

ELECTRONICS AND COMMUNICATION ENGINEERING DEPARTMENT

E-newsletter



October, 2022 – March, 2023

Two days International Conference on Artificial Intelligence of things (March 30-31, 2023) was jointly organized by the Department of Electronics and Communication Engineering, Computer Science Engineering and Electrical Engineering, NITTTR, Chandigarh. Prof. Kamal Kishore Pant, Director IIT Roorkee was the Chief Guest and he inaugurated the Conference. Prof. Anantha Ramakrishna, Director CSIR-CSIO, Chandigarh was the Guest of honor. He delivered the keynote address wherein he emphasized the importance of Internet of Things and Artificial Intelligence in various current and prospective applications. Arrangements were made to publish selected research papers with Springer. After rigorous review process, out of 400 received research papers from within and outside the country, 45 papers were presented and published in Conference Proceedings.



Prof. B.R. Gurjar, Director, NITTTR, Chandigarh Welcoming Prof. KK Pant, Director, IIT, Roorkee



Prof. Amod Kumar, Head ECE Welcoming Prof. B.R. Gurjar, Director, NITTTR



Organising Team of ICAIoT with Prof. B.R. Gurjar, Director, NITTTR, Chandigarh, Prof. KK Pant, Director, IIT, Roorkee and Prof. Anantha Ramakrishna, Director CSIR-CSIO, Chandigarh



Prof. B.R. Gurjar, Director, NITTTR, Chandigarh addressing the delegates of ICAIoT

The Department participated in the Cricket tournament - NITTTR Premier League (NPL-12) organized by the Sports Club of NITTTR during April 26 – May 3, 2023. Dr. Amod Kumar, Professor and Head, Mr. Kuldeep Singh, Senior Secretariat Assistant and Mr. Pushparaj, Research Scholar were the owner of one of the participating teams.



ECE Department participated in NPL-12 organized by sports club, NITTTR, Chandigarh as Team owner

Women's Day was celebrated on March 10, 2023. Dr. Garima Saini, Assistant Professor of this Department co-ordinated the event.



Prof. S.K. Dhameja, Officiating Director addressing on the occasion of Women's Day, 2023

Dr. Balwinder Raj has joined NIT, Jalandhar as Associate Professor after obtaining lien from NITTTR for 2 years. He has served ECE Department, NITTTR for more than 03 years.



DETAILS OF M.E. PROGRAMMES

S. No.	ME Subjects	Batches	Name of the Faculty
1.	Research Seminar-I	2021-23 (Regular)	Prof. Sandeep Singh Gill
2.	Digital Image Processing	2021-23 (Regular)	Prof. Amod Kumar
3.	Advance Computer Network	2021-23 (Regular)	Dr. Balwinder Singh Dhaliwal
4.	VLSI Design	2021-23 (Regular)	Dr. Balwinder Raj
5.	Embedded System Design	2021-23 (Regular)	Dr. Kanika Sharma
6.	Wireless & Mobile Communication	2021-23 (Regular)	Dr. Garima Saini
7.	Neural Networks & Fuzzy Logic	2021-23 (Regular)	Prof. Amod Kumar
8.	Research Methodology	2021-23 (Regular)	Prof. UN Roy
9.	Research Seminar-I	2020 (Modular)	Prof. Sandeep Singh Gill
10.	Advanced Computer Network	2020 (Modular)	Dr. Balwinder Singh Dhaliwal
11.	Advanced Digital Communication	2020 (Modular)	Dr. Garima Saini
12.	Embedded System Design	2020 (Modular)	Dr. Kanika Sharma
13.	Digital System Design	2021 (Modular)	Dr. Kanika Sharma
14.	Research Methodology	2021 (Modular)	Prof. Sunil Dutt Mrs. Amandeep Kaur
15.	Wireless and Mobile Communication	2021 (Modular)	Dr. Garima Saini
16.	Research Seminar-I	2021 (Modular)	Prof. Amod Kumar
17.	Fiber Optics Communication Systems	2022 (Modular)	Dr. Balwinder Raj Prof. Pankaj Sharma
18.	Advanced Digital Signal Processing	2022 (Modular)	Prof. Amod Kumar
19.	VLSI Design	2022 (Modular)	Dr. Balwinder Raj
20.	Digital Image Processing	2020, 2021 & 2022 (Modular)	Prof. Amod Kumar

