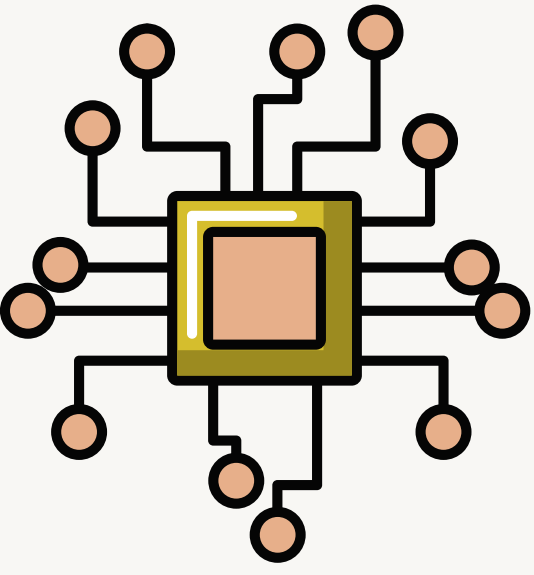
Issue 1 | Jan 2020 - Jun 2020

CURRENT

The Official Newsletter of

Department of Electronics Engineering

Sardar Vallabhbhai National Institute of Technology, Surat, Gujarat, India.



In This Issue:

Message from the Director

I am happy that Department of Electronics Engineering has joined the other departments of the Institute in publishing the Departmental Newsletter. This first issue highlights the activities in the department, achievements of the faculty members and participation of the students in various activities.

The current trend in most of the industry is to go for automation of most of the process to reduce the manpower requirements and for efficient system. The electronic department plays a key role in achieving the innovative sensors and control and this department does contribute to the same.

This newsletter aims at disseminating the expertise available in the department, facilities available and area of research for the faculty and students of the other Institutes. This will help faculty/ students to approach directly the concern faculty for any specific detail or any collaborative activities. This is first biannual issue and the same will be continued every semester updating the activities.

I congratulate the faculty and students of department of Electronics engineering for their achievements, facilities created and for their efforts in bringing out this publication.

I wish the department all the very best in all future endeavors.

Dr. S. R. Gandhi
DIRECTOR

Message from the Head of Department

In the era of globalization and information technology advancement, it is indispensable for an Engineering Institute to stand apart in terms of research and innovation. Faculty members and students are the two main pillars of education systems. Electronics engineering is considered to be a fast-ever-growing field so it is our moral duty to provide a platform to the faculty members and students of the department to showcase their research, innovations, academic achievements and talents. The department newsletter certainly plays a great role to disseminate department's information to their stakeholders.

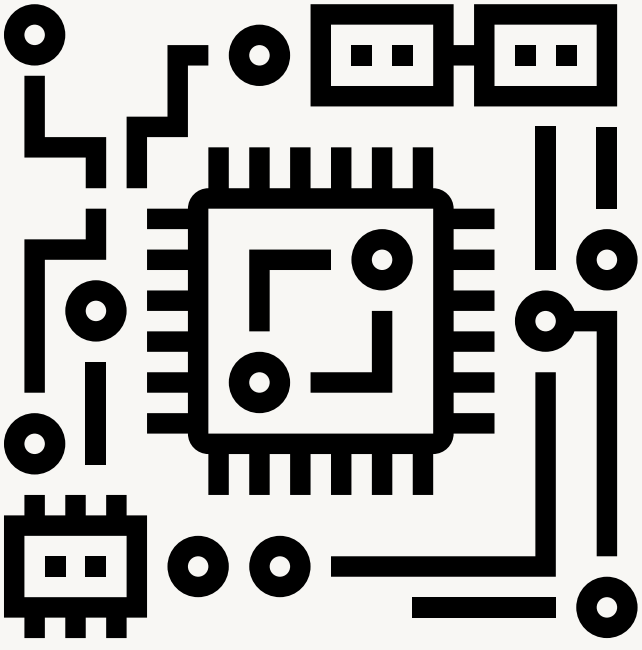
With this thought, we decided to publish the Department newsletter "**CURRENT**" It gives me immense pleasure to put forward the first issue of the newsletter of the Electronics Engineering Department, SVNIT-Surat.

This issue covers the article on recent advancements, experience sharing, information of available resources and other interesting material for the readers. Also, it includes the achievement of the students and faculty members, news items and reports of the different events organized by the departments during January 2020 to the June-2020. I sincerely thank Dr. S. R. Gandhi, Director, SVNIT-Surat, all faculty members, students and alumni for their support. I appreciate the efforts of newsletter committee members. My special thanks to Dr. Jigisha Patel and Ms. Anjali Sarvaiya for coordinating this activity.

I hope that this newsletter will become the reflection of the department. We will be happy to receive suggestions and feedback from the faculty members as well as students to improve the quality of the future editions.

Dr. Anand Darji,
Associate Professor & Head,
B.E (Electronics), M.Tech, (Electronics Systems) and Ph.D. (Microelectronics) - IIT Bombay,
Electronics Engineering Department,
E-mail: hod@eced.svnit.ac.in

DEPARTMENT CORNER



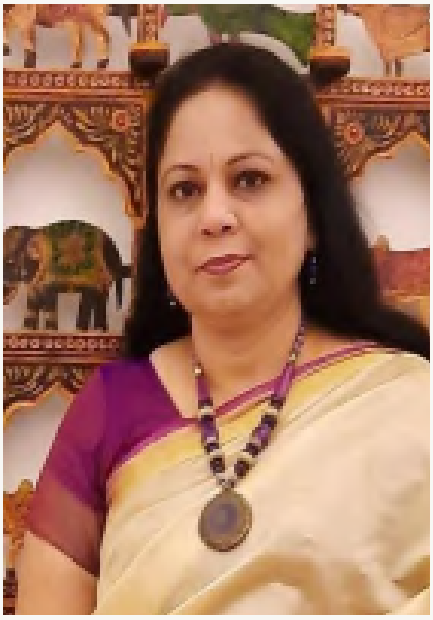
Mission

The mission of the Electronics Engineering Department is to contribute to society and industry through excellence in education, research, innovations and ethics by stakeholders.

Vision

The vision of the Electronics Engineering Department is to Aim to achieve quality in education and research to create leading Electronics engineers, researchers and entrepreneurs.

A Walk to Remember.....



Wow, a long journey of 34 years in SVRCET/SVNIT from a Bachelor student to a Ph D Professor. It was the year 1987, I joined as a first-year student in the Department of Electronics, which was running in the Department of Electrical and with a morable journey of four years I completed my B.E. in 1991. The same place of Library, the same place of canteen, the same old Department buildings I witnessed since the years in which the amenities, new constructions and beautifications in the campus went on adding the values in me and my Department. I got the opportunity to do my Masters and PhD while doing my job here. I did all my career progress here so the Department has become like my second home always..

