Quarterly (July- September)

NEWSLETTER

October 2019

Quick Glimpse

भारतीय प्रौद्योगिकी संस्थान दिल्ली
INDIAN INSTITUTE OF TECHNOLOGY DELHI

Indian Institute of Technology Delhi

Director's Message

Dear IITD friends and well-wishers,

I am happy to present the October 2019 issue of the Institute's quarterly newsletter to you.

It highlights the major academic achievements, research work, collaborations and extra-curricular activities in the Institute. It also showcases the accolades our alumni have received.

Your comments and suggestions are welcome to make the next issue of the newsletter more interactive.

Warm regards,
V Ramgopal Rao
Director, IIT Delhi

News & Events

IIT Delhi signs MoU with five CSIR laboratories to promote cooperative research

IIT Delhi has entered into an agreement with five of the renowned National Laboratories of CSIR Viz CSIR-Advanced Materials and Processes Research Institute, CSIR-Central Scientific Instruments Organisation, CSIR-Central Electronics Engineering Research Institute, CSIR-Institute of Minerals & Materials Technology, CSIR-National Physical Laboratory of India. The MoU was signed by the Directors of above five laboratories and Prof V. Ramgopal Rao, Director, IIT Delhi on 16th July 2019 in the presence of Dr Shekhar C. Mande, DG, CSIR.

CEL hands over 10 Smart Solar Rickshaws to rickshaw pullers at IITD

In a ceremony held on 19th July 2019 at IIT Delhi, the Central Electronics Limited (CEL), handed over 10 Smart Solar Rickshaws to the rickshaw pullers as part of its CSR activities. These solar powered rickshaws are plying inside the IITD campus. The rickshaws run with a combination of following powers: Solar Power, Human Power (Pedal), Conventional Electrical Power (Optional).

Globalization of IIT Delhi: New Opportunities for Higher Studies in India

IIT Delhi organised a Summit Meeting on "Globalization of IIT Delhi: New Opportunities for Higher Studies in India" on 24th July 2019. One of the key objectives of the Summit Meeting attended by the Ambassadors and Education & Cultural Attache of various nations to India was to explore the possibilities of attracting aspiring students from different countries to take admissions for postgraduate and doctoral studies at IIT Delhi.

Centre for Sensors, Instrumentation and Cyber-Physical System Engineering inaugurated

IIT Delhi inaugurated the Centre for Sensors, Instrumentation and Cyber Physical System Engineering (SeNSE) on 06 August 2019. SeNSE, an interdisciplinary unit, has emerged from the Institute's erstwhile Instrument Design Development Centre (IDDC). In keeping with modern trends, industrial/societal expectations and the national needs, SeNSE will focus on research in Sensors Technologies, Instrumentation and Cyber Physical Systems.

IIT Delhi, DESMI sign MoU to set up DESMI Centre of Excellence

IIT Delhi and Denmark-based DESMI have entered into a partnership under the aegis of the Office of the Principal Scientific Advisor (PSA) to setup 'DESMI Centre of Excellence on Waste to Wealth'. The objective of the DESMI Center for Excellence (CoE) is removal of floating debris from drains like Babarpur, Barapullah and other water bodies in Delhi and generate resource from the mixed waste feedstock collected.

DST selects IIT Delhi to set up SATHI

A high level Expert Committee constituted by the Department of Science and Technology (DST), Govt. of India, has selected IIT Delhi for setting up 'Sophisticated Analytical and Technical Help Institute' (SATHI). The centre has been awarded to IIT Delhi in recognition of outstanding performance of the institute in the area of research and development, managerial/ administrative capability, infrastructure availability etc. To set up SATHI, DST will provide Rs 125 Crore, mostly non-recurring grants, to IIT Delhi in next three financial years starting from 2019-2020.

TechEx - Technology Exhibition at IIT Delhi

Union HRD Minister, Shri Ramesh Pokhriyal 'Nishank' inaugurated TechEx - technology exhibition at IIT Delhi on 4th August 2019. TechEx was organized to demonstrate products and prototypes developed under two flagship schemes of the Ministry of Human Resource Development (MHRD) namely IMPacting Research, INnovation and Technology (IMPRINT) and Uchhatar Avishkar Yojana (UAY).

