ***Dr. K. Nirmala*** Asso. Prof., and ***Ms. Divya. B*** Assi. Prof., attended an online Faculty Development Program on "Role of Robotics and AI during COVID-19" organized by the Department of Biomedical Engineering, Vels Institute of Science, Technology and Advanced Studies (VISTAS) on 3.5.2020.

2. ***Ms. M. Dhanalakshmi*** Assi. Prof., attended 45th International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2020 virtual platform, organized by IEEE signal processing society, Barcelona from 4.5.2020 to 8.5.2020.

3. ***Dr. K. Nirmala*** Asso. Prof., participated in the workshop on "Ancient Breathing Practices (Pranayama)" organised by Department of Civil Engineering & Biomedical Engineering, Karpaga Vinayaga College of Engineering and Technology on 5.5.2020.

4. ***Dr. S. Arun karthick*** Asso. Prof., attended a webinar on "Smart Grid Technology in India" organised by Institute Of Electrical And Electronics Engineers, IEEE Madras Session on 6.5.2020.

5. ***Dr. S. Arun karthick*** Asso. Prof., attended an International webinar series on "Water challenges during and post COVID-19 ", convened by International Centre for Clean Water (ICCW), IIT-Madras Research Park from 7.5.2020 to 28.5.2020.

6. ***Dr. S. Arun karthick*** Asso. Prof., attended a webinar on "Research Perspectives of Nano Biomaterials to Mitigate Medical Issues" organized by Department of Biomedical Engineering, Mahendra College of Engineering, Salem on 14.5.2020.

FACULTY VENTURES

Workshop/seminar/FDP/Seminar /training/webinar attended

7. ***Dr. S. Bagyaraj*** Asso. Prof., ***Dr. J. Vijay*** Asso. Prof., and ***Ms. Divya. B***, AP/BME, attended a FDP on "Artificial intelligence and Machine learning" organized by Department of CSE & IT, CMR Technical Campus, Hyderabad from 18.5.2020 to 22.5.2020.

8. ***Dr. S. Arun Karthick*** Asso. Prof., and ***Dr. J. Vijay*** Asso. Prof., attended an online webinar on " Interdisciplinary Projects in Assistive Technology Engineering" Presented by Dr. S. K. Ramesh, Director AIMS Program, Professor of Electrical and Computer Engineering, California State University, Northridge, USA organized by IEEE madras section on 19.5.2020.

9. ***Ms. Divya. B*** Assi. Prof., attended a webinar on "Current Trends and Post COVID-19 future of Medical Electronics in India" organized by Easwari Engineering College on 22.5.2020.

10. ***Ms. Divya. B*** Assi. Prof., attended FDP on "E-content development for Higher Education" organized by Department of Biomedical Engineering and Internal Quality Assurance Cell (IQAC), Karpaga Vinayaga College of Engineering and Technology on 23.5.2020.

11. ***Dr. J. Vijay*** Asso. Prof., and ***Dr. K. Nirmala*** Asso. Prof., attended an online webinar on AI/ML advancements and Potential Applications organized by IEEE Madras section on 25.5.2020.

12. ***Dr. V. Mahesh*** Asso. Prof., and ***Dr. S. Arun Karthick*** Asso. Prof., attended a webinar on "Importance of mechanical standards in Medical Device Instruments" organized by Department of Mechanical engineering, SSNCE on 29.5.2020.

FACULTY VENTURES

Workshop/seminar/FDP/Seminar /training/webinar attended

13. ***Dr. R. Subashini*** Assi. Prof., participated in the webinar on "Cell-Free Bioprocessing: Opportunities and Challenges" organized by Department of Biotechnology, Sri Venkateswara College of Engineering, Sriperumbudur on 30.5.2020.

14. ***Dr. K. Nirmala*** Asso. Prof., ***Dr. S. Arun Karthick*** Asso. Prof., and ***Dr. R. Subashini*** Assi. Prof., attended a webinar on "Patent Act, Drafting, Filing system and challenges in India ", organized by Internal Quality Assurance cell of RMD Engineering College, Chennai on 10.6.2020.

15. ***Dr. V. Mahesh*** Asso. Prof., and ***Dr. B. Geethanjali*** Asso. Prof., attended a webinar on “Big Data and Covid19” by Dr. Anil K Maheshwari, Professor and Director of MBA in Information Systems, at Maharishi International University, in Fairfield, Iowa, USA on 16.6.2020.

16. ***Dr. S. Bagyaraj*** Asso. Prof., attended Faculty Development Program on 'Medical Signal and Image Analysis' organized by Department of ECE, St Joseph's College of Engineering, Chennai from 15.6.2020 to 17.6.2020.

17. ***Ms. M. Dhanalakshmi*** Assi. Prof., and ***Ms. R. Nithya*** Assi. Prof., attended webinar on "3D Printing FDM and DLP Technology" by Dr. Rahul sivakumar, Professor, Department of Mechanical Engineering, Dhanalakshmi Srinivasan College of Engineering, Coimbatore on 18.6.2020.

18. ***Ms. M. Dhanalakshmi*** Assi. Prof., and ***Ms. R. Nithya*** Assi. Prof., attended webinar on “Future of Education post COVID” organized by McGraw Hill on 18.6.2020.

19. ***Dr. B. Geethanjali*** Asso. Prof., attended a webinar on Big Data and Covid19 on 16/06/2020 by Dr. Anil K Maheshwari, Professor of Management & Director of MBA in Information Systems, at Maharishi International University, USA.

FACULTY VENTURES

Workshop/seminar/FDP/Seminar /training/webinar attended

20. ***Dr. B .Geethanjali*** Asso. Prof., attended a webinar on " COVID-19 Driving Inevitable Changes In Healthcare Delivery" presented by Technecon Healthcare 25.6.2020.

21. ***Dr. B. Geethanjali*** Asso. Prof., attended a webinar titled " Linear Discriminant Analysis "on 29.6.2020

Interaction with other organization

1. ***Dr. J. Vijay***, Asso. Prof., acted as an External expert for the comprehensive viva voce examination for a part time research scholar Mr. P. Muthu in the Department of Biomedical Engineering, SRM Institute of science and Technology, Chennai on January 23, 2020.

2. ***Dr. J. Vijay***, Asso. Prof., attended Doctoral Committee meeting for the Anna University part time research scholar Mr. Hariprasad at St. Josephs College of Engineering, Chennai on January 24, 2020.

