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WAVES

The Bharti School Newsletter

"To Develop Telecom Leaders Through Excellence In Education and Research"

Issue : 07 February, 2018

Bharti School in Action:

Activities

- LIRNEasia workshop on "How to engage in Broadband Policy and Regulatory Processes?"
- Inauguration of IoT-Samsung Lab
- Set-up of Massive MIMO Lab
- Set-up of Ericsson IITD 5G CoE
- Marconi Society sponsored Celestini Project India 2017 Competition Awards Ceremony
- Samsung SMARTathon India 2017
- Deep Learning Workshop by NVIDIA
- Publications
- Airtel Lectures
- Talk
- Short term course under TEQIP
- New Faculty join

Honour And Awards

- Bharti Merit Award &Best Women Graduate Award 2015-16

Student Activities

- Placements
- Student and Alumni views
- Students who attended International conferences & Presented Papers
- Students who attended National conferences/ workshops & Presented Papers

Bharti Foundation

- Views from Bharti Foundation

Upcoming Events

- MoU with TSDSI
- Set-up of Telecom Centre of Excellence
- Bharti Merit Award & Best Women Graduate Award 2016-17.





Greetings!

The last year has been an exciting time for the school; a lot of new activities have been spawned and some more are on the anvil. There has been a conscious effort to involve associated faculty by supporting their research activities. Publications, patents, industry collaborations, consultancies, sponsored research and participation in standardization activities have all been encouraged and has resulted in significant traction in the last year. IITD-Ericsson 5G centre of excellence and IITD-Samsung Innovations laboratory were established and have shown great promise. MoU with TSDSI, India's SDO is under discussion, so that Bharti School has an opportunity for increased participation in standardization activities. A Telecom centre of excellence is in the process of being established; negotiations with the Government are underway. Concerted effort has resulted in Bharti School getting funding for establishing an indigenous 5G testbed. The funding is a result of year-long discussion and planning along with 5 other IITs and IISc. All these activities are part of the vision of the school to be a significant contributor to the 5G and IoT ecosystem in the country and worldwide.

Lab upgradations, support for travel and publications have resulted in healthy research output in the last year. Many Bharti Students travelled to international conferences to present their work, which was very well received by the international research community. There has been an effort to recruit adjunct faculty to support the research activities in the school. A position of a technology officer has been created and candidate with appropriate experience and skills will be recruited to provide technical management support to the school research activities.

Students have continued to do well, as is evident from healthy placement figures. A nurturing environment has been created in the school to help both postgraduate students and research scholars to flourish. Lets all continue to significantly contribute to the school and take it to higher levels.

Best wishes,
Dr. Brejesh Lall, Head



ACTIVITIES:

❖ How to Engage in Broadband Policy and Regulatory Processes?

The four day residential course on 'How to engage in Broadband Policy and Regulatory Processes' held on 19-22nd August 2016 in India was the sixth of a series of short courses funded by Ford Foundation. LIRNEasia organized this in collaboration with IIT Delhi, India. Details about the courses are at: http://lirenasia.net/capacity-building/ford-broadband-policy-course/. The main goal is to enable members of government agencies, media and civil-society groups to marshal available research and evidence for enhancing broadband policy and regulatory processes, thereby facilitating and enriching policy discourse on means of increasing broadband access by the poor.













❖ Inauguration of Samsung IoT Lab:

IIT Delhi and Samsung India Open IoT Lab on Campus

Indian Institute of Technology, Delhi and India's biggest consumer electronics firm Samsung India have launched an Internet of Things (IoT) lab at the institute's campus to provide a boost to the technology ecosystem, spruce up academia-industry collaboration and bolster the Digital India initiative.

The Samsung IoT Innovation Lab will endeavour to build a smarter communication landscape for end users. The current focus of the lab is on three major activities including research at IIT Delhi, collaborative research with Samsung and lab exercises for IoT course/training offered by Samsung. The scope of work will be widened in the future and as activity grows at the lab, the size of the lab will be increased to cater to about 30 researchers.

An MOU was signed with between IIT Delhi and Samsung in August 2016 and the lab has been formally inaugurated this year. Equipment for the lab have been provided by Samsung.

“This lab is an apt representation of the institute’s thrust on cutting edge research with industry collaboration,” said Mr. Ramgopal Rao, Director of IIT Delhi.

The IoT lab will carry out research on areas such as sensor data processing, network architecture and embedded intelligence. At present, 15 scholars including 5 doctoral students are working in the new state-of-the-art lab in IIT Delhi, designed for creating transformational ‘device-to-device’ communication.