News & Events

IIT Delhi celebrates 73rd Independence Day

IIT Delhi celebrated 73rd Independence Day with fervour and enthusiasm. On this occasion, IIT Delhi Director presented the Sansthan Incentive Awards to 15 employees and Shri Ram Rishi Singh and Mrs. Malti Singh Memorial Staff Cash Awards for the year 2018 to two employees of the Institute who performed exceedingly well.

IIT Delhi celebrates Institute Day

Institute Day was celebrated at IIT Delhi on 16 August 2019. On this occasion, IIT Delhi along with Central Electronics Limited honoured Prof S.K. Koul and Prof Vinod Chandra (senior IITD faculty) for the contributions made by them in research that could be successfully translated to the industry (CEL).

IIT Delhi crowdsources money to establish Prof. Anshul Kumar Chair

IIT Delhi has crowdsourced money from alumni donors to establish a Chair in the name of distinguished faculty member Prof Anshul Kumar. In recognition of his distinguished service to IIT Delhi, over 50 alumni donors came together in 2018-19 to fund the Prof. Anshul Kumar Chair in the areas of Computer Architecture and Electronic Design Automation. He has played a key role in the establishment and growth of the Computer Science and Engineering (CSE) department in IIT Delhi as well as in the growth of VLSI Design/EDA in India.

IIT Delhi, JNU sign MoU for academic cooperation

IIT Delhi and Jawaharlal Nehru University, New Delhi have signed an MoU for academic cooperation. The MoU, signed on 26 Sept 2019, intends to further the academic objectives of each institution and to promote better understanding between their faculty and students. Under this MoU, the two institutions will mainly focus on enabling postgraduate, including PhD students, to enroll for courses at the other institution and joint research activities.

IIT Delhi celebrates International Year of Periodic Table (IYPT 2019)

To celebrate the IYPT, IIT Delhi and RSC (London) jointly organized a Public Lecture on the topic "Why is Mendeleev so Important to Chemistry?" by Prof. Swaminathan Sivaram, Padma Shri and former Director of NCL (Pune) on 30th August 2019. Prof. Sivaram nicely explained the origin and evolution of Periodic Table and provided deep insight into how Mendeleev came up with the idea of arranging the chemical elements using their physiochemical properties.

SIRe opening up new fields of research and boosting innovation eco system

The School of Interdisciplinary Research (SIRe) was founded in October 2017 as a virtual school at IIT Delhi to strengthen strategic interdisciplinary areas on fundamental and societal issues. Speaking on the occasion of launching an all new website (http://sire.iitd.ac.in/) of the school on 02 Sept 2019, Prof V. Ramgopal Rao, Director, IIT Delhi said, "The future of research and innovation will be at the intersection of different disciplines. Institutions need to create mechanisms for faculty and students to interact with researchers who are working outside of their domains of expertise. This will help in opening up new fields of research and boost the innovation eco system. SIRe at IIT Delhi is doing this effectively."

Unnat Bharat Abhiyan: IIT Delhi conducts orientation workshop for participating institutes

IIT Delhi in the capacity of Regional Coordinating Institute (RCI) for NCR Region, conducted an Orientation Workshop for Participating Institutes on 24th Sept 2019 to initiate work in adopted village clusters under Unnat Bharat Abhiyan. 67 participants from Higher Educational Institutes from NCR region attended the workshop. Prof. V.K. Vijay, National Coordinator, Unnat Bharat Abhiyan (UBA) gave a detailed presentation on UBA and highlighted the importance of the progress and paradigm in the county.
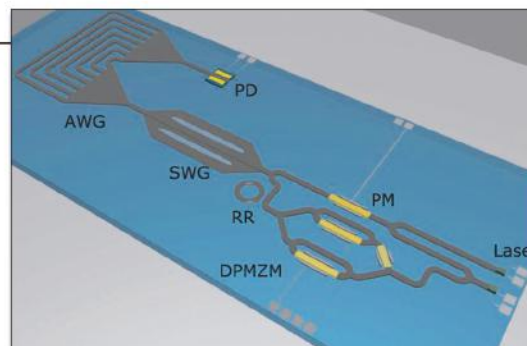
Research & Innovation

IIT Delhi researchers develop first of its kind machine learning software - Python for Glass Genomics (PyGGi)

