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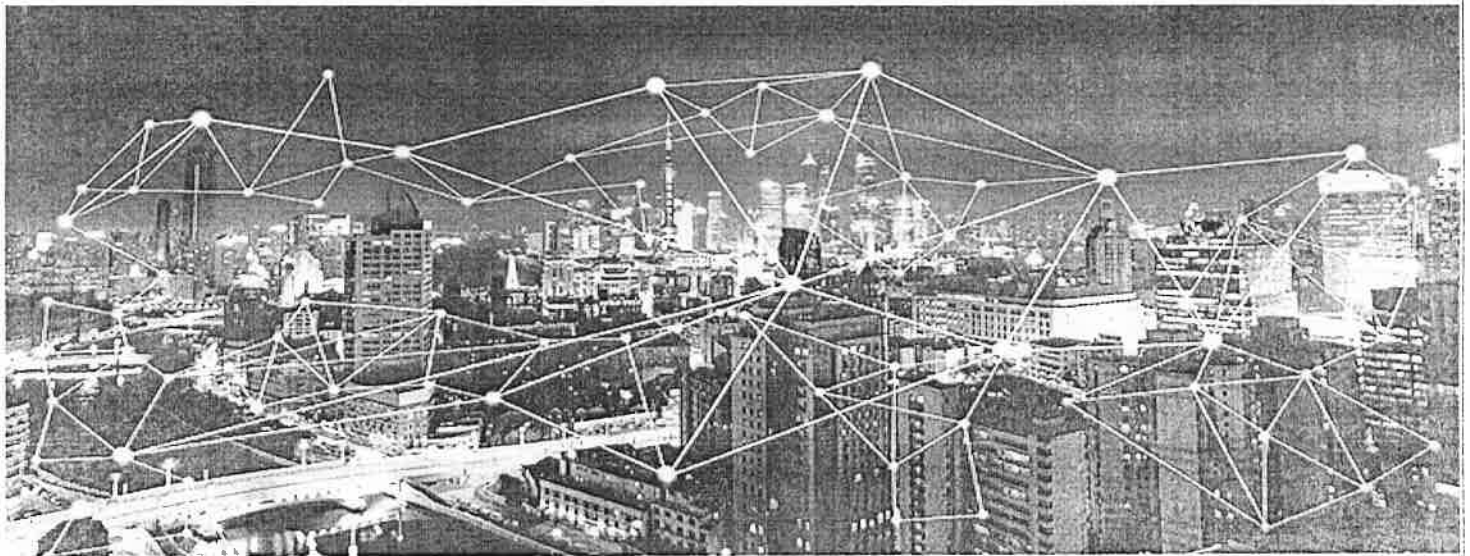*IEEE Communications Society*

12th IEEE International Conference on

Advanced Networks and Telecommunications Systems (ANTS)

Towards a Hyper-Connected World: Emerging Trends in ICT

Conference Report

Held on 16-19 December, 2018

Indore, India

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IEEE ANTS is a premier IEEE forum on advanced networking and telecommunications topics. IEEE ANTS is financially and technically supported by IEEE Communications Society. The distinguishing characteristic of IEEE ANTS is the promotion of an intense dialogue between academia and industry to bridge the gap between academic research, industry initiatives, and governmental policies. This is fostered through panel discussions, keynotes, invited talks, Ph.D. student forum, and industry exhibits, where academia is exposed to state-of-the-practice and results from trials and interoperability experiments. The industry, in turn, benefits from exposure to leading-edge research in networking as well as the opportunity to communicate with academic researchers regarding practical problems that require further research.

The theme of IEEE ANTS 2018 was **"Towards a Hyper-Connected World: Emerging Trends in ICT"**. In addition to the myriad of topics covered, special focus was on accepting papers which had a special focus on enabling technologies for communications in Smart Cities. As Indore is gearing up to build smart city, has been awarded as the cleanest city in India consecutively in 2017 and 2018, the theme of the conference fostered an environment for deliberating on different research aspects on the said topic.

Day 1: 16 December 2018

(Tutorials)

Session 1

Tutorial 1: "Road Communication Using Visible Light.......Road Ahead"

➤ The featured speaker, **Dr. Anand Srivastava**, Dean and Professor, Electronics & Communication Engineering, IIIT- Delhi, focused on reducing the number of traffic accidents, and on communication-based vehicle safety applications. He highlighted visible light communication (VLC) as one of the best solutions to enhance road safety.

Tutorial 2: "Machine Learning and other Approaches to the truthfulness of information on Online Social Networks"

➤ **Dr. Vishnu S. Pendyala,** Technical Leader, Cisco Systems Inc., San Jose, California, USA, introduced advanced machine learning approaches that can be used to solve the problem of falsehood on OSNs and the Web in general. The tutorial was planned to be predominantly based on the book authored by the instructor titled, **"Veracity of Big Data using Machine Learning and techniques"**.