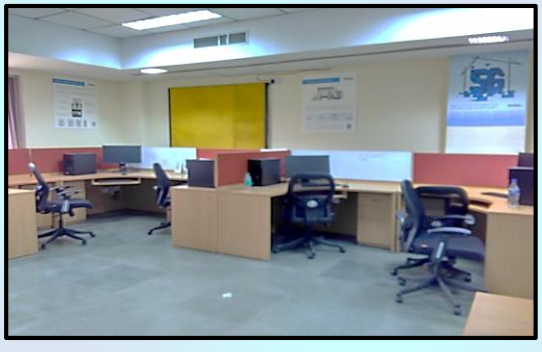




❖ *Set-up of Massive MIMO Lab*

The “Next Generation Wireless Communication Laboratory” is focused on developing next generation wireless communication technologies(e.g., Large and Massive MIMO technologies, Cognitive Radio technologies, Physical Layer Security, Energy harvesting, Green Communication, Device to Device communication, mmWave communication systems). Emphasis will be on building new wireless communication systems and development of new technologies. Facilities set up in this lab will aid technology development, and bring in large amount of research grants from government and industry. This lab is expected to become a leading wireless communication lab in India. It is expected to help faculty devote more attention to technology development and demonstration without taking away too much time from theoretical research. Through M.Tech/ B.Tech projects, students will also get trained in designing new communication technologies. This will lead to skill development which will satisfy industry needs.





❖ Set-up of Ericsson IITD 5G CoE

Ericsson has set up a Centre of Excellence with a 5G/4.5G test bed and incubation centre at IIT Delhi and use this facility to drive the development of the country's IOT ecosystem on the cellular technology. This program has been conceptualized to fast-track realization of Digital India initiatives and aid application development for Indian start-ups and industries. This centre of excellence enables research and development to explore how some of the country's challenges can be addressed with mobile technologies. The whole Test Bed program has a planned duration of 2 years which will be split in two phases:

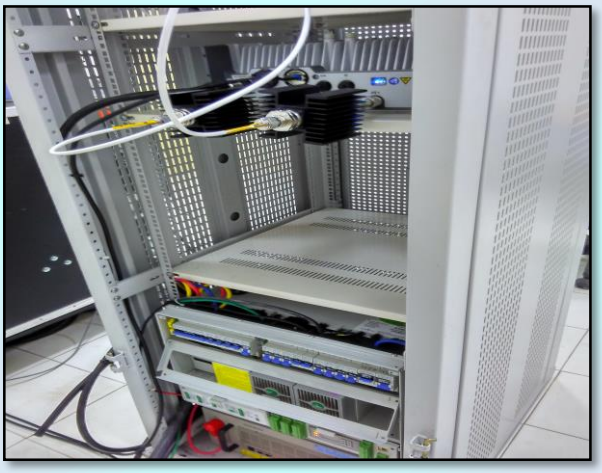
Phase-1: This will consist of deployment of LTE-A (4.5 G) solution with advanced test cases including use cases for IoT.

Phase-2: This will consist of 5G NR deployment and test cases catering to 5G RF characteristics and key uses cases like extreme Broadband, beam tracking etc.

4.5 G system is already up & running in Centre of Excellence use cases like water monitoring has already been demonstrated & going forward the emphasis is to conceptualize more use cases & run analytics from the cellular IOT use case data.

5 G equipment which will be first in India will place India on par with other developed countries in terms of 5G network and application deployment is expected to be installed in Centre of Excellence in Q1/Q2-2018.





❖Marconi Society sponsored Celestini Project India 2017 Competition Awards Ceremony

The Marconi Society Young Scholars (http://marconiyoungscholars.org/) are working to inspire undergraduate students in developing countries to help solve important social problems through the Celestini Program (http://marconiyoungscholars.org/project/celestini/). The Program expanded to India this year in partnership with IIT Delhi, led by IIT Delhi alumnus Dr. Aakanksha Chowdhery (Marconi Young Scholar, Princeton University), Prof. Brejesh Lall (Associate Professor, IIT Delhi and Head, BSTTM IIT Delhi) and Prerana Mukherjee (PhD Research Scholar IIT Delhi). The project goal was to improve road safety in Delhi using video analytics and it was held in two phases in IIT Delhi. 30 students participated in Phase I from several Engineering colleges around India, including Bharati Vidyapeeth College of Engineering, IIT Delhi, IIT Gandhinagar, IIT Madras, Indira Gandhi Delhi Technical University, Jaypee Institute of Information Technology, MAIT Delhi, and NIT Delhi. A team of six students from Bharati Vidyapeeth College of Engineering was selected to participate in Phase II where they created a testbed in IIT Delhi, called Drizy, to experiment with collaborative driver assistance to prevent collisions with pedestrians and other vehicles. To detect vehicle-to-pedestrian collisions, the system uses cameras connected to Raspberry Pis. To detect vehicle-to-vehicle collisions, a mobile phone application sends vehicular location data to cloud and receives alerts when other vehicles are in potential collision trajectory. The poster presentation was accepted at top-tier ACM MobiCom conference. The concluding ceremony was held on Nov 10 where the Vice Chairman of Marconi Society, Dr. Robert Tkach, gave inaugural address. The ceremony was attended by IIT Delhi's Deputy Director Prof. M. Balakrishnan, Dean R&D Prof. B.R.Mehta, HOD Electrical Engineering Prof. S. D. Joshi, and HOD School of IT Prof. Prem Kalra as well as industry partners from Samsung, Ericsson, and Google. The winning team was awarded a certificate with a cash prize of $1500.







