

ANNUAL REPORT

August 01, 2018 – July 31, 2019



26/C, Hosur Road, Electronics City, Bengaluru-560100
Ph. No. +91 80 4140 7777 | Fax No. +91 80 2852 7636
Web : www.iiitb.ac.in



Annual Report 2018-19

CONTENTS

BOARD OF GOVERNORS | 4

DIRECTOR'S MESSAGE | 6

PLACEMENTS | 8

19TH CONVOCATION | 11

HIGH DENSITY ELECTRONIC SYSTEMS (HIDES) | 14

ELECTRONIC SYSTEM DESIGN & MANUFACTURING (ESDM) | 16

CENTER FOR ELECTRONICS AND EMBEDDED SYSTEMS (CEEMS) | 20

VLSI DESIGN LAB | 25

COMMUNICATION & MICROPROCESSOR & MICROCONTROLLER LAB | 30

ROBOTICS CLUB (ENIGMA) | 31

MACHINE INTELLIGENCE AND ROBOTICS (MINRO) | 32

NETWORKING AND COMMUNICATIONS RESEARCH LAB (NCRL) | 36

MULTIMODAL PERCEPTION LAB (MPL) | 38

OPEN SOURCE TECHNOLOGY LAB(OSTL) | 40

GRAPHICS-VISUALIZATION-COMPUTING LAB (GVCL) | 42

SOFTWARE ENGINEERING (SE) LAB | 43

SOFTWARE DESIGN LABORATORY | 45

MATHEMATICS | 46

CENTRE FOR COMPLEX SYSTEMS & SOFT MATTER PHYSICS | 47

CONTENTS

CHEMISTRY | 50

CENTER FOR INFORMATION TECHNOLOGY & PUBLIC POLICY | 51

CENTER FOR DATA SCIENCES | 55

COMPUTATIONAL SCIENCES LABORATORY (CSL) | 56

WEB SCIENCE LAB (WSL) | 58

PROGRAMMING LAB | 63

E-HEALTH RESEARCH CENTER (EHRC) | 64

CENTRE FOR SPATIAL INFORMATION SCIENCE | 66

SPORTS | 68

DEAN'S LIST | 70

FINANCES | 80

GUEST TALKS | 82

BANGALORE ON IT | 83

IIITB IN MEDIA | 84

IMPORTANT DECISIONS OF GOVERNING BODY MEETINGS & ANNUAL

GENERAL BODY MEETING | 85

IMPORTANT DECISIONS OF SENATE | 89

INFRASTRUCTURE | 91

IMPORTANT MOUS SIGNED DURING THE ACADEMIC YEAR | 94

BOARD OF GOVERNORS



Mr. S Gopalakrishnan

Chairman Governing Body
Co Founder
Infosys



S Sadagopan

Director
IIIT-Bangalore



Mr. B V Naidu

Chairman
Sagitaur Ventures Pvt Ltd



Mr. I S N Prasad, IAS

Additional Chief Secretary
Government of Karnataka



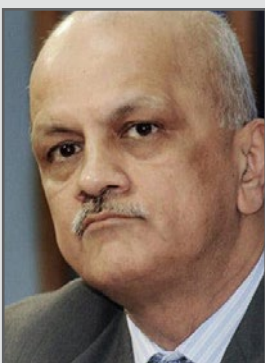
Mr. K.S. Viswanathan

Vice President (Industry
Initiatives)
NASSCOM



**Professor Pankaj
Chandra**

Chairman
Board of Management,
Ahmadabad University



Mr. R Chandrashekhar, IAS(R)

President
NASSCOM



Mr. Gautam Hegde

Managing Director
Backend Bangalore Pvt Ltd



Mr. Naresh Shah

President, EG India R&D
Hewlett Packard Enterprise



Ms. Nivruti Rai

General Manager, Intel India



Prof AnnaLee Saxenian

Dean of the School of
Information, University of
California, Berkeley.



Mr TK Srirang

Senior General Manager &
Head Human Resource,
ICICI Bank



Gaurav Gupta, IAS

Additional Chief secretary
Government of Karnataka



Gururaj Deshpande

Chief Operating Officer
EdgeVerve Systems
(an Infosys company)



Dr. Ajay Kumar, IAS

Defence secretary
Government of India



Cmde SR Sridhar

Registrar, IIITB - Secretary to
the Board

Director's Message



277 of our students (7 with PhD degree, 5 with Master of Science by Research Degree, 162 with 2-year M Tech Degree, 10 with M.Sc. in Digital Society, 60 students with dual degrees and 33 students with Sponsored M Tech degree) graduated on the 19th convocation held in July 2019

Along with IBAB (Institute for Bio-informatics and Applied Bio-technology), IIITB has started the country's first one-year long special program, namely, a post-graduate diploma on "Big Data Biology". This program has been sanctioned by DBT (Department of Bio Technology), subsequent to DBT's call for proposal, where this proposal has been rated to be the best of the 300 proposals from across the country. 18 students are enrolled for this course in its first batch.



The year 2018-19 is special as it marks the completion of 20 years of IIITB !
The key activities of the academic year include a plethora of events.

IIITB is hosting MOSIP (Modular Open Source Identity Program) – an “open Source” Digital Identity Software Solution created as a “public good” for the world at large as a way of India’s “Digital Diplomacy” program. Government of Morocco will be the first user; they expect to “go live” by the year end. The kick-off event attended was by IIITB team in Rabat, Morocco on 27th August 2018; Steering Committee meetings and Technology Meetings hosted by IIITB in August at Morocco and In January at Bangalore were attended by Minister / Secretary. Discussions with Philippines are at an advanced stage.

659 students of the highly successful Online Education program on Analytics, Machine Learning and other areas, jointly executed with the UPGRAD, graduated on November 24, 2018; another 1094 will be graduating on July 12, 2019.

The year saw multiple research projects funded at IIITB, many laurels won by students, alumni and faculty as well as a large number of distinguished visitors and partnerships. The details can be found in the pages that follow

Happy Reading

Placements

Internship Programme

TOTAL NUMBER OF STUDENTS



NUMBER OF MEN
151



NUMBER OF WOMEN
80



NUMBER OF COMPANIES THAT PARTICIPATES
42



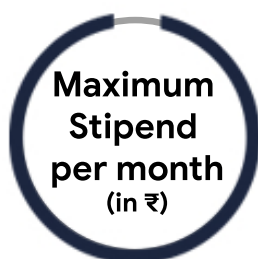
196



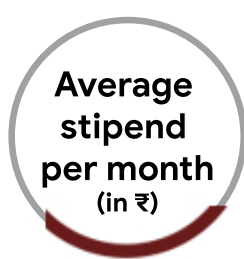
0



35



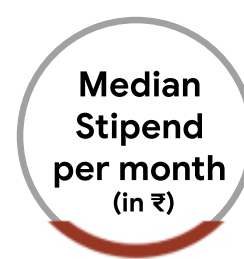
87,000



38,647



10,000



35,000

Full Time Employment



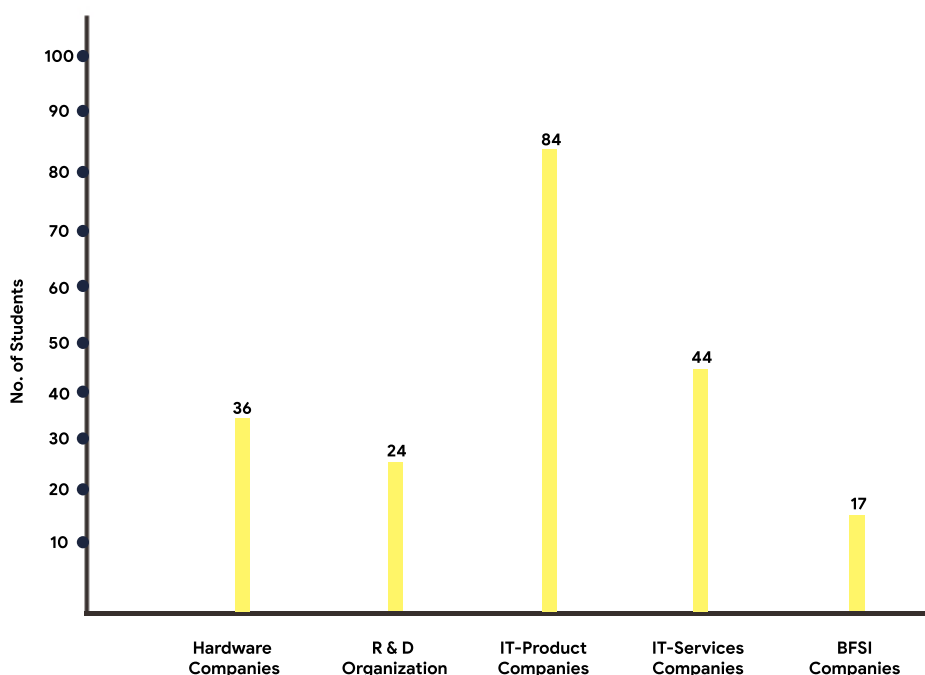
NUMBER OF COMPANIES THAT PARTICIPATES
70



**Number of Students in
Established Companies**
184



**Number of Students in
StartUps**
21



Events

19th Convocation

The International Institute of Information Technology Bangalore (IIITB) held its 19th convocation on institute's campus in Electronic city on July 7 2019. The graduating batch comprised of seven students with PhD degree, five with Master of Science by Research degree, 162 with two-year M Tech degree, ten with M.Sc. in Digital Society degree, 60 with dual degrees and 33 with Sponsored M Tech degree 277 in all.

Medals were awarded to students for excellence in academic as well as extra-curricular activities. **Veerapuraju Dhanya Akhila**, an MTech student was awarded the **Institute Gold Medal**; **Indu Ilanchezian**, an iMTech student, received **Sitaram Jindal Gold Medal** and **Sir M. Visvesvaraya Scholarship Award**; **Dipanjan Saha**, a student of MSc Digital Society, was awarded **Institute Gold Medal**; **Reijul Sachdev**, an iMTech student received **Sir M. Visvesvaraya Scholarship Award**; **Ahmad Shayaan**, an iMTech student received **Late Sri. N. Rama Rao Medal for Student of the Year**; **Shreya Jayateerth Joshi**, an iMTech student was awarded **Late Sri. N. Rama Rao Medal for All-Rounder of the Year**; **Rajula Vineet Reddy**, an iMTech student received Institute medal for **Contribution to IIIT-B Community Life** and **Shyam KB**, an iMTech student received **Institute medal for Contribution to IIIT-B Professional life**.

Professor Ashutosh Sharma, **Secretary, Department of Science and Technology**, Government of India, present on the occasion as the **Chief Guest** and **Anand Chandrashekhan**, **ex-director, Facebook** graced the occasion as the **Guest of Honour**.





A blood donation camp was organized on campus on September 10, 2019



Sangam, IIITB alumni day was held on February 23, 2019. Alumni dance recitals, plays and music programs were some of the events organized on the day.



The **annual sports fest of IIITB, Spandan - 2019**, was organized by sports committee between March 15 and March 17. This year, the event introduced rolling trophies for all activities. As many as 496 students and staff participated in the event.



70th Republic Day of India was celebrated at IIITB campus on January 26, 2019. The main attraction of the event was motorbike acrobatic show by IIITB security team.



RISE @IIITB 2019 was organised between February 14 and February 16 at IIITB. The event was organized under research and innovation tracks. Ph.D. colloquium, IMACX Nova, panel discussion, presentation by startups and session on research projects taken up by the institute were some of the events organized over the three days.

Labs

High Density Electronic Systems (HiDES) lab



FACULTY



Dr. Madhav Rao

Ph.D. (University of Alabama)

Associate Professor, iM.Tech Coordinator and Faculty in-charge-Labs

Research Interests: Assistive devices, Low Power VLSI circuits, Approximate computing circuits, Optimization techniques for VLSI circuits, 3D Interconnects



Dr. Subajit Sen

Ph.D. (University of Waterloo)

Associate Professor

Research Interests: Analog and mixed-signal VLSI integrated circuit & system design, Digitally-assisted analog circuit design, Embedded-systems for biomedical and energy-harvesting applications, RF Circuit Design

HiDES is affiliated to Center of Electronics and Embedded systems lab (CEEMS) and Computational Sciences Lab (CSL) at IIITB and is sponsored by the Government of Karnataka and Mentor Graphics Corporation LTD. HiDES is used extensively to carry out high-end research as well as to support undergraduate and post-graduate teaching. The lab has Intel IOT board, Grover starter kit plus, STM32, Cypress ARM Cortex M4, Arduino controller boards, Kalam IOT board, ABB commercial robot, Rover Robot, Electric ray robot, Firebird V robotic kit, High end Oscilloscopes, Function generator, Power supplies and LCR meters and Multisim.

Students' summer internship



VINAY CHANDRASEKHAR K

Pen State Univesity,USA
Department of Electrical Engineering
Ebrahimi Bio-Electronics Lab
Guide : Prof: Aida Ebrahimi

Work Description : I Worked on electrical noise analysis of systems. Mainly how electrical noise changes when a micro droplet evaporates, I also worked on electrical noise of bacteria on graphene FETs. I also worked on creating bio sensors using laser induced graphene and electrochemical analysis.

ARVIND REDDY

University of Alabama, Tuscaloosa, Alabama
Computer Laboratory of Ambient and Wearable Systems
<http://ece.eng.ua.edu>
Guide : Prof: Edward Sazonov

Project: Wearable wireless sensor system for non-invasive monitoring of ingestive behaviour.
Description: A wearable wireless sensor system was developed to monitor food intake patterns. The system is placed on the cheek and collects acceleration and other data. The collected data is sent to a smartphone or a computer via Bluetooth low energy for processing and Display. A custom flexible PCB is designed to keep the sensor small and non-invasive

PRANAV KEDIA

IIT Bombay
A.R.M.S Lab at Systems and Control Department
<http://www.sc.iitb.ac.in/robotics/index.html>
Guide : Prof: Arpita Sinha

Project : My work involved simulation of additive and subtractive swarm collective algorithms using kilobits and V-rep simulator

SRIRAM MARISSETTY

Mercedese-Benz Research and Development India
Departments of Electrical Engineering (Trucks and Buses)

Internship description: In this 2.5 months internship, I worked on Video and GPS data Classification and Segmentation Systems and Critical object detection using Raw Camera Video. These Classification systems can classify Petabytes of video data and GPS data based on the user input (currently done manually)

I also worked on Real time critical object detection using Raw-camera video. Taking the Vehicles front camera video as an input, the possible collision object is detected beforehand using ego-vehicle speed, trajectory and by mapping a Unique field of view onto the road.

Electronic System Design and Manufacturing (ESDM) lab



ESDM is sponsored by Government of Karnataka and focuses on research and development in the area of digital VLSI, interconnects, surgical and assistive Robotics. State-of-art optical microscope is used to capture high resolution images of around one micron. The design facilities include mentor graphics commercial software, electric MOSIS compatible open source software, and Matlab software. The lab has Agilent Parametric Analyzer, Cascode DC Probe station, Carl Zeiss High resolution optical microscope, Ultimaker 3D printer, Makerbot 3D Printer, Wet lab for wet etching, copper plating, dip soldering, Thermal and Electron beam evaporator and Desktop Lathe Machine.

FACULTY



Dr. Madhav Rao

Ph.D. (University of Alabama)

Associate Professor, iM.Tech Coordinator and Faculty in-charge-Labs

Research Interests: Assistive devices, Low Power VLSI circuits, Approximate computing circuits, Optimization techniques for VLSI circuits, 3D Interconnects

Focus Areas - SARL IIIT Bangalore

- SARL IIIT Bangalore, we focus on research and development in the area of Surgical and Assistive Robotics.
- SARL is affiliated to E-Health Research Centre (EHRC) and HiDES at IIITB. SARL lab is a joint work by IIITB and National Institute of Mental Health and Neuro-Sciences (NIMHANS). Currently, we are working on the development of surgical hyper flexible probe, neurosurgical microscope, assistive upper limb exoskeleton device, lower limb DVT prophylaxis device, minimally invasive ventricular assistive device, tactile educational kit, surgical gripper and automated drilling tool, swarm robotics, and passenger assistance system. The projects in the SARL is currently funded by EHRC, MINRO, MSJE, and IBM SUR.

Conferences

- Ajay, and Nithin's work on "Tactile sensors engineering for visually impaired education" got accepted in 2019 IEEE Sensors Conference to be held in Montreal, Canada.
- Pranav's work on "Design and development of an autonomous in-seat passenger state identification in a modern vigilance enabled public transportation system" got accepted in ICVES 2019 conference to be held in Cairo, Egypt.
- Dr. Madhav Rao presented a paper titled "Design of a non-invasive pulse rate controlled deep vein thrombosis prophylaxis lower limb device" in 41st EMBC conference on July 26, 2019 in Berlin, Germany.

