

CURRICULUM VITAE

Dr. Mohammad Junaid Khan



Ph.D. (Faculty of Engineering and Technology) from National Institute of Technical Teachers Training & Research (NITTTR), Sector-26, Chandigarh-160019 (**MHRD, Government of India**)

Title of Ph.D: “Development of Artificial Intelligence Based Real-Time Maximum Power Point Tracking Controller for a Hybrid Renewable Energy System”

M.E. (Electronics Product Design and Technology), PEC University of Chandigarh, Sector 12, Chandigarh-160012 (**Administration of Union Territory of Chandigarh, Govt. of India**)

B.E. (Electronics and Communication Engineering) from Ujjain Engineering College, Ujjain (**Autonomous by Govt. of M.P.**) formerly known as Govt. Engineering College, Ujjain affiliated to Rajiv Gandhi Proudyogiki Vishwavidyalaya (RGPV) Bhopal, Madhya Pradesh, India

1. Primary Details:

Name	Dr. Mohammad Junaid Khan
Present Address	Assistant Professor, Electrical and Electronics Department, Mewat Engineering College Nuh Haryana (HWB, Govt. of Haryana)
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2. Qualifications

2.1 Technical qualification

Degree	Specialization	University/Institute	Year of Passing	%Marks/ CGPA	Division
Ph.D.	Faculty of Engineering and Technology	NITTTR, Chandigarh/ Panjab University Chandigarh	2019	-	-
M. E.	Electronics Product Design and Technology	PEC University of Technology Chandigarh	2011	7.25	First Division
B. E.	Electronics and Communication Engineering	RGPV Bhopal/ Govt. Engineering College Ujjain	2009	69.53	First Division

2.2 Educational qualifications

Examination	Subject	University/Board	Year of Passing	% Marks	Class/ Division
10+2 (PCM)	Math, Physics, Chemistry, Hindi, English	Madhya Pradesh Board of Secondary Education	2004	79.78%	First Division & Distinctions in (P. C. M)
10 th	Math, Hindi, English, Sanskrit, Science, Social science	Madhya Pradesh Board of Secondary Education	2002	64.60%	First Division & Distinction in (Math)

3. Achievements (Total = 06)

3.1 Academic Achievements: (Total = 03)

S. No.	Name of Achievement	Department/Or ganization	Rank	Remark
1	GATE	Electronics and Communication Engineering	4888	Graduate Aptitude Test in Engineering (GATE-2009) in ECE Department
2	P.E.T.	Pre Engineering Test	289	Madhya Pradesh-Pre Engineering Test 2005 (MP PET 2005) was a state level examination organized by the Vyapam Board for admission to Engineering Colleges in Madhya Pradesh, India.
3	PDF	Electrical Engineering Department, IIT Guwahati	-	Post Doctorate Fellowship (Selected on 02.07.2019). for Research Purposes.

3.2 Awards and Recognition: (Total = 03)

S. No.	Name of Award	Department/Organization	Year	Remarks
1	Best Paper	RPIIT 2020: Online International Conference	24-25.7 2020	Award
2	Best Young Scientist	ITSR Rajasthan	25.11.2017	Award
3	UGC Fellowship	under MANF Scheme	2014-2019	Award

4. Experience (in reverse chronological order): (Total Exp.= 10 years)

S. No.	Designation	Organization	Period		Duration	Nature of experience	Pay scale/ (Consolidated)
			From	To			
1	Assistant Prof.	MEC Nuh, Haryana	29.6.2019	Till date	-	Teaching	15600-39100
2	Teaching cum research assistantship	NITTTR Chandigarh	4.9.2014	27.5.2019	4.7 Yrs	Teaching	45000 (Consolidated)
3	Assistant Prof.	SRMIET Ambala, Hr.	17.8.2013	3.9.2014	1 Yr	Teaching	15600-39100
4	Assistant Prof.	SIET Bilaspur HP	25.7.2011	25.7.2013	2 Yrs	Teaching	15600-39100

5. Filed Patents: (Total = 03)

S. No.	Inventor (s) (in correct order)	Title of Patent	Status /Year	Patent (Name/ Vol./Page nos/Publisher/ Place)
1	Ajay Kumar, M. J. Khan & R. K. Goel	Smart Green Solar Oven	Grant /2021	Granted with Patent No.367025 on 19.5.2021 , Patent Application No. 201911026984, Patent Filed, dated on 05/07/2019, Publication Date : 22/11/2019.
2	M. J. Khan & Amandeep Sharma	Optimal Power Generation from Hybrid Renewable Energy System	Published /2018	Patent Application No. 201811015392, dated: 24.04.2018 Published in the Official Journal No. 21/2018, dated on 25/05/2018.
3	Amandeep Sharma & M. J. Khan	Real-Time Monitoring of Electrical Assets for Predictive Maintenance With IoT Platform Based Intelligent Technology	Published /2018	Patent Application No. 201811024723, 03.07.2018 Published in the Official Journal No. 28/2018, dated on 13/07/2018.