❖ *Samsung SMARTathon India 2017 – Coding the Smartest way*

Samsung R&D Institute-Delhi recently organized a national level SMARTathon (24 hr. contest on Advanced S/W development and coding) inviting the participants from most of the premier engineering institutes of India. It was conducted from Nov 30, 2017~ Dec 1, 2017. The event was a great success and was principally aimed at generating large interest among the student community of various IITs and to bring together the young talent in a unified forum. The contest was hosted at India's top tech institute, Indian Institute of Technology-Delhi (IIT-Delhi), in collaboration with FITT (Foundation for Innovation and Technology Transfer).



❖Deep Learning Workshop by NVIDIA:

"DEEP LEARNING WORKSHOP" by NVIDIA Expert was organized on 28th November in LH-121 at IIT Delhi. Prof Brejesh Lall, Head of Bharti School of Telecom Technology and Management coordinated for this workshop. Aim of this workshop was to explore Deep Learning platform and strengthen Industry Academia Interaction. One day workshop was attended by fifty students of IIT Delhi. Industry professionals, data scientists, and researchers who are looking to solve the world's most challenging problems with deep learning also participated in this workshop. Instructor (Mr. Bharat Kumar) started the session with introduction of AI, Machine Learning and need of AI policy. He continued the session with a focus on Deep Learning, which is 4th industrial revolution. He touched upon many important concepts of deep learning. He further discussed about widely used open-source frameworks as well as NVIDIA's latest GPU-accelerated deep learning platforms. He introduced meta-level framework DIGITS and provided hands on for designing, training, and deploying neural networks for image classification and segmentation on MNIST and Pedestrian Dataset.

❖Publications since 21st SAB:

- C. Singhal and S. De, "Energy-efficient and QoE-aware TV broadcast in next-generation hetero-geneous networks"; (accepted, IEEE Commun. Mag., Sep. 2016).
- A. Gupta, S. Agarwal, and S. De, "A new spectrum occupancy model for 802.11 WLAN traffic"; (accepted, IEEE Commun. Lett., Aug. 2016).
- S. Agarwal and S. De, "Cognitive multihoming system for energy and cost aware video transmission"; (accepted, IEEE Trans. Cognitive Commun. and Netw., Aug. 2016).
- Anjitha Viswanath, V. K. Jain, Subrat Kar, "Aperture averaging and receiver diversity for FSO downlink in presence of atmospheric turbulence and weather conditions for OOK, M-PPM and M-DPPM schemes"; accepted for publication in Optical and Quantum Electronics (Aug 2016).
- Anjitha Viswanath, V. K. Jain, Subrat Kar, "Transmitter Spatial Diversity for FSO Uplink in Presence of Atmospheric Turbulence and Weather Conditions for Different IM Schemes"; to Journal of Optical Communications (JOC) [accepted, July 2016].
- Pooja Gopal, Virander Kumar Jain, Subrat Kar, "Performance Enhancement of Free Space Optical Satellite Uplink with Transmitter Spatial Diversity Technique", accepted for publication in Optical and Quantum Electronics. Manuscript number, OQEL-D-15-00496R1.
- Pooja Gopal, Virander Kumar Jain, Subrat Kar, "Capacity Improvement of a Free Space Optical Satellite Uplink using Transmitter Power and Rate Adaptation"; Journal of Optical Communications. ISSN (Online) 2191-6322, ISSN (Print) 0173-4911, DOI: 10.1515/joc-2016-0001, July 2016.
- Pooja Gopal, Virander Kumar Jain, Subrat Kar, "Performance improvement of FSO satellite downlink using aperture averaging and receiver spatial diversity"; IET Optoelectronics, 2016, DOI: 10.1049/iet-opt.2015.0102 IET Digital Library.
- Pratik Chakraborty and Shankar Prakriya, "Secrecy Outage Performance of a Cooperative Cognitive Relay Network"; IEEE Communications Letters, to appear.
- Pooja Gopal, V.K.Jain, and Subrat Kar, "Performance enhancement of free space optical satellite uplink with transmitter spatial diversity technique"; Optical and Quantum Electronics Vol.48, No.8, pp.1-14, July 2016.
- Pooja Gopal, V.K.Jain, and Subrat Kar, "Performance improvement of FSO satellite downlink using aperture averaging and receiver spatial diversity"; IET Optoelectronics Vol.10, No.4, pp.119-127, August 2016.
- Anjitha Viswanath, V.K.Jain, and Subrat Kar, "Aperture averaging and receiver diversity for FSO downlink in presence of atmospheric turbulence and weather conditions for OOK, M-PPM and M-DPPM schemes"; Optical and Quantum Electronics Vol.48, No.9, pp.1-20, August 2016.
- A.Viswanath, V.K.Jain, and S.Kar, "Performance Enhancement of FSO Uplink with Transmit Diversity in Presence of Various Atmospheric Conditions for Different IM Schemes"; Journal of Optical Communications (Under print).
- Bhupendra Kumar and Shankar Prakriya, "Rate Performance of Adaptive Link Selection in Buffer-Aided Cognitive Relay Networks"; 37th IEEE Sarnoff Symposium – Newark, New Jersey Sept 19-21, 2016.
- A. Garg, V. Venu, and M. R. Bhatnagar, "One Bit Feedback Based Diagonal Precoding for Non-Orthogonal Space-Time Block Codes"; IEEE Wireless Commun. Let., accepted for publication.