Research Publications

- Madhav Rao, Research Highlights, CSI transactions on ICT, Springer India, pp 1-8, May, 2019.
- Vikas Vazhiyal, Madhav Rao, Manish Beniwal, Nishanth Sadashiva, Narasinga Rao, Kannepalli Venkata Lakshmi, and Sampath Somanna, An Overview of Robotics in Functional Neurosurgery, Indian journal of neurosurgery, Thieme, pp 6-10, April, 2019.
- Prajwal Sharma, Vinay Chandrasekhar, Krishna Nagaraj, Vikas Vazhiyal, and Madhav Rao, Design of a minimally invasive ECG regulated ventricular assistive device, CSI transactions on ICT, Springer India, pp 1-8, May, 2019.
- SARL along with Vision Empower filed a provisional patent on "An audio tactile device to assist learning/ comprehension of diagrams" Application ID: 201941007438 on 26th February, 2019. The inventors of this device are K Nithin Raj (IIITB), Ajay Ramesh R (IIITB), Dr. Madhav Rao (IIITB), Mr. Rajagopal N (Vision Empower), Aditya Vikram M (Vision Empower), Vidya Y (Vision Empower), and Supriya Dey (Vision Empower).
- Prajwal Sharma, Prashanthi K, Krishna Nagaraj, Vinay Chandraekhar, Vikas Vazhiyal, and Madhav Rao, Design and analysis of a minimally invasive and ECG controlled Ventricular Assistive Device, 2019 32nd International Conference on VLSI Design and 2019 18th International Conference on Embedded Systems (VLSID), January 5-9, New Delhi, India, 2019.
- Prajwal Sharma, Prashanthi K, Krishna Nagaraj, Vikas Vazhiyal, and Madhav Rao, Development of a minimally invasive Ventricular Assistive Device, IEEE Sensors 2018 conference, October 29-31, New Delhi, India, 2018.

Current Projects

Sponsored Projects

- Wearable systems to monitor infants feeding behavior
- Development of anthropomimetic upper limb device
- AI assisted device for upper limb

Un-sponsored Projects

- Lower limb DVT prophylaxis device
- Hyperflexible Probe
- Ventricular Assistive devices
- Surgical tools: Gripper, Cutter, Suturing device
- Robots mapping, and swarm robotics
- Development of rapid freezing diagnostic chamber
- Women safety reporting tool
- Wearable for Parkinson disease patients
- Tactile educational Kit

Achievements

- Our manuscript on "Design of a Tactile Audio Gallery for Visually Impaired Students" was accepted in 2019 IEEE Sensors 2019 to be held in Montreal, Canada on October 27-29, 2019. Ajay R (IMTech 2017), Nithin Raj (IMTech 2017), Dr. T K Srikanth (IIITB), and Dr. Madhav Rao (IIITB) are the authors of the paper.
- Our Live demonstration proposal on "Live Demonstration : a Tactile Audio Gallery for Visually Impaired Students" was accepted in 2019 IEEE Sensors 2019 to be held in Montreal, Canada on October 27-29, 2019. Ajay R (IMTech 2017), Nithin Raj (IMTech 2017), Dr. T K Srikanth (IIITB), and Dr. Madhav Rao (IIITB) are the authors of the proposal. The live demonstration in the form of Poster and one-page paper will be published in the conference.
- Dr. Madhav Rao presented paper titled "Design of a non-invasive pulse rate controlled deep vein thrombosis prophylaxis lower limb device" in 41st EMBC Conference 2019 held in Berlin, Germany on July 23-27, 2019. Vinay Chandrasekhar (IIITB), Dr. Vikas V (NIMHANS), and Dr. Madhav Rao (IIITB) are the authors of the paper.
- Our manuscript on "Design and development of an autonomous in-seat passenger state identification in a modern vigilance enabled public transportation system" was accepted in 2019 IEEE International Conference on Vehicular Electronics and Safety to be held in Cairo, Egypt on September 4-6, 2019. Pranav Kedia (IMTech 2015), Pranav Aggrawal (IMTech 2015), and Dr. Madhav Rao (IIITB) are the authors of the paper.
- Our device on "Hyperflexible Probe" was covered in Times of India article on 19th June, 2019.
- Our device on "Hyperflexible Probe" was inaugurated in NIMHANS on 7th June, 2019 by Dr. Chander Shekhar, additional director general of ICMR in the gracious presence of Prof. Sadagopan, Director IIIT-Bangalore, Prof. B N Gangadhar, Director NIMHANS, Dr. R K Bajaj, Deputy Director General Bureau of Indian Standards.
- Pranav Kedia, iMtech 2015 batch student working with SARL, is invited to work as intern in the Summer of 2019 in Prof. Arpita Sinha's Systems and Control Engineering lab at IIT-Bombay.
- Our manuscript on "Design of a minimally invasive ECG regulated ventricular assistive device" was accepted and published in Springer CSI transactions on ICT journal. The authors of the paper are Prajwal Sharma (IIITB), Vinay Chandrasekhar (IIITB), Krishna Nagaraj (IIITB), Dr. Vikas Vazhiyal (NIMHANS), and Dr. Madhav Rao (IIITB).
- Our manuscript on "Design of a non-invasive pulse rate controlled deep vein thrombosis prophylaxis lower limb device" was accepted in 41st EMBC Conference 2019 to be held in Berlin, Germany on July 23-27, 2019. Vinay Chandrasekhar (IIITB), Dr. Vikas V (NIMHANS), and Dr. Madhav Rao (IIITB) are the authors of the paper.

- SARL along with Vision Empower filed a provisional patent on "AN AUDIO-TACTILE DEVICE TO ASSIST LEARNING/COMPREHENSION OF DIAGRAMS" Application ID: 201941007438 on 26th February, 2019. The inventors of this device are K Nithin Raj (IIITB), Ajay Ramesh R (IIITB), Dr. Madhav Rao (IIITB), Mr. Rajagopal N (Vision Empower), Aditya Vikram M (Vision Empower), Vidya Y (Vision Empower), and Supriya Dey (Vision Empower).
- Vinay Chandrashekar, iMTech 2015 batch student working with SARL, secured the prestigious S N Bose fellowship award in the month of February, 2019. Vinay is invited to work as intern in the Summer of 2019 in Dr. Ebrahimi's Bio-electronics lab in Penn State University, USA through S N Bose fellowship.
- Aravind Reddy, iMTech 2015 batch student working with SARL, is invited to work as intern in the Summer of 2019 in Computer laboratory of Ambient and wearable systems (CLAWS) of the University of Alabama. Prof. Sazonov from UA heads the CLAWS lab at the UA.
- Vinay Chandrashekar, iMTech 2015 batch student working with SARL, secured the prestigious S N Bose fellowship award in the month of February, 2019.
- SARL demonstrated upper limb device work in IIT Madras Shaastra event, held on 3rd and 4th of January, 2019. Vinay chandrashekar, Aravind Reddy and Dr. Madhav Rao demonstrated the project work in the Shaastra event.
- Our work on upper limb exoskeleton device, lower limb DVT device, and EEG based head gear device was showcased in Bangalore Tech Summit held in Bangalore Palace on 28th to 30th November, 2018.
- Vinay Chandrashekar (IMT2015523) won the 1st Place in Poster Student Paper Award in IEEE Sensors 2018 Conference for his paper on Motion Adaptive Image Capture in a body-worn wearable sensor. The co-authors of the paper are Masudul Imtiaz and Edward Sazonov, of the University of Alabama.
- Our manuscript on "Design and analysis of a minimally invasive and ECG controlled Ventricular Assistive Device" is accepted in VLSI Design and Embedded Systems Conference 2019 to be held in New Delhi on January 7-9, 2019. Prajwal Sharma (IIITB), Prashanthi K (IIITB), Krishna Nagaraj (IIITB), Vinay Chandraekhar (IIITB), Dr. Vikas V (NIMHANS), and Dr. Madhav Rao (IIITB) are the authors of the paper.
- Our manuscript on "Development of a minimally invasive Ventricular Assistive Device" is accepted in IEEE Sensors 2018 conference to be held in New Delhi on October 29-31, 2018. Prajwal Sharma (IIITB), Prashanthi K (IIITB), Krishna Nagaraj (IIITB), Dr. Vikas V (NIMHANS), and Dr. Madhav Rao (IIITB) are the authors of the paper.
- Dr. Madhav Rao was invited as one of Young Indian delegates to visit Israel as a part of "Discover Israel Program" from September 1 to September 7, 2018.



Center for Electronics and Embedded Systems (CEEMS) lab



CEEMS is a multi-disciplinary lab that supports research and education in embedded hardware and computing, wireless communication, computer vision and software technologies. Current research has an emphasis on design of ultra-low power and reliable system design, design methodologies and architectures for systems-on-chip, wireless sensor and ad-hoc networks, and other emerging technologies for pervasive computing such as Solar, RFID technology, implementation of controllers for robotic manipulators.

Multimodal Perception lab also contributes to the CEEMS lab. CEEMS is equipped with the state-of-the-art instrumentations for design of analog circuits and digital design circuits, simulation, layout and testing of various circuits. Apart from the regular laboratory classes, it is also utilized for academic and research purposes by UG / PG / PHD students and faculty. The lab offers internship opportunities for students from various institutes and support to in-house companies using lab facilities for product testing. Students have 24-hour biometric access to the lab.

The Embedded Systems lab houses training facilities with high end computer systems and variety of advanced electronic components, vision cameras and high-tech industrial equipment such as spectrum analyzer, signal analyzer, vector signal generator, agilent instruments MSO, Logic analyzer, NI PXIe 1065; various Micro controllers development boards PIC, AVR, atmel, NI development board, TI launch pad, free scale , ARM, digital signal processing (TI) kits, Microprocessors, FPGA Xilinx Spartan kit / Vertex kit, Basys board, Altera, Memsic wireless sensor networks boards, RFID kit , as well as Robotics building kits Tetrix and Lego, I robot and sensor boards; and industry standard VLSI EDA tools Cadence, Xilinx Vivado, Xilinx 13.0, Quartus II, Embedded systems software's tools including, Matlab, Code Composer Studio, Real View Development Suite, National Instrument Labview, Lego Mindstroms Education Nxt software.

CEEMS provides students to get an opportunity in applying their design concepts learnt during their project work under the supervision of faculty, and paper published in international conference seminars and to win prize and accolades in various design contests such as Maxim, Hackathon, etc.

CEEMS is funded by the Government of Karnataka.

Faculty Involved



Dr. Madhav Rao
Ph.D. (University of Alabama)
*Associate Professor, iM.Tech Coordinator and
Faculty in-charge-Labs*



Dr. Chetan Parikh
Ph.D. (University of Florida)
Professor



Dr. Sachit Rao
Ph.D. (Ohio State University)
*Assistant Professor Faculty-in-charge
Student Exchange*



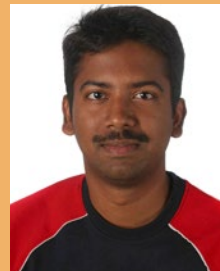
Dr. Subajit Sen
Ph.D. (University of Waterloo)
Associate Professor



Dr. Subir K. Roy
Ph.D. (Indian Institute of Technology Bombay)
Professor



Dr. Debabrata Das
Ph.D. (Ohio State University)
*Assistant Professor Faculty-in-charge
Student Exchange*



Dr. Dinesh Babu Jayagopi
Ph.D. (University of Alabama)
*Associate Professor, iM.Tech Coordinator and
Faculty in-charge-Labs*



Dr. Jyotsna Bapat
Ph.D. (University of Florida)
Professor



Dr. Neelam Sinha
Ph.D. (Ohio State University)
*Assistant Professor Faculty-in-charge
Student Exchange*



Dr. G. N. Srinivasa Prasanna
Ph.D. (University of Alabama)
*Associate Professor, iM.Tech Coordinator and
Faculty in-charge-Labs*



Dr. G. Srinivasaraghavan
Ph.D. (University of Florida)
Professor



Dr. Nanditha Rao
Ph.D. (Ohio State University)
*Assistant Professor Faculty-in-charge
Student Exchange*



Dr. Vinod Veera Reddy
PHD (Nanyang Technological University, Singapore)
Assistant Professor

FACULTY



Dr. Subajit Sen

Ph.D. (University of Waterloo)

Associate Professor

Research Interests: Analog and mixed-signal VLSI integrated circuit & system design, Digitally-assisted analog circuit design, Embedded-systems for biomedical and energy-harvesting applications, RF Circuit Design

Focus Areas

Analog and mixed-signal VLSI integrated circuit and system design, Digitally-assisted analog circuit design, Embedded-systems for biomedical and energy-harvesting applications.

Conferences

- Aheesh presented his paper "Ultrasound based Real-time, Guided Surgery for Treating Hydrocephalus: Prototype Implementation and Evaluation" at IEEE CONECCT 2019, Bangalore, India.

FACULTY



Dr. Subir K. Roy

Ph.D. (Indian Institute of Technology Bombay)

Professor

Research Interests: Hardware formal verification, Power estimation, Performance analysis, CAD for VLSI and embedded systems

Focus Areas

Hardware Trojan Design and Detection, high speed decimal floating point arithmetic design, formal verification of hybrid systems (such as Analog Mixed Signal Designs), model based hardware software co-synthesis of embedded systems, cache compression, branch and value prediction (jointly with Prof. Nanditha Rao), dynamic data flow analysis, decimal floating-point multiplier design (VLSI design).

Research outcomes

Successfully designed a state-of-the-art parallel pipelined decimal fixed point multiplier and synthesized on FPGA.

Achievements

- Spoorthi presented a poster titled "Low Power High Performance Decimal Floating Point Co-Processor for RISC-V" at RISC-V Workshop Zurich, ETH Zurich, Switzerland June 11-13, 2019.
- Spoorthi secured 1st place in 3MPT competition at IIST Trivandrum, Thiruvananthapuram, March 2, 2019.
- Manpreet Kaur Jaswal (PH2016006) completed her State of the Art seminar on "Performance Enhancement of Microprocessors through Value Prediction based on Dynamic Data Flow Analysis" on March 25, 2019.
- Poster titled "Performance Enhancement of RISC-V cores through Value Prediction based on Dynamic Data Flow Analysis", authored by Manpreet Kaur Jaswal, Prof. Subir Kumar Roy and Prof. Nanditha Rao, was presented at RISC-V Workshop, held at ETH Zurich, Switzerland during 11-13 June, 2019.
- Poster titled "FPGA Based Profiling Tool for Hardware-Software Co-Design with Profiler Memory Optimization", authored by Manpreet Kaur Jaswal, Prof. Subir Kumar Roy, was presented at Open Day of RISE-2019, held at IIT-Bangalore during 14-16 Feb., 2019.

Conferences

- Manpreet Kaur Jaswal attended IEEE WinTechCon-2018 held on Sept.28, 2018 organised by IEEE CAS Society, Bangalore Chapter and conducted in cooperation with IEEE Bangalore Section and IEEE WiE Council, Bangalore.
- Manpreet Kaur Jaswal participated in Workshop On Python Productivity for Zynq using PYNQ-Z2 organised by Dept. of ESE, IISC held on Dec.15, 2018 in association with CoreEL Technologies and Xilinx.
- Manpreet Kaur Jaswal as a Research Fellow under "Visvesvaraya PhD scheme for Electronics and Information Technology" actively participated in the Research Evaluation Workshop held at Punjab Engineering College, Chandigarh during 17-19 July, 2019.
- Manpreet Kaur Jaswal attended SiFive Technical Symposium held on Aug.1, 2019, Bangalore.

FACULTY



Dr. Subajit Sen

Ph.D. (University of Waterloo)
Associate Professor

Research Interests: Analog and mixed-signal VLSI integrated circuit & system design, Digitally-assisted analog circuit design, Embedded-systems for biomedical and energy-harvesting applications, RF Circuit Design

Focus Areas

Computer vision, MR Image-based disorder detection, EEG Analysis

Publications

- Srinivasula Reddy Gogireddy and Neelam Sinha, "Video Key Frame Detection using Block Sparse Coding", Proceedings of the Third International Conference on Computer Vision & Image Processing (CVIP), held at IIITDM-Jabalpur, during Sep 29-Oct 1 2018.
- Debanjali Bhattacharya, Sunil Kumar Vengalil, Neelam Sinha, Jitender Saini, Vani Santosh, "Classification of grade-III Astrocytomas based on IDH mutation using LBP texture analysis from structural MRIs", MedImage2018 (ICVGIP), accepted for publication in CCIS series of Springer, Hyderabad, December 2018.
- Debanjali Bhattacharya, Neelam Sinha, Jitender Saini "Spectral estimate to determine 1p/19q co-deletion status in grade-III glioma", presented in International Conference by Indian Society of Neuro-Oncology (ISNOCON), Bhopal, April 2019 (Received Best Paper Award, 2nd place).
- Debanjali Bhattacharya, Sunil kumar Vengalil, Neelam Sinha, Jitender Saini, Pramod Pal, sandhya M, "Structural MRI based texture analysis of corpus callosum in classifying Progressive supranuclear palsy", TENCON 2019, accepted for publication at the proceedings of IEEE TENCON 2019, to be held at Kochi, Kerala from 17th to 20th October 2019.
- Debanjali Bhattacharya, Neelam Sinha, Jitender Saini, "Detection of chromosomal arms 1p/19q codeletion in low graded glioma using probability distribution of MRI volume heterogeneity", TENCON 2019, accepted for publication at the proceedings of IEEE TENCON 2019, to be held at Kochi, Kerala from 17th to 20th October 2019.
- Gopika Gopan K, Neelam Sinha, and Dinesh Babu J. "Alcoholic EEG Analysis Using Riemann Geometry Based Framework." 2019 27th European Signal Processing Conference (EUSIPCO). IEEE, 2019.