Session 2

Tutorial 3: "Deep learning and its Applications to Wireless Communications"

➤ **Dr. Anubha Gupta**, Associate Professor, IIIT Delhi, and **Dr. Vimal Bhatia**, Professor, IIT Indore focused on wireless networking, Internet, and Internet enabled devices that have widely profused in our everyday life. As a consequence, there is huge data communication burden and resource utilization in wireless communication networks. This tutorial aimed was to introduce the basics of deep learning and to familiarize the audience with the research problems in communication engineering, particularly 5G that are being solved or can be solved using deep learning. The tutorial was covered in two parts. The first part begun with a brief introduction of machine learning and the emergence of deep learning, followed by discussion on deep belief networks, auto encoders, convolutional neural networks, and recurrent neural networks. In the second

part, recent research literature and applicability of deep learning for wireless communication problems were covered.

Tutorial 4: "Complex Networks: A Networking Perspective"

> **Dr. B. S. Manoj**, Professor and Head, Department of Avionics, Indian Institute of Space Science and Technology (IIST), Thiruvananthapuram, and **Dr. Abhishek Chakraborty**, Institute Post-Doctoral Fellow, Indian Institute of Technology (IIT) Madras, Chennai, India, gave a tutorial on complex networks, also known as network science. The complex networks appear in many aspects of our life such as biological networks, molecular networks, social networks, transportation networks, electric power grids, communication networks, and the Internet. This tutorial was an effort towards understanding the networking aspect of complex networks, and the current state-of-the-art research was discussed. Further, recent applications of complex network analysis in the emerging fields of wireless mesh networks, wireless sensor networks, and other wireless networks was emphasized. Open research problems were highlighted as well.

Day 2: 17 December 2018

Inaugural Ceremony

The inaugural ceremony of 12th IEEE International Conference on Advanced Networks and Telecommunications Systems (ANTS) 2018, commenced with the lamp-lighting by a group of dignitaries of IEEE Members- Dr. Vimal Bhatia (Professor, IIT Indore), Dr. Koushik Sinha (Southern Illinois University, USA), Dr. Biswanath Mukherjee (Distinguished Professor at University of California, Davis, and Founder & President, Ennetix Inc.), Dr. Vijay Bollapragada (CTO, Cisco, CX APJC), Dr.Sudhir Dixit (Senior Fellow and Evangelist, Basic Internet Foundation, Oslo, Norway – Head of US), and Dr. Byrav Ramamurthy (University of Nebraska-Lincoln, USA).

The General Co-Chairs of IEEE ANTS 2018- Dr. Vimal Bhatia (Professor, IIT Indore), and Dr. Koushik Sinha (Southern Illinois University, USA) formally welcomed all the dignitaries, researchers, students, professors, and industry professionals present from various parts of the world. They mentioned the major objective of IEEE ANTS that is to bridge the gap between academia, industry and the government, which the IEEE ANTS community has been consciously trying to address for the past eleven years. Towards this goal, in addition to contributed papers, they included a number of keynote and invited talks by eminent scientists from academia, leading industry researchers, and policy makers in the Government of India (GoI).

Furthermore, they said that the panel discussions will provide an opportunity to discuss government policies and make appropriate recommendations to promote technological growth of India for realizing the Make in India vision of the GoI.

1. Keynote Talks

Keynote Talk 1: "Trends in Networking"

Vijay Bollapragada-CTO, Cisco

Keynote Talk 2: "5G – Network Slicing and RAN Considerations"

Ravikanth Pasumarthy, Asst. Vice President-ARICENT

2. Workshops

Workshop 1: "Wireless Connectivity through Edge Technology"

> This workshop was introduced by **Dr. Vimal Bhatia,** Professor, Electrical Engineering, IIT-Indore.

> **Prof. Ganapati Panda,** FNAE, FNASc, FIET (UK) – Professor, IIT-Bhubaneswar, and **Dr. B. N. Bharath,** Asst. Professor, Dept. of Electrical Engineering, IIT-Dharwad, India, presented talks on **"Strategies for minimizing energy consumption in the access networks"** and **"Caching in 5G Cellular Networks"** respectively.

> The workshop focused on various edge (or last mile) technologies such as caching, data offloading, edge computing etc.

Workshop 2: "Green ICT for Next Generation Wireless Networks"

> This workshop was introduced by **Dr. Anand Srivastava**, Dean and Professor, Electronics & Communication Engineering, IIIT- Delhi.

> Later, **Prof. Abhishek Dixit**, IIT Delhi, and **S.Ramakrishnan**, Head of Technology, Nokia Networks, presented talk on **"Green ICT for Next Generation Wireless Networks"**.

3. Panel Discussions

Panel 1: "Transforming for the Digital Age"
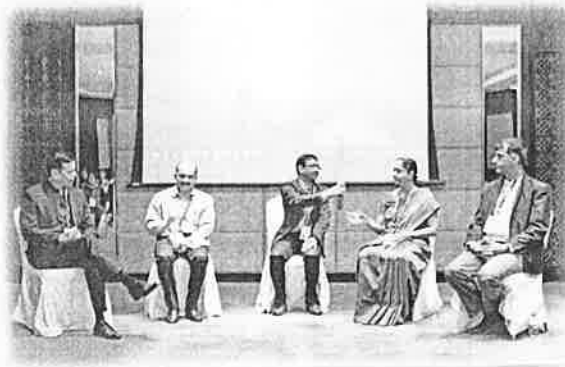
Panel Discussions were organized during the IEEE ANTS 2018. The topic of first panel discussion was "Transforming for the Digital Age" and the panelists were Subhas C Mondal (Chief Architect, Wipro), Sruthi Kannan (Head, Cisco LaunchPad), Vadiraja Bhatt (Principal Engineer, UCS Group), and Navin Kumar (Assoc. Prof. AVV, Bangalore). The moderator was Subodh Gajare (Chief Architect, Cisco R&D center (Blore)).