I joined the Department in 1991 as an Adhoc Lecturer and dramatically I got the opportunity to become the permanent faculty in 1993. Since then, I never stopped my journey of teaching. Thousands of students and hundreds of colleagues and a number of Heads/Directors kept my moral boosted always. Promotions from Senior Lecturer to Associate Professor and then Professor, 5th, 6th and 7th pay commissions added my salary base from four figure to six figures. From single floor in Electrical Department and sharing cabins, to separate building of ECED with individual cabins, Horizontal and vertical expansion of ECED to four storied new building of ECED with individual office, what a fascinating development I could see from a baby Electronics Department with limited number of faculties to fully grown young dynamic version. The journey as a Head of the Department and Associate Dean Faculty Welfare was just amazing as a leader. It makes me so happy when my old students come to meet me and I see them very well settled in their career. This is just a summary of my very long story associated with SVNIT and especially ECED. The total length of my story is the size of a book. This space is too less. Too many incidences, too many episodes, too many portfolios. And the story will further expand as I will go on working with the department directly or indirectly till my last breath.

Dr. (Mrs.) Upena Devang Dalal
Professor and Ex-Head, Electronics Engineering Department,
Sardar Vallabhbhai National Institute ofTechnology, Surat

NEWLY JOINED TALENT IN ECED FACULTY

Dr. Kirti Inamdar

Education Qualification:

Ph.D. (Metamaterial based Microstrip antenna design) in 2015 from Sardar Vallabhbhai National Institute of Technology, Surat

Area of Research:

Microstrip Patch Antenna design using Metamaterials, Wearable Antennas

Future plan:

- To set up EMI-EMC laboratory.
- To develop laboratory setup for Testing and Measurement of RF device parameters in the Department

Dr. Abhishek Acharya

Education Qualification:

Ph. D (Microelectronics & VLSI) - IIT Roorkee in 2018

Area of Research

Physics & Modelling of Nano-Scale Devices, Device-Circuit Interactions in Nano-Scale Transistors, Wide Bandgap Semiconductors and 2D Materials for Devices & Circuits

Dr. Deepak Joshi

Education Qualification:

Ph.D. (IIT Guwahati)

Area of Research

Metaheuristics, Analog Circuits: Design and Optimization, Computational Intelligence, CAD for VLSI

Future Plan

- To work for the application of ML and similar methods to VLSI circuit design, performance exploration and optimization.

NEWLY JOINED TALENT IN ECED FACULTY

Dr. Suman Deb

Education Qualification

Post-Doc: IIT Delhi (Feb 2019 to October 2019)
Post-Doc: IISc Bangalore (July 2018 to December 2018)
Ph.D.: IIT Guwahati (June 2018) Signal Processing,

Area of Research

Speech Processing, Speech based Health Analysis, Emotion Analysis based on Speech and Image, Speech Pathology Detection, Voice Conversion/ Speaker Identity Conversion, Pattern Recognition.

Future Plan

- To develop a speech-based system for analysis of heart and lung health.
- To develop a speech-based system for person's emotional state analysis.
- To develop a new lab, speech processing and spectrum lab.

Dr. Kamal Captain

Education Qualification

Ph.D. from DA-IICT, Gandhinagar, India. In 2019.

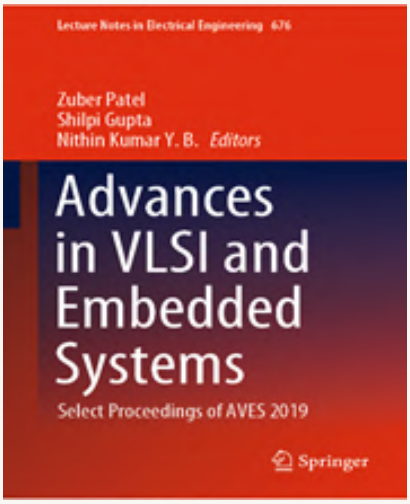
Area of Research

Cognitive Radio, Signal Processing, Statistical Signal Processing, Wireless Communication, Machine Learning

Future goals

- To develop courses that align with state of the art and continue improving my teaching skills.
- To pursue research in the domain of signal processing and communication.
- Collaborate with researcher working in the domain of signal processing.

INTERNATIONAL CONFERENCES:



Advance in VLSI and Embedded Systems (AVES-2019)

Duration: 19-21th December, 201

General Chairs: Dr. A. D. Darji, Dr. Z. M. Patel, Dr. P. J. Engineer and Dr. Rasika Dhavse

International Conference on Advances in VLSI and Embedded Systems (AVES-2019) and Pre-conference Tutorial was organized from December 19 to December 21, 2019. Dr. A. D. Darji, Dr. Z. M. Patel, Dr. P. J. Engineer and Dr. Rasika Dhavse were the organizing Chairs of the conference.

AVES-2019 was organized to provide premier forum for presentation of new advances and research results in the field of VLSI and Embedded Systems. Total of 66 delegates attended the conference. Conference proceedings are published by Springer in Lecture Notes in Electrical Engineering. In this conference following speakers have delivered the plenary talk and keynote talk.

- Prof. Gaurav Sharma (University of Rochester, NY, USA) plenary talk on "Smart Light-Weight Body Worn Sensors for Health Analytics".
- Prof. Virendra Singh (IIT Bombay) talk on "Computer Architecture Challenges in 21st Century".
- Prof. R. K. Chauhan (MMMUT, Gorakhpur) talk on "WBG Semiconductors for Next Generation Electronic Applications".
- Prof. Rutu Parekh talk on "Design, modelling and Simulation of 3-D integrated Single Electron Transistor based circuits operating at room temperature"
- Shri. H. S. Jatana (SCL, ISRO) talk on "Challenges in development of SOI-CMOS technology for ultra-low power applications".

INTERNATIONAL CONFERENCES:

Emerging Technology Trends in Electronics, Communication and Networking (ET2ECN-2020)

Duration: 7-8 February, 2020
General Chairs: Dr. Shilpi Gupta, Dr. Shweta Shah, Dr.Jignesh N Sarvaiya, Dr. P.N. Patel

Department of Electronics Engineering at SVNIT, Surat organized the 3rd International Conference on "**Emerging Technology Trends in Electronics, Communication and Networking (ET2ECN-2020)**" on 7-8 February, 2020. This conference was technically sponsored by Springer CCIS (Communications in Computer and Information Science).

The International conference ET2ECN -2020 received an overwhelming response to call for papers and around 80 were received. Out of these around 70 papers were selected after plagiarism checking and finally, about 32 were selected after peer review process. In this conference following speakers have delivered the plenary talk and keynote talk.

- Prof. Girish Kumar (IIT Bombay, Powai, Mumbai, India) plenary talk on "Cell phone/tower radiation hazards and solutions."
- Dr Nirupam S. D. (Senior Scientist, Head of IoT and Artificial Intelligence Energy Research Institute @ NTU, Singapore) on "How industrial IOT - setting yourself up for success."
- Mombasawala Mohmedsaeed (General Manager –Applications Keysight Technologies India Pvt. Ltd) on "Understanding 5G NR REL 15, 16 standards."
- Dr. Chetan Singh Thakur (IISC Bangalore, India) on "Low-power neuromorphic computing architectures for edge-computing."
- Dr. Vishwas Patil (Senior Research Scientist @ IIT-Bombay, PhD in Information Security, La Sapienza, Bachelor of Computer Engineering, SVNIT-Surat) on "The platform economies and privacy as their currency."