Patent

Application No. 201941004725

Inventors : TejPratap Venkata Subbu Lakshmi Gollanapalli, Vishal Keshav, Neelam Sinha

Title : System and Method for Classification of Video Shot using Deep Neural Network

PS Filed on 6 Feb 2019.

VLSI Design lab



VLSI Design laboratory was setup in 2017. The laboratory focuses on topics covering several aspects of both digital and analog hardware systems, implemented using FPGAs and custom fabricated VLSI circuits, design methodologies around EDA flows, verification and validation.

The lab is well-equipped with high end workstations with enabled EDA tools like Cadence, Xilinx ISE, Xilinx Vivado design suite and hardware facilities like FPGA Xilinx Spartan kit, Vertex kit, Basys board, Altera, CPLD, DEO Nano board, FPAA Development Kit. The lab provides facilities for research/projects and course work to MS/PHD, M.Tech and Integrated M.Tech students.

Faculty Involved



Dr. Madhav Rao

Ph.D. (University of Alabama)
*Associate Professor, iM.Tech Coordinator and
Faculty in-charge-Labs*



Dr. Chetan Parikh

Ph.D. (University of Florida)
Professor



Dr. Subajit Sen

Ph.D. (University of Waterloo)
Associate Professor



Dr. Subir K. Roy

Ph.D. (Indian Institute of Technology Bombay)
Professor



Dr. Nanditha Rao

Ph.D. (Ohio State University)
*Assistant Professor Faculty-in-charge
Student Exchange*

FACULTY



Dr. Madhav Rao

Ph.D. (University of Alabama)
*Associate Professor, iM.Tech Coordinator and
Faculty in-charge-Labs*

Research Interests: Assistive devices, Low Power
VLSI circuits, Approximate computing circuits,
Optimization techniques for VLSI circuits, 3D
Interconnects

Patent

Assistive devices, Low Power VLSI circuits, Approximate computing circuits, Optimization techniques for VLSI circuits, 3D Interconnects.

Publications

- Prajwal Sharma, Prashanthi K, Krishna Nagaraj, Vinay Chandraekhar, Vikas Vazhiyal, and Madhav Rao, Design and analysis of a minimally invasive and ECG controlled Ventricular Assistive Device, 2019 32nd International Conference on VLSI Design and 2019 18th International Conference on Embedded Systems (VLSID), January 5-9, New Delhi, India, 2019.
- Prajwal Sharma, Prashanthi K, Krishna Nagaraj, Vikas Vazhiyal, and Madhav Rao, Development of a minimally invasive Ventricular Assistive Device, IEEE Sensors 2018 conference, October 29-31, New Delhi, India, 2018.
- Neha Oraon, and Madhav Rao, Stick diagram representation for nanomagnetic logic based combinational circuits, 18th IEEE International Conference on Nanotechnology 2018 conference, July 22-26, Cork Island, Ireland, 2018.
- Alan Israel (IMT2015) presented his work on "A dual threshold voltage modified dynamic power cutoff technique to consolidate leakage and speed in a VLSI subsystem" in 2019 IEEE CONECCT conference, held on 26th July, Bangalore, India.



Dr. Chetan Parikh
Ph.D. (University of Florida)
Professor

Focus Areas

Analog & Mixed-signal circuit design

Research publications

- Tridib Sarma and Chetan D. Parikh, "Effect of Leakage Currents in Adiabatic Logic Circuits at Lower Technology Nodes" IEEE International Conference on Modelling of Systems, Circuits, and Devices (MOS-AK India 2019), Hyderabad, 25-27 February, 2019.
- Subhash Chevella and Chetan D. Parikh, "Multiply-by-n Switched Capacitor Amplifier Insensitive to Capacitance Mismatch," IEEE International Conference on Electronics, Computing and Communication Technologies (IEEE CONECCT 2019), Bangalore, 26-27 July, 2019.



Dr. Subir K. Roy

Ph.D. (Indian Institute of Technology Bombay)

Professor

Research Interests: Hardware formal verification, Power estimation, Performance analysis, CAD for VLSI and embedded systems

Focus Areas

Hardware Trojan Design and Detection, high speed decimal floating point arithmetic design, formal verification of hybrid systems (such as Analog Mixed Signal Designs), model based hardware software co-synthesis of embedded systems, cache compression, branch and value prediction (jointly with Prof. Nanditha Rao), dynamic data flow analysis, decimal floating-point multiplier design (VLSI design).



Dr. Subajit Sen

Ph.D. (University of Waterloo)

Associate Professor

Research Interests: Analog and mixed-signal VLSI integrated circuit & system design, Digitally-assisted analog circuit design, Embedded-systems for biomedical and energy-harvesting applications, RF Circuit Design

Focus Areas

Analog and mixed-signal VLSI integrated circuit & system design, Digitally-assisted analog circuit design, Embedded-systems for biomedical and energy-harvesting applications.



Dr. Nanditha Rao

Ph.D.(Ohio State University)

Assistant Professor Faculty-in-charge Student Exchange

Research Interests: Impact of single event upsets on an FPGA based design, Spectre attack on RISC-V cores, compressed caches and prefetchers, Compressed cache designs, Mitigation of Spectre/Flush-Reload attacks, Convolutional neural networks on an FPGA, Sensors for use in agriculture

Focus Areas

Cache compression, cache side-channel attacks, FPGA fault injection, soft error reliability

Research publications

- Jhalak Sharma, Subir Roy, Nanditha Rao, "Fault injection framework to study the soft error re-silience of RISC-V cores on the FPGA", RISC-V-Workshop Zurich, 2019.
- Shreya Joshi, Subir Roy, Nanditha Rao, "Cache compression using variable base BDI technique for RISC-V processors", RISC-V-Workshop Zurich, 2019.
- Nanditha Rao, Madhav Desai, "The likelihood of multiple bit-flips due to neutron strikes and its implications on circuit designs", 26th IEEE International Symposium on the Physical and Failure Analysis of Integrated Circuits, Hangzhou, China, 2019.

National and international conferences

- RISC-V-Workshop Zurich, 2019.
- IEEE International Symposium on the Physical and Failure Analysis of Integrated Circuits, Hangzhou, China, 2019.

Internship program

MITACS Global research award - internship program- awarded to Jhalak Sharma (MS2018005) in collaboration with Concordia university (June - Sep 2019).

Communication Lab & Microprocessor and Microcontroller Lab



Principal of communication
Microcontroller and Microprocessor

The lab was started in 2017 and is equipped with hardwares such as Raspberry Pi kits, Raspberry Pi starter kits, Universal GPIO Breakout Board, ESA 31 kits, PT51, PIC microcontroller, ARM controller. The lab provides facilities for academic course experiments to Integrated M.Tech students on following domains.

Robotics Club (ENIGMA)



Robotics club (Enigma) was started in 2017. The club is governed by the IIITB student council that primarily consists of IIITB students and works on multi-disciplinary projects.

The Robotics club is equipped with fabrication facilities like 3D printer, Microscope, Skill 10" Bench Drill, JBC soldering Workstation, Dremel tool kit, Dremel workstation, Bosch cut Saw; High end Oscilloscopes, Function generators, Power supplies, Tetrax kit, Lego kit, development boards Arduino, Raspberry pi kits, sensors, LIDAR, cameras, Intel boards, Quadcopter kit, Beagle bone board.

Faculty Involved



Dr. Madhav Rao

Ph.D. (University of Alabama)

Associate Professor, iM.Tech Coordinator and
Faculty in-charge-Labs

Machine Intelligence and Robotics (MINRO) center



MINRO's broad charter is to carry out high quality research in the area of Machine Intelligence and Robotics. The research is expected to lead to path breaking innovations that benefit entire state of Karnataka. The innovations will be widely disseminated for the benefit of the entire state through well-orchestrated showcasing mechanisms.

The center's activities can be divided into three major focus areas: education, research and government. MINRO conducts multidisciplinary research and development activities in important research areas related to machine intelligence, artificial intelligent systems, data analysis, data science, pattern recognition, human-machine interface and industrial products of robotics and automation. The application areas have the potential to address numerous real world problems of governance and society – thereby bringing greater focus to societal applications of MI and also industrial products generation – all of which that traditional systems cannot resolve. The envisaged application directions include, but are not limited to, governance, manufacturing, transportation, assisted living, communications, eLearning, finance, web services and many other areas.

MINRO Center is sponsored by department of ITBT, Government of Karnataka.

Faculty Involved



Dr. Chandrashekar Ramanathan
Ph.D. (Mississippi State University)
Professor & Dean (Academics)



Dr. Bidisha Chaudhari
Ph.D. (Universität Heidelberg)
Assistant Professor



Dr. Janaki Srinivasan
Ph.D. (University of California, Berkeley)
Assistant Professor



Dr. Sachit Rao
Ph.D. (Ohio State University)
*Assistant Professor Faculty-in-charge
Student Exchange*



Dr. Srinath Srinivasa
Ph.D. (Brandenburg Technical University at
Cottbus)
Professor & Dean (R&D)



Dr. Sridhar Mandyam
Ph.D. (Brandenburg Technical University at
Cottbus)
Professor & Dean (R&D)



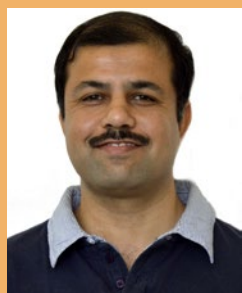
Dr. Jaya Sreevalsan Nair
Ph.D. (University of California, Davis)
Associate Professor



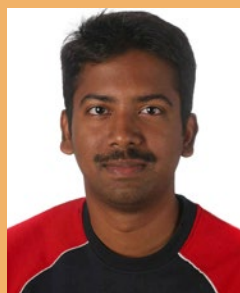
Dr. G. Srinivasaraghavan
Ph.D. (Indian Institute of Technology Kanpur)
*Professor & Faculty-in-charge Internships &
Placements*



Dr. V Sridhar
Ph.D. (University of Iowa)
Professor



Dr. Sujit Kumar Chakrabarti
Ph.D. (Indian Institute of Science)
Associate Assistant Professor



Dr. Dinesh Babu J
Ph.D. (École Polytechnique Fédérale de
Lausanne)
Associate Professor



Dr. Manish Gupta
Ph.D. (University of Illinois at Urbana
Champaign)
Infosys Foundation Chair Professor



Dr. V Rama subramanian
PhD (TIFR Bombay)
Professor



Dr. Neelam Sinha
Ph.D. (Indian Institute of Science)
Associate Professor



Dr. Madhav Rao
Ph.D. (University of Alabama)
*Associate Professor, iM.Tech Coordinator and
Faculty in-charge-Labs*



Dr. Jyotsna Bapat
Ph.D. (Pennsylvania State University)
Professor & Dean (Faculty)



Dr. G N Srinivasa Prasanna
Ph.D. (Massachusetts Institute of Technology)
Professor

Focus Areas

- Multi-modal language translation and understanding – focus on Hindi, English and Kannada (text, voice, gestures, videos, braille etc.).
- Robotics – technology for differently-abled, therapeutic exoskeletons and prosthetics, advanced warehouse robots, human intent prediction.
- IOT and Drones – smart, safe and sustainable buildings, automatic flight navigation.
- Web Sciences and Social Cognition– social network feed analysis, maven detection, fake detection, influence prediction.
- Smart Governance – policies around bias in machine learning algorithms. impact of automation on human society and jobs, framework for privacy and security of digital data.
- Urban mobility and Transportation – traffic analysis, multi-modal planning and autonomous vehicle.

Networking and Communications Research Lab (NCRL)



NCRL focuses on various R&D areas related to broadband wireless network. The lab was created in January 2007 by research fund from Hewlett Packard, Motorola India Research Labs. The lab later received research funding from Microsoft, Nokia, Intel, Siemens and DeitY-Government of India, on tasks related to various challenging problems in niche areas of broadband Wireless Network. This lab has already produced six PhDs and nine MS by Research (MSR) theses over the last eight years. Eight students are currently pursuing PhD with NRCL.

Faculty Involved



Dr. Debabrata Das
Ph.D.(Ohio State University)
Assistant Professor Faculty-in-charge
Student Exchange



Dr. Jyotsna Bapat
Ph.D. (Pennsylvania State University)
Professor & Dean (Faculty)

Focus Areas

- Multi Radio Access Technology (RAT) selection
- Software Defined Networking and NFV
- MAC layer scheduling for improved QoS in LTE-A network
- Energy and Comfort Management for Smart Buildings
- IoT Test Bed for Smart Buildings
- Network Slicing in 5G
- Emergency Evacuation Algorithms for Smart Buildings
- Massive MIMO for mm wave
- Access Technology in 5G IoT – PHY layer perspective

Achievements

130+ publications within Last 12 years
3 Best paper Awards
3 Standard Contributions in 4G-Advanced
8 PhD and 12 MS by Research graduated from above lab

Publications

- Dibakar Das, Jyotsna Bapat, Debabrata Das, "A Dynamic QoS Negotiation Mechanism Between Wired and Wireless SDN Domains", IEEE Transactions on Network Services and Management, Volume: 14, Issue: 4, Dec 2017.
- Pradnya G., J. Bapat and D. Das, 'Location-Aware Multi-Objective Optimization for Energy Cost Management in Semi-Public Buildings using Thermal Discomfort Information', Sustainable Cities and Society Journal, Elsevier, December 2017.
- P. Gaonkar, J. Bapat and D. Das, 'A Survey on QoE and Energy Cost Optimization Strategies for Smart Buildings', CSI Transactions on ICT Journal, Springer, June 2018.
- Dibakar Das, Jyotsna Bapat, Debabrata Das, "SDN assisted self-organizing network architecture for multi-RAT networks and mobility prediction", Wireless Networks, Springer, June 2018.
- Pradnya Gaonkar, Jyotsna Bapat, Debabrata Das, Subrahmanya VRK Rao, "Occupancy Estimation in Semi-Public Spaces using Sensor Fusion and Context Awareness", IEEE International Conference TENSYP-2019, Kolkata, June 7-9, 2019.
- Sasirekha GVK, Adhisaya T, Aswini P, Jyotsna Bapat, Debabrata Das, "Challenges in the Design of an IoT Testbed", accepted ICCT'19 (International conference on intelligent communication and computational techniques), Jaipur, September 2019.
- Pradnya G., Amudheesan A. N., J. Bapat, D. Das, 'Energy Budget Constrained Comfort Optimization for Smart Buildings', IEEE Tensymp, July 2017.
- Dibakar Das, Jyotsna Bapat, Debabrata Das, "SDN Assisted Architecture of Wireless Networks for Opportunistic Capacity Augmentation", revised version under review at IEEE Journal of Communications and Networks.
- Dibakar Das, Jyotsna Bapat, and Debabrata Das, "SINR based Sub-band Clustering in Uplink NOMA for Differentiated Services", IEEE Wireless Communication Letter, Communicated.
- Sharvari NP, Jyotsna Bapat, and Debabrata Das, "Comprehensive Risk Mapping for Strategic Evacuation in Semi-Outdoor and Outdoor Setups in Smart Cities", IEEE CONECCT 2019.
- Sharvari Ravindran, Saptarshi Chaudhuri, Jyotsna Bapat, and Debabrata Das, "Isolation based sub slices for throughput optimization in 5G radio access network" IEEE CONECCT 2019.
- Dibakar Das, Jyotsna Bapat, and Debabrata Das, "Power saving with capacity augmentation for sustained QoS in 5G cloud RAN" IEEE CONECCT 2019.
- Parthiban A., Jyotsna Bapat and Debabrata Das, "Emerging access technologies and open challenges in 5G IoT: from PHY layer perspective", IEEE International Conference on Advanced Networks in Telecommunication Systems, 2018.
- Parthiban A., Jyotsna Bapat and Debabrata Das, "A novel frequency allocation scheme for in band full duplex systems in 5G networks", IEEE Wireless Communication Letters, 2019.

Research Outcome

- COPAS research project outcome is under "Transfer of Technology" mode to Cognizant Technologies.

Patents

- Title: Method and device for categorizing a stream control transmission protocol(SCTP) receiver terminal as a malicious SCTP receiver terminal. Innovators: V.A.Kumar and Debabrata Das. International patent(USA) application no: PCT/IN2014/000195 (patent published in 2015).
- Title: Method and system for detection and elimination of optimistic SACK spoofing based denial of service attacks on SCTP through data enriched SACK. Innovators: V.A.Kumar and Debabrata Das. Indian Patent application no. 348/DEL/2014. (patent published on 2014).
- Title: Method and system of transmitting video data to user equipment in a wireless communication environment. Innovators: Ritesh K, Amar Kumar Nandan, Debabrata Das. Indian patent application no. 4528/CHE/2011 (patent published on 2011).