Invited talk

1. ***Dr. J. Vijay***, Asso. Prof., presented a talk on "Chip in Lab to Lab on Chip" in Two day Faculty Development Program on "Application of VLSI Technology in Healthcare", organized by the Department of Electronics and Communication at PSNA College of Engineering, Kollam on February 06, 2020.

FACULTY VENTURES

Invited talk

2. ***Dr. S. Bagyaraj***, Asso. Prof., delivered a talk on "Functional Near Infrared Spectroscopy; A Promising BCI Technique" in the two day National level workshop on “Photo stimulation of Neurons for the Enhancement of Prosthetics using Advanced Learning Techniques – Research Perspectives” , sponsored by Council of Scientific and Industrial Research (CSIR), Human Resource Development Group, New Delhi - 110 012 and organized by Department of Biomedical Engineering, Mahindra College of Engineering, Salem on February 10, 2020 and February 11, 2020.

3. ***Dr. J. Vijay***, Asso. Prof., gave a talk on “Deep Learning and its Applications in Healthcare” in TEQIP sponsored 5-day Faculty Development Program on “Biomedical Instrumentation and Signal Processing”, organized by the Department of Electronics and Communication at T.K.M. College of Engineering, Kollam on January 9, 2020.

4. ***Dr. S. Pravin kumar*** Asso. Prof., presented a webinar on "Modeling Asymmetric Vocal Fold Vibrations" to the research group at Medizinische Universität Wien, Vienna, Austria on 20.5.2020.

5. ***Dr. V. Mahesh*** Asso. Prof., gave a webinar talk on "Mathematics in Machine Learning" organized by Dept. of Mathematics, SSN on 20.5.2020.

6. ***Dr. J. Vijay*** Asso. Prof., acted as a resource person to present a topic on "Machine learning in Medical Image Analysis" in an online webinar organized by the department of ECE, Sri Ranganathar Institute of Engineering and Technology, Coimbatore on 24.5.2020.

FACULTY VENTURES

Faculty Research Activities

Journal Publication

1. Dinesh Bhatia, ***S. Bagyaraj, S. Arun Karthick***, "Role of 24 Hr Blood Pressure Variability as a Target Therapeutic Risk Factor for Poor Functional Outcome of Acute Ischemic Stroke", Annals of Indian Academy of Neurology, Vol. 23, No. 1, 9, Jan 2020. (IF:0.898)

2. Vijay Mani Shankar, ***B Geethanjali, Mahesh Veezhinathan***, Jayaram Hariharakrishnan, Nikhil Balakrishnan, L Lakshmi, "Evaluating the effect of music intervention on hypertension", Current Science, Vol. 118, No. 4, 612-620, Feb 2020. (IF:0.756)

3. Pillalamarri Srikrishnarka, Vishal Kumar, Tripti Ahuja, Vidhya Subramanian, ***Arun Karthick Selvam***, Paulami Bose, Shantha Kumar Jenifer, Ananthu Mahendranath, Mohd Azhardin Ganayee, Ramamurthy Nagarajan and Thalappil Pradeep, "Enhanced Capture of Particulate Matter by Molecularly Charged Electrospun Nanofibers", ACS Sustainable Chemistry & Engineering, May 2020. (IF:6.97) (online published)

4. Anitha R, ***Subashini R***, & Kumar P S, "In silico and in vitro approaches to evaluate the bioactivity of Cassia auriculata L extracts", IET Nanobiotechnology, Vol. 14, No. 3, 210-216, May 2020. (IF:2.058)

Conference Publications

1. Chrisilla S, Anna Masciantonio, ***Divya B***, Vidhusha S, ***Kavitha A***, "Effect of Virtual Reality on the EEG Sub-Band Frequency Powers of Autistic and Controlgroups", 2020 IEEE Sixth International Conference on Biosignals, Images and Instrumentation, ICBSII 2020, SSNCE, Chennai, Feb 27-28 2020.

2. ***Bagyaraj S*** and Sindhuja Mary S, "Study of EMG and fNIRS signals for various muscle activities", Indo-US International conference on Bioengineering and Regenerative medicine (ICBR 2020), organised by School of Biochemical Engineering, Indian Institute of Technology (BHU), Varanasi, Feb 27-29, 2020.

FACULTY VENTURES

Conference Publications

3. ***Arun Karthick S*** and Gundhavi Devi, "Fabrication of Collagen, Platelet Rich Plasma, Ag Nanocomposite for wound healing applications", Indo-US International conference on Bioengineering and Regenerative medicine (ICBR 2020), organised by School of Biochemical Engineering, Indian Institute of Technology (BHU), Varanasi, Feb 27-29, 2020.

4. Gayathiri. R. R, Bhuvana Devi.M, G. Aghil Kavya, ***Mahesh Veezhinathan***, ***B. Geethanjali***, "EEG based Visualization and Analysis of Emotional processing in Major Depressive Disorder", ICACCS 2020 - sixth IEEE International Conference on Advanced Computing and Communication Systems, Sri Eshwar College of Engineering, Tamilnadu, March 6-7, 2020.

5. Sakthivel Sukeerthi, ***Mahesh Veezhinathan***, ***Geethanjali. B***, "Analysing the Cognitive load for Monolinguals using EEG", ICACCS 2020 - sixth IEEE International Conference on Advanced Computing and Communication Systems, Sri Eshwar College of Engineering, Tamilnadu, March 6-7, 2020.

6. SB Shamena Selas, ***J Vijay***, ***S Arun Karthick***, S Saraswathi, "Preparation and Analysis of Nano materials for Smart textile in Continuous Monitoring of Physiological Parameters", 2020 5th International Conference on Devices, Circuits and Systems (ICDCS) at Karunya Institute of Technology and Sciences, Coimbatore, March 5-6, 2020.

7. S. Keerthika and ***R. Subashini***, "Effect of Chitosan Nanoparticle for Controlling Fungal Biofilms on Denture Surface", 6th International E-Conference on Latest Trends in Science, Engineering and Technology (ICLTSET'20), Karpagam Institute of Technology, Coimbatore, April 13, 2020.

8. Monica R and ***K. Nirmala*** "Assessment of fetal growth from ultrasound image using image processing techniques", 2nd International Conference on recent trends in Engineering and Scientific Technology – 2020", Rathinam Technical Campus, Coimbatore, March 21, 2020.

