



International Conference

on

"Robotics, Automation & Communication Engineering for Industry 4.0"

04 - 05 February, 2022

Jointly Organize by

Department of Mechanical Engineering

&

Department of Electronics & Communication Engineering

Manav Rachna University, Faridabad, Haryana, 121004, India

Fee for Listeners: Rs. 1330/-



Manav Rachna University, Faridabad

School of Engineering

Report on International Conference on “Robotics, Automation & Communication Engineering for Industry 4.0” on 4th - 5th February, 2022.

The Department of Mechanical Engineering and Electronics and Communication Engineering organized an International Conference on “**Robotics, Automation & Communication Engineering for Industry 4.0**” on 4th - 5th February, 2022. The Conference aimed to bring all the academicians, scientists, researchers, students and Industrialists, to share their experiences and research work in the field of Robotics, Automation & Communication Engineering.

Inaugural Ceremony started with the lamp lighting, and welcome of all the dignitaries **Prof. I.K. Bhat** -Vice Chancellor, MRU, **Prof. D.S.Sengar**- Pro VC MRU, **Dr.Kameshwar Singh**, Registrar MRU, **Dr. Sangita Banga** Dean Academics, other Deans and Heads of the departments.



Dr. Niharika initiating Conference by addressing the guests





Lamp Lightning by all the Dignitaries

Prof. Shruti Vashist, Convener of the conference shared a brief about the university and the departments followed by the conference brief by Co-Convener **Mr. Piyush Mahendru**. The program was divided into 7 keynote sessions & 8 Technical sessions. More than 90 papers were received out of which 60 were shortlisted for final presentation.

In the inaugural speech by Chief Guest of the Conference **Prof. (Dr.) I.K.Bhat** laid emphasis on collaborative works of researchers in different branches of Science and Engineering. He emphasized on the need for innovation and research in the area of Robotics engineering and spoke about the important role of Robots in industry 4.0 scenario. He also briefed that Robotic technology nowadays is applicable in most of the modern manufacturing industries involving different techniques such as AI, Machine learning etc. He also discussed the importance of new technologies in reducing carbon emission to build a healthy environment. He also stressed upon the importance of such types of conferences and with utmost gratitude to the entire participant for making the Conference a success.

Pro Vice-Chancellor **Prof. (Dr.) D.S.Sengar** discussed the importance of Law in the area of technology. He further discussed how law is helpful for patenting a particular technology so that it cannot be copied. **Dr. Sujata Nayak** expressed vote of thanks.





Dr. Sujata Nayak, HOD Mechanical addressing the participants during the Conference

Renowned Professors joined for the plenary session as keynote speakers:

The first keynote speaker **Prof. (Dr) Rajeevan Chandel, NIT, Hamirpur** talked about "Electronics & Communication Engineering for Industry 4.0". Dr. Rajeevan shared the importance of Silicon IC's and its applications in modern industry. The session also had information about the transformation of semiconductors materials from Industry 1.0 to Industry 4.0. Next Keynote lecture was delivered by **Dr. Vijay Janyani, Professor, MNIT Jaipur**, on "Photonics & Fiber Optics for Industry 4.0". Dr. Janyani briefed about the nine pillars of Industry 4.0 and about the evolution of wireless technology. For the last session of Day 1, **Prof. (Dr) Manuel F.Silva, Polytechnic of Porto, Portugal** shared his insight on "Digital Twin for Robotics Palletizing system for Industry 4.0". Dr. Silva introduced Digital Twin Palletizing simulator platform to execute the different activities performed by Robots.





Session by Prof. (Dr) Manuel F.Silva, Polytechnic of Porto, Portugal

34 papers were presented in four parallel sessions on the theme **Smart Manufacturing & Automotive Industry for Industry 4.0, Internet of Things & Machine Learning** respectively. Keynote speaker **Prof. (Dr.) Michael Short, Teesside University, UK** delivered his speech on “Informatics & Control for Energy Management in Smart Manufacturing”. The session focused on “Net Zero: Smarter & Greener Industry”. Prof. Short introduced the smart solution for thermal comfort & smart home devices.

Features	1G	2G	3G	4G	5G
Start Development	1970-1984	1990-1999	1990-2002	2000-2010	2010-2015
Technology	AMPS, NMT, TACS	GSM	WCDMA	LTE, WiMax	MIMO, mm Waves
Frequency	30 KHz	1.8 GHz	1.6 - 2 GHz	2 - 8 GHz	1 - 30 GHz
Bandwidth	2 kbps	14.4 - 64 kbps	2 Mbps	2000 Mbps to 1 Gbps	1 Gbps and higher
Access System	FDMA	TDMA/CDMA	CDMA	CDMA	OFDM/SDMA
Core Network	PSTN	PSTN	Packet Network	Internet	Internet

Paper Presentation during Conference



First IC at Texas Instruments

- ❑ **Jack St. Clair Kilby** was an American electrical engineer who took part (along with Robert Noyce) in the realization of the first integrated circuit while working at Texas Instruments (TI) in 1958. He was awarded the Nobel Prize In Physics on December 10, 2000.



Jack Kilby's original integrated circuit

Paper Presentation during Conference

Day 2 began Session delivered by guest speaker **Dr. Neeta Awasthy, Director, G L Bajaj Institute of Technology, Mathura**. The session was quite interactive. And had various components on design thinking in industry 4.0. Followed by a session by **Prof.(Dr.) Mukul Shukla, professor, MNNIT Allahabad** on "Monitoring & Control of Additive Manufacturing. The session had a brief description on advancement in the manufacturing process after the addition of Robotics & automation.



Presentation Content During Conference

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MRU participants during the Conference

26 papers based on **Product Design & User Interface** were presented in four parallel sessions followed by address by keynote speaker Prof. (Dr.) Danilo Pelusi on “Swarm Intelligent Algorithms for Industry 4.0” where he explained about the algorithms used for optimizing the approach used in Industry 4.0.



Presentation by keynote speaker Prof. (Dr.) Danilo Pelusi



Chief Guest for the Valedictory session, **Hon'ble Prof.(Dr.) D.P.Agrawal, Ex-Chairman, UPSC**, stated that the Educational Institutes have to play a vital role for making the new generation Industry ready. For this he also suggested a growth path for Curriculum designing, more emphasis on practical parts and also provide Industry based education to the students. He also congratulated the Organizing team of ICRACI40 for the successful completion of the Conference.



Valedictory Session towards the end of the conference



ME and ECE Department with MRU dignitaries





HoD ME presenting Token of Gratitude to Prof. (Dr. I.K. Bhat)

Chief Guest of the session along with **Hon'ble Vice Chancellor, Prof.(Dr.) I.K.Bhat, Pro-Vice Chancellor Prof.(Dr.) D.S. Sengar, Dean Academics Prof.(Dr.) Sangeeta Banga** congratulated the team of the conference i.e. faculty members from Mechanical Engineering & Electronics & Communication Engineering department. **Six papers** from various sessions received best paper award, followed by the conclusion remarks and vote of thanks by **Co-Convener Mr. Piyush Mahendru.**