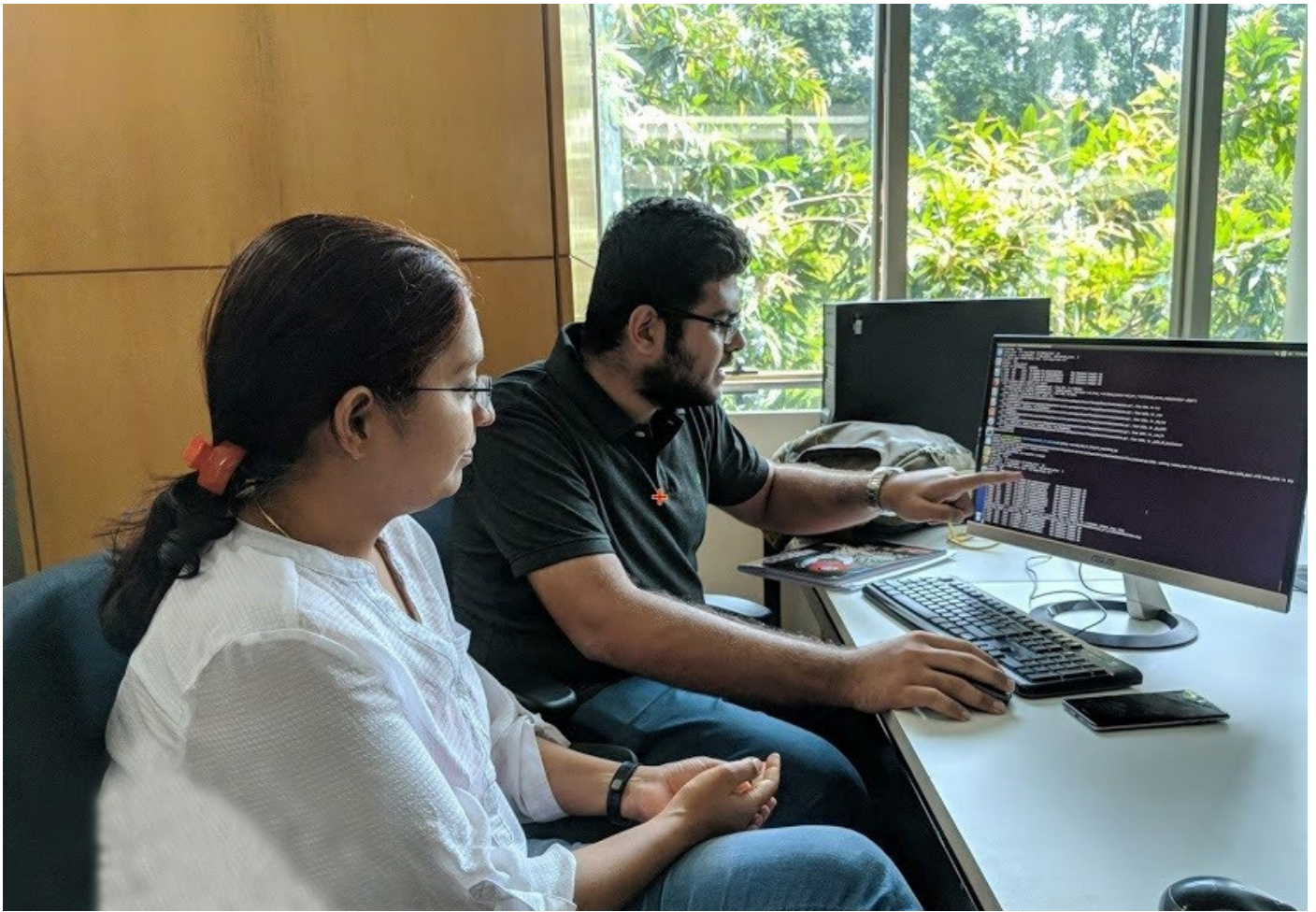
National and international conferences

- Three papers titled "Power saving with capacity augmentation for sustained QoS in 5G cloud RAN", "Isolation based sub slices for throughput optimization in 5G radio access network" and "Comprehensive Risk Mapping for Strategic Evacuation in Semi-Outdoor and Outdoor Setups in Smart Cities "were accepted in IEEE International Conference on Electronics, Computing and Communication Technologies 2019.
- Paper titled "Occupancy Estimation in Semi-Public Spaces using Sensor Fusion and Context Awareness" accepted in TENSYP 2019.
- Paper titled "Challenges in the Design of an IoT Testbed", accepted ICCT'19 (International conference on intelligent communication and computational techniques), Jaipur, September 2019.
- IEEE International Conference CONECCT 2019

Award

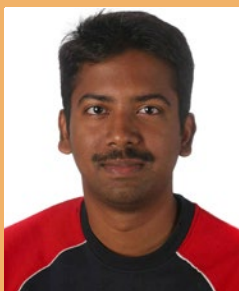
Best paper award for paper titled Isolation based sub slices for throughput optimization in 5G radio access network at IEEE CONECCT 2019.

Multimodal Perception Lab (MPL)



MPL focuses on human-centered sensing and multimodal signal processing methods to observe, measure, and model human behavior. These methods are used in applications that facilitate behavioral training, and social media analysis; and enable human-robot interactions (HRI). The focus is mainly on vision and audio modalities. Probabilistic graphical models form the backbone of the underlying formalism.

Faculty Involved



Dr. Dinesh Babu J

Ph.D. (École Polytechnique Fédérale de
Lausanne)
Associate Professor

Focus Areas

- Multimodal signal processing, Applied Machine Learning, Social Computing, Behaviour Analytics.

Conference publications

- S. Rasipuram and D. Jayagopi. A Comprehensive Evaluation of Audio-Visual Behavior in Various Modes of Interviews in the Wild, accepted for oral presentation at the 12th International Conference on Pervasive Technologies Related to Assistive Environments (PETRA), June 2019, Rhodes, Greece.
- C. Thomas, D. Gatica-Perez and D. Jayagopi. BookTubing Across Regions: Examining Differences based on Nonverbal and Verbal Cues, accepted for publication in ACM International Conference on Interactive Experiences for Television and Online Video (TVX), June 2019, Manchester, UK. Collaboration with IDIAP, EPFL.
- S. Raju, N. Duvvuru and D. Jayagopi. Improving Adversarial Images Using Activation Maps, accepted for publication in 8th Joint International Information Technology and Artificial Intelligence Conference (IEEE ITAIC 2019), May 2019, Chongqing, China.
- A. Sharma, D. Jayagopi. Handwritten Essay Grading on Mobiles using MDLSTM Model and Word Embeddings, published in the 11th Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP), Hyderabad, India, Dec 2018.
- C. Nagraj, H. Jain, D. Jayagopi. Rash Driving Detection using a Frontal View Camera in Cars, published in the 11th Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP), Hyderabad, India, Dec 2018. Collaboration with Samsung R&D.
- D. Gatica-Perez, D. Cortez, T. Minh-Do, D. Jayagopi, K. Otsuka. Vlogging Over Time: Longitudinal Impressions and Behavior in YouTube, published in the 17th International Conference on Mobile and Ubiquitous Multimedia (MuM), Cairo, Egypt, Nov 2018. Collaboration with IDIAP, EPFL.
- N. Nair, C. Thomas and D. Jayagopi. Human Activity Recognition Using Temporal Convolutional Network, published in the 5th International Workshop on Sensor-based Activity Recognition and Interaction (iWOAR), Berlin Sep 2018.
- K E Manjunath, K S Rao, D. Jayagopi, V. Ramasubramanian Indian languages ASR: A multilingual phone recognition framework with IPA based common phone-set, predicted articulatory features and feature fusion, published in the Proceedings of Interspeech, Sep 2018, Hyderabad.

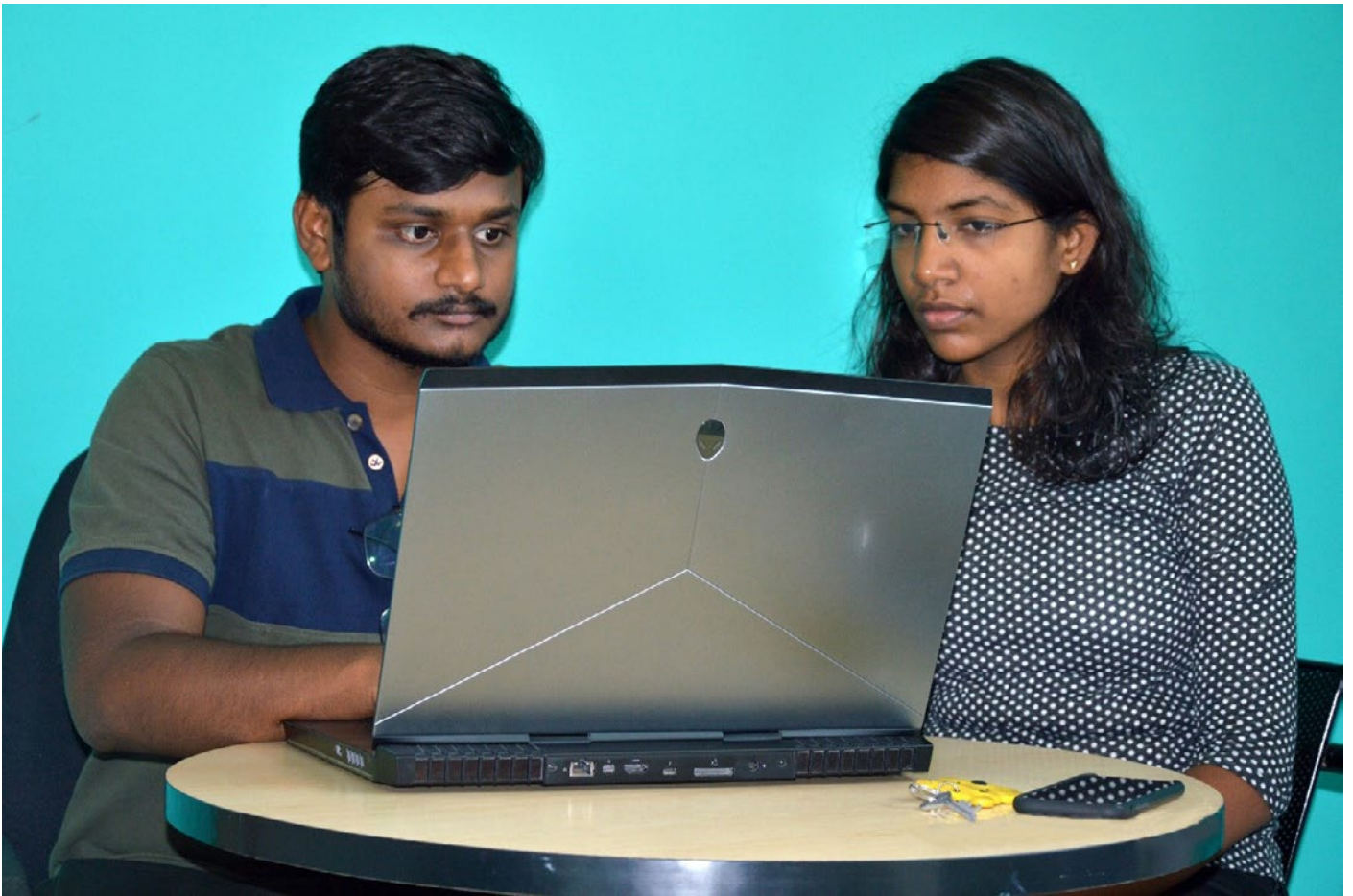
Journals

- Manjunath K E, D. Jayagopi, K S Rao, Ramasubramanian V Development and Analysis of Multilingual Phone Recognition Systems using Indian Languages, accepted for publication in Springer International Journal of Speech Technology (Impact Factor: 0.9).

Events

- Sowmya R attended PETRA conference, Greece.
- Annapurna attended ICVGIP, Hyderabad and presents her work.
- Chinchu T attended International Workshop on Sensor-based Activity Recognition and Interaction (iWOAR) 2018 to present her work co-authored with Nitin Nair.
- Chinchu T started three-month internship at Idiap Research Institute, EPFL.
- Manjunath presented his paper at Interspeech 2018, held in Hyderabad.

Open Source Technology Lab (OSTL)



Faculty Involved



Dr. B. Thangaraju
Ph.D (Bharathidasan University)
Professor

Publications

- How to Go About Linux Boot Time Optimisation by Sourya Sarthak Reddy Sane, Doppalapudi Sai Divya and Prof. B. Thangaraju, Open Source For You, September 2019, pp. 44-47.
- Continuous Deployment Orchestration Using Rundeck by R. Harika and B. Thangaraju, Open Source For You, August 2019, pp.54-58.
- Automation of Microservices Application Deployment Made Easy By Rundeck and Kubernetes by Harika Rajavaram, Vineet Rajula and B. Thangaraju, IEEE CONECCT 2019 Proceedings, 2019 International Conference on Electronics, Computing and Communication Technologies, 26-27 July 2019, IIIT Bangalore, pp.140 – 142.
- Linux CPU-Idle Menu Governor with Online Reinforcement Learning and Scheduler Load Balancing Statistics by Sayanta Pattanayak and B Thangaraju, IEEE CONECCT 2019 Proceedings, 2019 International Conference on Electronics, Computing and Communication Technologies, 26-27 July 2019, IIIT Bangalore, pp.143 – 148.
- "Get Rid of Priority Inversion with PI-Futex" by Dhanashree Mohite and Prof. B. Thangaraju, Open Source For You, July 2019, pp. 68-71.
- "Blockchain Development Made Easy with Open Source Tools", by Vaibhav Aggarwal and Prof. B. Thangaraju, Open Source For You, April 2019, pp. 99-102.
- "How Man in the Middle Attacks Cause Damage" by Sravya Goli and Prof. B. Thangaraju, Open Source For You, March 2019, pp. 45-47.
- "How to Avoid Priority Inversion and Enable Priority Inheritance in Linux Kernel Programming" by Poonam S. Warade and Prof. B. Thangaraju, Open Source For You, February 2019, pp. 84-89.
- "Is Your Website Secure?" by Sravya Goli and Prof. B. Thangaraju, Open Source For You, January 2019, pp. 47-49.
- "How the Blockchain Can Add Transparency to Healthcare" by Vaibhav Aggarwal and Prof. B. Thangaraju, Open Source For You, January 2019, pp. 30-33.
- "Rapidly Growing IT Companies are Adopting E-learning Technologies" by Ranganadhan N.S., Dr B. Thangaraju and Soji Joseph, Open Source For You, December 2018, pp. 24-30.
- "Intricacies of Docker Networking" by R Harika, Shreyak U and Dr. B Thangaraju, Open Source For You, June 2018, pp.39-44.
- "Container Orchestration with Kubernetes" by Vineet Rajula and Dr. B Thangaraju, Open Source For You, May 2018, pp.52-55.
- "A Quantitative Analysis of the Real-time Capabilities of Linux with PREEMPT_RT" by K. Deepika Raj, Prashanthi S.K and Dr B. Thangaraju, Open Source For You, April 2018, pp.93-95

Conferences

- IIITB was a community partner in Open Source India 2018 Conference.
- IEEE Conecct Conference 2019, IIITB.

Graphics-Visualization-Computing Lab (GVCL)

At GVCL, IIIT Bangalore, the research undertaken is in the domain of spatial computing and visual analytics. The lab focuses on research and development in visual analytics, general purpose GPU computing and graphics. The research interests of GVCL lie in developing interdisciplinary data models and techniques for visual analytics, involving second-order tensors and matrices for complex networks, spatio-temporal and multivariate data. Over the years, the lab has worked on applications in geosciences/earth observations, small-world networks, biological networks, public health data, and others. The lab conducts interdisciplinary work with domain experts, such as oceanographers, GIS practitioners, survey data analysts, biologists, and medical doctors, in devising novel solutions in data analysis and presentation.

Faculty Involved



Dr. Jaya Sreevalsan Nair
Ph.D. (University of California, Davis)
Associate Professor

Focus Areas

- Visual Analytics, Data Science

Publications

- Sreevalsan-Nair, "Visual Analytics of 3D Airborne LiDAR Point Clouds in Urban Regions," in Sarda, N., Acharya, P., Sen, S. (eds) Geospatial Infrastructure, Applications and Technologies: India Case Studies, pp 313-325, Springer Singapore, November 2018.
- J. Sreevalsan-Nair, A. Jindal, and B. Kumari, "Contour Extraction in Buildings in Airborne LiDAR Point Clouds Using Multi-scale Local Geometric Descriptors and Visual Analytics," in IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (JSTARS), 11(7), pp 2320-2335, June 2018.

Grants

- Intel India Research Fellowship (for MS student nominated by faculty) for Pragyan Mohapatra and Jaya Sreevalsan Nair, August 2019, Intel India Pvt. Ltd., INR 8,00,000/-
- Visual Analytics of Population Health Surveys, June 2018-December 2019, IBM SHARED UNIVERSITY GRANT INR 19,55,000/-.

Software Engineering (SE) lab

The mission of the SE stream at IIITB are two-fold: firstly, to educate our students to be high quality software engineers, with strong hands-on experience and with strong foundations in computer science concepts; secondly, to contribute original and ground-breaking ideas to the state-of-the art in SE by actively involving in research.