FACULTY VENTURES

9. Saikiran Subramani, Suhashine Sukumar, Zuber Ahmed, Vishaal Venkat, Sriram.V, ***Geethanjali B,*** "Analyzing the Performance of Blood Pressure Parameters Using EMF Method" , International Conference on Trends in Electronics and Informatics (ICOEI 2020-IEEE) held on June 15 – 17, 2020, the conference was conducted via Online Mode. (Joint paper with SSNCE and Ge Healthcare Bangalore.

Patents

Reply to the First Examination Report is submitted for the following patents

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.

2. Gobi N and ***S. Arun Karthick*** , "Multifunctional nanocomposite nanofibrous filter for aerosol filtration, chemical and biological protection", Application No: 201841029428

Book Publication

1. Vidhusha Srinivasan, ***A. Kavitha,*** "Inter-Hemispherical Investigations on the Functional Connectivity in Controls and Autism Spectrum Using Resting State fMRI", In book: Innovations, Algorithms, and Applications in Cognitive Informatics and Natural Intelligence. DOI : 10.4018/978-1-7998-3038-2.ch009.
2. Mallampalli Kapardi, ***Kavitha Anandan***, "Understanding Episodic Memory Through Decoding EEG and Probabilistic Estimation of Brain Functional Connectivity Parameters", In book: Innovations, Algorithms, and Applications in Cognitive Informatics and Natural Intelligence. DOI: 10.4018/978-1-7998-3038-2.ch008.

FACULTY VENTURES

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Book Publication

3. NP Guhan Seshadri, ***B Geethanjali***, S Muthumeenakshi, V Bhavana, R Vijayalakshmi, "Visualization of Event-Related Changes in Brain Networks During Attention-Demanding Tasks: Visualization of Functional Connectivity During Attention Task Using EEG", In Book - Innovations, Algorithms, and Applications in Cognitive Informatics and Natural Intelligence, pp. 127-150, Publisher IGI Global.

4. Vijayalakshmi P, ***Dhanalakshmi M***, & Nagarajan T, "Assessment and intelligibility modification for dysarthric speech", In Book: Voice Technologies for Speech Reconstruction and Enhancement, pp. 67-94, Berlin, Boston: De Gruyter.

5. Preethi Kurian, ***Vijay Jeyakumar***, "Multimodality medical image retrieval using convolutional neural network", Deep Learning Techniques for Biomedical and Health Informatics, Academic Press (Elsevier), pp. 53 - 96, 2020.

Projects Applied for External Funding

1. ***Dr. Mahesh V.*** Asso. Prof., ***Dr. Geethanjali B***. Asso. Prof., Dr. A. Vijayalakshmi, Dr. A. Senthil kumar, Tamilnadu Dr. Ambedkar Law University and Dr. Palaniyappan, Yoga Practitioner, World Community Service Centre, Chennai submitted a project proposal titled "Cognitive behavioral therapy as Rehabilitative measures on Juvenile Justice System through Yoga" under DST-SATYAM program with a budget of Rs.1,36,70,000/-.

2. ***Dr. B. Geethanjali*** Asso. Prof., ***Dr. V. Mahesh*** Asso. Prof., Dr. Bikesh Kumar Singh, Assistant Professor NIT , Raipur submitted a project proposal titled "Enhancing the Brain Cognition through Neuro - Feedback model in Indian children with Learning Disability" under SERB with a budget of Rs.42,00,000/-.

FACULTY VENTURES

Online Course

1. ***Dr. B. Geethanjali*** Asso. Prof., completed an online course on "Principles of fMRI - Part 1 & Part 2" this course was jointly conducted by John Hopkins University and University of Colorado through Coursera online learning platform on April 27, 2020.

2. ***Dr. K. Nirmala*** Asso. Prof., has completed the following online course in courser 1. Introduction to Machine Learning,2. MRI Fundamentals and 3. Medical Applications of Particle Accelerators.

3. ***Dr. R. Subashini***, Assi. Prof., has completed an online course in "Finding Hidden Messages in DNA" in coursera.

4. ***Dr. B. Geethanjali***, Asso Prof., Completed NPTEL Online certification course on " Demystifying the Brain " with score 93 %

5. ***Dr. S. Pravin Kumar, Asso Prof.,*** has completed the certification course on "Exploratory Data Analysis with MATLAB" conducted by MathWorks on Coursera.

Faculty Recognition

1. ***Dr. S. Arun Karthick, Asso Prof.,*** was .recognized as Honorary Rosalind Member of London Journals Press by London Journals Press, a leading U.S.A./U.K. based organisation which publishes international peer-reviewed journals.

Faculty Sports Participation

1. ***Dr. V. Mahesh*** Asso. Prof., as a part of Faculty cricket team from SSN played T20 cricket match against Tagore Engineering College for "T20 Tagore Trophy" organized by Tagore Medical College, Chennai.

SIH 2020 Contribution

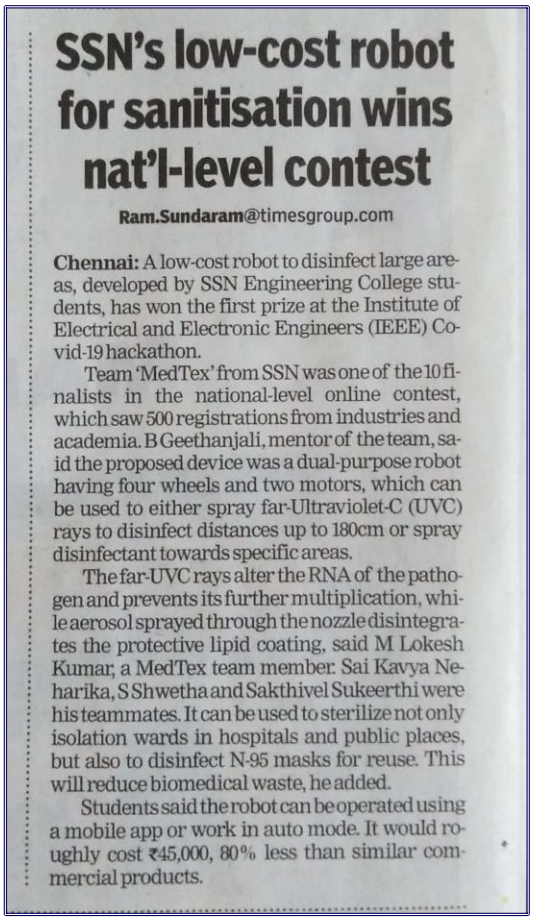
1. ***Dr. B. Geethanjali*** Asso. Prof, ***Dr. V. Mahesh*** Asso. Prof, ***Dr. L. Suagnthi*** Asso. Prof, ***Dr. S. Bagyaraj*** Asso. Prof, acted as Jury for the Internal Hackathon for Smart India Hackathon 2020 held on January 20th 2020.