- Ajay Kumar, Ravi Shankar, Alok Choudhary and Laxman S. Thakur, 2016 “A big data MapReduce framework for fault diagnosis in cloud-based manufacturing”; accepted in: International Journal of Production Research, DOI: 10.1080/00207543.2016.1153166
- Garima Mishra, S. Dharmaraja and Subrat Kar, “Reducing Session Establishment Delay using Timed out Packets in SIP Signaling Network, International Journal of Communication Systems”; 29 (2016) pp. 262 - 276. (Full paper).
- BR Manoj, RK Mallik, MR Bhatnagar, “Buffer-aided multi-hop DF cooperative networks: A state-clustering based approach”, IEEE Transactions on Communications, Dec, 2016.
- BR Manoj, RK Mallik, MR Bhatnagar, “Buffer-aided max-link relay selection in multi-hop DF cooperative networks”, Vehicular Technology Conference (VTC-Fall), 2016, 18/9/2016.
- A. Jindal and R. Bose, “Resource Allocation in Secure Multicarrier AF Relay System under Individual Power Constraints”, IEEE Transactions on Vehicular Technology, Jun. 2017, DOI: 10.1109/TVT.2016.2623747
- A. Mittal, C. Kundu,R. Bose and R.K. Shevgaonkar, “Entropy Based Image Segmentation for Energy Efficient LTE System with Cloud”, Wireless Personal Communications, vol. 92, no. 3,pp. 1145–1162, Feb. 2017.
- A Yadav, S Kar, VK Jain, “Study on Performance of 1-D and 2-D OCDMA Systems in Presence of Atmospheric Turbulence and Various Weather Conditions” IET Communications, March 2017
- Aditi Gupta, S. Dharmaraja and Subrat Kar, “Delay Efficient load balancing scheme for Component Carrier selection in Carrier Aggregation in LTE-A”, Proceedings of 10th EAI International Conference on Performance Evaluation Methodologies and Tools (ValueTools 2016), Taormina, Italy, October 26–28, 2016, pp. 105 - 108, 2016.
- Sudarshan Mukherjee and Saif Khan Mohammed, “How much Bandpass Filtering is Required in Massive MIMO Basestations”, to appear in IEEE Transactions on Vehicular Technology , Sept., 2016.
- Viswanathan Arunachalam, Garima Mishra and S. Dharmaraja, “Optimal Number of Frames Transmitted in a Sensing Based Opportunistic Spectrum Access”, Physical Communication, 6 (2018) pp. 156 - 161.
- Pratik Chakraborty and Shankar Prakriya, “Performance Optimization of Co-Existing Underlay Secondary Networks,” IEEE PIMRC 2017, Montreal, Canada.
- Pratik Chakraborty and Shankar Prakriya, “Secrecy Performance of an Idle Receiver Assisted Underlay Secondary Network,” IEEE Transactions on Vehicular Technology, to appear.
- Harikrishna Boddapati, Manav Bhatnagar, Nagaraju K, Vemuri Sai Krishna and Shankar Prakriya, “BER Analysis of Improved Path Selection Criterion for Cluster-Based Multi-hop Cooperative Networks,” IEEE ANTS 2016.
- Bhupendra Kumar and Shankar Prakriya, “Rate Performance of Adaptive Link Selection in Buffer-Aided Cognitive Relay Networks,” 37th IEEE Sarnoff Symposium – Newark, New Jersey Sept 19-21, 2016.
- U. V. Dias, and S. Srirangarajan, “Co-Prime Sampling Jitter Analysis”, 25th European Signal Processing Conference (EUSIPCO), Kos Island, Greece, Aug. 2017.
- U. V. Dias, and S. Srirangarajan, “Co-Prime Arrays and Difference Set Analysis”, 25th European Signal Processing Conference (EUSIPCO), Kos Island, Greece, Aug. 2017
- A. Mukhopadhyay, P. S. Rajput, and S. Srirangarajan, “A Smartphone-based Indoor Localisation System Using FM and Wi-Fi Signals”, 25th European Signal Processing Conference (EUSIPCO), Kos Island, Greece, Aug. 2017.
- Ajay Kumar, Ravi Shankar, Alok Choudhary & Lakshman S. Thakur , “(2016) A big data MapReduce framework for fault diagnosis in cloud-based manufacturing”, International Journal of Production Research, 54:23, pp, 7060-7073.
- M. Sharma, S. Chaudhury, and B. Lall, "A novel hybrid kinect-variety based high quality multi-view rendering scheme for glasses-free 3d displays," 2016.
- M. M. Vegad, S. De, and B. Lall, "Analysis of optimal carrier sensing range in wireless ad hoc networks with order dependent capture capability," Wireless Personal Communications, vol. 81, no. 2, pp. 445{472, 2015.
- B. Mukhopadhyay, S. Sarangi, S. Srirangarajan, and S. Kar, “Indoor Localization using Analog Output of Pyroelectric Infrared Sensors”, IEEE Wireless Communications and Networking Conference (WCNC), Barcelona, Spain, Apr. 2018 (to be presented).
- U. V. Dias, and S. Srirangarajan, “Co-Prime Sampling and Cross-Correlation Estimation”, 24th National Conference on Communications (NCC), Hyderabad, India, Feb. 2018 (to be presented).