Faculty Involved



Dr. Meenakshi D'Souza
Ph.D. (Institute of Mathematical Sciences)
Associate Professor & Warden (Women's Hostel)



Dr. Sujit Kumar Chakrabarti
Ph.D. (Indian Institute of Science)
Assistant Professor

Focus Areas

- Software Engineering
- Formal verification
- Software Testing
- Education technology
- Accessibility and inclusivity
- Embedded software

Research Publications

- Sulochan Naik, Meenakshi D'Souza, Efficient Power Saving Method for WiFi Direct Devices in IoT based on Hidden Markov Model. COMSNETS 2019: 565-567.
- Meenakshi D'Souza, Rajanikanth N. Kashi, Avionics Self-adaptive Software: Towards Formal Verification and Validation. ICDCIT 2019: 3-23.
- Vijaya Sharvani, Kumar Abhinav, Alpana Dubey, Sakshi Jain, Veenu Arora, Meenakshi D'Souza, FrAppLe: A Framework for Apprenticeship Learning. ISEC 2019: 26:1-26:5.
- Nitin Bhatia, Meenakshi D'Souza, Sujit Kumar Chakrabarti,
- Formalizing GPU Instruction Set Architecture in Coq. ISEC 2019: 28:1-28:5.
- Abhishek Singh, Meenakshi D'Souza, Arshad Ebrahim, Formal Verification of Data race in Safety Critical ARINC653 compliant RTOS. ICACCI 2018, 1273-1279.
- Avijit Mandal, Devina Mohan, Raoul Jetley, Sreeja Nair, Meenakshi D'Souza,
- A Generic Static Analysis Framework for Domain-specific Languages. ETFA 2018: 27-34.
- Ramakrishnan Raman, Meenakshi D'Souza, Learning Framework for Maturing Architecture Design Decisions for Evolving Complex SoS. SoSE 2018: 350-357.
- Varsha P. Suresh, Sujit Kumar Chakrabarti, Raoul Jetley, Automated Test Case Generation for Programmable Logic Controller Code, ISEC 2019.
- Varsha P. Suresh, Sujit Kumar Chakrabarti, Raoul Jetley, Handling Backtracking for Symbolic Testing of Embedded Software ETFA 2019.

Research Outcomes

- DST has sponsored a project titled "Verification and validation of IoT systems" with Meenakshi D'Souza as the single PI for a period of three years, starting April 2019.
- DRDO has sponsored a project on "Formal verification of neural networks as applied to autonomous systems" for a period of 2.5 years from July 2019 with Meenakshi D'Souza as the PI and G. Srinivasa Raghavan as the Co-PI., starting July 2019.
- MoU Signed for the RBD project between IIIT-B, Vision Empower, ToucheTech Labs for the Development of RBD with Sujit as PI. This project has subsequently been funded under MINRO fund.

Guest Speakers

- Ranvindran Kariappa, CUNY, USA
- Emtiyaz Khan, RIKEN, Tokyo Japan
- Vinayak Prabhu, Colorado State University, USA

Collaborative Research Workshops

- First IISc-IIITB Joint Workshop of Software Engineering Research
- Second IISc-IIITB Joint Workshop of Software Engineering Research

Seminars and national and international conferences

- Nitin Bhatia and Varsha P Suresh attended the ACM ISEC conference and ISEC Ph. D. Symposim, held at COEP, Pune, February 2019.
- Abhishek Singh presented his paper at IEEE ICACCI 2018, held at Bangalore, October 2018.
- Avijit Mandal attended IEEE EFTA and presented his paper at the conference, Italy, October 2018.
- Ramakrishnan Raman attended IEEE SoSE and presented his poster cum paper at the conference, Paris, France, July 2018.
- Varsha P Suresh attended the ACM India IRSS Ph. D. student's summit at Cochin, February 2019. She presented her work on test case generation on AADL models with fault annex.

Talks and Panels

- Sujit Kumar Chakrabarti; Title: Machine Learning and Software Engineering at Indian Academy, Bangalore on March 23, 2019.
- Sujit Kumar Chakrabarti; Title: Automated Evaluation of Programming Assignments – Some Experiences at IISc, Bangalore on July 13, 2019.
- Meenakshi D'Souza; Title: Avionics Self-Adaptive Software: Verification and Validation at 15th International Conference on Distributed Computing and Internet Technologies (ICDCIT), Bhubaneswar, on January 10, 2019.

Software Design Laboratory

The research focus here is on the design and architecture of software. Design patterns approach for the software development process is studied, with special emphasis on the impacts of design principals and patterns on the flexibility as one of the prime focus.

Faculty Involved



K V Dinesha

Ph.D. (Indian Institute of Information
Technology Bombay)
Professor

Mathematics

Faculty Involved



Dr. Amit Chattopadhyay
Ph.D. (University of Groningen)
Assistant Professor



Dr. Manisha Kulkarni
Ph.D. (IMSc Chennai)

Focus Areas

Computational Topology, Certified Geometric Computing

Research Publications

Topological Feature Search in Time-Varying Multifield Data. Tripti Agarwal, Amit Chattopadhyay, Vijay Natarajan. TopolnVis, Nykoping, Sweden, Pages 1-20, June 17-19, 2019.

Research Fund

Topological Data Analysis: Tools for Multivariate (funded by Science Education and Research Board -Core Research Grant, 2019-2022)

Conferences

- Invited talk in "International Workshop and Conference on Topology and Application" IWCTA 2018 at Rajagiri Engineering College and Technology, Kochi, Kerala.
- MS student Tripti Agarwal attended TopolnVis conference at Nykoping in Sweden.

Centre for Complex Systems & Soft Matter Physics



Faculty Involved



Dr. Balakrishnan Ashok

Ph.D. (University of Massachusetts
Amherst)

*Associate Professor & Faculty- in-charge
Library*

Focus Areas

Research areas tackled under the aegis of the Centre for Complex Systems & Soft Matter Physics include problems in nonlinear dynamics & complex systems and in theoretical soft condensed matter & polymer physics. Problems addressed range from the physics of small scales (in the nano & micrometer range) to that of modelling macroscopic complex systems like climate phenomena & ecological modelling. Recent focus has been on the modelling the behaviour of co-axial carbon nanotubes & their potential use in NEMs, dynamics of acoustically forced charged bubbles, modelling of climate phenomena through simple models, effect of climate change on ecological systems, and dynamics of coupled neurons. Other areas of interest include instabilities in fluid flows and combustion phenomena, dynamics of macromolecular & micellar solutions, etc.

Research Publications

- Brijesh K. Mishra & B. Ashok, "Modelling multi-walled carbon nanotubes -- from quantum mechanical calculations to mechanical analogues", book chapter in a forthcoming book "Organized networks in carbon nanotubes" (CRC Press), submitted.

National and international conferences

- B. Ashok, "Tubes and containers at the nano and microscales: statics and dynamics", accepted for oral presentation at the 11th CNSD, Conference on Nonlinear Systems and Dynamics, JNU, New Delhi, Oct 11-14, 2018.

Research outcomes

Work done over 2018-19 by Prof. Ashok has principally been continuation of ongoing work and are of both fundamental and practical importance. These have led to fresh insights and understanding of processes in diverse fields including multiphase systems (bubble dynamics), understanding observed changes in an ecosystem due to climate change, potential use of DWCNTs in nano-scale machines, firing of coupled neurons etc. These have also resulted in research publications (ongoing as well as submitted) and conference communications.

Research & outreach

External students worked on short-term assignments (through the IIIT-B Summer Intern Programme)

1. Lalit Kumar, from IISER Kolkata (15 May - 1 July, 2019).
2. Monali Pradhan, from NIT, Rourkela (15 May - 1 July, 2019).

Faculty



Dr. Shiva Kumar Malapaka
Ph.D. (Universität of Bayreuth)
*Assistant Professor & Warden (Men's
Hostel)*

Conferences and talks

- Shiva Kumar. Malapaka, Spectral, visualization and statistical studies of helicity forced and decaying 3D-MHD turbulent flows, Solar Helicities in Theory and Observations: Implications for Space Weather and Dynamo Theory, NORDITA, Stockholm, Sweden, 11-15 March, 2019 (was present for a week in the month long workshop).
- Shiva Kumar. Malapaka, Invited talk as a Resource Person Using OpenMP and MPI in Modeling and Simulations, AICTE QIP Sponsored Short Term Course on High Performance Computing for Science and Engineering, Department of Computer Science and Engineering, Thiagarajar College of Engineering, Madurai, 4-10 February, 2019.

Conferences Attended

- HiPC 2018, Bengaluru, India, (December 17 - 20, 2018)
- Continued the establishment of a High Performance Computing Cluster Called FUTURE (Fusion Turbulence) which was tested for its performance and code portability in July 2018 and is now being used to perform 3D-MHD Turbulent Flow Simulations.
- 3D-DNS of Helically forced Magnetohydrodynamic Turbulence with Varying Magnetic Prandtl Number & Data Analysis, Shiva Kumar. Malapaka, A. Chattopadhyay, J. Nair, N. Bisai, D. Sharma and R. Ganesh, NFP-PFRC Vision Meeting, Nirma University, Ahmedabad & Institute for Plasma Research, Gandhi Nagar, Gujarat, India. (April 26 -28, 2018).

Chemistry

Faculty Involved



Dr. Brijesh Kumar Mishra

Ph.D. (Indian Institute of Technology
Kanpur)
Assistant professor

Focus Areas

Computational Chemistry

Research Publications

- Effect of Confinement on Structure, Energy and Vibrational Spectra of (HF)_n, n = 1 - 4 (Chemical Physics Letters 2019) P. R. Remya, B.K. Mishra, C.N. Ramachandran, N. Sathyamurthy.
- Influence of Water on the CH₃O• + O₂ → CH₂O + HO• Reaction Physical Chemistry Chemical Physics, 21, 15734 - 15741, 2019 S. Mallick, A. Kumar, B. K. Mishra, P. Kumar.
- Influence of stacking on the ground and excited states of 2-aminopyridine Computational and Theoretical Chemistry 1148, 60-66, 2019 A. Gupta, B. K. Mishra, N Sathyamurthy.

Center for Information Technology and Public Policy (CITAPP)



CITAPP focuses on the policy challenges and the organizational demands made by technological innovation. The center is interested in interactions between technology and society and is particularly concerned with how technological advances, along with institutional changes, address the needs of under-served communities. It seeks to provide a means to nurture and transform public policy through the use of IT by engaging with academic faculty and researchers, policy planners, political leaders and community representatives, technology vendors, public officials and civil society organizations. The center brings together best-practices demonstrating the power of IT and analytical tools for information management, modeling, and forecasting. It engages in research and evaluation studies of topics where IT and public interest intersect.

Faculty Involved



Dr. Bidisha Chaudhari
Ph.D. (Universität Heidelberg)
Assistant Professor



Dr. Preeti Mudliar
Ph.D. (University of Texas at Austin)
Assistant Professor



Dr. Balaji Parthasarathy
Ph.D. (University of California, Berkeley)
Professor



Dr. Amit Prakash
FPM (Indian Institute of Management
Bangalore)
*Associate Professor and M.Sc. (Digital
Society) Programme Coordinator*



Dr. S. Rajagopalan
Ph.D. (Indian Institute of Technology Kanpur)
*Professor & Faculty-in-charge Institutional
& Finance*



Dr. V. Sridhar
Ph.D. (University of Iowa)
Professor



Dr. Janaki Srinivasan
Ph.D. (University of California, Berkeley)
Assistant Professor

Focus Areas

- E-governance: from transactions to decision support and policy, role of stakeholders, structures and engagement
- ICT diffusion, absorption and use in government and society
- ICTs in Agriculture: Price Information
- ICT and Equity: Digital divide, Gender disparities, Digital identity
- ICTs in Health: Public Health Records, Maternal and Child Health
- ICTs and Work: Digital Work, Platform Economy, Automation of Work
- Innovations in ICT: role of collaborations, clusters and co-creation
- Telecom policy and regulation
- Tools: GIS, Simulation, Gaming for decision support models in large urban systems
- Data: Repository, Web observatory, Visualization and dissemination

Research Publications

- Amit Prakash, Anjali Karol Mohan, Bidisha Chaudhuri (2019) What Do Citizens Value in E-Governance? Reflections from A Property Registration Computerization Project in India, Economic and Political Weekly, Vol. 54, Issue No. 10, 09 Mar, 2019.
- Amit Prakash, Rajesh Hanbal (2019). A Rights-based Approach to Open Government Data. 10th IEEE/ACM International Conference on Information and Communication Technologies and Development (ICTD 2019), ACM, 2019. Ahmedabad, India, 4-7 January 2019.
- Amit Prakash, Supriya Dey, Vidhya Y, Mounika Neerukonda, Suprgya Bhushan (2019). Creating an Accessible Technology Ecosystem for Learning Science and Math: A Case of Visually Impaired Children in Indian Schools. MCHV-INAIS Workshop on "Being (more) human in a digitised world", IIM Calcutta, 1-2 February 2019.
- Balaji Parthasarathy and Yuko Aoyama. (2019). Governing frugal innovation for sustainable innovation for sustainable development: The hybrid domain. Capturing Frugal Innovation: Towards a Handbook on the Crossroads of Technology, Entrepreneurship and Global Sustainable Development, Leiden, Netherlands, 11-15 February.
- Bidisha Chaudhuri (2019). Technology, Gender and Exclusion: Aadhaar and Welfare in India.
- Workshop on Being (more) Human in a Digitised World Management Centre for Human Values, IIM Calcutta (MCHV) & Association for Information Systems – India Chapter (INAIS), February 1-2 at IIM Calcutta.
- Bidisha Chaudhuri, Linus Kendall (2019). The Ins and Outs of Participation in a Weather Information System. In International Conference on Social Implications of Computers in Developing Countries, pp. 3-14. Springer, Cham, 2019.
- Bidisha Chaudhuri, Linus Kendall, Apoorva Bhalla (2019). Technology as situated practice: voice user interfaces in everyday lives of diverse groups of urban users in India. Workshop on Being (more) Human in a Digitised World Management Centre for Human Values, IIM Calcutta (MCHV) & Association for Information Systems – India Chapter (INAIS), February 1-2 at IIM Calcutta.
- Bidisha Chaudhuri, Syed Faisal (2019). Examining the Foundational versus Functional ID Debate. FUTUREID3 : Identification in the era of Automated Decision Making, Jesus College, Cambridge, U.K. March 19-20.
- Oreglia, Elisa and Janaki Srinivasan. (2019). "Human and non-human intermediation in rural agricultural markets." Journal of Cultural Economy. DOI: 10.1080/17530350.2018.1544918.
- Janaki Srinivasan and Elisa Oreglia. (2018). Placeless and Faceless in Asia?: Mythmaking and Moral Economies in the Digital Age." Paper presented at the Techno-Optimism Within and Beyond Silicon Valley conference, UC Berkeley Centre for Science, Technology, Medicine and Society, October 19-20.
- Sachit Rao, Bidisha Chaudhuri and Janaki Srinivasan. (2018). "To Bot or Not to Bot, that's the question." Paper presented at the Artificial Intelligence and Cognition as Social Praxis panel, Society for Social Studies of Science (4S) Annual Meeting, Sydney, August 29 -September 1.
- Janaki Srinivasan and Bidisha Chaudhuri. (2018). "What is the future of work in the technology sector?" Question Marks Seminar. Australia India Institute, Melbourne, August 28.

- Preeti Mudliar (2018). Public WiFi is for men and mobile Internet is for women: Interrogating politics of space and gender around WiFi hotspots. Proceedings of the 21st ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW'18) November 3-7, 2018, Jersey City, New York, New York.
- Preeti Mudliar and Noopur Raval: (2018). "They are like personalized mini-Google": Seeking information on Facebook Groups. Proceedings of the 51st Hawaii International Conference on System Sciences.
- Preeti Mudliar (2018). Breakdowns and Repairs in Aadhaar-linked Public Distribution Systems—Learnings from Rajasthan. Presented at the 2018 International Tech4Dev Conference, UNESCO Chair in Technologies for Development: Voices of the Global South, Lausanne, Switzerland. 27-29 June.
- Janaki Srinivasan, Savita Bailur, Emrys Schoemaker and Sarita Seshagiri. (2018). The Poverty of Privacy: Understanding Privacy Trade-Offs from Identity Infrastructure Users in India. International Journal of Communication 12, 1–20.
- V. Sridhar (2019). Building a High Technology Product out of India: The Intelli-Fi way. Journal of Information Technology Teaching Cases.
- V. Sridhar (2018). Vistaar lends itself to small businesses. Asian Business Case Centre. Case No: ABCC-2018-029. Nanyang Business School, Nanyang Technological University, Singapore.
- V. Sridhar (2018). Gaming Robosoft Way: A Global Tech Start-up from a Small Town in India. Asian Business Case Centre. Case No: ABCC-2018-034. Nanyang Business School, Nanyang Technological University, Singapore.

Others

- Brief on ICT Trends: Digital Identity published by UN-APCICT.
- Brief on ICT Trends in Education published by UN-APCICT.
- Preeti Mudliar (2019). Offline Subjectivities of Online Women. Part of an essay series exploring the social, economic, cultural, political, infrastructural, and aesthetic dimensions of the "offline" Researchers@Work, Centre for Internet and Society, Bangalore. February 12, 2019.
- Preeti Mudliar (2019). 'The Automaton's New Clothes'. In 'Drones and Dreams: A Speculative Sprint Story Collection' on Artificial Intelligence Futures. Digital Asia Hub, Hong Kong. January, 2019.

Seminars

- Workshop on "Digital Media Presence for the Not-for-Profit Sector" (April 2018).
- Workshop on Online Platform Labour in collaboration with Fairwork Foundation (July 2018).
- IEEE Unconference on Digital Inclusion Through Trust and Agency (July 2018).
- Seminar on Digital Economy jointly organized with TRAI (November, 2018).
- Winter School on "Towards an Inclusive Digital Society: Shaping the Agenda for Technology Design" (December 2018).