STUDENT PURSUITS

Hackathon

1. IEEE India Council organized a 3-day National online IEEE COVID-19 hackathon, from 17th April to 19th April 2020 to develop innovative solutions for the problems caused due to the outbreak of the COVID19 virus.

   Team "MedTex" comprises ***M.C. Sai Kavya Neharika - 2nd year BME - IEEE member, S. Shwetha - 2nd year ECE, M. Lokesh Kumar - 2nd year BME, Sakthivel Sukeerthi - 2nd year M.E Medical Electronics*****,** bagged the coveted first prize for their project titled "Corover 2020", under the mentorship of ***Dr. B. Geethanjali*** Asso. Professor /BME.



SSN's low-cost robot for sanitisation wins nat'l-level contest

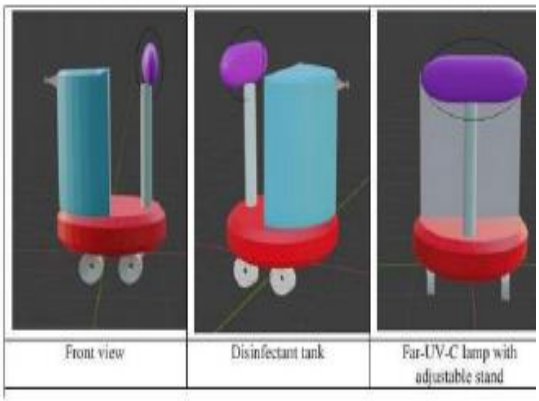
Ram.Sundaram@timesgroup.com

Chennai: A low-cost robot to disinfect large areas, developed by SSN Engineering College students, has won the first prize at the Institute of Electrical and Electronic Engineers (IEEE) Covid-19 hackathon.

Team 'MedTex' from SSN was one of the 10 finalists in the national-level online contest, which saw 500 registrations from industries and academia. B Geethanjali, mentor of the team, said the proposed device was a dual-purpose robot having four wheels and two motors, which can be used to either spray far-Ultraviolet-C (UVC) rays to disinfect distances up to 180cm or spray disinfectant towards specific areas.

The far-UVC rays alter the RNA of the pathogen and prevents its further multiplication, while aerosol sprayed through the nozzle disintegrates the protective lipid coating, said M Lokesh Kumar, a MedTex team member. Sai Kavya Neharika, S Shwetha and Sakthivel Sukeerthi were his teammates. It can be used to sterilize not only isolation wards in hospitals and public places, but also to disinfect N-95 masks for reuse. This will reduce biomedical waste, he added.

Students said the robot can be operated using a mobile app or work in auto mode. It would roughly cost ₹45,000, 80% less than similar commercial products.



This robot by Chennai's SSN College of Engg can sanitise large spaces with UV-lamps

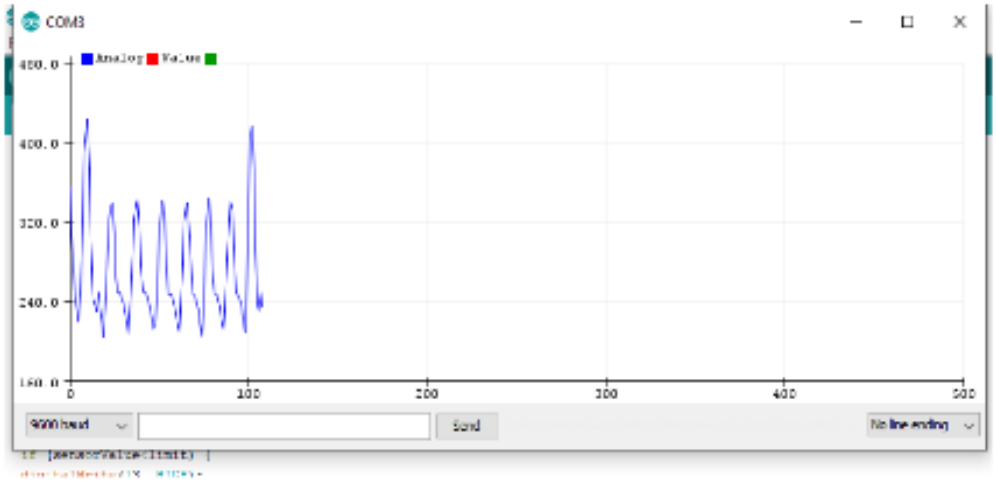
An option to sterilise isolation wards and waiting rooms using disinfectants, in case of failure of the UV lamp, is also provided

STUDENT PURSUITS

2. Rajalakshmi Institute of Technology conducted a virtual Covid19 hackathon to find solutions for the problems caused due to the pandemic. 36 teams from various colleges participated in which two teams from SSN won.
   The winning team from the biomedical department consists of members from 2nd Year BME ***G. Rebecca Maria, Varsha Seshadri, Harish Balaji and Amogh Gupta***.The team was mentored by ***Dr. V. Mahesh***, Asso. Professor/ BME and Dr. R Sundareswar, Associate professor / Department of Mathematics.

3. ***Chetana Krishnan***, 2nd year UG student from the Department of BioMedical Engineering won the second place and cash prize for her project on detecting the lung disease using breathing rate. In today's context to detect COVID-19 cases, the most often used diagnostic tool is thermal scanners which is purely based only on temperature. WHO has marked that researchers are working on extracting the pattern of the lung compliance of patients to get to know the COVID intensity more clearly.

   The proposed concept consists of three blocks. The first block is meant to generate the ideal compliance pattern and the second block is meant to measure the patient's wave finally the third block contains the monitoring mechanism.