SHORT TERM COURSES CONDUCTED

Sr. No.	Course Title	Duration	Dates	Certificates Issued
1.	Smart Materials and Nanotechnology	One Week	17.10.22 – 21.10.22	119
2.	System Designing with Controllers	One Week	14.11.22 – 18.11.22	71
3.	Antenna Design Technique & Tools	One Week	14.11.22 – 18.11.22	08
4.	Free ICT Tools for Effective Research	One Week	14.11.22 – 18.11.22	35
5.	Digital Filter Design with MATLAB	One Week	21.11.22 - 25.11.22	08
6.	IoT and its Applications	One Week	5.12.22 – 9.12.22	575
7.	Emerging Research Areas in wireless Communication	One Week	9.1.23 – 13.1.23	25
8.	Technology Enabled Teaching-Learning	One Week	16.1.23 – 20.1.23	41
9.	Embedded Modeling Systems	One Week	16.1.23 – 20.1.23	04
10.	Antenna Design and Fabrication using Additive Manufacturing Techniques	One Week	13.2.23 – 17.2.23	11
11.	Latest Technologies in embedded Systems	One Week	20.2.23 – 24.2.23	06
12.	Antenna and Wireless Technologies	One Week	20.2.23 – 24.2.23	168
13.	Applications of AI in Electronics Design	One Week	20.2.23 – 24.2.23	198
14.	Soft Computing Techniques	Two Weeks	20.2.23 - 3.3.23	08

GUIDANCE OF M.E. THESES

Sr. No.	Name of Student	Mode of M.E.	Final Thesis Presentation held
1.	Shivam Bansal	ME Regular 2020 batch	29/11/2022
2.	Yogesh Thakur	ME Regular 2020 batch	29/11/2022
3.	Ankit Meghwal	ME Modular 2016 batch	11/01/2023
4.	Alka Yadav	ME Modular 2017 batch	15/02/2023
5.	Anavil Mishra	ME Modular 2016 batch	11/02/2023
6.	Yashica	ME Modular 2017 batch	24/02/2023
7.	Shahraan Hussain	ME Modular 2017 batch	24/02/2023
8.	Kulbhaskar	ME Modular 2018 batch	06/03/2023

9.	Akanksha Mishra	ME Modular 2018	06/03/2023
10.	Pankaj Kumar Tailor	ME Modular 2018	10/03/2023
11.	Sitaram Meena	ME Modular 2018	10/03/2023
12.	Vijay Kumar Meena	ME Modular 2018	10/03/2023