SPONSORED RESEARCH PROJECTS

Sanctioned Sponsored Research Projects :

Project Title: Design and Development of Co-Planar Waveguide based Wearable Bio-Sensor for Medical Application

Duration: March 2020-March 2022

Agency: Ministry of Science & Technology, Department of Biotechnology Government of India

Amount: 18 lacs

Investigators: Dr. P N Patel (PI), Dr J N Sarvaiya(C0-PI)

Project Description:

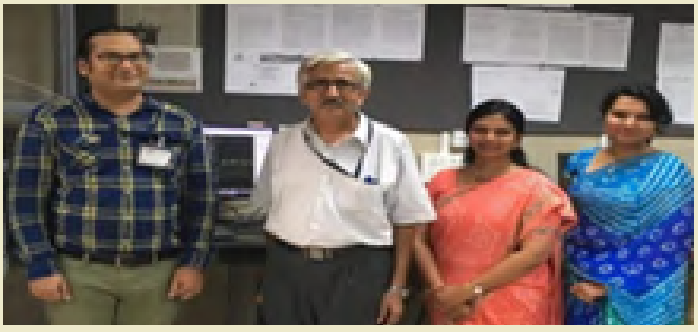
The aim of the proposed project is to design an electronic textile (E-textile) antenna which could easily integrate on the human body and be useful in the field of medical application for the detection of knee effusion. The knee is the largest joint in the body. “Water on the knee” is a common term for knee effusion, a condition in which excess fluid accumulates around the knee joint. In medical terminology, an effusion refers to accumulation of fluid in an anatomic space. Knee effusion is more common in people who have significant “wear and tear” on their joints. Synovial fluid a viscous liquid found in the cavities of the movable joints. Joint disorder can cause extra fluid to build up around the joint these result into swelling, pain and restricted range of motion. The E-textile will be used to detect early signs of knee effusion upon which with help of early medical intervention permanent damage can be avoided. Using the device one can keep track of the amount of synovial fluid inside the membrane at any given point of time. It is a very cost-effective technique for real-time characterization of knee effusion as compared to other options such as ultrasound, MRI and radiograph. The proposed device maintains stability under conformal condition, it is non-hazardous to health by limiting the specific absorption rate (SAR) value under safety level IEEE C95.1-1999/2005 standard 1.6 W/kg averaged over 1g of tissue.

SPONSORED RESEARCH PROJECTS

Completed Research Projects

Project Title: SIRMI - Strengthening IRNSS Receiver by Mitigation of Interference
Duration: 2017-2020
Funding Agency: SAC, ISRO Ahmedabad
Amount: 30,16,000/-
Investigators: Dr. Upena Dalal (PI),
Dr. Shweta N Shah (Co-PI)

Project Summary:
The SIRMI Strengthening IRNSS Receiver by Mitigation of Interference is targeted to study, classify, analyse the interference by Monitoring as well as proposing the possible mitigation techniques. The study of RFI helps to classify the interference in the two major part: Intentional Interference and Unintentional Interference. For Intentional interference in L5 Band of IRNSS, Class II chirp type jammer is identified as source of interference and for unintentional interference in S band of IRNSS, Wi-Fi signal is found to be a source of interference.



Project Title: Study, Design, and Simulation of Ionodelay effect based on Ionospheric Models and their correction techniques using Software Defined Radios
Duration: 2017-2020
Funding Agency: SAC, ISRO Ahmedabad
Amount: 18,90,000/-
Investigator: Dr. Shweta N Shah (PI)

Project Summary:
The Indian government has launched a NavIC regional navigation satellite system to provide accurate positioning information for the low-latitude equatorial Indian subcontinent. Navigation should be accurate enough to give precise location. The ionosphere plays an important role as satellite signals have pass through it. Overcoming the effects of the ionosphere is a challenging problem in the NavIC system due to significant irregularities in the low latitude Indian region. The Aim of the project is to observe the effect of the ionosphere on NavIC signals and provide the correction using existing ionospheric delay models (dual frequency, Klobuchar, GIVE, GRAPHIC, etc.) as well as a proposed model on the software-defined radio platform to improve the NavIC positional accuracy.

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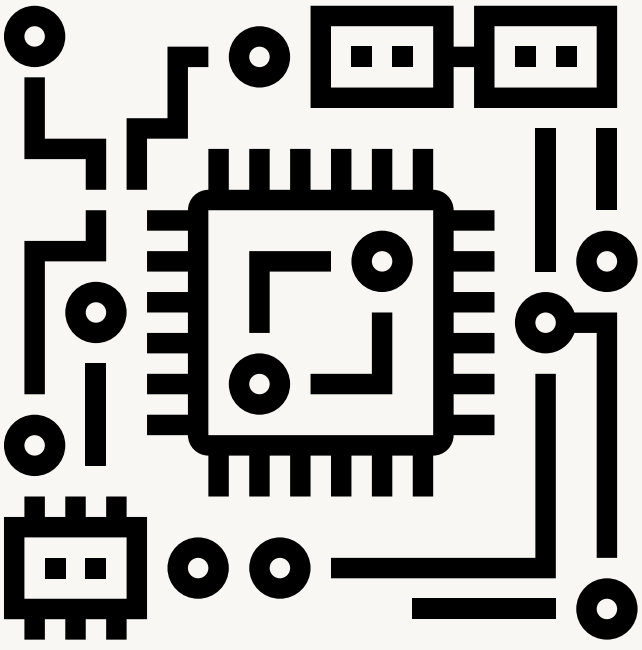


PAPER PUBLICATION

Research Papers Published in International Journals

- Priyank H. Prajapati, A. D. Darji, "**FPGA Implementation of MRMN with Step-size Scalar Adaptive Filter for Impulsive Noise Reduction Circuits, Systems and Signal Processing**" Springer publication, vol. 39, pp.3682-3710, 2020, SCI index

- Dinesh Rotake, A. D. Darji and Nitin Kale, "**Fabrication, calibration, and preliminary testing of microcantilever-based piezoresistive sensor for BioMEMS applications,**" IET nanobiotechnology, IET publication, vol.14/5, pp.357-368, 2020, SCI index

- Dinesh Rotake, A. D. Darji and Nitin Kale, "**Highly selective piezoresistive sensor for detection of Hg ions using mercaptosuccinic acid-functionalized microcantilevers with cross-linked pyridine dicarboxylic acid**," Sensor Review, emerald publication, USA, 2020, SCI index

- Dinesh Rotake, A. D. Darji and Jitendra Singh, "**Thin-film based sensor for the selective detection of mercury (Hg2+) ions at the picomolar range**," Sensor Review, EMERALD publication, USA, vol.40/4, pp.485-495, 2020, SCI index

- Dinesh Rotake, A. D. Darji, Ajay Kumar and Jitendra Singh, "**Highly selective sensor for the detection of Hg2+ ions using Homocysteine functionalized quartz crystal microbalance with cross-linked pyridine dicarboxylic acid**," IET nanobiotechnology, IET publication,2020, SCI index

- Dinesh Rotake, A. D. Darji and Nitin Kale, "**Ultrasensitive detection of Cadmium ions using a microcantilever-based piezoresistive sensor for groundwater**," Bilstein Journal of Nanotechnology, vol.11, pp.1242-1253, 2020, SCI index

- Abhishek Tripathi, Shilpi Gupta, Abhilash Mandloi, "**Orthogonally polarized and 60 GHz dual-channel based 18× 2.5 Gb/s DWDM-interleaved hybrid FSO**," Wireless Personal Communications, vol.52 issue 4, 2020, SCI index

- Sarosh K. Dastoor, Upena D. Dalal and Jignesh N. Sarvaiya, "**Optimisation of CoMP-based cellular network design and its radio network parameters for next generation HetNet using Taguchi's method**," Int. J. Innovative Computing and Applications, Vol.11, Nos. 2/3, pp.147-158, 2020,Scopus index