6. Publications: (Total = 47)

A. Papers in refereed International Journals Including 11 SCI (total Impact Factor of SCI journals is 57.604), 03 ESCI, and 05 Scopus Indexed

S. No.	Author (s) (in correct order)	Title	Year	Journal (Name/ Vol./Page nos/ Publisher/ Place/ SCI/ Scopus/Impact Factor)
1	M. J.	Fuzzy-Logic	2022	MDPI , Mathematics, Vol. 10, No. 3, pp 1-28, 08.02.

	Khan, L. Mathew; M. A. Alotaibi, Hasmat M., M. E. Nassar	Based Comparative Analysis of different Maximum Power Point Tracking Controllers for Hybrid Renewal Energy Systems		2022. ISSN 2227-7390 https://doi.org/10.3390/math10030529 [SCI, IF=2.258]
2	M. J. Khan	An AIAPO MPPT Controller based Real Time Adaptive Maximum Power Point Tracking Technique for Wind Turbine System	2021	Elsevier , ISA Transactions, Vol. No. , pp. 1-13, 7.06.2021 ISSN No.: 0019-0578 https://doi.org/10.1016/j.isatra.2021.06.008 [SCI, IF=5.468]
3	M. J. Khan and L. Mathew	Artificial neural network-based maximum power point tracking controller for real-time hybrid renewable energy system	2021	Springer , Soft Computing, Vol. 25 No. 08 pp. 6557-6575, 25.02.2021, ISSN No.: 1433-7479, DOI:10.1007/s00500-021-05653-0 [SCI, IF=3.643]
4	M. J. Khan and Pushparaj	A Novel Hybrid Maximum Power Point Tracking Controller based on Artificial Intelligence for Solar Photovoltaic System under Variable Environmental Conditions	2021	Springer , Journal of Electrical Engineering and Technology, Vol. 16, No. 4, pp. 1879-1889, 29.04.2021, ISSN No. 2093-7423 https://doi.org/10.1007/s42835-021-00734-4 [SCI, IF= 1.069]
5	M. J. Khan	Review of recent trends in Optimization techniques for Hybrid Renewable Energy System	2020	Springer , Achieves of Computational Method in engineering, Vol. 28, No. 3, pp. 1459-1469. 24.04.2020. ISSN No. 1886-1784 DOI: 10.1007/s11831-020-09424-2 [SCI, IF = 7.302]
6	M. J. Khan and L. Mathew	Fuzzy Logic Controller Based MPPT for Hybrid Photo-Voltaic/ Wind/Fuel Cell Power System	2018	Springer , Neural Computing and Applications, Vol. 31, No. 10, pp. 6331-6344, 2019. ISSN No. 1433-3058 https://doi.org/10.1007/s00521-018-3456-7 [SCI, IF=5.606]
7	M. J. Khan and L.	Comparative analysis of Maximum power	2018	Taylor & Francis , International Journal of Electronics, Vol. 105, No. 9, pp.1535-1550, 2018. ISSN No. 1362-3060,