Seminars

- 10th IEEE/ACM International Conference on Information and Communication Technologies and Development (ICTD 2019).
- 21st ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW'18).
- 51st Hawaii International Conference on System Science.
- International Conference on Digital Economy (ICDE)2019. MCHV-INAIS Workshop on "Being (more) human in a digitised world".
- International Conference on Social Implications of Computers in Developing Countries.
- International Tech4Dev Conference, UNESCO Chair in Technologies for Development: Voices of the Global South.
- Society for Social Studies of Science (4S) Annual Meeting.

Center for Data Sciences

The Center for Data Sciences is a formal conglomeration of all the labs under the Data Sciences research domain, which takes care of overall activities at a higher hierarchical level of operation. This involves pooling in resources, conducting biannual student workshops, etc.

Computational Sciences Laboratory (CSL)



CSL is broadly in the areas of Algorithms, Optimization, and Robotics.

Faculty Involved



Dr. G N Srinivasa Prasanna
Ph.D. (Massachusetts Institute of Technology)
Professor



Dr. Muralidhara V.N
Ph.D. (Indian Institute of Technology Delhi)
*Associate Professor, M.Tech. & S.M.Tech.
Programme Coordinator*



Dr. Sachit Rao
Ph.D.(Ohio State University)
*Assistant Professor Faculty-in-charge
Student Exchange*



Dr. Manisha Kulkarni
Ph.D. (The Institute of Mathematical Sciences)
*Associate Professor & M.S. Ph.D. Programme
Coordinator*



Dr. G. Srinivasaraghavan
Ph.D. (Indian Institute of Technology Kanpur)
*Professor & Faculty-in-charge Internships &
Placements*



Dr. Jaya Sreevalsan Nair
Ph.D. (University of California, Davis)
Associate Professor

Focus Areas

- Robust optimization under uncertainty, with applications to supply chains, real time search, banking, smart grid, transportation, gaming and allied areas. This work couples algorithms with information theory.
- Approximation algorithms, machine learning, cryptography and linguistics.
- Novel robot skeletons using generalized mechanisms, incorporating magnetism distributed throughout.
- Algebraic number theory.
- Electronic design automation including statistical timing analysis and optimisation for digital circuits, power analysis and optimization and formal verification, semiconductor manufacturing, statistical optimization, combinatorial optimization, and design and analysis of algorithms.
- Visualization (scientific and information), high-performance computing, computational geometry and topology.

Government of India Projects

- Virtual Labs
- Indian Railways Project
- KSRTC Bus Scheduling Project with IISc

Infosys Sponsored Projects

- Optimization Under Uncertainty
- Decimal Floating Point ALU Design

IIIT - B Projects

- iChess
- Chitrakavya - Sanskrit Computing
- Paduka
- Copy Number Variation Detection Algorithms
- Magnetic Carrom
- Automated Trash Separation using Pattern Recognition and Image Processing
- Storage Area Networks

Web Science Lab (WSL)



WSL is focused on understanding the web in all its aspects. Research interests of the WSL include enabling technologies for the web, web-scale data management, web mining, network analysis and socio-cognitive models of web dynamics.

Faculty Involved



Dr. Srinath Srinivasa

Ph.D. (Brandenburg Technical University at
Cottbus)

Professor & Dean (R&D)

Projects

Sponsored Projects

- Gooru – Narrative Arc towards Digital Empowerment
- Gooru

Research Projects

- Tweet Summarization
- The Cogno – Web Observatory: Characterize Online Social Cognition

Archived Projects

- An Open Architecture for Smart Cities
- Inferencing in the Large: Semantic Integration of Open-Data Tables
- Reach
- Sandesh
- Co-creation of a Center of Excellence in Big Data Engineering
- ISWC2017-Learning Semantics of Literal-Value Columns

Academic Magazine Articles

Year - 2019

Aparna Lalingkar, Srinath Srinivasa and Prasad Ram. (2019). Characterization of Technology-based Mediations for Navigated Learning. *Advanced Computing and Communications Systems*, 3(2).

Year - 2018

Sharath Srivatsa, Shyam Kumar V N, Srinath Srinivasa. The Story Of Computational Narratology. In Quaterly Publication of "Advanced Computing and Communications Society" (ACCS), December, 2018.

Books and Book Chapters

Subramanian, A., and S. Srinivasa. "Semantic Interpretation and Integration of Open Data Tables." In *Geospatial Infrastructure, Applications and Technologies: India Case Studies*, pp. 217-233. Springer, Singapore, 2018.

Conference and Journal Papers

- Aparna Lalingkar, Srinath Srinivasa, and Prasad Ram. (2019). Characterizing Technology-based Mediations for Navigated Learning, *Advanced Computing and Communications*, 3(2), ACCS Publication, pp. 33-47.
- Chaitali Diwan, Srinath Srinivasa, and Prasad Ram. Automatic Generation of Coherent Learning Pathways for Open Educational Resources, In *Proceedings of the Fourteenth European Conference on Technology Enhanced Learning (EC-TEL 2019)*, Springer LNCS, Delft, Netherlands, 16-19 September 2019 (to appear).
- Praseeda, Srinath Srinivasa and Prasad Ram "Validating the Myth of Average through Evidences" In: *The 12th International Conference on Educational Data Mining*, Michel Desmarais, Collin F. Lynch, Agathe Merceron, & Roger Nkambou (eds.) 2019, pp. 631 – 634.
- Raksha Pavagada Subbanarasimha. 2019. Designing the Cogno-Web Observatory: To Characterize the Dynamics of Online Social Cognition. In *Proceedings of the Twelfth ACM International Conference on Web Search and Data Mining (WSDM '19)*. ACM, New York, NY, USA, 814-815. DOI: <https://doi.org/10.1145/3289600.3291600>.

- Srinivasa S., Pavagada Subbanarasimha R. (2018) Design of the Cogno Web Observatory for Characterizing Online Social Cognition. In: Anirban Mondal, Himanshu Gupta, Jaideep Srivastava, P.Krishna Reddy, D.V.L.N. Somayajulu. (eds) Big Data Analytics. BDA 2018. Lecture Notes in Computer Science. Springer, Cham.
- Chaitali Diwan, Srinath Srinivasa, and Prasad Ram. Computing Exposition Coherence of Learning Resources, In Proceedings of The 17th International Conference on Ontologies, Databases and Applications of Semantics (ODBASE 2018), Springer LNCS, Valletta, Malta, October 22-26, 2018.
- Sharath Srivatsa, Srinath Srinivasa. Narrative Plot Comparison Based on a Bag-of-actors Document Model. In Proceedings of the 29th ACM Conference on Hypertext and Social Media (ACM HT'18), Baltimore, USA, ACM Press, July 2018.
- Lalingkar. A., Srinivasa, S. and Ram, P. (2018). Deriving semantics of learning mediation, In Proceedings of the 18th IEEE International Conference on Advanced Learning Technologies (ICALT), IEEE, 9th July to 13th July, IIT Bombay.
- Raksha Pavagada Subbanarasimha, Lokesh Todwal, Mamillapalli Rachana, Aditya Naidu, and Srinath Srinivasa. 2018. Mithya: A Framework For Identifying Opinion Drivers On Social Media. Demo at ACM IKDD Conference on Data Science and International Conference on Management of Data, Goa, India, Jan 2018 (CODS-COMAD 2018).
- Sumant Kulkarni, Srinath Srinivasa, Tahir Dar. 2018. Syncretic Matching: Story Similarity Between Documents. In Proceedings of ACM IKDD Conference on Data Science and International Conference on Management of Data, Goa, India, Jan 2018 (CODS-COMAD 2018).

Events

- Workshop on Web Science for Development WS4D 2019
- Reach Workshop – 23 November 2018
- Workshop on Theoretical Foundations of Computer Science

Conferences and Talks

- 30 Aug 2019. Srinath Srinivasa. Presented an invited talk entitled "Text, Semantics and Stories" as part of the Samsung-IIITB AI Conclave, Bangalore, India.
- 27 Aug 2019. Ramesh Sundararaman, Sujit Kumar Chakrabarti, Srinath Srinivasa. Participated in the Huawei University Day to present an overview of IIITB Research in Software Engineering and Data Science, at the Huawei R&D Campus in Bangalore, India.
- 22 Jul 2019. Srinath Srinivasa and Asha Subramanian (representing PAC India) participated in the launch workshop of the National Data Quality Forum (NDQF), organized by the Indian Council for Medical Research (ICMR).
- 3 Jul 2019. Prasad Ram presented the paper "Validating Myth of Average" at 12th International Conference on Educational Data Mining at Montreal, Canada.
- 10 Jun 2019. Gaurav Koley successfully defended his iMTEch thesis entitled "Computing Social Capital as Engagement and Belief Revision".
- 30 Aug 2019. Srinath Srinivasa. Presented an invited talk entitled "Text, Semantics and Stories" as part of the Samsung-IIITB AI Conclave, Bangalore, India.
- 27 Aug 2019. Ramesh Sundararaman, Sujit Kumar Chakrabarti, Srinath Srinivasa. Participated in the Huawei University Day to present an overview of IIITB Research in Software Engineering and Data Science, at the Huawei R&D Campus in Bangalore, India.
- 22 Jul 2019. Srinath Srinivasa and Asha Subramanian (representing PAC India) participated in the launch workshop of the National Data Quality Forum (NDQF), organized by the Indian Council for Medical Research (ICMR).
- 3 Jul 2019. Prasad Ram presented the paper "Validating Myth of Average" at 12th International Conference on Educational Data Mining at Montreal, Canada.

- 10 Jun 2019. Gaurav Koley successfully defended his iMTECH thesis entitled "Computing Social Capital as Engagement and Belief Revision".
- 3 Jun 2019. Praseeda presented her State of the Art Seminar titled "Competency Modeling for Navigated Learning".
- 10 May 2019. WSL Research workshop to discuss about current research activities of the lab and the roadmap ahead. Workshop details at <http://wsl.iitb.ac.in/index.php/2019/05/07/research-workshop-10-may-2019/>
- 11 Apr 2019. Dr Prasad Ram, Founder of Gooru Inc visited WSL lab and discussed about project updates and future plans.
- 18 Mar 2019. Chaitali Diwan presented her State of the Art Seminar titled "Automatic Generation of Learning Pathways for Navigated Learning".
- 11 Mar 2019. Aparna conducted a workshop for Gooru as a resource person on "Navigated Learning" for a short term course at UGC-HRDC, University of Mumbai.
- 27 Feb 2019. Day long Workshop on Web Science for Development (WS4D) organised at IIIT Bangalore, with Dame Wendy Hall as the keynote speaker and numerous other speakers and participants from academia, industry and startups.
- 25-26 Feb 2019. Aayushman Khurana, Gaurav Koley, Raksha P S, Srinath Srinivasa participated in the RBCDSAI Web Science Symposium at IIT Madras, Chennai, India. Poster presentations and an invited talk entitled "Characterising Online Social Cognition" were delivered as part of this participation.
- 14 Feb 2019. Praseeda presented a paper titled "Competency Modeling for Digital Empowerment" at RISE (Research & Innovation Conference) 2019 at IIIT Bangalore.
- 14 Feb 2019. Chaitali Diwan presented a paper titled "Narrative Arc Computation for Digital Empowerment" at RISE (Research & Innovation Conference) 2019 at IIIT Bangalore.
- 11-15 Feb 2019. Raksha P S presented a paper titled "Designing the Cogno-Web Observatory: To Characterize the Dynamics of Online Social Cognition" at the Twelfth ACM International Conference on Web Search and Data Mining (WSDM '19), Melbourne, Australia.
- 5 Feb 2019. Prof Oliver Gunther, President of the University of Potsdam, Germany visited IIIT Bangalore and had interactions on various research projects of WSL lab and some startups incubated at IIIT Bangalore.
- 31 Jan 2019. Srinath Srinivasa participated as a panelist in the Awareness Workshop on Cyber Security and Privacy in Education, organised by Cyber Security Center of Excellence of the Government of Karnataka, Privacy Virtuoso, IISc and KSCST Bengaluru, at CSA Department, IISc, Bengaluru.
- 30 Jan 2019. Srinath Srinivasa participated in the Task Group Meeting on Big Data in Governance, of the Karnataka Jnana Aayoga, Vikasa Soudha, Bangalore.
- 25 Jan 2019. Dr Prasad Ram, Founder of Gooru Inc visited WSL lab and discussed about project updates and future plans.
- 19 Jan 2019. Srinath Srinivasa and Jayati Deshmukh participated in the ThoughtWorks E4R (Engineering for Research) Symposium on Complex Systems. Pune, India.
- 8 Jan 2019. Prof. Sharma Chakravarthy from UT Arlington presented a talk on "Graph Analysis: Decomposition-Based Analysis Using Multilayer Networks" at IIIT Bangalore.
- 19 Dec 2018. Srinath Srinivasa presented an invited talk titled "Design of the Cogno Web Observatory for Characterizing Online Social Cognition" at The Sixth International Conference On Big Data Analytics (BDA) at NIT Warangal.
- 17-18 Dec 2018. Aparna Lalingkar presented series of talks in "Recent Trends in Teaching-Learning Technology" at North Maharashtra University, Jalgaon on Navigated Learning and Semantic Web technology and Education.
- 12 Dec 2018. Srinath Srinivasa participated as a panelist discussing the role of technology clusters in promoting innovation, at the IndoUK FutureTech conference, New Delhi, India.
- 11 Dec 2018. Srinath Srinivasa participated as a member of the technical panel of experts for the National Data & Analytics Portal at NITI Aayog, New Delhi, India.
- 7 Dec 2018. Praseeda successfully cleared her comprehensive exam.
- 23 Nov 2018. REACH Workshop was held at IIIT Bangalore. Click on REACH workshop 2018 for details.
- 21 Nov 2018. WSL workshop focused to reflect on the research progress in the last semester.
- 21 Nov 2018. Prof. Rajendra Bera presented an invited talk titled "Connecting the dots" as a part of the course The Web and The Mind.
- 12 Nov 2018. Srinath Srinivasa. Participated as a member of the Executive Committee on Data, at the EC meeting of the National Spatial Data Infrastructure (NSDI), New Delhi, India.

- 8-9 Nov 2018. Srinath Srinivasa and Manish Gupta participated in the Falling Walls venture pitch, at the Falling Walls conference 2018, Berlin, Germany.
- 30 Oct 2018 – 1 Nov 2018. Aparna Lalingkar and Raksha P S presented posters titled "Learning Navigator – A Platform for Navigated Social Learning" and "Designing the Cogno – Web Observatory: To Characterise the Dynamics of Online Social Cognition" respectively at the 14th FICCI HIGHER EDUCATION SUMMIT 2018, at Vigyan Bhavan, New Delhi.
- 22-26 Oct 2018. Chaitali Diwan presented her work "Computing Exposition Coherence of Learning Resources" at the 17th International Conference on Ontologies, Databases and Applications of Semantics (ODBASE 2018), Valletta, Malta.
- 15 Oct 2018. Prof Srinath Srinivasa, Raksha P S, Chaitali Diwan presented a talk on "Understanding a post-web world" at Samvaad, IIIT Bangalore.
- 29 Sept 2018. Article published in New Indian Express regarding the Web Observatory project at WSL. <http://www.newindianexpress.com/cities/bengaluru/2018/sep/29/web-observatory-at-iiit-b-aims-to-check-fake-news-and-trends-1878448.html>
- 27 Sept 2018. Prof Sridhar Mandyam participated in the panel discussion on "Leverage Cognitive Computing to address Challenges in Digital Empowerment" as a part of Symposium on "Cognitive Computing and Social Innovation" conducted by IIIT Bangalore and Mphasis. Praseeda moderated this panel discussion.
- 6 Sept 2018. Chaitali Diwan successfully cleared her comprehensive exam.
- 9-12 July. Aparna Lalingkar presented poster of her work "Deriving semantics of learning mediation" at the 18th IEEE International Conference on Advanced Learning Technologies (ICALT) at IIT Bombay.
- 9-11 July. Sharath Srivatsa presented his work "Narrative Plot Comparison Based on a Bag-of-actors Document Model" in 29th ACM Conference on Hypertext and Social Media (ACM HT'18) at Baltimore, USA.
- 10-11 July. Raksha P S attended "InDITA conference on Digital Inclusion through Trust and Agency" held at IIITB. She also hosted a session named "Effects of Digital Identities (multiple) on Human Cognition or Behavior". Key points of the session can be found in this link: <http://wsl.iiitb.ac.in/wordpress/wp-content/uploads/2018/07/summary.pdf>.
- 21-25 May 2018. Prof Srinath Srinivasa visited Web Science Institute, University of Southampton and City University of London, United Kingdom. Also presented a talk titled "Many Worlds on a Frame, Characterizing online social cognition" at the University of Southampton.
- 18 May 2018. Asha Subramanian successfully defended her Thesis titled "Semantic Integration And Knowledge Representation Of Open Data, Powered By Linked Open Data".
- 15 May 2018. WSL. "Web Science Lab Workshop" at IIIT Bangalore discussing the research activities happening in the lab.
- 14 May 2018. Dr Prasad Ram, CEO of Gooru Learning visited Gooru Labs at IIITB for research collaborations and discussions.
- 26 April 2018. Project Reviews of all the projects in WSL.
- 13 April 2018. Jaya Appukuttan presented her seminar on the state-of-the-art and the thesis proposal entitled, "Semantic Summarization of User Generated Short Reports".
- 3rd April 2018. Aravindh Raman from King's College London presented his work "Content Delivery at the Edge: Possibilities and Solutions" at IIIT-Bangalore.
- 2nd April 2018. Prof. Oliver Guenther, President of the University of Potsdam, Germany visited IIIT-Bangalore and Gooru Labs. He delivered a talk "Defining a University Strategy – A European Perspective".
- 5-9 March 2018. Prof. Srinath Srinivasa visited Gooru HQ at Redwood City, California for research and collaboration.
- 12th Jan 2018. Dr Prasad Ram, CEO of Gooru Learning visited Gooru Labs at IIITB and other teams in India. Several discussion meetings held at Gooru labs, whose minutes can be found in Gooru Knowledge Base.
- 11–13 Jan 2018. Raksha P S, Chaitali Diwan, Praseeda Kalkur. Participated in the 18th International Conference on Management of Data and Data Science (COMAD-CODS) at Goa, India.
- 3 Jan 2018. Dmytro Karamshuk, Senior Data Scientist at Skyscanner, presented his work on "Bridging big data and qualitative methods in the social sciences" at Gooru Labs, IIIT-Bangalore.