- Sruthi S., Rasika Dhavse, Jignesh N. Sarvaiya, "**Quality Assessment of Fruits and Vegetables using Bio-impedance based Expert System**," International Journal of Innovative Technology and Exploring Engineering, vol. 9 Issue-8, pp.965-970, June-2020, Scopus index

PAPER PUBLICATION

Research Papers Published in International Journals

- Pavan Sai Vemulapalli, Ajay Kumar Rachuri, Heena Patel, Kishor P. Upla, "**Multi-object Detection in Night Time**," Asian Journal of Convergence of Technology (AJCT), Vol 5 No. 3, pp.01-07, 2020, Scopus index

- Vishal M. Chudasama, Kishor Upla, "**E-ProSRNet: An Enhanced Progressive Single Image Super-Resolution Approach**," Elsevier Journal of Computer Vision and Image Understanding (CVIU), vol.200, pp.103038, 2020,SCI index

- Hirenkumar V. Dhuda, Piyush N. Patel, Hiteshkumar B. Pandya, "**Modified Corrugation-Based W-Band Waveguide with Selective Notched Operation for Fusion Plasma Diagnostics**," IEEE Transactions on Plasma Science, vol.48, pp.2502-2508, June 2020,SCI index

- Hirenkumar V. Dhuda, Piyush N. Patel, Hiteshkumar B. Pandya, "**A Constant Corrugation Circular Waveguide for High-Pass Signal Diagnostics in ECEI System at 75–110 GHz**," Journal of Infrared, Millimeter, and Terahertz Waves, vol.41, pp.894-907, June 2020,SCI index

- Raj Shah, Rasika Dhavse, "**Novel Hybrid Silicon SETMOS Design for Power Efficient Room Temperature Operation**," Silicon , 31 March 2020, DOI :http://dx.doi.org/10.1007/s12633-020-00461-x,SCIE, Scopus index

- M. V. Desai, S. N. Shah, "**Case Study: Performance Observation of NavIC Ionodelay and Positioning Accuracy**," IETE Technical Review, pp.1-11, March 2020, SCI index

- M. V. Desai, S. N. Shah, "**An observational review on influence of intense geomagnetic storm on positional accuracy of NavIC/IRNSS system**," IETE Technical Review, vol.37 (3), pp.281-295, 2020,SCI index

PAPER PUBLICATION

Research Papers Published in International Conference

- G. G. Soni, A. Tripathi, A. Mandloi and S. Gupta, "**Outage and SNR Performance of Tropical Optical Wireless Links using Receiver Diversity**," 3rd Int. Conf. on Emerging Technology Trends in Electronics, Comm. and Networking (ET2ECN 2020) SVNIT, Surat, India, 6th -8th February, 2020, Scopus index

- Rushi Bhatt, Sudhanshusinh Yadav, Jignesh N. Sarvaiya, "**Convolutional Neural Network Based Chest X-Ray Image Classification for Pneumonia Diagnosis**," International Conference on Emerging Technology Trends in Electronics Communication and Networking ET2ECN 2020, pp.254-266, 7th-8th February, 2020, Scopus index

- Heena Patel, Kalpesh Prajapati, Vishal Chudasama and Kishor P. Upla, "**An Approach for Fusion of Thermal and Visible Images**," 3rd International Conference on Emerging Technology Trends in Electronics Communication and Networking (ET2ECN), 7th-8th February, 2020, Scopus index

- Meghal Darji, Jaivik Dave, Nadim Asif, Chirag Godawat, Vishal Chudasama, Kishor Upla, "**License Plate Identification and Recognition for Non-Helmeted Motorcyclists using Light-weight Convolution Neural Network**," International Conference for Emerging Technology (INCET 2020), 5th -7th June, 2020

- Gheewala S.M., Rasika Dhavse, P. N. Patel, "**Fabrication of Macro Porous Silicon Structures Using Pulsed Fiber Laser Technique for Capacitive Sensor Application**," Emerging Technology Trends in Electronics, Communication and Networking Third International Conference, ET2ECN 2020., 7th-8th February, vol.1214, pp.68, 2020, Scopus index

- Paresh Sagar, Piyush Patel, "**Design and Analysis of Miniaturized Double Negative Metamaterial in Microwave S-Band for Sensing Applications,**" 3rd International Conference on EMERGING TECHNOLOGY TRENDS in ELECTRONICS COMMUNICATION and NETWORKING (ET2ECN 2020), 7th- 8th February, 2020, pp.1-4, Scopus index

- Raj Shah, Rutu Parekh and Rasika Dhavse, "**Strategy for Designing Single Electron Transistors**," 3rd International Conference on Emerging Technology Trends in Electronics Communication and Networking (ET2ECN-2020), SVNIT, Surat, Gujarat, India, 7th- 8th February, 2020, Scopus index

- Raj Shah, Rutu Parekh and Rasika Dhavse, "**Ultra-low-power Novel Hybrid SETMOS Logic Circuits using Single-Gate Single Electron Transistor (SG-SET) working at Room Temperature,**" Symposium on Frontier Problems in Nanoscience and Nanotechnology, IIT Gandhinagar, Gujarat, India, 14th-15th February, 2020

PAPER PUBLICATION

Research Papers Published in International Conference

- S. Sruthi, R. Dhavse, and J. N. Sarvaiya, "**Expert system based quality assessment of fruits and vegetables through bio-impedance measurement**," 3rd International Conference on Emerging Technology Trends in Electronics Communication and Networking (ET2ECN-2020), SVNIT, Surat, Gujarat, India, 7th- 8th February, 2020, Scopus index

- Gandhi Divyangna and Gupta Shilpi, "**Evaluation of Gain and Noise Figure spectrum of EDFA by optimizing its parameters with different Pumping schemes in the scenario of DWDM System**," 3rd Int. Conf. on Emerging Technology Trends in Electronics, Comm. and Networking (ET2ECN 2020) SVNIT, Surat, India., 7th- 8th February, 2020, Scopus index

- Chhaya Suratwala, Shilpi Gupta, Abhilash Mandloi and Pranav Lapsiwala, "**Experimental study on Etching of FBG for sensing Application**," 3rd Int. Conf. on Emerging Technology Trends in Electronics, Comm. and Networking (ET2ECN 2020) SVNIT, Surat, India, 7th- 8th February, 2020, Scopus index

- Monika Gambhir and Shilpi Gupta, "**Long Period Fiber Grating Sensors Design Optimization using Jaya Algorithm**," 3rd Int. Conf. on Emerging Technology Trends in Electronics, Comm. and Networking (ET2ECN 2020) SVNIT, Surat, India, 7th- 8th February, 2020, Proceeding, Scopus index

- Abhishek Tripathi, Gireesh G. Soni, Shilpi Gupta, and Abhilash S. Mandloi, "**Performance Analysis of 16-QAM based RoFSO System over Gamma-Gamma Modeled Turbulence Channel**,"3rd Int. Conf. on Emerging Technology Trends in Electronics, Comm. and Networking (ET2ECN 2020) SVNIT, Surat, India, 7th- 8th February, 2020, Proceeding, Scopus index