	Mathew	point tracking controller for wind energy system		DOI: 10.1080/00207217.2018.1461251 [SCI, IF=1.336]
8	M. J. Khan and L. Mathew	Comparative Study of Optimization Techniques for Renewable Energy System	2018	Springer , Achieves of Computational Method in engineering, Vol. 27, pp. 351-360, 2020. ISSN No. 1886-1784 https://doi.org/10.1007/s11831-018-09306-8 , [SCI, IF = 7.302]
9	M. J. Khan and L. Mathew	Comparative Study of Maximum Power Point Tracking Techniques for Hybrid Renewable Energy System	2019	Taylor & Francis , International Journal of Electronics, Vol. 106, No. 8, pp. 1216-1228. ISSN No. 1362-3060, https://doi.org/10.1080/00207217.2019.1584917 [SCI, IF = 1.336]
10	M. J. Khan, A.K. Yadav and L. Mathew	Techno Economic Feasibility Analysis of Different combinations of PV-Wind-Diesel-Battery Hybrid System for Telecommunicati on applications in different cities of Punjab, India	2017	Elsevier , Renewable & Sustainable Energy Reviews, Vol. 76, pp. 577-608, 2017. ISSN No. 1364-0321, (DOI: 10.1016/j.rser.2017.03.076) [SCI, IF=14.982]
11	M. J. Khan and L. Mathew	Different Kinds of Maximum Power Point Tracking control Method for Photo voltaic Systems: A Review	2016	Springer , Achieves of Computational Method in engineering, Vol. 24, No. 4, pp.855-867, 02 September 2016. ISSN No. 1886-1784, doi: 10.1007/s11831-016-9192-1. [SCI, IF=7.302]
12	M. J. Khan and Pushpar aj	Modeling and Implementation of DC–DC Power Converter for Different Sampling Time Period	2020	NATURAL REMEDIES PRIVATE LTD , Journal of Natural Remedies, Vol. 21, No. 3, pp. 1-12, 03.07.2020, ISSN / eISSN: 0972-5547 DOI: https://doi.org/10.46828/OCPU/JNRabout.Vol21.Iss3.28 [ESCI, SCOPUS]
13	M. J. Khan and Pushpar aj	Electric Power Generation from Photo-voltaic Renewable Energy System	2020	Science and Engineering Research Support Society (SCRSC) , IJFGCN, Vol. 13, No. 3, pp. 3815-3824, 01.08.2020, ISSN No. 2233-7857 http://www.sersc.org/journals/index.php/IJFGCN/article/view/30801 [ESCI Indexed]
14	M. J. Khan and	Impact of Covid-19 in Social Environment and	2020	NATURAL REMEDIES PRIVATE LTD , Journal of Natural Remedies, Vol. 21, No. 2, pp. 29-43, 11.6.2020, ISSN / eISSN: 0972-5547

	Pushparaj	Management in India		DOI: https://doi.org/10.46828/about.Vol21.Iss2.23 [ESCI, SCOPUS]
15	R. Mustafa, M. J. Khan, Pushparaj, T. Kaur	Novel Energy Efficient Clustering Approach For Cognitive Radio Sensor Networks	2021	Karadeniz Technical University (Turkbilmat Egitim Hizmetleri) , Turkish Journal of Computer and Mathematics Education, Vo. 12, No. 9, pp. 3109-3116, 20.04.2021, e-ISSN 1309-4653 https://doi.org/10.17762/turcomat.v12i9.4777 https://turcomat.org/index.php/turkbilmat/article/view/4777/4012 [SCOPUS Indexed]
16	M. Z. Hassnain, P.K. Angral, M. J. Khan, Pushparaj	Comparative Analysis of various Techniques for Transformer Protections	2020	Science and Engineering Research Support Society (SCRSC) , International Journal of Advanced Science and Technology, Vol. 29, No. 7s, pp. 5812-5819, 1.06.2020. ISSN No. : 2207-6360 http://sersc.org/journals/index.php/IJAST/article/view/26495 [SCOPUS Indexed]
17	M. J. Khan	Artificial Intelligence Based Maximum Power Point Tracking Controller for Fuel Cell System	2019	IIETA, European Journal of Electrical Engineering, Vol. 21, No. 3, pp. 297-302, 15, August 2019. ISSN No. 2103-3641. Doi: 10.18280/ejee.210306 [Scopus Indexed]
18	M. J. Khan and L. Mathew	Maximum Power Point Tracking Control Method For a Hybrid PV/WT/FC Renewable Energy System	2017	Serials Publications , International Journal of Control theory and Applications, Vol. 10, No. 6, pp. 411-424, 13, April 2017. ISSN No. 0974-5572. https://serialsjournals.com/abstract/42742_44-mohammad_junaaid_khan.pdf [Scopus Indexed]
19	M. Rizwee, S. S. Minz, M. Orooj, M. Z. Hassnain, M.J. Khan	Electric Discharge Machining Method for various Metal Matrix Composite Materials	2019	Blue Eyes Intelligence Engineering and Sciences Publication , International Journal of Innovative Technology and Exploring Engineering (IJITEE), Vol. 8, No. 9, pp. 1-12, 10, July, 2019. ISSN No. 2278-3075 https://www.researchgate.net/profile/Mumtaz-Rizwee/publication/350441298_Electric_Discharge_Machining_Method_for_various_Metal_Matrix_Composite_Materials/links/605f6f1092851cd8ce6fb2ad/Electric-Discharge-Machining-Method-for-various-Metal-Matrix-Composite-Materials.pdf [Scopus Indexed]
20	A. Sharma, S. Chatterji, L. Mathew and M. J. Khan	A Review of Fault Diagnostic and Monitoring Schemes of Induction Motors	2015	International Journal of Research in Applied Science & Engineering Technology (IJRASET) , Vol. 3, No. IV, pp. 1145-1152, April 2015. [Scientific Journal Impact Factor = 5.696]. ISSN: 2321-9653. https://www.ijraset.com/files/serve.php?FID=2285 [UGC Indexed]
21	R. Mustafa and	Implementation for Temperature Monitoring of	2015	International Journal of Innovative Research in Applied Science and Technology (IJIRAST) , Vol. 1, No. 2, pp. 31-41, March 2015. ISSN-2000-2001