PAPERS PUBLISHED BY THE DEPARTMENT FACULTY IN SCI JOURNALS

Sr. No.	Name of the Paper Published	Author (s) Name
1.	GeSn based Hetrojunction Double-Gate Tripple metal layer Vertical TFET with Enhanced DC and Analog/RF Performance <i>Micro and Nanostructures, Elsevier, Volume 170, pp. 207392, October 2022</i>	Tulika Mamta Khosla Balwinder Raj
2.	Analog Performance Analysis of High-K Spacer Dual Material Gate Graded Channel Nanotube <i>Journal of Electronic Materials Springer (SCIE), Vol. 52, pp. 422–428, October 2022</i>	Ashima Rai Vaithyanathan Dhandapani Balwinder Raj
3.	On 3D-Printed Acrylonitrile Butadiene Styrene- Based Sensors: Rheological, Mechanical, Morphological, Radio Frequency and 4D Capabilities <i>Journal of Materials Engineering and Performance, Vol. 31, No. 11, pp. 8760-74, November 2022.</i>	Chahat Jain Balwinder Singh Dhaliwal Rupinder Singh
4.	Analytical Modeling and Performance Assessment of High Performance Split-Gate Dielectric Modulated InGaAs Gate All Around Junctionless MOSFET Biosensor <i>Micro and Nanostructures, Vol. 171, pp. 207395, November 2022</i>	Pawandeep Kaur Avtar Singh Buttar Balwinder Raj
5.	Comparative study of Hole Transporting Layers Commonly used in High Efficiency Perovskite Solar Cells <i>Journal of Materials Science, Springer, Vol. 57, pp. 21172–21191, November 2022</i>	Divya Sharma Rajesh Mehra Balwinder Raj
6.	Optimization of Tin Based Perovskite Solar Cell Employing CuSbS ₂ as HTL: A Numerical Simulation Approach <i>Journal of Optical Materials, Elsevier, Vol. 134, pp. 113060, December 2022</i>	Divya Sharma Rajesh Mehra and Balwinder Raj
7.	Artificial neural networkbased character recognition using SciLab <i>Multimedia Tools and Applications, Vol. 82, No. 2, January 2023.</i>	Priya Darshni Balwinder Singh Dhaliwal Raman Kumar Vincent Aizebeoje Balogun Sunpreet Singh and Catalin Lulian Pruncu
8.	Characterization of 3D printed meta-structure PLA substrate for patch antenna applications in S-band <i>International Journal of Electronics, pp. 1–15, February 2023</i> https://doi.org/10.1080/00207217.2023.2173805	S. Bansal S. Maithani B. S. Dhaliwal G. Saini
9.	On Comparison of 3D-Printed ABS and PVDF-Based Sensors for Body-Centric Utility <i>Arabian Journal for Science and Engineering, February 06, 2023, https://doi.org/10.1007/s13369-023-07658-3.</i>	Chahat Jain Balwinder S. Dhaliwal Rupinder Singh Suman Pattnaik
10.	On 3D Printing of Primary Recycled Polyvinylidene-Fluoride-Based Miniaturized, Flexible, and Wearable Sensor <i>Journal of Materials Engineering and Performance, February 13, 2023, https://doi.org/10.1007/s11665-023-07911-8.</i>	Chahat Jain Balwinder Singh Dhaliwal Rupinder Singh
11.	CL-HPWSR: Cross-layer-based energy efficient cluster head selection using hybrid particle swarm wild horse optimizer and stable routing in IoT-enabled smart farming applications <i>Transactions on Emerging Telecommunications Technologies, Vol. 34, No. 3, March 2023; e4725.</i>	Amandeep Kumar, Balwinder Singh Dhaliwal Damanpreet Singh

PAPERS PUBLISHED INTERNATIONAL JOURNALS OTHER THAN SCI JOURNALS

Sr. No.	Name of the Paper Published	Author (s) Name
1.	MOEES-Multi Objective Energy Efficient Clustering Scheme for Wireless Sensor Networks <i>International Journal of Intelligent Engineering and Systems, Vol.15, No.3, pp. 525-535, 2022.</i>	Amandeep Kumar Balwinder Singh Dhaliwal Damanpreet Singh
2.	Enhanced Approach for Image Edge Detection Using Histogram Equalization (BBHE) and Bacterial Foraging Optimization (BFO) <i>International Journal of Computer Applications in Technology, Inderscience, Vol. 68, No. 4, pp. 875-880, November 2022</i>	Tanvi, Parveen Kumar Balwinder Raj
3.	Energy Efficient Multi-hop Multipath sub clustering routing protocol for Wireless Sensor networks <i>International Journal of Recent Technology and Engineering, Vol.11, Issue 6, March 2023</i>	Kirti Bazar Kanika Sharma

PAPERS PUBLISHED IN NATIONAL JOURNALS

Sr. No.	Name of the Paper Published	Author (s) Name
1.	Design and Analysis of Various Solar Cell Technologies for Improvements in Efficiencies <i>Indian Journal of Engineering and Materials Sciences (IJEMS) Vol. 29, pp. 557-567, October 2022</i>	Divya Sharma Rajesh Mehra Balwinder Raj