STUDENT PURSUITS

Chetana's model to monitor the breathing rate

Club Activity

The members of Biomedical development club (BDC) shared their knowledge to the II year B.E./BME students and I year M.E./Medical electronic students from March 6 – 9, 2020 in the following topics.

- Autodesk Fusion 360 – ***Ms. Kawya and Ms. Srija (Final year UG)***
- 3D Animation using Unity Software – ***Mr. Kesavaraj and Mr. Anupam*** (Final year UG)
- Python Programming – ***Mr. Praveen kumar (Final year UG)***

STUDENT PURSUITS

Achievements

1. ***Srija S and Kawya P***, from final year BME won first place and cash award of Rs.5000/- for the project titled "Wearable reader for visually impaired people", in Project Expo 2k20 (Hardware and Software)- Leveraging Technology for a better tomorrow, St. Xavier's Catholic college of Engineering, Nagercoil on March 7th, 2020. The team was mentored by ***Ms. M. Dhanalakshmi***, Assistant Professor/BME.

2. ***Gayathiri R R, Bhuvana Devi M, and G Aghil Kavya*** , from final year BME won best paper award for the paper titled "EEG based Visualization and Analysis of Emotional processing in Major Depressive Disorder" during ICACCS 2020 - Sixth IEEE International Conference on Advanced Computing and Communication Systems, Sri Eshwar College of Engineering, Tamilnadu, March 6th and 7th, 2020. The students were guided by ***Dr. Mahesh V*** Asso. Prof., and ***Dr. B. Geethanjali*** Asso. Prof.,/BME.

3. ***Sakthivel Sukeerthi*** from second year Medical Electronics won best paper award for the paper titled "Analysing the Cognitive load for Monolinguals using EEG" during ICACCS 2020 - Sixth IEEE International Conference on Advanced Computing and Communication Systems, Sri Eshwar College of Engineering, Tamilnadu, March 6th and 7th, 2020. The student was guided by ***Dr. Mahesh V*** Asso. Prof., and ***Dr. B. Geethanjali*** Asso. Prof.,/BME.

4. ***Monica R*** from second year Medical Electronics won best paper award for the paper titled "Assessment of fetal growth from ultrasound image using image processing techniques" during 2nd International Conference on recent trends in Engineering and Scientific Technology – 2020", Rathinam Technical Campus, Coimbatore, March 21st, 2020. The student was guided by ***Dr. K. Nirmala*** Asso. Prof.,/BME.

THINK PIECE

Surgical Implant Gives Battery-free Electrical Stimulation to the Brain

Rice University neuro engineers have created a tiny surgical implant that can electrically stimulate the brain and nervous system without using a battery or wired power supply.

The neural stimulator draws its power from magnetic energy and is about the size of a grain of rice. It is the first magnetically powered neural stimulator that produces the same kind of high-frequency signals as clinically approved, battery-powered implants that are used to treat epilepsy, Parkinson's disease, chronic pain and other conditions.

The implant's key ingredient is a thin film of "Magnetoelectric" material that converts magnetic energy directly into an electrical voltage. The method avoids the drawbacks of radio waves, ultrasound, light and even magnetic coils, all of which have been proposed for powering tiny wireless implants and have been shown to suffer from interference with living tissue or produce harmful amounts of heat.

To demonstrate the viability of the magnetoelectric technology, the researchers showed the implants worked in rodents that were fully awake and free to roam about their enclosures.

"Doing that proof-of-principle demonstration is really important, because it's a huge technological leap to go from a benchtop demonstration to something that might be actually useful for treating people," said Jacob Robinson, corresponding author of the study and a member of the Rice Neuroengineering Initiative. "Our results suggest that using magnetoelectric materials for wireless power delivery is more than a novel idea. These materials are excellent candidates for clinical-grade, wireless bioelectronics."

THINK PIECE

Tiny implants capable of modulating activity of the brain and nervous system could have wide-ranging implications. While battery-powered implants are frequently used to treat epilepsy and reduce tremors in patients with Parkinson's disease, research has shown that neural stimulation could be useful for treating depression, obsessive-compulsive disorders and more than a third of those who suffer from chronic, intractable pain that often leads to anxiety, depression and opioid addiction.

Robinson said the miniaturization by study lead author and graduate student Amanda Singer is important because the key to making neural stimulation therapy more widely available is creating battery-free, wireless devices that are small enough to be implanted without major surgery. Devices about the size of a grain of rice could be implanted almost anywhere in the body with a minimally invasive procedure similar to the one used to place stents in blocked arteries, he said.

Study co-author and neuroengineering initiative member Caleb Kemere said, "When you have to develop something that can be implanted subcutaneously on the skull of small animals, your design constraints change significantly. Getting this to work on a rodent in a constraint-free environment really forced Amanda to push down the size and volume to the minimum possible scale."

For the rodent tests, devices were placed beneath the skin of rodents that were free to roam throughout their enclosures. The rodents preferred to be in portions of the enclosures where a magnetic field activated the stimulator and provided a small voltage to the reward center of their brains.

Singer, an applied physics student in Robinson's lab, solved the wireless power problem by joining layers of two very different materials in a single film. The first layer, a magnetostrictive foil of iron, boron, silicon and carbon, vibrates at a molecular level when it's placed in a magnetic field. The second, a piezoelectric crystal, converts mechanical stress directly into an electric voltage.

THINK PIECE

"The magnetic field generates stress in the magnetostrictive material," Singer said. "It doesn't make the material get visibly bigger and smaller, but it generates acoustic waves and some of those are at a resonant frequency that creates a particular mode we use called an acoustic resonant mode."

Acoustic resonance in magnetostrictive materials is what causes large electrical transformers to audibly hum. In Singer's implants, the acoustic reverberations activate the piezoelectric half of the film.

Robinson said the magnetoelectric films harvest plenty of power but operate at a frequency that's too high to affect brain cells.

"A major piece of engineering that Amanda solved was creating the circuitry to modulate that activity at a lower frequency that the cells would respond to," Robinson said. "It's similar to the way AM radio works. You have these very high-frequency waves, but they're modulated at a low frequency that you can hear."

Singer said creating a modulated biphasic signal that could stimulate neurons without harming them was a challenge, as was miniaturization.

"When we first submitted this paper, we didn't have the miniature implanted version," she said. "Up to that point, the biggest thing was figuring out how to actually get that biphasic signal that we stimulate with, what circuit elements we needed to do that.