	M. J. Khan	PIC Microcontroller Based Embedded System		[UGC Indexed]
22	R. Mustafa and M. J. Khan	Design, Development and Fabrication of PIC Microcontroller Based Embedded System for Temperature Monitoring	2014	IJRASET , Vol. 2, No. 5, pp.225-232, May 2014. ISSN: 2321-9653. https://www.ijraset.com/files/serve.php?FID=462 [UGC Indexed]
23	M. J. Khan and R. Mustafa	Soil testing and Analyzing Using Advanced Virtual RISC microcontroller	2012	IJECT , Vol. 3, No. 1, PP. 61-65, 2012. ISSN: 2230-9543 (print), ISSN: 2230-7109 (online). http://www.iject.org/vol3issue1/junnaid.pdf [UGC Indexed]

B. Papers in Conference Proceedings (International): (Total = 12)

S. No.	Author (s) (in correct order)	Title of Paper	Year	Int. Conf. / Place/ date/Page/ Publisher etc.
1	A. Akhtar, M. J. Khan, S.Khan	Comparative Analysis of various Control Techniques for Electric Vehicles	2021	Online International Conference on Recent Trends in Renewable Energy and Advancement in Engineering and Technology (RTREAET-2021), Jointly organized by EEE and ECC Departments, MEC, Nuh, Haryana, pp. , 28-29 Dec. 2021. ISBN No.: 978-93-5526-758-0
2	S. Parween, M. Shaban ,M. Z. Khan , U. Khan, M. J. Khan	Comparison between different method of maximum power point tracking algorithm for solar photovoltaic array	2021	Online International Conference on Recent Trends in Renewable Energy and Advancement in Engineering and Technology (RTREAET-2021), Jointly organized by EEE and ECC Departments, MEC, Nuh, Haryana, pp. , 28-29 Dec. 2021. ISBN No.: 978-93-5526-758-0
3	Md Zahid Hassnain, Mohd. Junaid Khan, Wasim Akram	Comparative Analysis of Fault Diagnostic Methods in Solar Panels	2021	Online International Conference on Recent Trends in Renewable Energy and Advancement in Engineering and Technology (RTREAET-2021), Jointly organized by EEE and ECC Departments, MEC, Nuh, Haryana, pp. , 28-29 Dec. 2021. ISBN No.: 978-93-5526-758-0