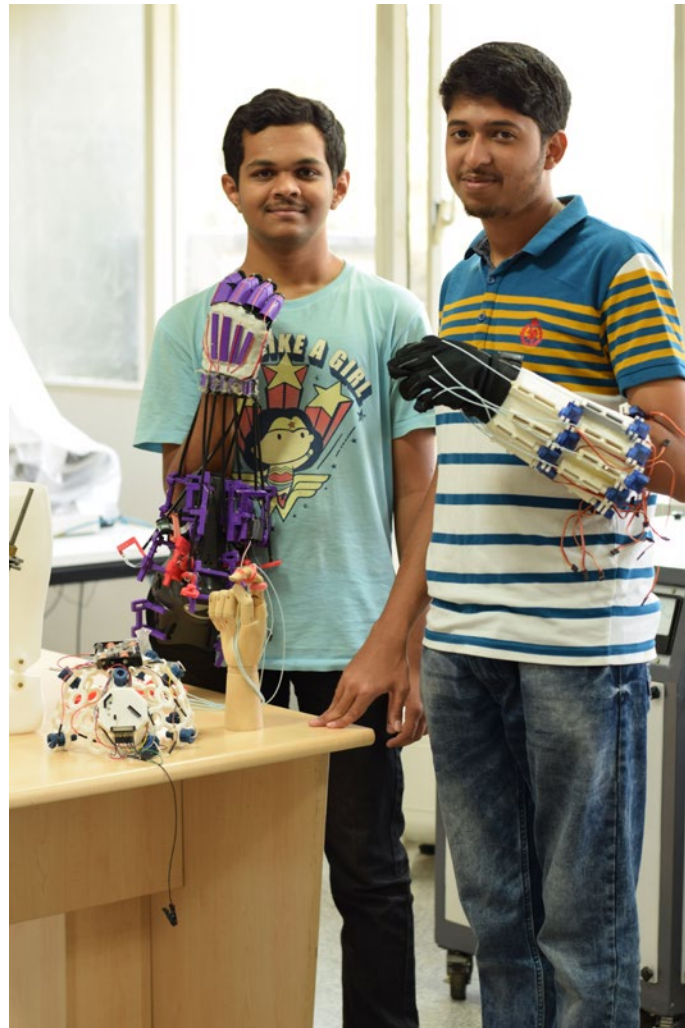
Programming Lab



Programming Lab was started in 2006. The lab is well-equipped with 120 Workstations for student's academic lab courses and research purpose.

- Prep C
- Database systems lab
- Programming I – Python
- Programming II - Java
- C programming
- C++ Programming
- Operating Systems
- Database Systems lab
- Software Engineering Lab
- Data structures & Algorithms Lab
- Computer Architecture Lab

E-Health Research Center



EHRC conducts research on the use of information and communication technologies for meeting the healthcare needs of the under-served and marginal population groups in India and similar regions across the world, with a focus on affordability, accessibility and availability of technology solutions covering [medical] devices, [health] data, and delivery [platforms and models]. Initial focus is in the areas of mental health, malnutrition and disabilities. The work of the center is structured as a set of inter-disciplinary research programs, with participation from faculty members across the research domains at IIIT-B. EHRC is currently funding 3 PhD scholars and 3 MS scholars at IIIT-B, on research into topics in healthcare.

The center works in collaboration with partners including hospitals, research institutes and government organizations. EHRC has entered into a Memorandum of Understanding with NIMHANS, Bangalore. Under this arrangement, a number of collaborative research projects have been initiated. These span topics covering collection, visualization and analysis of data in public health services, development of assistive devices and robotic surgery, artificial intelligence and natural language processing, internet and mobile-based applications for hospital operations and patient care and medical image analysis using machine learning. Solution designing and prototyping is also in progress for a State level public initiative for Mental Health covering digitization of clinical and hospital processes and creation of State level mental health data registry and repository. Research on visual analytics for healthcare informatics is being conducted in collaboration with the Foundation for Research in Health Systems. Research and Development is also being done for developing IT based solutions for helping people with disabilities like visual impairment and Autism Spectrum Disorder (ASD) with partners like Vision Empower and Bubbles Centre for Autism respectively.

Faculty Involved



Prof. T. K. Srikanth
Ph.D. (Cornell University)
Professor & Faculty-in-charge Computing



Dr. Amit Prakash
FPM (Indian Institute of Management
Bangalore)
*Associate Professor and M.Sc. (Digital
Society) Programme Coordinator*



Dr. Jaya Sreevalsan Nair
Ph.D. (University of California, Davis)
Associate Professor



Divya Raj
B.Tech. (IIT Varanasi), PGDIT (IIIT-Bangalore)
*Principal Technical Strategist in the E-Health
Research Centre (EHRC) & Adjunct faculty*



Dr. Madhav Rao
Ph.D. (University of Alabama)
*Associate Professor, iM.Tech Coordinator and
Faculty in-charge-Labs*



Dr. G. Srinivasaraghavan
Ph.D. (Indian Institute of Technology
Kanpur) *Professor & Faculty-in-charge
Internships & Placements*



Dr. Neelam Sinha
Ph.D. (Indian Institute of Science)
Associate Professor



Dr. Subajit Sen
Ph.D. (University of Waterloo)
Associate Professor



Dr. Sachit Rao
Ph.D. (Ohio State University)
*Assistant Professor Faculty-in-charge
Student Exchange*

Centre for Spatial Information Science

Faculty Involved



Dr. S. Rajagopalan

Ph.D. (Indian Institute of Technology Kanpur)
*Professor & Faculty-in-charge Institutional
& Finance*



Prof. Uttam Kumar

Ph.D (IISc. Bangalore)
*Assistant Professor, Warden (Men's Hostel)
& Infosys Foundation Career Development
Chair Professor*

Focus Areas

Geographic Information System (GIS), Spatial Computing, Applied machine learning, Remote sensing, Digital image processing.

Research Publications

- Rahul Ambati, Chakravardhan Reddy, Smit Patel, Sandeep Tadepalli and Uttam Kumar, (2018), Automatic feature selection for Landsat-8 and Sentinel-2 image co-registration using SURF-FANN, In Proceedings of the IEEE Symposium Series on Computational Intelligence (SSCI 2018), Bangalore, India, 18-21 November, 2018.

Research Outcomes

- Uttam Kumar is the Co-PI for the Project titled "Crowd sourced Culture Information Platform" from IIITB which is being jointly executed by Culkey Foundation and Bangalore Printing and Publishing Co. Ltd.
- Uttam Kumar is the Co-PI from IIITB for the Agri-Tech Project (draft under preparation) for possible submission and funding to CSIR, New Delhi. The project is a joint collaboration of IIITB, IIT Dharwad, IIT Jodhpur, CSIR 4th Paradigm Institute Bangalore, ICAR New Delhi and UAS Dharwad.
- Development of an ensemble image classification method.
- Application of fused Landsat and Sentinel space borne satellite data for urban studies.

Seminars

- "Subpixel Learning Algorithms for Estimating Global Land Cover Fractions from Satellite Data Using High Performance Computing" at Samvaad 2018, IIIT Bangalore, November 12, 2018.
- "Subpixel Machine Learning Algorithms for Estimating Global Land Cover Fractions from Remote Sensing Data Using High Performance Computing" at Lake 2018, organized by Indian Institute of Science (IISc) Bangalore, India, November 24, 2018.
- "GRASS GIS and Other Relevant Packages" at Indian Institute of Science (IISc) Bangalore on May 30, 2019.
- "Machine Learning for High Resolution Image Processing" at Department of Computer Science and Engineering, Sri Jayachamarajendra College of Engineering, Mysore, June 15, 2019.
- "Linear Regression and Correlation", at R V College of Engineering, Bangalore in the AICTE Sponsored Two Weeks Faculty Development Programme on Data Science and Deep Learning, July 19, 2019.
- "Pattern Recognition and Computer Vision for Global Challenges" at REVA University, Bangalore in the Faculty Development Program (FDP) on Computer Vision and Pattern Recognition, July 29, 2019.

Sports 2019-20

International Yoga Day

If you have a lot of waste on your waist, reach out to Yoga! This is essentially what IIITBians did on Friday morning, as they celebrated International Yoga day on the campus. Students, staff and faculty, all clapped and danced to the tunes of 'Krishna Govinda' to kick-start an hour-long Yoga session.

Virabhadrasana (warrior pose), chakrasana (wheel pose), katichakrasana (spinal twist pose) and chin mudra were some of the poses that were practiced. "Yoga essentially means 'union'. The practice is analogue to playing a musical instrument like guitar. If you do not fine tune the guitar, the music will not be pleasant to your ears. Similarly, yoga teaches one to fine tune with oneself and with nature," said Kumarasimha N, yoga instructor, Art of Living.



After kicking away all the negativity through various poses, the IIITBians moved on to meditation and 'pranayamas'. "As per yoga, law of body is 'effort' and law of mind is 'effortlessness'. Secret of mental fitness is relaxation and meditation is the heights of relaxation your mind can achieve. Three golden rules of meditation are "I want nothing", "I do nothing" and "I am nothing". Meditation is about defocusing," said Kumarasimha.

Many attended the session with the aim of inculcating a healthy lifestyle. "I have been looking for some form of exercise or meditation to calm and relax my mind. The 'aasanas' taught in today's event were easy to follow and can be used at home or at work too. I have never been to a formal yoga session, but I enjoyed today's class," said Apurva Kulkarni, a PhD student at IIITB.

Run Bhoomi



The institute has taken up the initiative to protect and revive lakes in Bengaluru through 'Run Bhoomi', a six km annual run. The fund raised from the event is used to revive Doddathogur Lake in Konappana Agrahara.

Dean's List



International Institute of Information Technology Bangalore

Dean's List (M.Sc. (Digital Society))
June 2019

The Dean's List at IIIT-B honors the students of MSc (Digital Society) who have attained a cumulative GPA of 3.75 or above. The list is updated annually.

MSc (Digital Society)

Roll No	Name	CGPA
DT2017004	Dipanjan Saha	
DT2017006	Pradyumna Taduri	

Prof. Chandrashekar Ramanathan
Dean (Academics)

Prof. Amit Prakash
Co-ordinator M.Sc. (Digital Society)

Prof. Amit Chattopadhyay
Faculty Incharge Fellowship



International Institute of Information Technology Bangalore

Dean's List (Integrated MTech)

June 2019

The Dean's List at IIIT-B honors the students of Integrated Mtech (iMTech) who have attained a cumulative GPA of 3.60 or above. The list is updated annually.

Integrated MTech

Roll No	Name	CGPA
IMT2012036	Reijul Sachdev	
IMT2014004	Ahmad Shayaan	
IMT2014005	Ankita Christine Victor	
IMT2014006	Anshul Gupta	
IMT2014018	G Neha	
IMT2014019	Gaurav Koley	
IMT2014024	Indu Ilanchezian	
IMT2014034	Meghana Kotagiri	
IMT2014040	Pratheeksha Nair	
IMT2014047	Seelapureddy Venkata Rama Aditya Reddy	
IMT2014061	Vadari Dakshayani	

Prof. Chandrashekar Ramanathan
Dean (Academics)

Prof. Madhav Rao
Co-ordinator iMTech Programme

Prof. Amit Chattopadhyay
Faculty Incharge Fellowship



International Institute of Information Technology Bangalore

Dean's List (MTech)

June 2019

The Dean's List at IIIT-B honors the students of MTech who have attained a cumulative GPA of 3.75 or above. The list is updated annually.

Master of Technology

Roll No	Name	CGPA
MT2017023	Anmol Asrani	
MT2017037	Shinde Deepali Deelip	
MT2017041	Veerapuraju Dhanya Akhila	
MT2017054	Jaishankar G M	
MT2017060	Kavya K Puranik	
MT2017095	D Ravi Theja	
MT2017120	Sumitesh Purohit	
SMT2016023	Sulochan Naik	

Prof. Chandrashekar Ramanathan
Dean (Academics)

Prof. Muralidhara V N
Co-ordinator MTech Programme

Prof. Amit Chattopadhyay
Faculty Incharge Fellowship



International Institute of Information Technology Bangalore

Dean's List (Integrated MTech)

June 2019

The Dean's List at IIIT-B honors the students of Integrated MTech (iMTech) who have attained a cumulative GPA of 3.60 or above. The list is updated annually.

Integrated MTech Batch 2015

Roll No	Name	CGPA
IMT2015002	Abhiramon R	
IMT2015003	Aditya Ankush	
IMT2015006	Alavala Deepika	
IMT2015007	Anagha Vishnuvajjala	
IMT2015015	Ghantasala Oormila	
IMT2015032	Potluri Sai Rakshith	
IMT2015044	Utkarsh Agrawal	
IMT2015504	Aparna D Nair	
IMT2015512	Krishna Nagaraja	
IMT2015517	Pranav Aggarwal	
IMT2015523	Vinay Chandrasekhar K	

Prof. Chandrashekar Ramanathan
Dean (Academics)

Prof. Madhav Rao
Co-ordinator iMTech Programme

Prof. Amit Chattopadhyay
Faculty Incharge Fellowship



International Institute of Information Technology Bangalore

Dean's List (Integrated MTech)

June 2019

The Dean's List at IIIT-B honors the students of Integrated Mtech (iMTech) who have attained a cumulative GPA of 3.60 or above. The list is updated annually.

Integrated MTech Batch 2016

Roll No	Name	CGPA
IMT2016001	Gopalakrishnan V	
IMT2016005	Aayush Grover	
IMT2016008	Sunkam Ramprasad Satvik	
IMT2016024	Shobhit Pankaj Behl	
IMT2016025	Akshi	
IMT2016050	Biswesh Mohapatra	
IMT2016052	Aditya Gulati	
IMT2016054	Aditya Shridhar Hegde	
IMT2016057	Pasumarthy Lakshmi Manonmaie	
IMT2016072	Nomula Rohith Yogi	
IMT2016082	Nimisha Garg	
IMT2016110	Dachepalli Soumith Kumar	
IMT2016129	Ananth S	

Prof. Chandrashekar Ramanathan
Dean (Academics)

Prof. Madhav Rao
Co-ordinator iMTech Programme

Prof. Amit Chattopadhyay
Faculty Incharge Fellowship



International Institute of Information Technology Bangalore

Dean's List (Integrated MTech)

June 2019

The Dean's List at IIIT-B honors the students of Integrated Mtech (iMTech) who have attained a cumulative GPA of 3.60 or above. The list is updated annually.

Integrated MTech 2017 Batch

Roll No	Name	CGPA
IMT2017003	Amogh Johri	
IMT2017004	Ananya Appan	
IMT2017013	Deep Inder Mohan	
IMT2017016	Eric John	
IMT2017024	Kaushal Mittal	
IMT2017027	SeelamLalitha	
IMT2017043	Swasti Shreya Mishra	
IMT2017047	Yeddula Sai Dhanush Reddy	
IMT2017521	S Ram	
IMT2017522	Rathin Bhargava	
IMT2017524	Kalyanapu Sailesh	
IMT2017525	S Prasanth	

Prof. Chandrashekar Ramanathan
Dean (Academics)

Prof. Madhav Rao
Co-ordinator iMTech Programme

Prof. Amit Chattopadhyay
Faculty Incharge Fellowship



International Institute of Information Technology Bangalore

Dean's List (Integrated MTech)

June 2019

The Dean's List at IIIT-B honors the students of Integrated Mtech (iMTech) who have attained a cumulative GPA of 3.60 or above. The list is updated annually.

Integrated MTech Batch 2018

Roll No	Name	CGPA
IMT2018004	Agam Kashyap	
IMT2018009	Anish Rajan	
IMT2018010	Veluri Aravind	
IMT2018014	Ayush Sawlani	
IMT2018033	Jishnu Vinod Kumar	
IMT2018036	Khavesh Nagappan	
IMT2018051	Nikitha A N	
IMT2018052	Nipun Goel	
IMT2018059	Rohit Katlaa R	
IMT2018060	Sahaj Kuman Vaghasiya	
IMT2018067	Sama Sai Karthik	
IMT2018504	Arpitha Malavalli Srivathsa	

Prof. Chandrashekar Ramanathan
Dean (Academics)

Prof. Madhav Rao
Co-ordinator iMTech Programme

Prof. Amit Chattopadhyay
Faculty Incharge Fellowship



International Institute of Information Technology Bangalore

Dean's List (MTech)

June 2019

The Dean's List at IIIT-B honors the students of MTech who have attained a cumulative GPA of 3.75 or above. The list is updated annually.