How many of us have wished for mobile phone screens or glass utensils or window panes that resist damage? Despite two thousand years of usage, developing glasses with tailored properties is still an open challenge. To address this problem, IITD researchers led by Prof N. M. Anoop Krishnan, Civil Engg Dept. and Prof Hariprasad Kodamana, Chemical Engg Dept. have developed a first of its kind machine learning software - Python for Glass Genomics (PyGGi) for predicting and optimizing glass compositions. PyGGi will allow researchers and companies to easily predict glasses with superior properties like scratch resistance and crack resistance at the tap of a button.
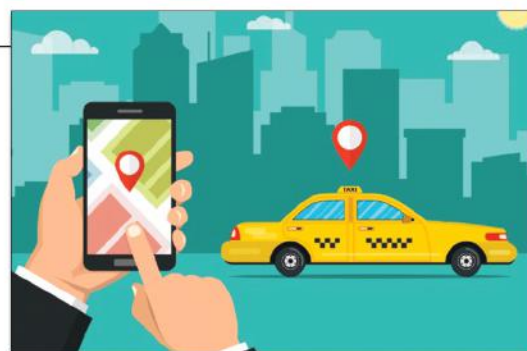

Miniature chips use sound and light to improve wireless communications

For current and future wireless communication networks, various beams would need to be steered from one user to another using the concept of phased array antennas. These typically require multiple antennas with elements known as phase shifters. However, as the required bandwidth, and frequencies of operation rises, current electronic phase shifters cannot keep up with the required demands. Prof Amol Choudhary, Dept. of Electrical Engineering, IIT Delhi, in collaboration with Researchers at the University of Sydney, University of Twente and industrial partners have used optical techniques to demonstrate phase shifters over wide bandwidth using low optical powers.
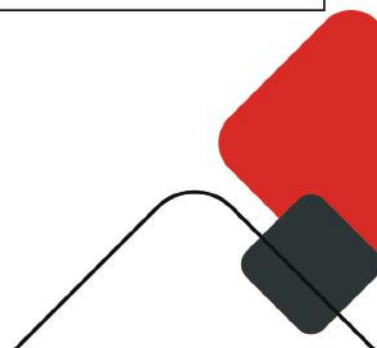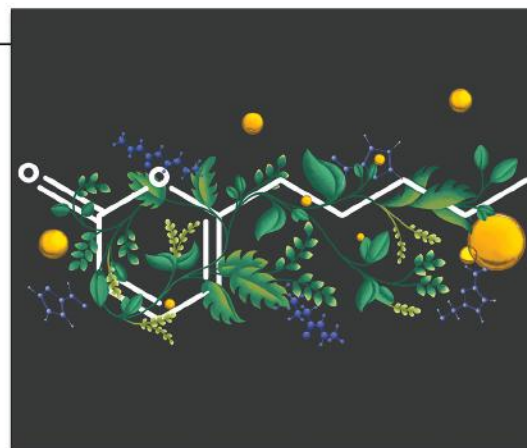

Beyond shortest paths: Route recommendations for ride-sharing

Researchers at IIT Delhi led by Prof Amitabha Bagchi, Associate Professor, CSE have developed an algorithm that can guide taxi drivers to take a route where they can find more commuters for sharing. They believe this algorithm can make shared rides more profitable for drivers and reduce waiting time for commuters as well. The new algorithm is more efficient in searching compatibility between ride-orders. Called 'Share' (Sharing with History-Aware Route Recommendations), it finds routes beyond shortest paths and recommends a route that is close in length to the shortest path and offers higher chance of finding a compatible ride-order.

Bio-renewable platform to produce high value chemicals

State-of-the-art technologies applied today to convert biomass into high value fuels and chemicals are based on multi-step catalytic transformation steps, which are difficult to commercialize. In an alternative approach, a technology based on integrated bio and chemo-catalytic reactions is developed, to carry out the desired conversion of biomass in fewer steps, giving higher product yield. In this, 6-amyl-alpha-pyrone (6PP) is produced from the fermentation of waste biomass by Prof Atul Narang's research group at the Department of Biochemical Engineering & Biotechnology. 6PP is catalytically converted into high value chemicals at the Renewable Energy and Chemicals (REC) Lab, advised by Prof. M. Ali Haider at the Department of Chemical Engineering. This work is highlighted on the cover of the journal Green Chemistry and recently also published in ACS Sustainable Chemistry & Engineering.