- Mitesh Solanki, Shilpi Gupta, "**A Comparative Evaluation of Low Complexity LAS Detection Algorithm for Massive MIMO System**," 3rd Int. Conf. on Emerging Technology Trends in Electronics, Comm. and Networking (ET2ECN 2020) SVNIT, Surat, India, 7th- 8th February, 2020, Proceeding, Scopus index

- Akriti Jaiswal, A. Krishnma Raju, Suman Deb, "**Facial Emotion Detection using Deep Learning**," 2020 IEEE International Conference for Emerging Technology (INCET), Belgaum, India, 5th-7th June, pp.1-5,2020,

- Chudasama Vishal, Heena Patel, Kalpesh Prajapati, Kishor P. Upla, Raghavendra Ramachandra, Kiran Raja, and Christoph Busch. "**TherISuRNet - A Computationally Efficient Thermal Image Super-Resolution Network.**" In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops, pp.86-87, 2020. ***(Best paper award)***

PAPER PUBLICATION

Research Papers Published in International Conference

- Kalpesh Prajapati, Vishal Chudasama, Kishor Upla, "**A Light Weight Convolutional Neural Network for Single Image Super-Resolution**", Procedia Computer Science, vol. 171, pp. 139-147, 2020, ISSN 1877-0509, https://doi.org/10.1016/j.procs.2020.04.015.
- Rai Aashish, Vishal Chudasama, Kishor Upla, Kiran Raja, Raghavendra Ramachandra, and Christoph Busch. "**ComSupResNet: A Compact Super-Resolution Network for Low-Resolution Face Images.**" In 2020 8th International Workshop on Biometrics and Forensics (IWBF), pp. 1-6. IEEE, 2020.
- Prajapati, Kalpesh, Vishal Chudasama, Heena Patel, Kishor Upla, Raghavendra Ramachandra, Kiran Raja, and Christoph Busch. "**Unsupervised single image super-resolution network (usisresnet) for real-world data using generative adversarial network.**" In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops, pp. 464-465, 2020.

BOOK CHAPTER PUBLICATION

Dipika D. Pradhan, **Abhilash Mandloi**, "*Parabolic Pulse Generation at 1550 nm Raman Amplifier Utilizing High Power Pump Laser*" Book name: **Optical and Wireless Technologies**, chapter 6, ISBN 978-981-13-6158-6, ISBN 978-981-13-6159-3 (eBook), Springer publication-2020

EXPERT LECTURE/TALK DELIVERED BY ECED FACULTY

Over the course of this academic year, several expert talks have been delivered by our esteemed faculty members. The lectures/talks covered a vast range of topics and gave exposure to all the attendees. It helped in enhancing and diversifying the knowledge of each individual. Given below are the Lectures/Talks delivered by the faculty members.

Dr. Upena D. Dalal:

5G Technology and it's Applications

The talk was delivered through a Webinar during lockdown on 28th May 2020. It was organized by Sri Vasavi Institute of Engineering and Technology, AP (Online).

5G: Network Architecture and SDN

The talk was delivered through a Webinar during lockdown on 15th June 2020, which was organized by Parul University, Vaghodia (Online).

Physical Layer Aspects in 5G/next generation Systems

The talk was delivered through a FDP Webinar during lockdown on 19th June 2020. It was organized by Kommuri Prasad Reddy Institute of Technology, Hyderabad.

5G: Network Architecture and Software Defined Networking (SDN)

The talk was delivered through a Webinar during lockdown on 28th June 2020, which as organized by Lokmanya Tilak College of Engineering, Navi Mumbai

Dr. Rasika N. Dhavse:

Self Assembly Processes for Fabrication of Emerging Nanoelectronics Devices

The talk was delivered in a One Week FDP on Recent Advancement in 'Devices, Circuits and Communication' on 4th January 2020, which was organized by TEQIP-III MMMUT, Gorakhpur.

Role of Energy Band Diagrams in Semiconductor Devices

It was delivered through an Expert Talk on 26th February 2020, which was organized by GEC, Surat.

EXPERT LECTURE/TALK DELIVERED BY ECED FACULTY

Dr. Kishor P. Upla:

Low resolution face super resolution

The talk was delivered in NBL Meeting on 5th and 6th of March 2020 which was hosted by NTNU, Gjøvik, Norway.

Dr. Shweta N. Shah:

5G Satellite Network

The talk was delivered through a webinar (Under COVID-19 Situation) on 12th June 2020, which was organized by Parul University.

Role of Satellite Systems in 5G

It was delivered through a webinar organized by Department of EC& Telecommunication Engineering on 9th June 2020 the venue for which was Pimpri Chinchwad College of Engineering & Research, RAVET in collaboration with IEEE.

Dr. Kamal Captain:

Spectrum Sensing for Cognitive Radio

The talks were delivered through a Webinar Series on 9th May 2020 and 9th June 2020, which were hosted by Faculty of Engineering and Technology, Parul University and ENINE Solutions respectively.

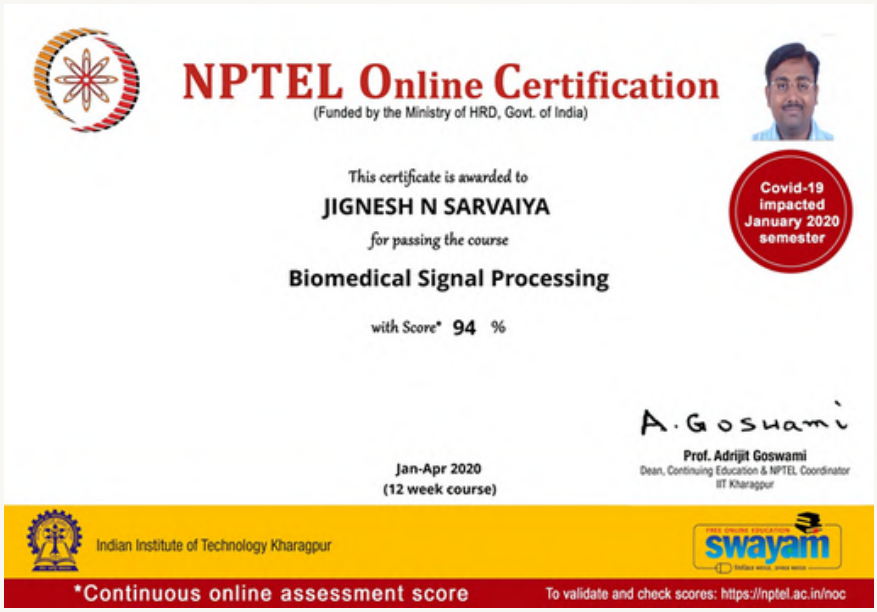
Dr. Deepak Joshi:

Optimization and its application in VLSI circuit design

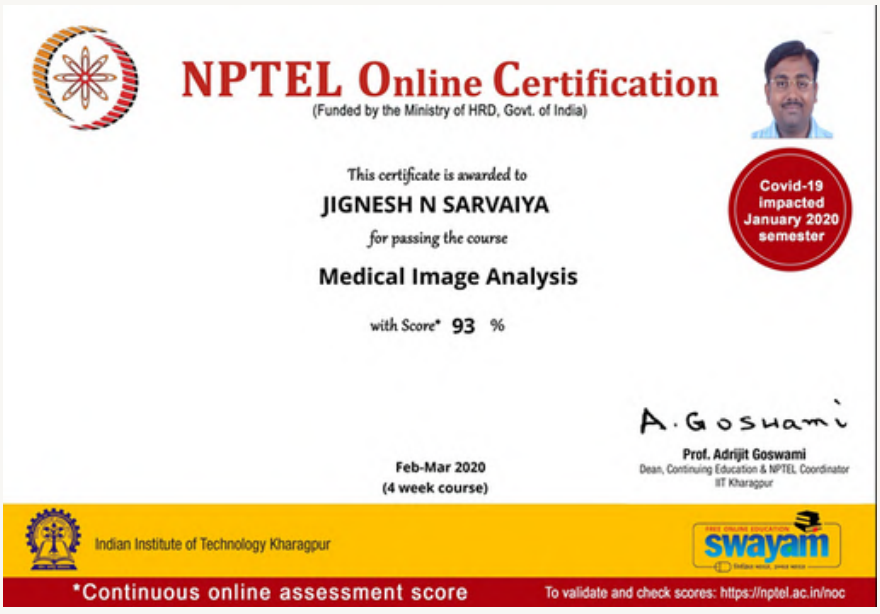
The talk was delivered in the Online Expert Lecture Series SSU, Palampur on 30th April 2020, which was organized by Office of R&D, Sri Sai University, HP. (Online)

PARTICIPATION IN NPTEL COURSES

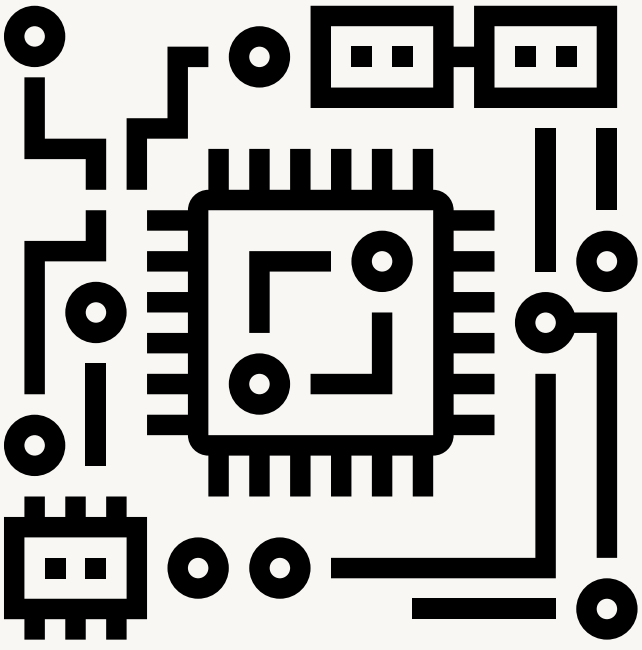
Dr. Jignesh N. Sarvaiya (Associate Professor) has completed 12 week (January 2020 to April 2020) NPTEL online certification course on "**Biomedical Signal Processing**" with score of 94%.



Dr. Jignesh N. Sarvaiya (Associate Professor) has completed 4 week (Feb 2020 to March 2020) NPTEL online certification course on "**Medical Image Analysis**" with score of 93%.



STUDENT CORNER



Ph.D. COMPLETED STUDENTS

Name	:	**Mr. Vinay Kumar Singh**
Roll Number	:	**D14EC002**
Title of Thesis	:	Combating LED Nonlinearity by PAPR Reduction of OFDM in Visible light Communication Systems for High Speed Indoor Applications.
Completion Date	:	22nd June, 2020
Supervisor Name	:	Dr. U. D. Dalal, Professor, ECED, SVNIT, Surat

Name	:	**Ms. Darshana D. Jagiwala**
Roll Number	:	**DS14EC003**
Title of Thesis	:	Collateral Advanced Processing for Interface Perception and Reduction (IPR) in NavIC Receiver
Completion Date	:	8th April, 2020
Supervisor Name	:	Dr. S. N. Shah, Assistant Professor, ECED, SVNIT, Surat

Name	:	**Pooja Mihir Bhamre**
Roll Number	:	**DS15EC002**
Title of Thesis	:	Analytical modelling of transmit-received beamforming using polyphase coded waveforms for interface mitigation in mimo radar.
Completion Date	:	22nd June, 2020
Supervisor Name	:	Dr. Shilpi Gupta, Associate Professor, ECED, SVNIT, Surat

Name	:	**Mr. Jay Rajendraprasad Pathak**
Roll Number	:	**D14EC001**
Title of Thesis	:	Assessment of Sub-14 nm technology node In0.53Ga0.47As nFinFET for High Speed Applications
Completion Date	:	24th June, 2020
Supervisor Name	:	Dr. A. D. Darji, Associate professor, ECED, SVNIT, Surat

Name	:	**Mr. Mehulkumar Vijaysinh Desai**
Roll Number	:	**D15EC001**
Title of Thesis	:	A Development and Analysis of Ionosperic Correction Model for Position Estimation with NavIC Receiver
Completion Date	:	22nd June, 2020
Supervisor Name	:	Dr. Shweta Shah, Assistant Professor, ECED, SVNIT, Surat

PAPER PUBLICATIONS

Aashish Rai (U17EC124), **"ComSupResNet: A Compact Super-Resolution Network for Low-Resolution Face Images"**; 8th International Workshop on Biometrics and Forensics (IWBF), Porto, Portugal, 29-30 April 2020, proceeding indexed by IEEE

Vivek Kantilal Adajania(U17EC055), **"Autonomous Navigation of Holonomic Robot Using Point-to-Line Algorithm"**, 6th International Conference on Control, Automation and Robotics (ICCAR), 20-23April-2020; ISBN:978-1-7281-6138-9; vol.6; pp.107-112; Scopus index

Jatinkumar Chaudhary (U17EC016), **"Optimization of Silicon Tandem Solar Cells Using Artificial Neural Networks"**, Published in: Lecture notes in Artificial Intelligence by Springer Nature Presented at: SGAI 39th International Conference on Artificial Intelligence, Cambridge University; Vol no: 11927; pp- 392-403, 17-19-December,2019; Scopus index

Divyam Srivastava(U17EC083), **"A non-radiation-based screening to detect dense breasts"**, San Antonio Breast Cancer Symposium (SABCS-2019), pp.3-6,11-14 December 2019, vol.80, issue 4 supplement,

TECHNICAL EVENT ACHIEVEMENT

Our students Divyam Srivastava (U17EC083), Rajat Sharma (U17EC148), Rishabh Sharma U17EC096), Kshitij Suri (U17CO096) participated in I-Hack 2019 Hackathon, IIT-Bombay .The project title Sentinel: An AI that watches your back represented in this Event. Our students developed Deep learning based model and won INR 1 Lakh as winning prize.

STUDENT CHAPTER ISF ACTIVITY

ISF is the nerve Centre for various student activities in our department, they organise various events across the year which are open for students from all departments, and these events are a great opportunity for learning various technical and non-technical skills.