Master of Technology

Roll No	Name	CGPA
MT2018019	Shah Anuj Rajesh	
MT2018126	Tushar V Bharadwaj	
MT2018130	Vasu Bansal	
MT2018510	Karthik S	
MT2018518	Palakurthi Ravali	
MT2018523	Peddineni Siva Mounika	
SMT2017005	Inbarajan P	
SMT2017010	Nischal Jain	
SMT2017023	Sowbarnika Thiruppathiraj	
SMT2017027	Surendra Pandey	
SMT2018013	Narasimha Rao Thurlapati	
SMT2018015	Pavithra Vancheeswaran	
SMT2018025	Yogesh Kochar	

Prof. Chandrashekar Ramanathan
Dean (Academics)

Prof. Muralidhara V N
Co-ordinator MTech Programme

Prof. Amit Chattopadhyay
Faculty Incharge Fellowship



International Institute of Information Technology Bangalore

Dean's List (M.Sc. (Digital Society))
June 2019

The Dean's List at IIIT-B honors the students of MSc (Digital Society) who have attained a cumulative GPA of 3.75 or above. The list is updated annually.

MSc (Digital Society)

Roll No	Name	CGPA
DT2018007	Srravya C	

Prof. Chandrashekar Ramanathan
Dean (Academics)

Prof. Amit Prakash
Co-ordinator M.Sc. (Digital Society)

Prof. Amit Chattopadhyay
Faculty Incharge Fellowship

Finances

International Institute of Information Technology - Bangalore
26/C, Electronics City, Hosur Road, Bangalore - 560 100

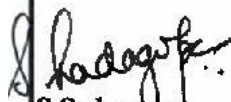
Income and Expenditure Account for the year ended 31st March 2019

31-Mar-18	Income	Sch.No.	31-Mar-19
54,19,09,998	Tuition Fees	M	96,03,23,303
4,23,87,640	Hostel and Facility Fees		4,80,93,624
1,23,88,520	Academic Activities	N	2,33,33,285
1,63,04,990	Interest on Bank Deposits		3,19,03,272
4,85,68,999	Other Receipts	O	4,40,51,690
6,27,14,324	IIIT Project Income	U3	11,85,64,467
72,42,74,471	TOTAL (a)		1,22,62,69,641
31-Mar-18	Expenditure	Sch.No.	31-Mar-19
19,32,42,241	Faculty & Staff Expenses	P	18,20,00,474
73,03,176	Student Expenses	Q	89,92,914
28,92,84,099	Academic Expenses	R	60,55,34,342
5,09,95,466	Infrastructure Expenses	S	6,50,18,113
4,31,59,422	Administrative & General Expenses	T	4,65,01,308
6,24,87,489	IIIT Project Expense	U4	6,76,73,342
64,64,71,892	TOTAL (b)		97,57,20,493
7,78,02,579	Excess of Income before Interest, Depreciation and Appropriation (a-b)		25,05,49,147
43,98,754	Interest on Term Loan		-
7,34,03,826	Excess of Income before Depreciation and Appropriation		25,05,49,147
(2,10,36,419)	Depreciation on Assets	E	(1,97,19,417)
5,23,67,407	Excess of Income before Appropriation		23,08,29,730
68,00,000	Appropriation: Transferred to Student Benevolent Fund		62,27,164
	Appropriation: Transferred to Corpus Fund		10,00,00,000
4,55,67,407	Surplus/ (Deficit) for the year transferred to Revenue Account		12,46,02,566
	Significant Accounting Policies & Notes forming part of Accounts	V	

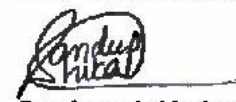
As per our report of even date

For International Institute of Information Technology - Bangalore

For Rao Associates
Chartered Accountants
Firm Reg. No. 003080S


S. Sadagopan
Director




Sandeep S Shekar
Partner
Membership No. 232631

Place: Bangalore
Date: 04.09.2019

Guest Talks

IITB launched "Bangalore on IT", a public lecture series on January 18, 2019. This lecture series is an initiative by the Branding Committee of 2018 who believe that informed and upto-date students and researchers can bring about greater technological change through the dissemination of information via these lectures given by leading scholars and thinkers on all topics related to IT. The inaugural lecture was given by Dr. Marianne Schmid Mast, full professor of Organizational Behavior at HEC at the University of Lausanne. She is a former member of the Swiss National Research Council and acted as president of the Swiss Psychological Society. In 2018, she was named one of the 50 most influential living psychologists.

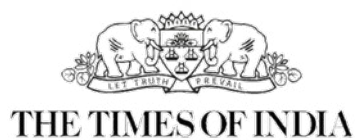
Bangalore on IT



List of talks

- June 30: Talk by Nobel laureate Dr. Mohd. Yunus
- August 08: "The Promise of Privacy in the Age of Visibility" a CITAPP talk by Dr. Pawan Singh, a postdoctoral researcher at the Deakin University, Australia.
- August 13: "Digital Ghars/Bahirs" a CITAPP talk by Prof. Radhika Gajjala, (PhD, University of Pittsburgh, 1998), Professor of Media and Communication and of American Culture Studies at Bowling Green State University, USA.
- August 24: "Work and income security among workers in on-demand digital economy: Issues and challenges in developing economies," a CITAPP talk by Dr. Uma Rani Amara, Senior Economist at the Research Department, International Labour Office (ILO) in Geneva.
- September 4: "Did Demonetization Enable Digital Money Transactions in ePublic Services Delivery? Evidence from Andhra Pradesh, India" by Dr. Sundar Balakrishna, Director of Electronics Services Delivery and CEO, Andhra Pradesh Information Technology Academy, Government of Andhra Pradesh, Vijayawada.
- October 10: "Privacy and Security in Online Social Media (PSOSM)" by Prof. Ponnurangam Kumaraguru, Associate Professor at IIIT-Delhi, Visiting Associate Professor at IIIT Hyderabad.
- November 5: "Fast computation of uncertainty in deep learning" by Dr. Emtiyaz Khan, RIKEN, Tokyo, Japan.
- November 28: "Mathematics in Science and Technology" by Prof. Sujatha Ramadorai, Professor of Mathematics and Canada Research Chair at University of British Columbia, Canada.
- January 8: Prof. Kaliappa Ravindran, CUNY, on "Configuration Management for Resilient Networked Systems".
- January 8: Prof. Sharma Chakravarthy, UT Arlington, on "Graph Analysis: Decomposition- based Analysis Using Multilayer Networks".
- March 20: Dr. Amit Bhardwaj, Haptics and Virtual Reality Laboratory, Pohang University of Science and Technology (POSTECH), South Korea, delivered a lecture on "Data-driven haptic rendering of viscoelastic deformable objects"
- June 25: "Computational Analysis of Infection Spread Through Air Travel" by Prof. Ashok Srinivasan, William Nystul Eminent Scholar Chair and Professor at the University of West Florida and a Fulbright Fellow

IIITB in Media



Important decisions of governing body meetings and annual general body meeting



Meeting	Date of Meeting	DECISIONS
73rd Governing Body Meeting	September 05, 2019	- Mr S Gopalkrishnan as Chairman, Mr R Chandrashekar, IAS (Retd), Mr BV Naidu, Prof Pankaj Chandra and Mr ISN Prasad, IAS as members were elected/re-elected for a period of 3 years. - K S Viswanathan Vice President (Industry Initiatives), NASSCOM and Mr Ajay Kumar, IAS Secretary Defence Production were inducted/ invited to be members - Governing Body recommended placing the Annual Statement of Accounts for consideration and Approval by the IIITB Society in its 20th Annual General Body Meeting - The reappointment of Internal Auditor M/s Rao and Swami, Chartered Accountants with revised fee of Rs 87,500 (existing Rs 75,000) plus applicable taxes and out of pocket expenses per quarter was deliberated during the discussions and approved - The reappointment of statutory auditor M/s Rao Associates, Chartered Accountants with a revised fee of Rs 2.50 Lakhs per annum (existing Rs 2 lakhs) plus applicable taxes and out of pocket expenses was discussed and recommended by the Governing Body for approval during ensuing 20th AGM on September 26, 2018. - Approval of creation of IIITB Student's Benevolent Fund. - The Governing Body accorded approval to the following:- (a) MOSIP project at a total budget out lay of \$14,628,644 (b) Authorization for the Director to enter in to grant agreements with the donors , and other contractors (like Mindtree) (c) Authorization for the Director to enter in to agreements with Governments of countries wanting to adopt MOSIP and (d) Authorization for the Director to constitute various committees to execute the project - The board approved expenditure of a sum of Rs 2 Cr (Two Crores only) as Capital Budget to facilitate augmentation of certain capital assets/infrastructure during the 20th year of IIITB.

74th Governing Body Meeting	November 14, 2018	• The board members approved the membership of Mr Gururaj Deshpande in the category of Patron Member. • The Governing Body approved the constitution of a Sub-Committee to examine the following:- 1. HR Policies of Faculty and Staff. 2. Delegation of Financial Powers Powers 3. Finance Manual 4. Purchase Manual • The Governing Body approved the following members in the committee:- 1. Prof S Rajagopalan 2. Mr Gautham Hegde 3. Cmde SR Sridhar (Retd), Registrar 4. Mr M Pitchiah Adviser Finance • The Governing Body accorded approval to engage the services of Mr M Pitchiah as Adviser (Finance) for a further period of two years with effect from January 01, 2019.
20 TH Annual General Body Meeting	September 26, 2018	• The General Body resolved that the Balance sheet as on March 31, 2018; Income and Expenditure Accounts and Auditor's report for the year ending March 31, 2018 be adopted as recommended by the Governing Body in its 73rd Meeting. • The General Body resolved that M/s. Rao Associates, Chartered Accountants, Bangalore be and hereby appointed as statutory Auditors of the Institute till the conclusion of the Annual General Meeting 2018 with a remuneration of Rs. 2,50,000 (Rupees Two lakhs only) plus taxes and out of pocket expenses" • The General Body approved Mr S Gopalkrishnan as Chairman, Mr R Chandrashekar, IAS (Retd), Mr BV Naidu, Prof Pankaj Chandra and Mr ISN Prasad, IAS as members were elected/re-elected for a period of 3 years. • The General Body also approved K S Viswanathan Vice President (Industry Initiatives), NASSCOM and Mr Ajay Kumar, IAS Secretary Defence Production were inducted/ invited to be members

75th Governing Body Meeting	February 06,2019	• Annual Budget for the financial year 2019-2020 • Annual Pay increase wef April 01, 2019 as follows:- 1. A flat rate of 3% considered on the basic for all regular Faculty and Staff. 2. A Special Allowance for the year 2019-20, fixed at 3 % of the gross salary (Basic plus HRA plus conveyance) drawn as on March 2019, in line with CPI inflation for all regular Faculty and Staff. 3. In case of faculty/ staff who are paid a consolidated fee (consulting faculty, consultants in projects etc.) the fee paid will be increased by 6%. • The Governing Body approved the draft HR Policies be operationalized on trial basis with immediate effect till the next Governing Body Meeting and render a feedback. • The Governing Body approved the draft Finance Manual be operationalized on trial basis with immediate effect till the next Governing Body Meeting and render a feedback. • The Governing Body approved to retain Mindtree Limited as the developer on a Time and Material basis to develop the software for MOSIP project. • The members unanimously felt that new methodologies / strategies need to be adopted to enhance enrolment of female students, without compromising on merit to improve Male: Female ratio.
76th Governing Body Meeting.	July 07,2019	• Approval of award of following for the 19th Convocation :- • Ph.D Degrees • MS (by research) • Degrees • M.Tech Degrees • M.Tech (Sponsored) • M.Sc (Digital Society) • iMTech – B.Tech & M.Tech • Scholarships and Medals

Important Decisions of Senate of IIITB



Meeting Number	Date of meeting	Decisions
63rd Meeting	25/07/2018	More electives to be introduced for Integrated M.Tech. programme in 5th Semester under Choice-Based-Credit-System
64TH Meeting	10/10/2018	- The Senate noted the list of students admitted for research programme during the year - August 2018 batch. - Senate approved the course EC 509 Analog Circuits and Systems course which is an elective course open to M.Tech(ECE) and Integrated M.Tech. (ECE) students for change of structure from L:T:P structure of 3:0:1 to 2:0:2.
65th Meeting	05/12/2018	- The Senate approved the Course Proposal on 'Digital Sociology' submitted by Prof Bidisha Chaudhuri. - The Senate recommended to the Governing Body for conferring the Master of Science by Research degree to Nandakishore K N MS2015007 and Surabhi Jha, MS2014007 - The Senate approved the Course Proposal on 'News Media Literacies' submitted by Prof Preeti Mudliar
66th Meeting	03/04/2019	- The Senate recommended to the Governing Body for conferring the Master of Science by Research Degree to Ms Sunita Katre. - The Senate recommended to the Governing Body for conferring the Master of Technology degree to two Samsung students Narasimman Subburayalu and Chandan Swarup Patra
68th Meeting	19/06/2019	- The Senate recommended to the Governing Body award of the following degrees in the 19th Convocation to: - Ph.D - Master of Science by research - Master of Technology -Master of Technology to Samsung students -M.Sc (Digital Society) -Master of Technology and Bachelor of Technology to Integrated MTech students -Scholarships and Medals - Consideration and approval of changes made in Master of Science by Research Manual with regard to title "Special admission to PhD programme"
69th Meeting	24/07/2019	- The Senate recommended to the Governing Body for conferring the PHD Degree to Ramakrishnan Raman - The Senate approved the Course proposal for an elective CS 734 Program Analysis for Software Engineering submitted by Prof Sujit Kumar Chakrabarti

Infrastructure



New innovation center



Computer lab capacity enhanced by 20%



Activated 11.5 KVA Solar electricity generation

IMPORTANT MoUs SIGNED DURING THE ACADEMIC YEAR 2018-19

1. With **Ppyrus India Pvt. Ltd.** Chennai on September 7, 2018 to facilitate examinations in IIITB in a paperless digital mode of exam delivery.
2. With **Fidelity Business Services India Pvt. Ltd** on September 10, 2018 to support Social welfare activities, specifically focused to address the lack of adequate STEM (Science Technology Engineering and Math) content on Learning Management Systems (LMS) for the schools which are accessible to the visually impaired students and teachers. It envisages to provide the necessary content and training mechanism required by the students for every lesson in the curriculum.
3. With **Archive of Indian Music Bangalore** on September 14, 2018 with an intent to set up a branch in IIIT Bangalore for archiving Indian music in pursuance of supporting IIITB's information Technology and Society area research.
4. With **Centre for study of Science, Technology & Policy** on October 17, 2018 to facilitate a Joint Research Project – ICT application for Nutrition Rehabilitation Center at Vanivilas Hospital.
5. With **NIMHANS** on October 30, 2018 for Collaborative Research in the area of Mental Health Care management. The scope envisages design and development of IT based solutions for enhancing Mental Health care management in Karnataka, design of a scalable system to store and retrieve patient medical data, and enhancing to an integrated Mental Health Management System.
6. With **Institute of Bioinformatics and Applied Biotechnology, Bangalore (IBAB)** on December 18, 2018 to offer a one – year PG Diploma Programme in 'Big Data Biology' (PGDBDB).
7. With **UpGrad Education Pvt. Ltd. Mumbai** on December 18, 2018 to facilitate outcome-based and online programs to be hosted on the UpGrad Platform by way of resource persons and inputs for Content creation of various Programs.
8. With **Huawei Technologies India Pvt. Ltd. Bangalore** on March 31, 2019 for provision of scholarships to academically distinguished students of IIITB.
9. With **Creative Yogi Bangalore** on July 01 2019 , for provision of a world class website focused on communicating brand values and ethos to all stakeholders.
10. With **Dvara Research Foundation Chennai** on July 11, 2019 for sharing Data. The data collector gets the Data anonymised and shares with the foundation, and authorizes the foundation to license the use of such data to independent and credible research. The Institute desires to get access to and obtain a license to use aforementioned Data for the purpose of academic research.
11. With **Yoursdost health solutions pvt. Ltd** on August 01, 2019 for provisioning of Counselling Services and manage well-being of IIITB campus community with the help of a web platform YourDost and also provisioning of on-site counselling services and workshops for the community.
12. With **Greendzine Technologies Pvt. Ltd. Bangalore** on August 1, 2019 for collaborative Research in the field of developing electric vehicles for Industrial and personal mobility market IIIT-B would undertake research problems with the help of its resources and endeavor to solve.
13. With **TCS Foundation Mumbai** on August 9, 2019 with the specific objective of encouraging and supporting world class, innovative, and impact creating Ph.D work at Institute in the areas of computer Engineering, Computer Science, Information Systems, Information Technology, and Software Engineering.
14. With **Philippine Statistics Authority, Philippines** on August 28, 2019 to establish a single national identification system for all citizens and resident aliens of the country under Republic Act. IIIT-B as part of its efforts to promote open source applications towards the goal of Identity for Development has developed the Modular Open Source Identity Platform which will be used for the said purpose as part of the MoU.



26/C, Hosur Road, Electronics City, Bengaluru-560100
Ph. No. +91 80 4140 7777 | Fax No. +91 80 2852 7636
Web : www.iiitb.ac.in