Research & Innovation

Raised Lines Foundation's bilingual tactile books

Raised Lines Foundation, a non-profit IIT Delhi incubated startup working on developing affordable tactile graphics for persons with visual impairment, has launched three bilingual tactile books (Hindi + English, Print + Braille) including one on Mahatma Gandhi's life titled Father of the Nation Mahatma Gandhi – राष्ट्रपिता महात्मा गांधी. The two other books include: About India - भारत को जानें; Incredible India - अतुल्य भारत. The books are created keeping inclusive setup in mind, therefore all the content is in print along with Braille. These are bilingual books and their content is in English print text along with English Braille on the front side of the page and Hindi print text along with Hindi Braille on the rear side of the page.

Converting plastic waste into diesel

Researchers at IIT Delhi have developed a process for efficiently producing high-quality liquid fuel like diesel using designed reactor setup for the thermo-catalytic cracking of post-consumer plastic waste. The research team led by Prof. K. K. Pant, Dept. of Chemical Engg, Prof S.N. Naik, CRDT and Ms. Uma Dwivedi, Research Scholar are working on a pilot-scale set-up for the 100% conversion of plastic waste into fuel range hydrocarbons (solids, liquids and gases) as an alternative energy source; for the replacement of commercial petroleum compounds.
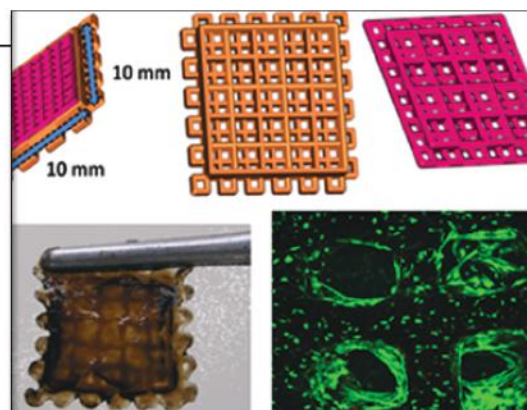

Air pollution monitoring 5G testbed powered by solar energy harvester

Researchers at IIT Delhi Ms Payali Das, Ms Sushmita Ghosh and Mr Sandeep Kaur led by Prof. Swades De and Prof. Shouri Chatterjee have developed an Air Pollution Monitoring 5G Testbed Powered by Solar Energy Harvester. The researchers have designed a prototype for a 5G capable environmental air pollution monitoring system. The system measures concentrations of NO_2, ozone, CO and SO_2 using semiconductor sensors. Further, the system gathers other environmental parameters like temperature, humidity, PM1, PM2.5 and PM10. The prototype is equipped with a GPS subsystem for accurate geo-tagging. The board communicates through Wi-Fi and NB-IoT. The board is also equipped with energy harvesting power management, and is powered through solar energy and battery backup.

3D bioprinted human skin model

Researchers at IIT Delhi led by Prof Sourabh Ghosh, Dept. of Textile & Fiber Engineering have developed, for the first time in India, a 3D bioprinted human skin model, with some structural features similar to that of human skin. The skin model was developed by collaborating with scientists from the ITC Life Sciences and Technology Centre in Bengaluru. The skin constructs could potentially be used to test the efficacy of bioactive molecules, drugs and cosmetic products, and potentially can reduce or replace the use of animals.

Corporate Relations

Third Edition of IIT Delhi Industry Day 2019

The annual flagship event of IIT Delhi, Industry Day 2019 was organised on 21st September, 2019. The inaugural session was addressed by Dr V. K. Paul, Member (Health), NITI Aayog, Prof V. Ramgopal Rao, Director, IIT Delhi, and attended by business leaders, research community, delegates from Finland, Japan and IIT Delhi faculty, staff and students.

Chief Guest Dr V. K. Paul stressed on the idea of launching exchange programmes between medical institutions like AIIMS and IIT Delhi on critical health issues, which can support immersion programmes of IIT Delhi.

Prof V. Ramgopal Rao, Director, IIT Delhi called upon the industry to collaborate with academia. He added, "IIT Delhi is not only looking for collaborations with the industry but IIT Delhi also wants the industry to treat it as part of their innovation ecosystem".