PAPERS PUBLISHED / PRESENTED IN INTERNATIONAL CONFERENCES/SEMINARS

Sr. No.	Title of the Paper Presented/Accepted along with the Name of the Conference/Seminar (venue, with date)	Author (s) Name
1.	Study of State-of-the-art Optimized Routing methods in WSNs for Various Applications <i>IEEE 2nd International Conference on Technological Advancements in Computational Sciences (ICTACS), Uzbekistan, pp.180-184, October 2022</i>	V.K. Meena Kanika Sharma Amod Kumar
2.	Design and Parametric Analysis of Pentacene Organic Field Effect Transistor with Varying Dielectric Thickness <i>10th International Conference on Advancements in Engineering and Technology (ICAET-2022), November 11-12, 2022</i>	Yogesh Thakur Balwinder Raj Sandeep Singh Gill
3.	Hetero-junction Organic Solar Cell Design Materials and Structures <i>2nd International Conference on Electrical, Computer, Communications and Mechatronics Engineering (ICECCME 2022), Maldives, November 16-18, 2022</i>	Divya Sharma Rajesh Mehra Balwinder Raj Lajwanti Singh
4.	Comparative Study of Materials for Low Voltage Organic and Inorganic Dielectric for OFET <i>8th International Conference on Nanoelectronics, Circuits, & Communication Systems (NCCS-2022) at ARTTC, BSNL Ranchi, November 19-20, 2022</i>	Akanksha Mishra Balwinder Raj S.S.Gill
5.	Comparative Analysis of Multiplier Design for High Performance Applications <i>9th IEEE UP Section Conference on Electrical, Computer and Electronics, IIIT Allahabad, December 2-4, 2022</i>	Pankaj Balwinder Raj S S Gill
6.	Effect of Temperature Variations on the Linearity parameters of Graded Channel Nanotube Field Effect Transistor <i>Fourth International Conference on Recent Advances in Materials and Manufacturing (ICRAMM 2022), Velalar College of</i>	Ashima D. Vaithyanathan Balwinder Raj

	<i>Engineering and Technology, Erode, Tamil Nadu, December 8-9, 2022</i>	
7.	A Compact Flexible Crown Rectangular Fractal Antenna on low-cost PET substrate <i>2022 IEEE Microwaves, Antennas, and Propagation Conference (MAPCON 2022), Bangalore, India, pp. 1886–1890, 12-16 December 2022.</i>	Simranjit Kaur Josan Balwinder S. Dhaliwal Sachin Maithani
8.	Design of a 3D printed meta-structure biosourced PLA substrate based patch antenna <i>IEEE Microwaves, Antennas, and Propagation Conference (MAPCON 2022), Bangalore, India, pp. 520-524, 12-16 December 2022</i> https://doi.org/10.1109/MAPCON56011.2022.10047095	B. S. Dhaliwal S. Bansal G. Saini
9.	Design and Simulation of Tin-Halide Cs ₂ SnI ₆ -Based Perovskite Solar Cell for Enhanced Efficiency <i>International Conference on Sustainable Management Practices for Inclusive Growth: Issues, Challenges and Strategies, December 15-16, 2022</i>	Hemant Kumar Piush Verman and Balwinder Raj
10.	Simulation Analysis of Energy-Optimized Routing Techniques for Wireless Sensor Networks <i>5th International Conference on Contemporary, Computing and Informatics, December 2022</i>	V.K. Meena Kanika Sharma Amod Kumar
11.	Foam Based Flexible Z Shaped Microstrip Patch Antenna for 5G Applications <i>Proceedings of 3rd International Conference on Energy Control Computing and Electronic Systems (ICECCES 2022), Tirupati, Andhra Pradesh, December 29-31, 2022</i>	Yashica, Garima Saini Balwinder S. Dhaliwal Jayant G. Joshi
12.	Design and Analysis of Flexible Foam based Antenna for UWB Application <i>Proceedings of 3rd International Conference on Energy Control Computing and Electronic Systems (ICECCES 2022), Tirupati, Andhra Pradesh, December 29-31 2022</i>	Kulbhaskar Singh Balwinder S. Dhaliwal Garima Saini
13.	AMC Loaded Modified Circular Shaped Antenna for 5G Sub-6 GHz Applications <i>Proceedings of 3rd International Conference on Energy Control Computing and Electronic Systems (ICECCES 2022), Tirupati, Andhra Pradesh, December 29-31 2022</i>	Alka Yadav Garima Saini Balwinder S. Dhaliwal
14.	Facial Paralysis Severity Assessment via Convolutional Neural Network <i>International Conference NCETET-23</i>	Sakshi Awasthi Amod Kumar Kanika Sharma
15.	Design and Performance Analysis of InSb/InGaAs/InAlAs High Electron Mobility Transistor for High Frequency Applications <i>Congress on Control, Robotics, and Mechatronics (CRM 2023), Modi Institute of Technology, Kota, India, March 25-26, 2023</i>	Prajwal Sandeep Singh Gill and Balwinder Raj