"When we got the reviews back after that first submission, the comments were like, 'OK, you say you can make it small. So, make it small,'" Singer said. "So, we spent another a year or so making it small and showing that it really works. That was probably the biggest hurdle. Making small devices that worked was difficult, at first."

THINK PIECE

All told, the study took more than five years, largely because Singer had to make virtually everything from scratch, Robinson said.

"There is no infrastructure for this power-transfer technology," he said. "If you're using radio frequency (RF), you can buy RF antennas and RF signal generators. If you're using ultrasound, it's not like somebody says, 'Oh, by the way, first you have to build the ultrasound machine.'

"Amanda had to build the entire system, from the device that generates the magnetic field to the layered films that convert the magnetic field into voltage and the circuit elements that modulate that and turn it into something that's clinically useful. She had to fabricate all of it, package it, put it in an animal, create the test environments and fixtures for the in vivo experiments and perform those experiments. Aside from the magnetostrictive foil and the piezoelectric crystals, there wasn't anything in this project that could be purchased from a vendor."

Reference: *Singer, A., Dutta, S., Lewis, E., Chen, Z., Chen, J. C., Verma, N., Avants, B., Feldman, A. K., O'Malley, J., Beierlein, M., Kemere, C., & Robinson, J. T. (2020). Magnetoelectric Materials for Miniature, Wireless Neural Stimulation at Therapeutic Frequencies. Neuron.* https://doi.org/10.1016/j.neuron.2020.05.019

THINK PIECE

Feature Focus: Live Scripts in MATLAB R2020a

-Dr. S. Pravin Kumar, Asso. Prof., BME

Now we have a campus wide MATLAB licence and R2020a has been recently launched officially (R2020b pre-release is available now for the curious minds), it is worth exploring what is on store for us. In this newsletter, let's explore the Live Scripts that can be created from the Live Editor feature. MATLAB supports Live Scripts in versions R2016a and above, and live functions in versions R2018a and above. Starting in R2019b, MATLAB supports the Live Editor in all operating systems supported by MATLAB. Be informed that, classes are not supported yet in the Live Editor and you need to create and call a plain class (.m) file for this.

Some of you might have already used it. If so, you might also agree with me its relevance at times when the remote learning has become a new norm.

Clone of Jupyter/R notebook

Got a team work? Or you like to share the scripts with your supervisor? Or are you a big fan of Jupyter or R notebook and wished that kind of executable notebook in MATLAB?

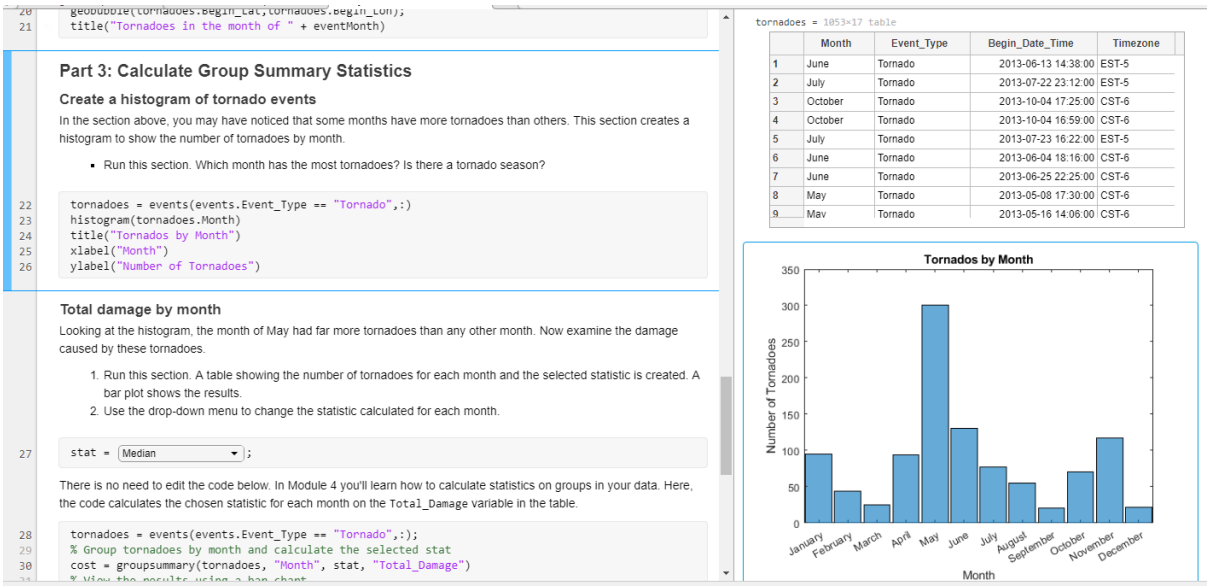
MATLAB gives this functionality as a Live Script that eases up the task of sharing. Live Scripts enable you to combine your analysis and an explanation of that analysis into a single document as an executable notebook.

Live Editor in MATLAB allows you to:

- Create scripts that combine code, output, and formatted text in an executable notebook.
- Just like a document, you can insert headings, images, equations, and hyperlinks.

THINK PIECE

- The equations can be inserted using interactive codes or using LaTeX.
- It provides the option to divide the codes and related scripts into different sections which can run independently.
- The output results and visualizations are placed next to the code that produced them. Thus, in short it is an executable notebook which has both program, results and documentation in a single document.



Communicating your codes

Let's start this discussion by asking this question. How easy is to understand your friend's or someone else's code? Challenging right? So, the same might be true for others to understand your code unless you properly document it. Communicating properly with the ins and outs of your part of the code is important when you work collaboratively with your teammates to develop different modules of the project together. By including interactive elements in your Live Scripts, you can empower your peers to explore and extend your work even if they don't know how to code.