Prof Anurag S. Rathore, Dean, Corporate Relations, IITD said, "A productive academic-industry relationship is the necessary foundation for the long-term development of India".

Key highlights

Footfall: 550+ Industry, 136 Faculty; 44 Staff; 595 Students + 110 Student volunteers

Over 50 elite speakers: Industry Day 2019 witnessed discussions and deliberations by illustrious speakers like Dr. Randeep Guleria, Director, AIIMS; Mr. M.S. Unnikrishnan, MD & CEO, Thermax Ltd.; Mr. R.V. Jasra, Sr. V-P, R&D, Reliance Industries; Mr. Ajit Manocha, President & CEO, SEMI and many other thought leaders on the following five themes:

1. Clean Energy for Sustainable Economy and Environment
2. Sustainable Medical Technologies
3. Emerging Nano and Advanced Materials
4. Sustainable Environment
5. Make in India

Industry Day 2019

More than 25 hands-on products demonstrated

Over 130 industrially relevant posters showcased

Session on 'Women in Science' discussed the need for gender parity in various science disciplines by women personalities from various fields. This was followed by a deep tech panel discussion.

Placement session exclusively for Ph.D. students of the Institute in which more than 10 companies interviewed over 70 students.

'Research Café' sessions were also held on the side-lines to facilitate interaction between IITD research scholars and CXOs of the Industry.

Pre-Industry Day press conference and a media preview of research-based products developed by IITD researchers held on 18 Sept. 2019.

Industrial Research & Development (IRD)

Sponsored Research Projects & Consultancy Jobs Undertaken through IRD Unit during July - September 2019.

- 55 sponsored projects with sanctioned value to the tune of Rs 43.16 Cr.
- 57 consultancy jobs with a total sanctioned value of Rs 4.45 Cr.

High Value Sponsored Research Projects (with sanctioned value Rs 100 Lacs and above) undertaken During July - September 2019

- "Energy Storage Platform on Batteries (ESPOB)" multi-institutional project sponsored by DST (Sanctioned Value for IITD: Rs 565.68 Lacs, Total Sanctioned Value for all Institutes: Rs 1087.07 Lacs).

- "Demonstration of effective Technology solutions to eliminate and use waste from municipal drains in Delhi" sponsored by Office of the Principal Scientific Adviser, GoI (Sanctioned Value: Rs 444.70 Lacs).

- "Study of nanoscale electrical properties of 2D/2D and 2D/3D interfaces for solar energy, photoconductivity and Thermometric applications" sponsored by DST (Sanctioned Value: Rs 431.58 Lacs).

- "Development of freeform and large size aspheric optics for thermal and optical imaging" sponsored by DRDO, Ministry of Defence (Sanctioned Value: Rs 418.49 Lacs).

- "Platform for production of affordable biopharmaceuticals: Ranibizumab as a case study" sponsored by Biotechnology Industry Research Assistance Council (Sanctioned Value: Rs 203.90 Lacs).

- "Scalable spatio-temporal measurement and analysis of air pollution data for Delhi-NCR using vehicle-mounted sensors" sponsored by SERB, DST under IMPRINT scheme (Sanctioned Value: Rs 127.47 Lacs).

Faculty Awards & Achievements

Prof. Sukumar Mishra, Department of Electrical Engineering, has been selected for the IETE-Bimal Bose Award-2019 for his significant contribution to the development of multifunctional inverter for photovoltaic (PV) systems to enhance their penetration in the Indian grid.

Prof. Swades De, Department of Electrical Engineering, has been selected for the IETE-Ram Lal Wadhwa Award-2019 in recognition of his contribution to cross-layer design and optimization towards resource-efficient and energy sustainable communication systems and networks.