PAPERS PUBLISHED/PRESENTED IN NATIONAL CONFERENCES/SEMINARS

Sr. No.	Title of the Paper Presented/Accepted along with the Name of the Conference/Seminar (venue, with date)	Author (s) Name
1.	Design and Analysis of Patch Antenna for Three Substrate Operating at 2.4 GHz <i>Proceedings of National Conference on Recent Trends in Communication, Computing and IOT (RTCCI), Feb. 12, 2023, Nashik, India</i>	Shivam Bansal Sachin Maithani Balwinder Singh Dhaliwal Garima Saini

PATENTS/COPYRIGHT SUBMITTED

S. No.	Name of Patents/Copyright	Submitted/Granted	Author (s) Name
1.	A Smart Changeover Switch Integrated with Diesel Generator Monitoring and Control System	Submitted	Mohd Ahsan Siddiqui C. Rama Krishna Challa Mala Kalra Syed Mohammad Shoaib Adil Zaidi Pushparaj Banoth Krishna Sandeep Singh Gill Amod Kumar Garima Saini

TRAINING PROGRAMMES ATTENDED BY THE INSTITUTE FACULTY/STAFF

S. No.	Title of Training Programme	Period of Training	Venue	Attended by
1.	Reservations in Services for SC/ST/OBC/ExSM/PWDs	06-02-2023 to 09-02-2023	Online by The Institute of Secretariat Training and Management (ISTM), New Delhi	Dr Balwinder Singh Dhaliwal

INTERNATIONAL CONFERENCES ORGANIZED

S. No.	Name of the Seminar/Conference	No. of Participants
1.	Artificial Intelligence of Things (ICAIoT 2023), organized at NITTTR, Chandigarh on March 30-31, 2023 sponsored by DSIR, Ministry of Science and Technology, GoI, Springer CCIS series	102

WORKSHOPS CONDUCTED (OTHER THAN CURRICULUM DEVELOPMENT WORKSHOPS)

Sr. No.	Name of the Workshop along with dates and venue
1.	Punjab State Curriculum Design Workshop Nov. 22, 2022 (Punjab State Polytechnic) 4 th Semester
2..	Punjab State Curriculum Design Workshop Dec. 23, 2022 (Punjab State Polytechnic) 5 th and 6 th Semester
3	VVM Workshop, October 15-16, 2022, NITTTR Chandigarh

RESEARCH AND DEVELOPMENT

Sr. No	Name of Project	Team	Amount (Rs.)	Status of Project completed/ In progress
1.	Design and Development of Junctionless Nanowire TFET Biosensor	Dr Balwinder Raj	37 Lakhs	Completed
2.	FIST: To strengthen research facilities in the college	Dr. Rupinder Singh Dr Balwinder Raj	80 Lakhs	Ongoing
3.	Memristive Non-volatile SRAM Cell Design for AI Applications	Dr Balwinder Raj Dr S S Gill	11.42 Lakhs	Ongoing
4.	Design of FinFET architectures for analog/RF and biomedical applications	Dr Balwinder Raj Dr Suman Lata	18 Lakhs	Ongoing
5.	Design of Low Power Area Efficient 8-Bit CMOS Flash ADC for Biomedical Applications	Dr Balwinder Raj Dr S S Gill	86 Lakhs	Presentation Done