4. Paper Presentation

Professors and Research Scholars arrived from different research labs and institutes of the world presented their research papers in different technical sessions.

First technical session: Wireless Networks I, and Security, Trust and Privacy I

Second technical session: Physical Layer I, and Converged Networks I.

Third technical session: Network Applications I, and Short Paper session I.
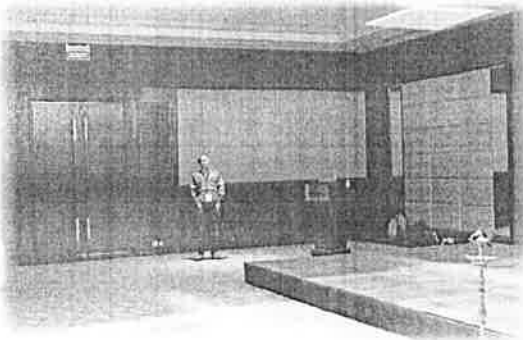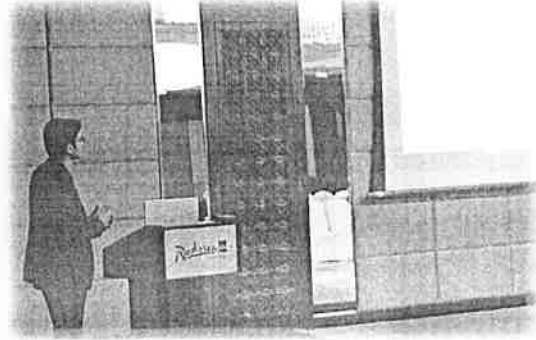
Day 3: 18 December 2018 (No. of Participants: 210)

1. Keynote Talks

Keynote Talk 3: "Transforming through 5G"

K.R.Sanjiv, CTO & SVP, Wipro Ltd.

Keynote Talk 4: "Networks, Crowds & Markets:The potential of Blockchains for Smart Cities"

Praphul Chandra, Founder, KoineArth

2. Panel Discussion
Panel 2: "Emerging ICT Architectures for Smart Infrastructure in the Hyper-Connected World"

The second Panel Discussion during the IEEE ANTS 2018 was on "Emerging ICT Architectures for Smart Infrastructure in the Hyper-Connected World" and the panelists were Goutam Chakraborty (Professor and Head of the Intelligent Informatics laboratory, IPU, Japan), Subhas C Mondal (Wipro), Narayanan Rajagopal (TCS), and Samar Shailendra (TCS) . The moderator of this panel discussion was Narang N. Kishor (Technology Philanthropist, Innovation & Standardization Evangelist).

3. Paper Presentation

Professors and Research Scholars arrived from different research labs and institutes of the world presented their research papers in different technical sessions.

Fourth technical session: Software Defined Networking, and Short Paper Session II

Fifth technical session: Optical Networks, and Next Generation Networks.

**Sixth technical session:** Short Paper Session III, and Wireless Sensor Networks.
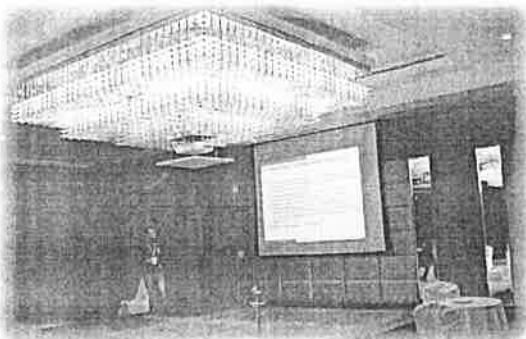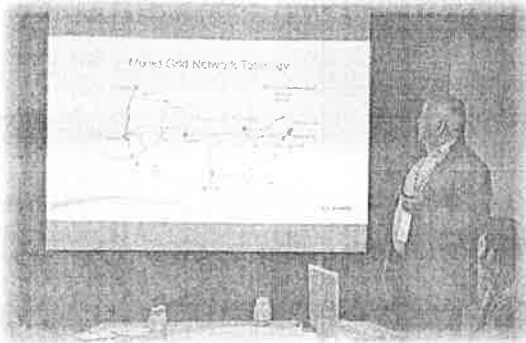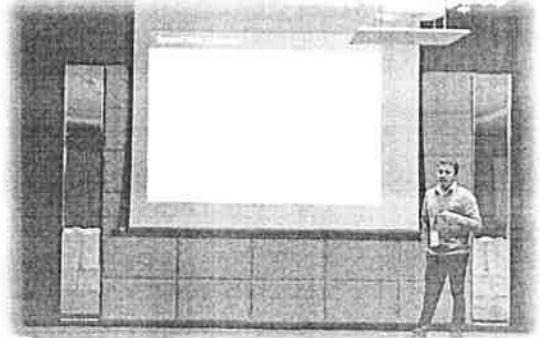
4. Women in Engineering (WiE) mini conference
(Women in Networking (WiN) with Women in Telecommunications (WiT))
"WiN with WiT"

The WiE Co-chairs of IEEE ANTS 2018, **Mydhili Nair** (MSRIT, Bengaluru, India), **Anubha Gupta,** (IIIT Delhi, India), **Pragya Swami** (IIT Indore, India), and **Chhabi Rani Panigrahi,** (Rama Devi Women's University, India) welcomed the participants to the 12th IEEE ANTS. WiE initiative was conceived as a one day mini-conference with the aim to encourage women engineers to showcase their technical acumen.