Prof. (Ms) Kamlesh Singh, Department of Humanities & Social Sciences, who recently published a book in Hindi, has been selected for "Rajbhasha Gaurav Award". The award is for original book writing in Hindi on 'Gyan-Vigyan' for the Citizens of India. Book Title: "Bharatiya Sandarbh Mein Vyavharik Sakaratmak Manovigyan" (2018) (The book is mainly focused on - Applied Positive Psychology in Indian Setting)

She has also been awarded "Shane J. Lopez Award for Professional Contributions in Positive Psychology" by Section on Positive Psychology, American Psychological Association.
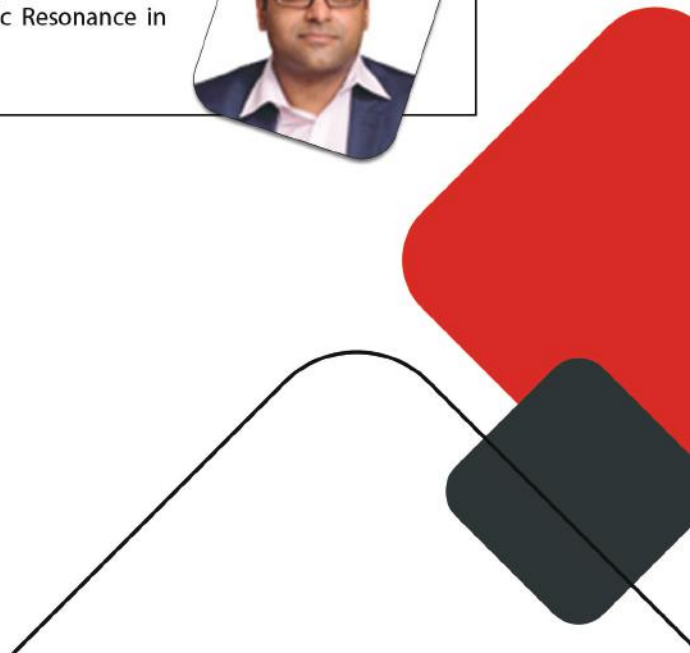
Prof. Manav Bhatnagar, Department of Electrical Engineering, has been awarded "Hari Om Ashram Prerit Dr. Vikram Sarabhai Research Award 2017".

Prof. Anurag Sharma, Department of Physics, has been awarded "JC Bose fellowship".

Prof. Amit Mehndiratta, CBME, has been invited as a Guest Faculty and to deliver a lecture as an honorary speaker at the prestigious International Society of Magnetic Resonance in Medicine (ISMRM).

International Delegations

Prof. Tijjani Muhammad-Bande, President, UN General Assembly visited the Institute on 2nd September 2019.

An 80-member delegation from UKIERI visited the Institute on 3rd September 2019.

A 10-member delegation from Taiwan visited the Institute on 2nd August 2019.

A group of 40 students from various countries under Know India Programme, a flagship initiative of Indian govt., visited the Institute on 20th August 2019.

A 3-member delegation from Australian Trade and Investment Commission, Australia visited the Institute on 17th July 2019.

A 6-member delegation from Shanghai Municipal Commission of Housing, China visited the Institute on 17th July 2019.
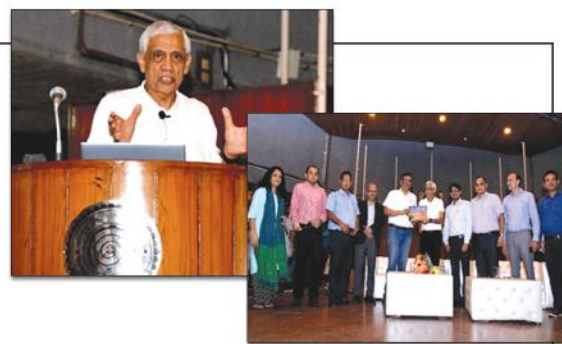
MoUs/Agreements Signed with Reputed Foreign Universities/ Institutes

1. IIT Delhi and Universiti Brunei Darussalam (19th Aug 2019)
2. IIT Delhi and The Royal University of Bhutan (17th Aug 2019)

Alumni News

Interactive Session with Mr. Vinod Khosla

Alumni Affairs and International Programmes (AAIP) organized its flagship event with Mr. Vinod Khosla (B.Tech. in Electrical Engg., 1976), co-founder of Sun Micro systems and founder of Khosla Ventures, and one of the most distinguished alumni of IIT Delhi. His talk, held on 9th August 2019, was entitled: 'Societal Reinvention through Technology'. Mr. Khosla talked about how the world will change by technological innovations and interventions. On being asked about the role of education in entrepreneurship, he said that for a good tech company higher education was an important ingredient.