Hertz 5.0: 22-23rd February 2020

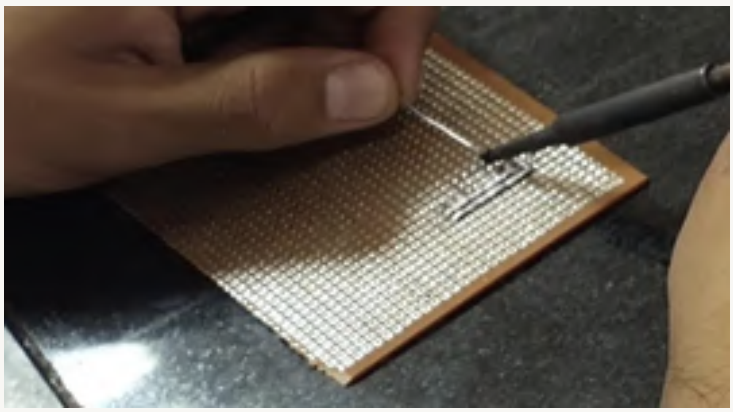
Following activities were organized under the banner of ISF-SVNIT during 22-23rd February 2020, as part of annual technical event Hertz 5.0

Circuitrix (Circuit Designing Event)

ISF SVNIT conducted CIRCUITRIX event (round wise) at electronics systems lab, ECED. The problem statements were designed by 2nd year student **Ayush Agrawal**. Around 48 students participated in the event.

Fuse It (Soldering Event)

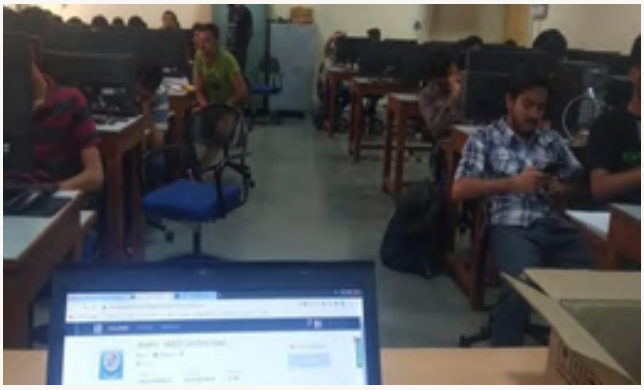
ISF SVNIT conducted a soldering event (round wise) at electronics systems lab, ECED. The problem statements were designed by 2nd year student **Dhruv Patel**. Around 65 students participated in the event.



STUDENT CHAPTER ISF ACTIVITY

RooTFS (Coding Event)

ISF, SVNIT conducted a coding event in the old ECE Department Simulation Lab (EC009). The event was conducted for 1st and 2/3/4th year students. Questions were set by 3rd year student **Punit Jain**. Around 73 students from various engineering branches participated in the event.



Treasure Hunt

ISF SVNIT conducted a treasure hunt round, in which students are given clues for the treasure technically and they have to solve the electronics puzzles to find the treasure. The question paper was set by 2rd year students **Tushar Pokhra** and **Bhavya Shah**. Around 30 students participated in the event.

Spark (Line Follower Event)

ISF SVNIT conducted line follower event in new ECE Department ground floor. The line path is designed by 2nd year students **Dhruv Patel** and **Sat Patel** and the problem statement was made by 2nd year student Dhruv Patel. Around 10 teams have participated in the event.

Switch (Debate)

ISF-SVNIT conducted a unique concept of debate in the new ECE department. The aim was to improve the skills of students and make them prepare for interviews. The topics for group discussions were prepared by 2nd year student **Sat Patel**. Around 10 students have participated in the event.

STUDENT CHAPTER ISF ACTIVITY

Bid N Win

ISF-SVNIT conducted a cricket auction in new ECE department. The event was handled by 2nd year students **Raj Modi, Neha Bhampal and Meet Siddhpuria**. Around 14 teams consisting of 2-4 students each have participated in the event.

Mock Placements

ISF-SVNIT conducted a Mock Placement (Round Wise) in new ECE department. The event was handled by 2nd year students **Bhavya Shah** and **Raj Modi**. The group discussion was taken by 3rd year students **Dhruv Golwala** and **Pradeep Bhati**. The interviews were taken by Final year students **Riddhi More, Abhinav Jain, Parthav Patel and Sudheer**. Around 51 students have participated in the event.

INFORMALS

ISF-SVNIT also conducted some fun informal events in its fest Hertz 5.0 on 22-23 February 2020. Informal events such as UNO, Jenga, hit the score, JAM, etc. were included. Over 120 students were present.

INTERNSHIPS

Internships provide a unique opportunity for students to experience how things work in real and get ready for a life after college, our students got selected into various reputed companies for their summer Internship.

MASTER CARD

Yash Gopalani (U18EC114)
Jinal Parmar (U18EC108)
Harsh Sanghai (U18EC107)
Krupal Panchasara (U18EC041)
Bhavya Shah (U18EC027)

Deutsche Bank

Moksha Sood (U18EC145)
Bhavika Tambi(U18EC147)
Chetan Karwa (U18EC133)

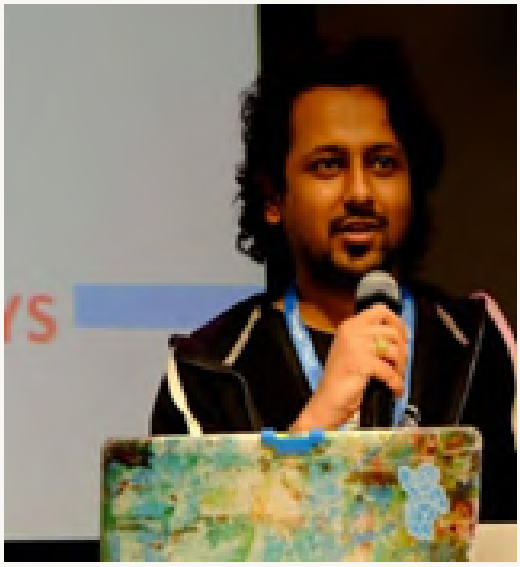
GOOGLE

Dubey Shivangi (U18EC028)

ALUMNI INTERVIEW

For any institution its alumni are one of its biggest assets for they are a goldmine of knowledge and experience. We bring words of wisdom from one such alumni.

Meet our Alumni Mr. Abhishek Thakur who is the world's youngest and First Kaggle 4x Grandmaster.



ABHISHEK THAKUR

Abhishek Thakur is the first person in the world to achieve "**Kaggle 4x Grandmaster**" title. Abhishek did his Bachelors in Electronics Engineering from NIT, Surat India and moved to Germany for pursuing his master's in computer science from University of Bonn with a focus on image processing and computer vision. He dropped out of PhD in 2015 and since then has been working in industries. His passion lies in solving difficult world problems through data science. His research interests are in the areas like automated machine learning, hyperparameter optimization and so on. He is also the organizer of the Berlin Machine Learning Meetup. Abhishek Thakur has an unflagging journey from getting into data science to becoming Kaggle 4x GM. Currently, he holds the title of Chief Data Scientist at Norway's boost.ai, a "software company that specializes in conversational artificial intelligence (AI)." He is also advising a Bangalore-based start-up named Stylumia. The challenges he overcame is something we all should look up to.

So, firstly, How is Covid-19 treating you, and how has it influenced your life?

- For people like me who sit in front of a laptop all the time and have no social life, not much has changed. On a serious note, covid-19 has influenced my life quite a lot. Since March, 2020, I am home and trying to avoid going out and meeting people as much as possible. I live in Norway and the government acted quite swiftly in the very beginning. This saved a lot of people from getting covid-19 here. But since my family members live in India, it is quite stressful to hear the news of a growing number of cases each and every day. Apart from that, being home and working from home is something I like and it has also given me a new perspective on many different things.