> ➢ The Guest of Honour **Mrs. Sellammal Shekhar,** Sc'G', Associate Director, DRDO Headquarters presented talk on **"Future Networking and communication Technologies: A Defence Perspective".**
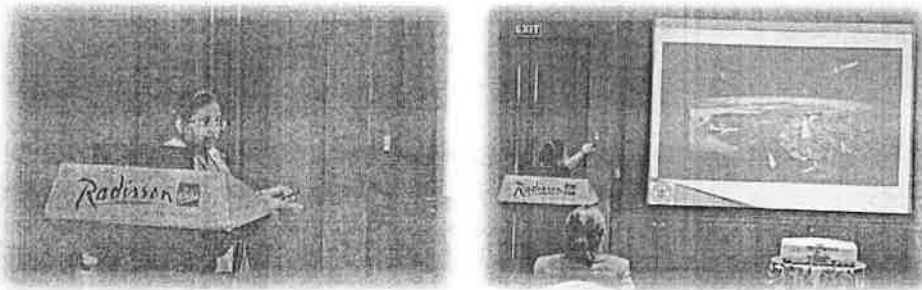
> ➢ The Keynote Speaker **Swati Meherishi,** Executive Editor-Applied Science and Engineering, Springer India presented talk on **"Women in Engineering: A Global Perspective".**

- In Invited Talk-1, **Dr. Anjana Jain**, SGSITS Indore, India presented talk on **"Emerging Telecom Technologies for hyper connected world"**.

- In Invited Talk-2, Mrs. Ruby Malhotra, ED, Kailtech Test and Research Center Pvt. Ltd. presented talk on **"Women Entrepreneurship--Opportunities and Challenges"**.

- In Invited Talk-3 **Prof. Basabi Chakraborty**, Iwate Prefectural University, Japan, presented talk on **"Role of Efficient Similarity Measures for Time Series Data Mining"**.

WiE Paper Presentation

The WiE paper presentation was scheduled in five sessions, where women authors presented their papers. Five technical paper presentation sessions, namely, WiE-1, WiE-2, WiE-3, WiE-4, and WiE-5 were held. This year, 17 research papers were accepted in WiE at IEEE ANTS 2018.

5. Ph.D. Forum

The Ph.D. forum at IEEE ANTS 2018 provided an opportunity for research students to showcase their original yet incomplete 'work-in-progress'. The Ph.D. forum was organized on the third day of IEEE ANTS 2018. Research works were invited for Ph.D. forum in the broad areas of wireline networks, wireless networks, and network applications. Apart from the TPC reviews, poster presentations provided the Ph.D. students an opportunity to have detailed discussions throughout the day with the professors and industry experts of different fields, and obtain feedback on their work.

6. Cultural Events, Best Paper Awards, and Banquet Dinner

On 18 December 2018, a colorful and memorable Cultural Event with Banquet Dinner was organized. This event was held at Indore Marriott Hotel. It was a truly mesmerizing event, where students from IIT Indore and Devi Ahilya Vishwavidyalaya (DAVV) Indore performed various Indian classical dance forms and classical singing, representing the culture of India.

Dignitaries and participants arrived from different parts of the world praised the entire event a lot, and congratulated the undergraduate students of IIT Indore and DAVV for their wonderful performances. The General Co-Chairs of IEEE ANTS 2018 guided with their inspirational words. The event was followed by the announcement of best paper awards by Springer under different categories, namely, Regular Paper, Short Paper, WiE track, Workshop track, and Ph.D. Forum. The event concluded with vote of thanks.

Day 4: 19 December 2018 (No. of Participants: 140)

1. Keynote Talks

Keynote Talk 5: "Connectivity divide in the light of Hyper-convergence"

Vipin Tyagi, Executive Director, C-DOT
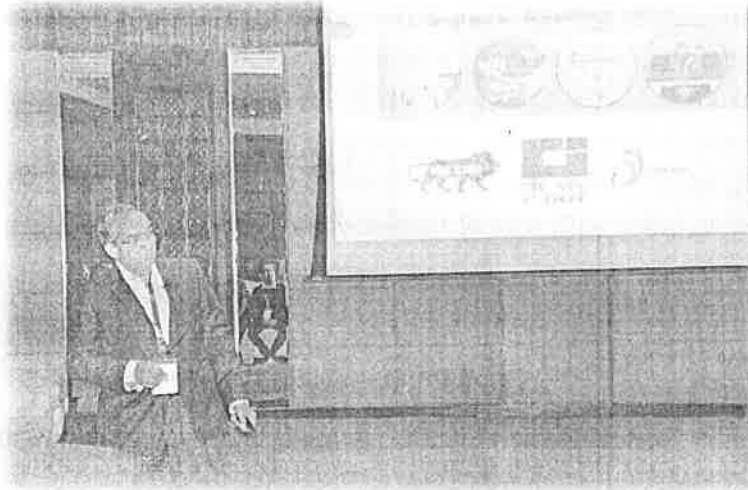
Keynote Talk 6: "Rising Power of the Network User"

Biswanath Mukherjee

Distinguished Professor at University of California, Davis

Founder & President, Ennetix Inc.