It all started at IIT Delhi: Mr. Chetan Bhagat

The Alumni Association, IIT Delhi organized a fireside chat with renowned author Mr. Chetan Bhagat (1995-batch, ME) on 4th August 2019. Out of many probable options for interviewers for Mr. Bhagat, Prof Sanjeev Sanghi, Dean, AAIP happened to be his clear choice. Prof Sanghi knows him ever since the author joined IITD because he happens to be amongst the first batches taught by him. As mentioned by Mr. Bhagat himself during the talk, Five Point Someone character, 'Veera' was largely based on Prof Sanghi. During the talk, there was also a discussion on the influence of Five Point Someone and 3 Itdiots in reforming the education system. On this occasion, he was honored with IITD Distinguished Alumni Award by the Institute Director.

Interactive Session with Dr. Mohit Aron

Alumni Affairs & International Programmes office conducted an interactive talk session with one of the most eminent alumni of the Institute, Dr. Mohit Aron. He is founder and CEO of the US-based Enterprise Storage Company, "Cohesity", and co-founder and CTO of a billion-dollar enterprise Nutanix. He graduated from IIT Delhi in 1995 with a B.Tech degree in Computer Science & Engineering. Cohesity was named "Next Billion-Dollar Startup" by Forbes and recognized as one of the Top 25 Disruptors of 2016 by CRN and lately among top 50 Disruptors by CNBC in 2019. He explained the significant factors behind the failure of a majority of ventures and how to avoid them.

Alumni Contribution

The IIT Delhi Alumni have come forward to contribute very generously towards the various causes of the Institute. Some major contributions received during July to September 2019 are as follows:

1. Ramesh Kapur Scholarship -	Rs 59.22L
2. Soumitra Dutta Chair -	Rs 19.69L
3. 1982 Pearl Reunion Endowment Fund* -	Rs 8.71L
4. 1994 Silver Jubilee Reunion Endowment Fund* -	Rs 1.97 Cr
5. Pranab Kumar Memorial Scholarship -	Rs 3.97L
6. Mehra Professorial Chair -	Rs 3.63L
7. Dr. Kewal Krishna Baveja Award -	Rs 3.00L
8. Suyash Chandra Memorial Cash Award -	Rs 2.50L
9. Reba and Pranab Chatterjee Excellence Award -	Rs 1.98L
10. Nitin Gupta Award -	Rs 1.50L
11. Asha Gupta Award -	Rs 1.50L
12. Mudit Sharma Memorial Scholarship -	Rs 1.00L
13. STAYCON* -	Rs 2.07L

*Cumulative Fund

Sports & Culture

Fit India Movement

The Prime Minister of India Shri Narendra Modi launched the Fit India Movement at a ceremony in New Delhi on 29th August 2019 on the occasion of hockey legend Major Dhyan Chand's birth anniversary.

IIT Delhi also organised a number of activities for its faculty, staff and students to mark the occasion. A fitness camp was organised in the morning in which a large number of students participated.

Arrangements were made for the live viewing of the Movement's launching ceremony at the Lecture Hall Complex and hostels.

In the evening, friendly matches of hockey, football, basketball, volleyball, lawn tennis, table tennis, squash, swimming, athletics were organised between the students.
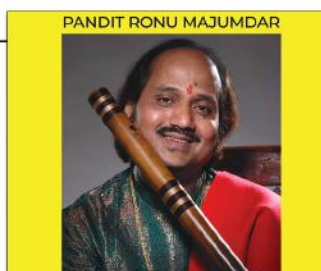

BRCA orientation for freshers

An orientation programme conducted by IIT Delhi's Board for Recreational and Creative Activities (BRCA) on 20th August 2019 provided a glimpse into what the 11 BRCA clubs offer to freshers in the Institute. Each club portrayed their skillset through scintillating performances.

SPIC MACAY, BRCA

- SPIC MACAY, BRCA, IIT Delhi presented Indian Classical Flute Concert by Pandit Ronu Majumdar on 12th September, 2019.
- SPIC MACAY, BRCA, IIT Delhi presented Kathakali concert by Guru Sadanam Krishnankutty on 13th September, 2019.

PANDIT RONU MAJUMDAR

GURU SADANAM KRISHNANKUTTY