6.	Design and Development of System-on-Chip for Single-Lead Wearable Electrocardiogram (ECG) for medical devices	Dr Balwinder Raj Dr S S Gill	97 Lakhs	Presentation Done
7.	Design, Fabrication and Characterization of Vertical TFET based Ammonia Gas Sensor for Industrial Applications	Dr Balwinder Raj	45 Lakhs	Submitted
8.	Design and Development of InSb HEMT based Power Amplifier for 6G Applications	Dr Garima Saini Dr Balwinder Raj	39 Lakhs	Submitted
9.	Tuning of dielectric constant of textile substrate using Dielectric Ceramic Nanomaterial Coating for designing Wearable Antenna	Dr Balwinder Singh Dhaliwal	94 Lakhs	Submitted to CRG-SERB 14-Mar-2023
10.	Design of FinFET architectures for analog/RF and biomedical applications	Dr. Suman Lata, LPU Dr. Balwinder Raj, NITTTR, Chandigarh	18 Lakhs SERB funded project under TARE	Ongoing (Started in Nov, 2022)

INSTRUCTIONAL MATERIAL DEVELOPMENT

Sr. No.	Type of Instructional Material Developed	Author(s) / Team	Project Completed
1.	Editing Text Book	Balwinder Raj B B Gupta and Sandeep Singh Gill	AI for big data based engineering applications from the Security perspectives, <i>CRC Press, Taylor & Francis, Dec 2022 (ISBN 9781032136134).</i>
		Rupinder Singh Balwinder Singh Dhaliwal Shyam Sundar Pattnaik, (eds	3D Printing of Sensors, Actuators, and Antennas for Low-Cost Product Manufacturing <i>CRC Press, Taylor & Francis Ltd., February, 2023. ISBN 9781032046808, eBook ISBN 9781003194224 DOI: https://doi.org/10.1201/9781003194224.</i>
2.	Book Chapters	Parul Sharma Sandeep Singh Gill and Balwinder Raj	Spintronics for AI, in Book AI for big data based engineering applications from the Security perspectives CRC Press, Taylor & Francis, Dec 2022
		Mandeep Singh, Tarun Chaudhary and Balwinder Raj	Emerging Non-volatile Memories for AI Applications, in Book AI for big data based engineering applications from the Security perspectives CRC Press, Taylor & Francis, Dec 2022
		Atul M. Kulkarni Garima Saini Shyam S. Pattnaik Ravindra A. Pardeshi	3D Printing in Antenna Design, in Book 3D Printing of Sensors, Actuators, and Antennas for Low-Cost Product Manufacturing CRC Press, eBook ISBN9781003194224 doi.org/10.1201/9781003194224
		Jayant G. Joshi Mandar P. Joshi Balwinder S. Dhaliwal Shyam S. Pattnaik,	Introduction to 3D Printing of Sensors, Actuators, and Antennas for Low-Cost Product Manufacturing, In Book 3D Printing of Sensors, Actuators, and Antennas for Low-Cost Product Manufacturing R. Singh, B.S. Dhaliwal, S.S. Pattnaik (eds), pp. 1–12, CRC Press, Taylor & Francis Ltd., February, 2023.
		Chahat Jain, Balwinder S. Dhaliwal Rupinder Singh	3D printing of sensors, actuators, and antennas: Materials & Processes, In Book 3D Printing of Sensors, Actuators, and Antennas for Low-Cost Product Manufacturing R. Singh, B.S. Dhaliwal, S.S. Pattnaik, (eds.), pp. 13-30, CRC Press, Taylor & Francis Ltd., February, 2023.

		Ankit Meghwal Garima Saini Balwinder Singh	A Unique Multident Wide Band Antenna for TV White Space Communication Applications, published in Proceedings of the International Conference on Paradigms of Computing, Communication and Data Sciences, July 05-07, 2022, MNIT, Jaipur, India, In Book Algorithms for Intelligent Systems. R.P., Yadav, S.J., Nanda, P.S., Rana, M.-H. Lim. (eds), pp 745-756, Springer Singapore, February 24, 2023 https://doi.org/10.1007/978-981-19-8742-7_60 .
3.	Lab Manual	Balwinder Raj	VLSI Design

STUDENT TRAINING ORGANIZED

Sr. No.	Name of the Course along with dates & place	No. of weeks	Participation		Total No. of Participants
			Poly	Engg	
1.	Industrial Training of students of University of Kashmir in Internet of Things, 20-02-2023 to 26-03-2023 at NITTTR, Chandigarh (Dr. Balwinder Singh Dhaliwal/Dr. Garima Saini)	04			12

Dr. Kanika Sharma
e- News Letter, Coordinator
ECE Department