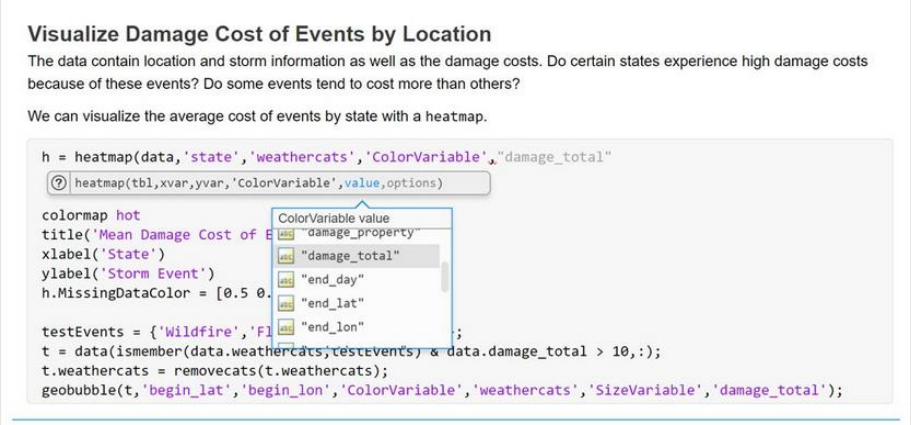
THINK PIECE

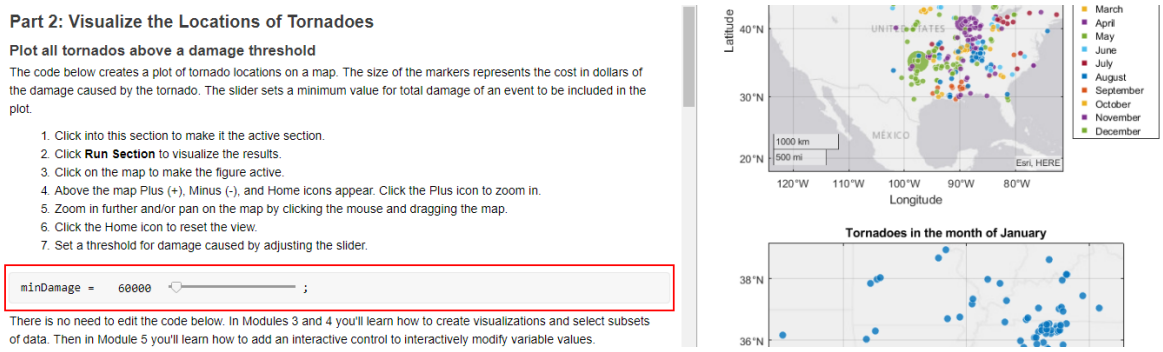
By documenting your analyses with meaningful visualizations and clear summaries you can provide your lab work or project work with a great confidence.

More than that, proper documentation allows you to reuse your own work. Better not to be surprised, it won't take much time to forget your own codes and figure out what worked for you and what didn't! So by recording this information, you will not only help others in understanding the code, but you will greatly help yourself in saving the coding time. This will be handy especially when you decide to revisit and update your code to implement expert's suggestions after a project review.

Interactive Controls and Publication

Live Scripts help you to document your own work and create rich interactive presentations to share with others. The scripts can be saved as a word, PDF, HTML or LaTeX file .With live editor you can add interactive controls to allow others to experiment with parameters in your code.

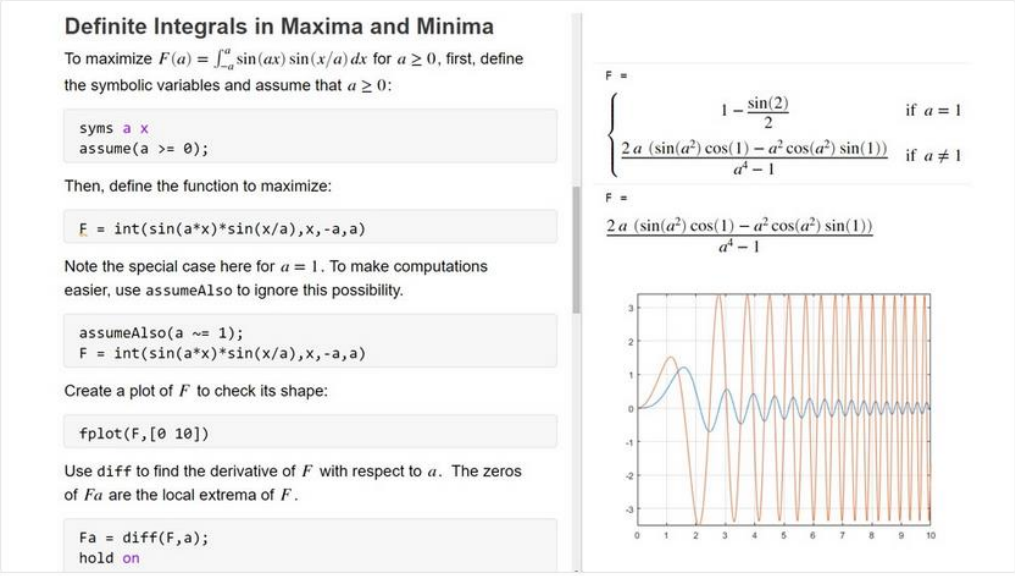




THINK PIECE

Flip class learning

Now the classes become more online, Live Editor can be a great tool for flip class model of learning. Professors can create the engaging and executable learning contents that combine explanatory text, mathematical equations, code, and results. They can share the live script examples of real world engineering problems and give assignments to allow students to explore, modify and learn the codes intuitively on their own.



Download

With the campus wide MATLAB license all faculty, students and staff members has access to download MATLAB and associated products for use on personal machines using the SSN College of Engineering MATLAB portal. Use your SSN email ID to register, login and download MATLAB products from this portal.

THINK PIECE

AI TOOL THAT GIVES A BETTER LOOK AT THE LUNGS IN TREATING COVID-19

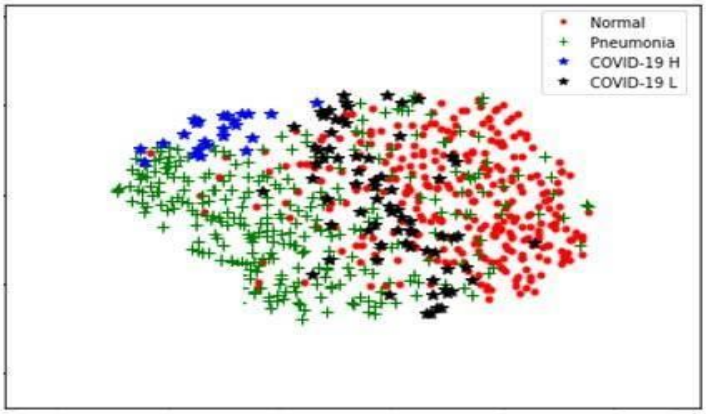
-Maanasa Guru Adimurthy, III BME

Spurred by the ongoing Covid-19 pandemic, researchers from Princeton university have developed a diagnostic tool to analyse chest X-Rays for patterns in diseased lungs. The new tool could give doctors valuable information about the patient's condition in a quick and cheap manner. Jason Fliescher, professor of electrical engineering and this project's main investigator got inspired to create this tool after the Covid-19's devastating range of attacks.