2. Workshops

Workshop 3: "5G and Future Wireless Technologies"

➢ This workshop was introduced by **Dr. Navin Kumar,** Assoc. Prof. Amrita Vishwa-vidyapeetham (University), Bangalore, Chair, ComSoc Bangalore Chapter, Sr. Member IEEE, IET(UK), IAENG(HK), IETE, IE(India) Global ICT Standardization Forum for India (GISFI).

➢ Later, dignitaries from different organizations continued the workshop. The talks included:

- **Dr. Sudhir Dixit,** Senior Fellow and Evangelist, Basic Internet Foundation, Oslo, Norway – Head of US Operations, presented a talk titled **"IEEE Future Network Initiative: Enabling 5G and Beyond"** (Visionary Talk).
- **Anshuman Nigam,** SAMSUNG R&D INSTITUTE, BANGALORE, presented a talk on **"The Key Building Blocks of 5G".**
- **Subodh Gajare,** Chief Architect, SDN, Cloud, IoT and Mobility – Cisco R&D center (Blore), presented a talk on **"5G changing the game for Agriculture, Health Care, Smart Cities and Manufacturing verticals".**
- **Krishna Rao,** Nokia Networks, presented a talk on **"Challenges on the path to 5G era for industry verticals".**
- **Ashutosh Deepak Gore,** PhD, Qualcomm, presented a talk titled **"Making 5G NR a reality".**
- **Subhas C Mondal,** Chief Architect, Wipro, presented a talk on **"Cognitive automation in 5G".**
- **Rajesh Gandhi,** Arista Networks, presented a talk on **"Enabling new services with WiFi 6".**
- **Tabrez Khan S**: Senior Application Engineer, MathWorks India, presented a talk on **"Developing 5G Wireless Communications Systems Using MATLAB and Simulink".**

3. Panel Discussions

Panel 3: "Securing the Internet of Things – Security & Privacy in a Hyper-connected World"
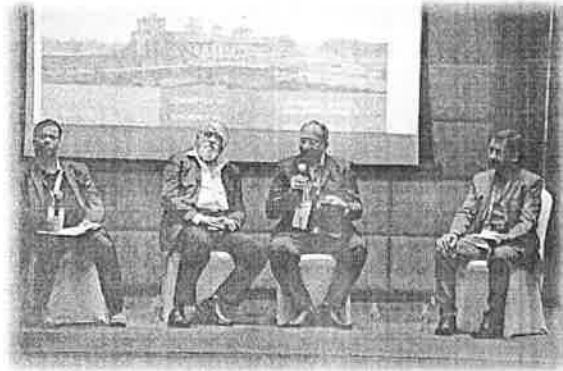
The third Panel Discussion during the IEEE ANTS 2018 was on "Securing the Internet of Things – Security & Privacy in a Hyper-connected World" and the panelists were Hemanth Rath (Senior Scientist, TCS Research), AT Kishore (Principal Consultant, UTL Technologies), and Nishant Krishna (Entrepreneur). The moderator was Narang N. Kishor (Technology Philanthropist, Innovation & Standardization Evangelist).

4. Paper Presentation

Professors and Research Scholars arrived from different research labs and institutes of the world presented their research papers in different technical sessions.

Seventh technical session: Cognitive Radio Networks, and Physical Layer II.

Eighth technical session: Network Applications II, and Cellular Networks.

Ninth technical session: Converged Networks II, and Security, Trust and Privacy II.

5. Concluding Ceremony and Vote of Thanks

The General Co-Chairs of IEEE ANTS 2018 expressed their sincerest thanks to all the sponsors of the conference, without the support of which it would not have been possible to organize IEEE ANTS 2018. This year, IEEE ANTS got support from Industry as well as Indian Government Organizations, namely, CISCO, WIPRO, Aricent, IEEE Standards Association, IEEE Future Networks, Science and Engineering Research Board (SERB), Department of Science and Technology (DST) India, Defence Research and Development Organization (DRDO) India, UK-India Education and Research Initiative (UKIERI), Center for Development of Telematics (C-DOT) India, Council of Scientific and Industrial Research (CSIR) India, Technical Education Quality Improvement Programme – III (TEQIP-III), Springer, and MathWorks.

The General Co-Chairs thanked all the keynote speakers, invited speakers, panel members, and tutorial speakers for kindly giving their consent to attend this conference and enlightening the audience with their in-depth talks. They also thanked the delegates from academia, industry and the Government of India for their active participation in various sessions of the conference. Sincere thanks were given to all the session chairs for executing various technical paper presentation sessions interactively.