❖ *Airtel Lectures :*

31st May, 2016

"Case Study of Big Data Analysis for Smart Grid"



By

Prof. Zhu Han,

University of Houston



17th July, 2017

"Disruption in 5G Cellular Systems"



By

Prof. Robert Heath,

President and CEO of MIMO Wireless Inc.



15th September, 2017

" Platform Thinking … Powered by Artificial Intelligence"



By

Ms. Harmeen Mehta,

Global CIO, Bharti Airtel



27th September, 2017

" Internet of Skills – where 5G, Robotics and AI meet"



By

Prof. Mischa Dohler,

Kings College, London



❖ *Talk :*

12th May, 2016

"Cheap approximate localization using FM Radio"



By

Prof. Piyush Kumar,

Visiting Faculty, IIT Delhi



31st March, 2017

"Application of 5G Wireless to Internet of Things (IoT)"



By

Prof. Suresh Borkar,

Armour College of Engineering, Chica



2nd November, 2016



"Modem System Design"

By

Mr. Manav Garg,

Qualcomm



31st January, 2017



"Cognitive Radio for Wireless Communications: Concepts and Applications"

By

Dr. Jae Hong Lee,

Professor, Seoul National University



27th June, 2017



"Design of Modern mm-wave (especially 5G) Transmitters and Power Amplifiers in Silicon and FD SoI CMOS"

By

Dr. Kalyan Bhattacharya,

Associate Professor, Amrita University



14th December, 2017



"5G Wireless Update – Technology, Spectrum, Systems Development and Roll Out Plans"

By

Prof. Arogyaswami Paulraj,

Emeritus Professor, Stanford University



4th January, 2018



"SpooQySats – Enabling space-based quantum key distribution with CubeSats"

By

Prof. Rob Bedington,



❖ *Short Term Course under CEP/QIP:*

We had a short term course under CEP/ QIP (December 17- 19, 2016).

Title: "Optical Fiber / Wireless Communications and Networks".

Bharti School of Telecommunication Technology and Management

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Indian Institute of Technology, Delhi

Presents a CEP & QIP Course on

Optical Fiber/Wireless Communications and Networks

Faculty members of IIT Delhi and industry experts will conduct a 3-day course on Optical Fiber/Wireless Communications and Networks. The topics covered will include:

Recent trends & bandwidth requirements, Introduction to optical communications, Wireless optical communications, Optical networks (WDM and flexi-grid), Optical access networks, Software defined optical networks, Practical deployment issues in optical core and FTTH networks.

This course will also include lab sessions and field visits. This short-term course will enable participants to teach a course on this topic in their institute, and initiate research activities in related areas. On successful completion of the course, participants will be provided with a certificate.

Target Audience:

- Faculty of engineering colleges
- Engineers from optical industry and
- R&D institutions

Important Dates

Course Dates: 17th – 19th Dec, 2016 (9:00 AM to 5:00 PM)
Last Date for Registration: 10th Dec, 2016 (for QIP only)

❖*New Faculty*

Four new faculties have become a part of Bharti School:



Dr. Abhishek Dixit
Specialities:

- Optical access networks, Fibre wireless converged networks, Internet of Things.



Dr. Harshan Jagadeesh
Specialities:

- Wireless Networks, Coding Theory, Distributed Storage Networks, Wireless Security, Cyber-Physical Systems.