How does electronics engineer from NIT, Surat land up a job in Norway?

- In 2007, when there was AIEEE, I managed to get a good rank and that gave me an opportunity to study electronics engineering from SVNIT, Surat. However, I was always interested in studying computer science but for my state (there was a state quota at that time) there was only 1 seat of computer science in SVNIT. Thus, I could not do my bachelor's in computer science. I always took elective subjects in computer science though. This passion of studying computer science brought me to Germany in 2011 (right after my bachelor's degree finished). I studied computer science from University of Bonn and it was during this time when I developed an interest in machine learning. My first job was a data scientist role in Berlin in a small start-up company. After spending over 6 years in Germany, this interest in machine learning, deep learning and data science is what brought me to work in Norway.

Were you encouraged by your family to take up whichever field you chose or were they inclined to Science from the get-go? How important do you think is it to provide this choice to the kids?

- Mostly, Indian parents are more inclined towards science. You either become a doctor or an engineer. However, that is not entirely true. Otherwise, you wouldn't see any other profession in India. There are many people in top management of different companies who do not have a science background. My family always supported me with whatever I wanted to study. It is indeed very important to provide this choice but more than that, proper guidance of the choice is more important in my opinion. At the end of the day, it is the kids who have to work and not the family members. I think that one should always work and study something they are interested in otherwise; it just feels like we are doing it for the sake of it.

What according to you are the relevant skills required in an ideal Data Science Portfolio? Data science, machine learning, deep learning, AI have become buzz words every company is using these days. Due to this, there is a very high interest about these topics among students.

- These days everyone wants to be a data scientist. The problem is most of the people do not want to study in the right way or they rush. The skills required are not more than some basic mathematics, statistics and programming. If someone has to start with data science, they should start from the basics and take it slow and easy instead of rushing. Good things take time and it is wise to spend some time making the foundation strong. Theory as well as applications are equally important in building a data science portfolio.

Online certifications. With context to the present scenario, do you think there's an ever-growing possibility that they would undermine the conventional education system?

- Conventional education system is something I like more than online certifications. Getting the certificates online is easy. One doesn't have to work hard for them. People should go for knowledge rather than certifications. I have seen many people with over 50 certifications who are not able to build simple models in machine learning when it comes to applications. I would rather have no online certification but a good portfolio of projects and knowledge about those projects. Another drawback of the online certifications is lack of interaction. You are not able to interact with other students or instructions as much. Some MOOCs are really good. For example, I have always loved the courses by Andrew Ng. One should remember that online certifications are a way of paying back to the instructors. If you think you have learned a lot from a certain instructor in one way or the other, go for the certification. They are not very useful when it comes to the real world. Knowledge is all that matters.

With over 27k subscribers and counting, what motivated you initially to open your own YouTube Channel?

- My initial idea of starting the YouTube channel was simple. I saw that most channels or courses focus on theory and none of them focus on applications. I made a channel that purely focuses on application of machine learning / deep learning and also on other aspects like writing good, production ready code, deployment, etc. These things are not taught in the online courses or class-room programs. Making tutorials for my YouTube channel also lets me revise the concepts which is quite useful for me.

Would you suggest everyone to read as much as they could in an organized fashion or figure out their own way of learning and discovering new ideas in a more personalized way?

- Everyone is different when it comes to learning new things. I would suggest making a plan of your own. Read some theory and apply it.

So, we often connect our young minds with a world of possibilities. How important do you think it is to receive and provide the right kind of guidance to nurture and ignite impressionable, young minds?

- Right guidance is quite important. If we limit our discussion to machine learning and data science, you will see that it's not difficult for people to learn the theory around different concepts. But when it comes to applications, many fail. This can only be improved by proper guidance. Choose a mentor and follow them. One more thing to remember is that any mentor can guide you only up to a certain extent. You have to do most of the work.

How important is it to network? Are you able to find time from your busy schedule to keep in touch with your friends from college?

- When I was in Berlin, I became part of the Berlin Machine Learning Community. Going to meetups every month, listening to talks and networking with people helped me quite a lot. Networking with the right people is the key. If there are meetups or events around machine learning where you live, attend them. You will always get to learn something new and meet some interesting people. You might even find your next employer at one of these events. As far as my friends from college are concerned, I am still in touch with a few and talk to them quite often. Just like I found time for this interview, I do always find time for my friends.

What is your opinion with regard to strengths and weaknesses? Should we work on our weaknesses or just play to our strengths?

- Choose a track and become a master in it. A lot of time people ask me which library to choose. Well, there is no right answer. One must be a master of something and have knowledge about the others. Once you feel like you are strong enough with what you have learnt, you can invest time to strengthen your weaknesses.

Do you admire any famous personality? What is it about them that you look up to?

- There are many. Sundar Pichai, Elon Musk, Andrew Ng are a few names I admire the most. Well, there is something common in them. All of them are hard-working and there is always a lot to learn from them.

In the end, any advice to our readers out there from our college or beyond who want to pursue a career in data science?

- Beginners have one problem. They give up too fast. If you want to start with data science, start with the basics. Do the courses from Andrew Ng and then apply what you have learned to real world problems. Take part in Kaggle competitions. Learn from the winners of the competitions. Write a blog post about your approach. Learn from the open source codebases available on GitHub. Whatever you use, feel free to use them as long as you know how everything works under the hood. In the end, it's all about perseverance. **Don’t try to be a jack of all trades. Rather, be a master of one.**

CREATIVE CORNER

Test your academic intellectual level with these brain raking questions!!
Send your answers once you have completed to newsletterece20@gmail.com
Happy Solving!

Q.1) X is a project which leverages distributed computing to simulate protein dynamics. X in the past has collaborated with Sony to take advantage of the computing power of PlayStation 3s. X also became the world's first exaflop computing system this year. Identify X.

Q.2) The X icon was drawn to resemble Neptune's Trident "The Mighty Dreizack" .
In lieu of the pointed triangles at the tip of the three -pronged spear the X promoters decided to alter the shape to a Triangle, Square and a Circle. This was done to signify all the different peripherals that could be attached using the standard. Identify X.

Q.3) Intel: Altera :: Amd : X
Identify X.

Q .4) This year due to COVID-19 pandemic, Digital Logic Design lab evaluation procedure has changed. Lab instructors plans to distribute the ICs to each student turn by turn whilst also conducting their viva. Each student (Q) in the batch will have to answer whether the IC they receive is functional or not by using the following instruction provided to them by Lab Instructor. The instructions are:

- The number of functional ICs remaining with the Lab Instructor excluding the one which is to the student(Q) on which the prediction is to be made.
- Seat location of Q-1th student. (It can either row A or Row B)

Constraints and conditions:

- Number of ICs = Number of students = N
- Number of functional ICs ≤ N
- Students are free to choose whichever row they want to seat (i.e., Row A or Row B)
- Students cannot communicate with each other once the evaluation starts.
- Students can come up with a plan before the evaluation starts.
- Each student can only answer once
- If E≥2 then entire batch fails the evaluation (E = number of wrong prediction)

How can the batch avoid failure in this evaluation?

COMMENTS & SUGGESTIONS

Most valuable thing for any publisher is their reader and we are no different. We care deeply about what you thought about this newsletter and would love to hear any positive remarks or constructive criticism from your side.

Please send your feedback to **newsletterece20@gmail.com**

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