Finally, they thanked all the members of the Organizing Committee, Technical Program Committee, R & D Section of IIT Indore, and student volunteers for their hard work and a year-long effort to make the IEEE ANTS 2018, Indore, a great success.

Thank you!

Conference Press Coverage

टेक्नोलॉजी — आईआईटी इंदौर द्वारा हो रही आईईईई की इंटरनेशनल कॉन्फ्रेंस में टेक्नोलॉजी के एक्सपर्ट हुए शामिल

2020 तक 5जी इंटरनेट स्पीड होगी आपके मोबाइल में

5जी से स्मार्ट सिटी का सपना होगा पूरा

एडवांस टेक्नोलॉजी से सीधे गवर्नमेंट से जुड़ जाएगा हर व्यक्ति

अब मशीन टू मशीन कम्युनिकेशन का दौर है

आईआईटी द्वारा आयोजित आईईईई एंट्रस कांफ्रेंस में शामिल हुए देश-विदेश के एडवांस नेटवर्किंग एक्सपर्ट्स

5जी नेटवर्क के लिए आईआईटी इंदौर और जीएसआईटीएस कर रहे स्मार्ट एंटेना और माइमो तकनीक पर काम, 2020 तक पूरा करने का लक्ष्य

इंटरनेट चेस्ड मशीनों की क्षमता बढ़ेगी

19 December 2018: Nai Duniya

तकनीकों का सही इस्तेमाल करना भी सिखाना चाहिए

इंदौर। नईदुनिया रिपोर्टर

हर दिन नई नई तकनीकें आ रही हैं। तकनीकी प्रगति के साथ उसके सही इस्तेमाल को भी जानने की जरूरत है। स्टूडेंट्स को तकनीकी ज्ञान तो मिलता रहता है, लेकिन उन्हें उसके सही तरह से इस्तेमाल के बारे में फायदा ही बताया जाता है। शिक्षा के हर क्षेत्र में इसको भी पढ़ाने जरूरी हैं। अमेरिका में मैं अपने स्टूडेंट्स को टेक्नोलॉजिकल इथिक्स भी पढ़ाता हूं जिससे आगे की पीढ़ी तकनीकों का समाज की बेहतरी के लिए उपयोग कर सके।

यह बात मंगलवार को यूनिवर्सिटी ऑफ कैलिफोर्निया में कंप्यूटर साइंस के प्रोफेसर विश्वनाथ मुखर्जी ने नईदुनिया से चर्चा के दौरान कही। वो आईआईटी इंदौर द्वारा आयोजित इंटरनेशनल कॉन्फ्रेंस ऑन एडवांस्ड नेटवर्क्स एंड टेलीकम्युनिकेशंस सिस्टम के लिए आए हैं। उन्होंने कहा आज हम 5जी तकनीक की बात कर रहे हैं, लेकिन जरूरत है इसके आगे की बात करने की। एजुकेशन सिस्टम इस तरह का होना चाहिए जो सिर्फ आज की समस्याओं और उनके समाधान तक ही सीमित न हो बल्कि भविष्य की सोच कर चले। शिक्षित वर्क फोर्स तैयार करने पर

ये होंगे फायदे

नॉर्वे से आए सुधीर दीक्षित ने कहा 5जी नेटवर्क में बड़े मोबाइल टावर के साथ छोटे-छोटे सेल्स होंगे जिससे कम्युनिकेशन ज्यादा बेहतर होगा। अलग-अलग नेटवर्क की जगह एक ही नेटवर्क से जुड़कर डाटा ट्रांसफर की स्पीड बहुत ज्यादा होगी और कॉल ड्रॉप जैसी समस्याएं नहीं होंगी। सूचना ज्यादा बेहतर, जल्दी और सस्ती हो जाएगी। परफॉर्मेंस डिपार्टमेंट 1000 गुना ज्यादा होगी।

ध्यान देना चाहिए जो भविष्य में हर क्षेत्र में बेहतर कार्य करेंगे।

अमेरिका से आए कौशिक सिन्हा ने कहा 5जी तकनीक का असर शिक्षा, स्वास्थ्य, इंफ्रास्ट्रक्चर, कृषि बैंकिंग, ट्रांसपोर्ट सभी जगह दिखेगा। जिन लोगों की पहुंच कक्षाओं तक नहीं है वो भी घर बैठे उसी तरह की पढ़ाई कर सकेंगे क्योंकि स्पीड ज्यादा होने से इंटरैक्टिव कम्युनिकेशन होगा। इसके अलावा रिमोट और ग्रामीण क्षेत्रों में जहां अस्पताल नहीं है, वहां भी बेहतर सुविधाएं पहुंचाई जा सकती हैं। आर्टिफिशियल इंटेलीजेंस से 3डी टेलीकॉन्फ्रेंसिंग, रोबोटिक सर्जरी से बहुत बड़े बदलाव दिखेंगे।

IITs study local needs, challenges ahead of 5G technology rollout

Times News Network

Indore: Indian Institute of Technology (IIT) Indore and seven other IITs are studying local needs and challenges that need to be addressed ahead of roll out of fifth-generation (5G) technology.

IIT, Indore is conducting a study on heterogeneous network and the same would be submitted to Ministry of Electronics and Information Technology. Every IIT has a separate topic of research with IIT Madras the nodal agency for testbeds.