Dr. Lalan Kumar
Specialities:
- Array Signal processing, Time-frequency Analysis, Blind Source Separation, Digital Signal Processing, Biomedical Signal processing, Speech, Music and Acoustic Signal processing.



Dr. Prathosh A.P.
Specialities:
- Vision and Image Processing audio, Speech and Music Analytics and Learning (Deep Learning, Sequential Modelling and Transfer Learning).

HONOURS AND AWARDS

BHARTI MERIT AWARD AND BEST WOMEN GRADUATE AWARD (2015-16)











STUDENT ACTIVITY

❖ Placements:

M.Tech and MBA Graduates had an excellent placement.

Year 2015

Companies who recruited M.Tech Students:

Oracle, Intel, HSBC, Uhuru Corporation, CDAC, CRL, BBNL, Qualcomm, Tejas Network, Cypress Semiconductor

Average Salary Package: Rs. 12.73 Lac P.A.
Highest salary Offered: Rs. 22 Lac P.A.

Companies who recruited MBA Students:

Brillio, Lava, Amazon, EY, HPCL, IOCL, HP Inc.

Average Salary Package: Rs. 12 Lac P.A.
Highest Salary Offered: Rs. 17.5 Lac P.A.

Year 2016

Companies who recruited M.Tech Students:

Intel, Qualcomm, Marvell Semiconductor, Texas Instruments, Telstra, Accenture, Aadhar (UIDAI)

Average Salary Package: Rs. 15.65 Lac P.A.
Highest salary Offered: Rs. 19.5 Lacs P.A.

Companies who recruited MBA Students:

Placements of MBA students is still undergoing. It is expected that the figures will be higher than last year.

❖ Bharti Students Views:



'My peers are my role models, and my role models are my peers. Which is extraordinary.' This quote by David Levithan was just another sentence for me until I came to IIT Delhi, where I met some of the most talented and motivated individuals working towards a common goal. That, coupled with Bharti School's cutting-edge course on Telecom Tech & Management gave me an unparalleled platform to sharpen and enhance my skills. The expert faculty also inspired me a great deal, making it the most fulfilling two years of my academic journey.

Karan Saxena
2016JTM2077



Being a part of Bharti School was a thorough learning experience that has equipped me with the requisite skills which will help me achieve greater heights in life. Starting from the courses covered in the comprehensive curriculum, to the support of our faculty has added immensely to my knowledge and skill set. The cherry on the cake has been the lab facility offered to us with fully equipped lab, available 24*7. I am thankful to this institute for making me realize my calibre and head towards my goal.

Tanya Bansal
2016JTM2081

❖ Coverage on Alumni :



My overall experience in Bharti School was excellent. I began my journey here in July 2015. In these two years, I gained knowledge as well as skills in both technology and management area. Highly qualified & experienced faculty and well built infrastructure are the two main drivers that makes this department as one of the best department to be in. The best thing about this department is 24x7 availability of labs. Here, I got the environment which kept me motivated throughout this journey & I am thankful to the faculty and staff of IIT Delhi and Bharti School for giving me the opportunity to live my dream and making this journey a worthwhile experience of my life.

Divya Pareek
2015JTM2312



Saurabh Kapoor
2015JTM2322

My journey in Bharti school started in year 2015 as master's graduate student. It was a great honour to be a part of such prestigious school. The culture of the school was to constantly strive towards perfection and excellence. Professor's at school, inculcated an attitude to see life not only engineering, from an ocean like broad perspective.
Two years in the school have brought an immense change in confidence and belief towards my capabilities, as I was one of top academic performers in the school together with many position of responsibilities for IIT Delhi. I am very thankful to the school for making me a part of Bharti family.

❖ *Students who attended International Conferences and Presented Papers :*



1) "Farheen Fauziya" attended conference "OCEANS 16 MTS/ IEEE", held at "Monterey, California, USA" from "19-23 Sep, 2016".
She got her paper published "Channel capacity of a vector sensor based underwater communications systems" and "Higher order statistics based direction of arrival estimation with single acoustic vector sensor in the under-determined case".

2) "Farheen Fauziya" attended conference "OCEANS 17 MTS/ IEEE", held at "Aberdeen, Scotland" from "19-22 June, 2017".
She got her paper published "AoA based Analysis of Vector Sensor Receiver for Underwater Acoustic Communications " , "Vector Transducer based MISO Communications System: Capacity Analysis", "Quantitative analysis of the effect Time Reversal Mirror on coherence bandwidth and delay spread" and "A Generalized Gaussian Noise Receiver for Improved Underwater Communication in Leptokurtic Noise".
3) Farheen Fauziya" attended conference "WUWNet 2017", held at "Halifax, Canada" from "6-8 November, 2017".
She got her paper published ""Path Gain Characterization of Shallow Water Acoustic Channel: A Geometry Based Approach".
4) F. Fauziya, B. Lall, and M. Agrawal, "Vector sensor based channel equalizer for underwater communication systems," in 2017 IEEE 7th Annual Computing and Communication Workshop and Conference (CCWC), January,2017, pp. 1–5.