Current differentiation methods involve expensive and time-consuming procedures, such as computed tomography (CT) scans, Fleischer's machine learning model looks at a simple X-ray image and finds patterns that are too subtle even for the expert human eye. This tool would give doctors a new measure for determining the type and severity of COVID-19 pneumonia. Many COVID-19 cases show a familiar form of pneumonia, where the tiny sacs lining a patient's lungs are stiff and heavy with fluid and this restricts breathing and prevents oxygen transfer to the bloodstream. But more than half of the patients look more like an altitude-sick mountaineer: blood-oxygen levels are dangerously low, but the lungs work fairly well and breathing is nearly normal. This new COVID-19 tool is designed to process noisy and complex information and make it easier to interpret for clinicians in the field, who necessarily have to make decisions with imperfect data, sometimes under extreme duress.

Fleischer agrees that his tool is not a panacea but hopes it can give doctors a higher level of confidence when choosing a patient's course of treatment and also further extend the tool in recognizing other respiratory ailments.

THINK PIECE



A machine learning model developed at Princeton scanned dozens of simple chest X-rays and predicted the type and severity of a patient's lung damage. Two types of COVID-19 lung damage are shown here in clusters, labeled COVID-19 H (blue) for patients likely needing a ventilator, and COVID-19 L (black) for patients who may need less invasive treatments. The model was also able to differentiate patients with normal lungs (red) and lungs damaged from non-COVID pneumonia (green).

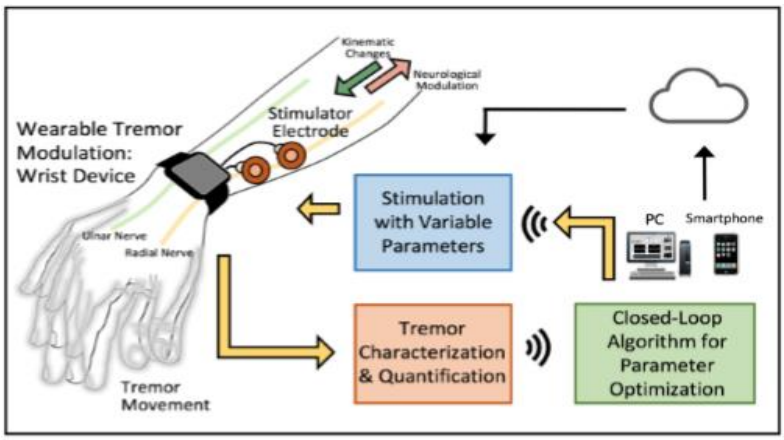
THINK PIECE

WEARABLE SYSTEM FOR TREMOR ATTENUATION

-Aarthi. R, II BME

TREMOR, an abnormal oscillatory movement, can be observed in patients with neurological disorders such as essential tremor (ET) and Parkinson's disease (PD). More than 90 percent of ET patient experience arm tremor. Currently available oral medications and treatment are expensive and at the same time it is not beneficial for all kinds of people.

Jeonghee Kim, Thomas Wichmann, Omer T. Inan, Stephen P. DeWeerth, Senior members of IEEE developed a wireless wearable stimulation system that analyzes upper limb tremor using a three-axis accelerometer and that modulates/attenuates tremor using peripheral-nerve electrical stimulation with adjustable stimulation parameters and a real-time tremor detection algorithm. They outfitted nine subjects with tremor with a wearable system and a set of surface electrodes placed on the skin overlying the radial nerve and tested the effects of stimulation with nine combinations of parameters for open- and closed-loop stimulation on tremor. To quantify the effects of the stimulation, they measured tremor movements, and analysed the dominant tremor frequency and tremor power.



THINK PIECE

As a result, Baseline tremor power gradually decreased over the course of 18 stimulation trials. During the last trial, compared with the control trial, the reduction rate of tremor power was 42.17 + or - 3.09%. The dominant tremor frequency could be modulated more efficiently by phase-locked closed-loop stimulation. The tremor power was equally reduced by open- and closed-loop stimulation. They concluded that Peripheral nerve stimulation significantly affects tremor and stimulation parameters need to be optimized to modulate tremor metrics. This preliminary study lays the foundation for future studies that will evaluate the efficacy of the proposed closed-loop peripheral nerve stimulation method in a larger group of patients with kinetic tremor.

THINK PIECE

AI BASED APPROACH TO FIGHT COVID-19 – REPURPOSING OF DRUGS

-*T S SUBHASRI*

In the recent pandemic of COVID 19, a team of experts from various departments of several institutions of Taiwan has conducted a research on treating the infectious SARS CoV-2 by repurposing the existing drugs. An AI platform has been established to identify potential old drugs that has the similar capability to fight the virus. The identification process is done based on two different learning databases. One of them had the compounds that are used against SARS-CoV, SARS-CoV-2, HIV and the influenza virus. The other had the 3C-like protein inhibitors. When these drugs were tested against feline coronavirus using in vitro cell-based assay, the results obtained were given as a feedback to the AI system to relearn and thus generate an advanced model to identify the old drugs. Feline coronavirus was specifically used because the infection caused by it in cats had similar features to that of infection caused by SARS in humans.

The AI learning was performed by mainly three types of molecular descriptors namely extended connectivity fingerprint, functional class fingerprint and octanol-water partition coefficient in one of the prediction models. In total 613 descriptors were used for practicing and analyzing through AI system. The system also used Deep Neural Network algorithm to identify important descriptors and gave different weightings to generate AI prediction models. The other model was generated from a learning dataset of 210 drugs and compounds that acted against 3C like protease of SARS CoV. After a series of learning and processing the system identified 80 marketed drugs for the use against COVID 19. Among them some drugs like bedaquiline, brequinar, celecoxib, clofazimine and etc showed activities against proliferation of feline coronavirus.

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