Professor Vimal Bhatia from IIT, Indore said, "Eight IITs are involved in testbeds for 5G including IIT Indore. All IITs involved are looking at different areas like network is being studied by Madras. It's a pan-India IIT project."

Bhatia said, "Indore is looking at some low complexity algorithms to give good performance at low cost using less battery powers."

IIT Madras, IIT Bombay,

IIT Indore is among the eight IITs that are undertaking the study

IIT Delhi, IIT Banglore, IIT Kharagpur and IIT Patna among others are also the part of the testbeds for 5G.

Eminent speakers, academicians and industrialists discussed in length about advanced networks, technologies and impact of 5G in different industry verticals and on consumers among other topics, at IEEE International Conference on Advanced Networks and Telecommunications Systems -IEEE ANTS 2018 hosted by IIT, Indore on Tuesday.

Munir Mohammed, senior programme manager, IEEE said, "Department of telecommunications has invested a lot on creating test-

bods because our needs are different from the western world with main requirement is how to connect with the dense population and hence the task is to collect local information."

Experts said 5G will enhance the battery life by 10 times and will result in development of new applications such as 3D teleconferencing, robotics surgeries, driverless cars among others.

Sudhir Dixit, fellow and evangelist, Basic Internet Foundation said, "4G took off very quickly in India but 3G took a long time to happen in India but for 5G, we expect it to be even faster because India has never had the legacy

of old network and it can build a new network very quickly." Experts said 5G technology is seen bringing a revolution but a major requirement ahead of the roll out is a complete change in network architecture to support 5G.

They said 5G technology will use entirely IT infrastructure and the focus will be on development of new applications and industry verticals. Delegates from 19 foreign countries including US, Germany, Norway, Denmark, China, Canada, Brazil, Spain and Bangladesh among others participated in the event.

This year the theme was 'Towards a Hyper Connected World: Emerging Trends in ICT'.

IEEE is the world's largest technical professional organization dedicated to advancing technology and IEEE Communications Society promotes advancement of science technology and applications in communications and related disciplines.

आइट्रिइई एन्ट्स कॉन्फ्रेंस में विशेषज्ञों ने भविष्य के कम्युनिकेशन्स पर किया मंथन

आइआइटी इंदौर के स्टूडेंट्स की रिसर्च, 5जी टेक्नोलॉजी से बढ़ेगी 10 गुना इंटरनेट स्पीड

Security challenges for telecom networks discussed at IIT

Times News Network

Indore: The IEEE International conference on 'Advanced Networks and Telecommunications Systems' IEEE ANTS 2018 hosted by Indian Institute of Technology (IIT), Indore was concluded on Wednesday.

The four-day conference witnessed presentations of technical papers, workshop on 5G and future wireless technologies aiming to bridge the gap between academia and industry.

Professor of computer sciences of University of California, Davis, Biswanath Mukherjee said "Machine learning can be used for solving content-based network problems and fault diagnosis solutions in the minutes of the whole network, which currently takes hours or days to detect."

Vipin Tyagi, executive director of C-DOT spoke on challenges for India's digital era and solutions for connectivity problems in the rural areas of the country.

IEEE International conference concluded on Wednesday

A panel discussion on "Securing the Internet of Things security and privacy in a Hyper-connected World" was also conducted on the concluding day. The panel discussed security challenges and solutions for the future telecom networks.

Director of IIT Indore, professor Pradeep Mathur said, "As an institute with the sharpest growth trajectory, the choice of IIT Indore as the hosting institute is very appropriate and I am sure that the conference has been able to generate new ideas and motivate researchers in the areas to push frontiers of science."

C-DOT innovating to solve digital connectivity problems: Tyagi

Staff Reporter

ANCHOR　आईआईटी की एन्ट्स इंटरनेशनल कॉन्फ्रेंस का समापन, देश-विदेश के एक्सपर्ट्स ने किया मंथन

मशीन लर्निंग से 5 मिनट में पता चलेगा फॉल्ट, अभी लगते हैं कई घंटे

पत्रिका PLUS रिपोर्ट

इंदौर ● इंडियन इंस्टिट्यूट ऑफ टेक्नोलॉजी (आईआईटी) इंदौर की एडवांस नेटवर्क्स एंड टेलीकम्युनिकेशन सिस्टम्स (एन्ट्स) पर हुई तीन दिवसीय प्रोफेशनल थर्ड-फेम का समापन बुधवार को हुआ। ट्यूशडे हायर कनेक्टेड वर्ल्ड। भारतीय टेक्स इन आईआईटी टीम पर हुई कॉन्फ्रेंस में देश-विदेश के एक्सपर्ट्स ने ज्ञी चर्चित अन्य आधुनिक टेलीकम्युनिकेशन पर मंथन किया।

युनिवर्सिटी ऑफ कैलिफोर्निया कम्प्यूटर साइंस प्रोफेसर विश्वनाथ

गांवों में कनेक्टिविटी की समस्याओं को दूर करने के लिए काम करेगा सैटेलाइट

आईआईटी द्वारा होस्ट की जा रही एडवांस नेटवर्क्स एंड टेलीकम्यूनिकेशन्स पर वर्कशॉप का समापन