1) "Manoj BR" attended conference "IEEE Vehicular Technology Conference VTC 2016- Fall", held at "Montreal, Canada" from "18-21 Sep, 2016".
He got his paper published "Buffer- aided max-link relay selection in multi-hop DF cooperative networks".



1) "Nilay Pandey" attended conference "IEEE Global Communication GLOBECOM ", held at "Singapore", from "2-10 December, 2017".
He got his paper published "Truncated Levy statistics for diffusion based molecular communication".



1) "Rachita Gupta" attended conference "International Conference on Green Supply Chain", held at "London, UK" from "10-13 July, 2016".
She got her paper published "Modeling Traceability of Food Supply Chain".
2) "Rachita Gupta" attended conference "Prolog conference", held at "France" from "11-12 May, 2017".
She got her paper published "Modeling Critical Success Factors of Traceability for Food Logistics System". The Paper was awarded "**Young Researcher Award**".
3) "Rachita Gupta" attended conference "INFORMS ANNUAL MEET 2017", held at "Houston" from "22-25 October, 2017".
She got her paper published "Severity Assessment of Food Security Impediments in Food Supply Chain".



"Rojalin" attended conference "Bio EM 2016 Conference", held at "Ghent, Belgium" from "5-10 June, 2016".
She got her paper published "Consumer awareness framework – a risk mitigation architecture of EMF".



"Pratik Chakraborty" attended conference "IEEE PIMRC" held in "Montreal, Canada" from "6-15 October, 2017".
He got his paper published "Performance Optimization of Co-Existing Underlay Secondary Networks".



"Rajesh Kumar Singh" attended conference "EuCAP 2017" held in "Paris, France" from "19-24 March, 2017".
He got his paper published "Novel High Gain Polarization Switchable Rectangular Slot Antenna for L-band Applications".



B. Kumar and S. Prakriya, "Rate performance of adaptive link selection in buffer-aided cognitive relay networks," in Proc. IEEE Sarnoff Symposium, Newark, New Jersey, USA, 19-21 Sept 2016, pp. 172–177.



"Arka Mukherjee" attended conference "OSJ-OSA Joint Symposia on Nanophotonics and Digital Photonics 2017", held at "Tokyo, Japan" from "30 -31 October, 2017".
He got his paper published "Analysis of FSO Link under Atmospheric Turbulence from First Principle".

❖ *Students who attended National Conferences/ Workshops and Presented Papers:*



"Ambika Sharma" attended conference "GSI Annual Conference 2017 (Glaucoma Society of India)", held at "Jaipur, Rajasthan" from "15 - 17 September, 2017".
She got her paper published "Automatic Glaucoma Diagnosis in digital fundus images using optic disc and cup features".



1) "Rajesh Kumar Singh" attended conference "APMC 2016", held at "New Delhi" from "5-9 December 2016".
He got his two papers published "Asymmetric Coupled Polarization Switchable Oscillating Active Integrated Antenna" and "Efficient Null Broadening and Steering Using Slot Antenna Array for Radar Applications".
2) "Rajesh Kumar Singh" attended conference "IMaRC 2017", held at "Ahmedabad" from "11-13 December, 2017."
He got his paper published "Two-Port Reconfigurable Passive Radiator with Switchable Pattern for Active Antenna Application".



"Ramakrishnan S" will be attending conference "NCC2018", to be held at "IIT Hyderabad" in "Feb 2018".
He will get his paper published "Analysis of Computational Complexity and Power Consumption in Cloud Based Heterogeneous RAN".



"Manoj BR " attended conference "23rd National Conference on Communications (NCC)",held at "IIT Madras" from "2-4 March, 2017".



1) "Jyoti Maheshwari" attended conference "IBRO-APRC School on Neuroinformatics and Brain Network Analysis", held at "Kuala Lumpur, Malaysia" from "7-19 August, 2017".
2) "Jyoti Maheshwari" attended conference "IBRO-APRC Singapore Associate School of Neuroscience", held at "Singapore" from "3-7 July, 2017".



"Rachita Gupta" attended conference "XX Annual International Conference of the Society of Operations Management ", held at "Indian Institute of Information Technology & management, Gwalior, Madhya Pradesh" from "22 - 24 December, 2016".
She got her paper published "Technology Integration for Minimizing Inappropriate conduct during Food Logistics".

Bharti Foundation

Bharti Foundation, the philanthropic arm of Bharti Enterprises is committed to implementing and supporting programs in the fields of primary, elementary, senior secondary and higher education benefitting underprivileged children across rural India. With education as its core focus, Bharti Foundation has been working steadfastly since 2000 to enable the cognitive, creative and emotional development of students along with the instilling of values and attitudes of responsible citizenry.