हमारे देश के शहरी क्षेत्रों में तो कनेक्टिविटी बेहतर है लेकिन गांवों में ये समस्या कई जगह गंभीर है। सेंटर फॉर डेवलपमेंट ऑफ टेलीमेटिक्स यानि सी-डॉट के एक्सपर्ट्स इस समस्या को दूर करने के लिए काम कर रहे है। सी-डॉट में एक सैटेलाइट तैयार करने के साथ ही ऐसे कई डिवाइस तैयार किए हैं जो रूरल ब्रॉडबैंड कनेक्टिविटी में उपयोग किए जा सकते है।

सी-डॉट के एग्जीक्यूटिव डायरेक्टर विश्वन त्यागी ने ये बातें आईआईटी इंदौर द्वारा होस्ट की जा रही एडवांस नेटवर्क्स एंड टेलीकम्यूनिकेशन्स कॉन्फ्रेंस के अंतिम दिन कहीं। वे चैलेंजेस फॉर इंडियन डिजिटल एरा पर बोल रहे थे। कॉन्फ्रेंस की थीम थी रूअइस

अ हाइपर कनेक्टेड वर्ल्ड इमर्जिंग ट्रेंडस इन आईसीटी। यूनिवर्सिटी ऑफ कैलिफोर्निया के कम्प्यूटर साइंस के प्रोफेसर विश्वनाथ मुखर्जी ने मशीन लर्निंग के जरिए कंटेंट बेस्ड नेटवर्क प्रॉब्लम दूर करने के बारे में बात की। उन्होंने कहा कि मशीन लर्निंग के जरिए पूरे नेटवर्क की समस्याएं पांच मिनट में दूर की जा सकेगी जिसमें अभी कई घंटो से लेकर दिनों तक का समय लगता है।

आईआईटी के डायरेक्टर प्रोफेसर प्रदीप माथुर ने कॉन्फ्रेंस के आयोजकों को इंदौर में आयोजन के लिए शुक्रिया अदा किया। उन्होंने कहा कि सबसे तेज ग्रोथ ट्रेजेक्टरी वाले इंस्टीट्यूट होने के नाते ये सबसे सही चुनाव था। ये कॉन्फ्रेंस नई आईडिया जनरेट करने के साथ ही रिसर्चर्स को भी कई नए एरिया प्रदान करेगी।

Engineers prepare Test Beds for 5G technology

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Research students and academicians of various institutes are preparing test beds for the usage of 5G services that is expected to make an inroad in the country in the second phase. At the 12th edition of Institute of Electrical and Electronics Engineers (IEEE) international conference on advanced networking and telecommunications (ANTS) held recently, the academia and the industry players tried to lay a roadmap for better usage of 5G.

Though Japan and Korea will be the initial users, India is likely to have the technology post Summer Olympics 2020, however the Engineers want to be ready with test beds for commercial deployment.

The conference organised by Indian Institute of Technology (IIT), Indore, had the participation on several prominent professors, Engineers from universities across the world.

Speaking on the sidelines of the conference, Sudhir Dixit, fellow and evangelist, Basic Internet Foundation, Norway said that 5G services will use IT infrastructure rather than hardware infrastructure used in 3G and 4G networks. "In 5G, the focus will be on industry verticals than on consumers. Huge revenues will be generated by selling 5G services to industry verticals,"

holography, robotics, etc.

"5G will enable enterprises to move into new markets and build new revenue streams with radically new business models and use cases, including massive Internet of Things (IoT) applications. It will enable more secure transactions and expand the battery life of IoT devices by 10 times," said Subodh Gajare, chief architect, Cisco during one of the workshops conducted in the conference.

The demands for 5G in India are different from what it is in the West. "We (in India) do not need high mobility, but need a network that can penetrate through high density. Energy efficiency is yet another aspect that would be needed from 5G network," said Muneer Mohammad, IEEE Bangalore.

The Ministry of Electronics and Information Technology (MEITY), earlier this year launched a three-year project titled 'Building an End-to-End 5G Test Bed' to advance 5G innovation and research in India. The budget of the project is around Rs 224 crores. The pilot project has been awarded to IIT Madras, IIT Hyderabad, IIT Delhi, IIT Kanpur, Centre of Excellence in Wireless Technology (CEWiT), Society for Applied Microwave Electronics Engineering and Research (SAMEER) and IISc Bangalore. IIT Indore, IIT Bombay and IIT Mandi were later added to the project.

The goal of the project is to build a Test Bed that closely resembles a real-world 5G deployment. This Test Bed could become a basis for many commercial deployments. The Test Bed can be used by telecom operators, technology companies, academics and startups for R&D purposes.

"There are various aspects of the project that the IITs would be working upon. For example, IIT Madras is working on the network aspect; IIT Delhi and IIT Indore are working on the physical layer aspect of building the Test Bed," said Vimal Bhatia, professor, IIT Indore.

Elaborating IIT Indore's role in the pilot project, Vimal said, "We are involved with prototyping the receiver architecture for 5G. We are working on the physical layer standard technology-NOMA (Non Orthogonal Multiple Access) which is also a part of the later stages of the 4G technology."