Its flagship initiative, the Satya Bharti School Program, completed a decade of successful implementation in 2016, with several first generation learners, especially girls, continuing to draw benefit from it. The program's strength and scale is reinforced by the Satya Bharti Quality Support Program which hones the extant capacities of teaching personnel and enhances the schooling experience in Government schools. The Satya Bharti Learning Centre Program focuses on bridging the learning gap and mainstreaming out of school children, in close collaboration with State Governments in remote rural terrains. Seeking as always, to be partners in nation building, the Foundation also initiated 'Satya Bharti Abhiyan' to improve sanitation facilities in Ludhiana and 'Nyaya Bharti' to provide legal and financial assistance to underprivileged undertrials as well as first time offenders of petty crimes. Bharti Foundation has till date impacted more than 3,00,000 students, through 2,000 schools/centres, across 13 Indian states, engaging 12,000 educators across 3700 villages through its initiatives.

Bharti Family Pledges 10% of their Wealth (Approx. Rs.7,000 Crores) Towards Philanthropy

The Family has decided to pledge 10% of their wealth, including 3% of their stake in group flagship Bharti Airtel, towards supporting the activities of Bharti Foundation, the Group's philanthropic arm, one of the few professionally managed philanthropic bodies in India. With this commitment, the Bharti Family envisions to significantly step up the scope and reach of Bharti Foundation's activities, and further enable the Foundation to develop and execute innovative development models to support the aspirations of India's underprivileged including students of Satya Bharti Schools. It plans to set up **"Satya Bharti University"**, a world-class University to offer free education to deserving youth from economically weaker sections of society

Announcing the commitment, Sunil Bharti Mittal, Founder and Chairman, Bharti Enterprises and Chairman, Bharti Foundation, said, "*Today is a major milestone in the journey of the Bharti Family. Being first generation entrepreneurs, we feel absolutely privileged that this nation gave us the opportunity to imagine and build world-class businesses. Bharti's DNA has always been about creating a deep positive impact on society through our businesses, and we are proud to have contributed to the India growth story."*

The Satya Bharti University for Science and Technology will complement Bharti Foundation's existing programs in the area of education. The University will have a strong focus on future technologies like AI, Robotics, AR/VR, IoT, in addition to offering degrees in Electrical & Electronics Engineering and Management. It will be a non-profit centre of excellence and will offer free education to a large number of deserving youth from economically weaker sections. It will also promote and fund advanced research with global linkages. It intends to add leading global industry partners, i.e. Facebook, Google, Apple, Microsoft and SoftBank among others.

Bharti Foundation is ranked in the Top 100 of 'INDIA'S BEST COMPANIES TO WORK FOR 2017', certified by The Economic Times in partnership with Great Place to Work® Institute!



On 14th July 2017, the then Hon'ble President of India, Shri Pranab Mukherjee inaugurated Satya Bharti School, Kanidighi in West Bengal. He also launched a compendium on students' dreams and aspirations of an ideal schooling experience, during the event.



On July 15, 2017, Bharti Foundation invited Sh. Arun Jaitely, Hon'ble Union Minister of Finance and Corporate Affairs to commemorate the completion of Satya Bharti Abhiyan (close to 18,000 toilets) in Ludhiana, making Ludhiana (rural) the second self-declared Open Defecation Free district of Punjab.

UPCOMING EVENTS:

❖ *MoU with TSDSI*

MoU with TSDSI, India's SDO is under discussion, so that IIT Delhi has an opportunity for increased participation in standardization activities.

❖ *Telecom Centre of Excellence*

A Telecom centre of excellence is in the process of being established; negotiations with the Government are underway.

❖ *Bharti Merit Award And Best Women Graduate Award 2016-17*

BHARTI SCHOOL OF TELECOMMUNICATION TECHNOLOGY AND MANAGEMENT

INDIAN INSTITUTE OF TECHNOLGY, DELHI

BHARTI MERIT AWARD 2016-17

CONGRATULATIONS!!!

M.Tech (Telecom Technology Management)

1st Position	2nd Position	3rd Position	3rd Position
			
Madhav Sunilbhai Bhatt (2016JTM2088)	Harshal Kumar (2016JTM2078)	Karan Saxena (2016JTM2077)	Anant Khandelwal (2016JTM2085)

M.B.A (Telecom System Management)

1st Position	2nd Position	3rd Position	4th Position	5th Position
				
Poornima Asija (2016SMT6595)	Jyoti Garg (2014SMT6591)	Ujjawal Srivastava (2016SMT6626)	Sushant Choudhery (2016SMT6624)	Pavan Nandkishore (2016SMT6719)

Best Women Graduate Award

M.Tech ((Telecom Technology Management) and M.B.A (Telecom System Management)

	
Mounika Kusunuri (2016JTM2940)	Poornima Asija (2016SMT6595)

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