4	M. J. Khan and Rinku Dhiman	Maximum Power Point Tracking Control Methods for Photo-voltaic system under partial shading conditions	2020	RPIIT 2020: Online International Conference on latest trends in “Engineering, Management, Hotel Management Pharmacy, Nursing, Physiotherapy”, RTIIT, Karnal, India, July(24-25), 2020 ISBN: EMPN 2020:978-93-5396-946-2
5	M. J. Khan and L. Mathew	Artificial Intelligence Based Maximum Power Point Tracking Algorithm for Photo-Voltaic System Under Variable Environmental Conditions	2017	Proceedings IEEE International Conference on Recent Developments Control, Automation & Power Engineering (RDCAPE), Amity, Noida, India, pp. 114-119, 26-27 Oct 2017. ISBN: 978-1-5090-3978-4 Doi: 10.1109/RDCAPE.2017.8358251
6	M. J. Khan and L. Mathew	Maximum Power Point Tracking Control Method for a Hybrid PV/WT/FC Renewable Energy System	2017	2 nd International Conference on Sustainable Computing Techniques in Engineering, Science and Management (SCESM-2017), Jain College of Engineering, Belagavi, Goa, India, 27-28 January 2017, pp. 0378-0385. ISSN: 0974-5572.
7	M. J. Khan, A. K. Yadav, S. Chatterji and L. Mathew	Techno Economic Analysis of PV-Wind-Grid Connected Systems for Power Generation in India	2015	Annual IEEE India Conference (INDICON) , Jamia Millia Islamia, New Delhi, India, 17-20 Dec. 2015, pp. 1-5. ISSN: 2325-9418.
8	M. J. Khan, P. Shukla, R. Mustafa, S. Chatterji And L. Mathew	Different Types of Maximum Power Point Tracking Techniques for Renewable Energy Systems: A Review	2015	Proceedings of AIP International Conference on ICCS-2015, 1715, or Vol. 1715, No. 1, PP. 020015-1-20015-9, BKBIET, Pilani Rajasthan, India, ISBN: 978-0-7354-1362-7, 18-20 October 2015; doi: 10.1063/1.4942697 [Scopus Indexed]
9	R. Mustafa, S. Sarowa, R. R. Jaglan, M. J. Khan and S. Agrawal	LTE-Advanced Random Access Mechanism for M2M Communications: A Review	2015	Proceedings of AIP International Conference on ICCS-2015, 1715, or Vol. 1715, No. 1, PP. 020036-1-20036-6, BKBIET, Pilani Rajasthan, India, doi: 10.1063/1.4942718, ISBN: 978-0-7354-1362-7, 18-20, oct-2015. [Scopus Indexed]
10	M. J. Khan, S. Chatterji, L. Mathew	A Survey of various Maximum Power Point Tracking Techniques used in solar photovoltaic system	2014	International Conference on Recent Advances and Trends in Electrical Engineering (RATEE 2014), at dec.23-24, 2014, NITTTR, Chandigarh, published by Excel

	and A. Sharma			India, pp. 283-288. ISBN: 978-93-84869-05-2
11	M. J. Khan, Y. Narayan, S. Chatterji and L. Mathew	Literature Review on Solar Maximum Power Point Tracking (MPPT) System	2015	International Conference on Emerging & Trends in Engineering, Published by MPH Enlightening Minds, pp. 286-291, 8-9 May 2015, Maharaja Agrasen University H.P.. ISBN: 978-93-82068-14-3.
12	Y. Narayan, M. J. Khan, S. Chatterji and L. Mathew	Hybrid Control of A Robotic Arm Using EEG & EMG Signal: A Review	2015	International Conference on Emerging & Trends in Engineering, Published by MPH Enlightening Minds, pp. 292-297, 8-9 May 2015, Maharaja Agrasen University H.P. ISBN: 978-93-82068-14-3.

C. Papers in Conference Proceedings (National): (Total = 12)

S. No.	Author (s) (in correct order)	Title of Paper	Year	Complete Reference: Title of Conf./ Place/ date/ Page/Publisher etc.)
1	M. J. Khan, R. Khan, N. Sah and D. Kumar	Soil Testing Using AVR Microcontroller	2011	Futuristic Application in Electronics Engineering (NCFAEE-11), at AISSMS IOIT, Pune, 2011, PP. 226-229.
2	R. Khan, M. J. Khan, N. Sah and D. Kumar	Controlling of Irrigation Valve Through Mobile Using GSM Modem	2011	National Conference on Futuristic Application in Electronics Engineering (NCFAEE-2011), at AISSMS IOIT, Pune, PP. 1-5.
3	Y. Narayan, S. Chatterji, L. Mathew, R. M. Singh, M. J. Khan and S. Kumar	An EEG and EMG-Based Control Approaches in Exoskeleton Robotic Arm for Stroke Rehabilitation	2015	National Conference on Technological Development in Electronics Engineering “Macro To Nano World” (NCTDEE - 15), Sponsored by Science Engineering Research Board (SERB), DST, Govt. of India, Department of ECE, Dronacharya College of Engineering, Khentawas, Farrukhnagar, Gurgaon-123506, (Haryana), pp. 2, 13-14 march 2015
4	Narendra Kumar Garg, Ajay Kumar Dadoria, Vivek Singh Kushwah& M. J. Khan	Design and Analysis of Noise Tolerant, Low Power Wide-OR Domino Logic by using Interconnects in DSM Technologies	2020	National Conference (online) on Recent Trends in Renewable Energy and Advancement in Engineering and Technology (RTREAET-2020), Jointly organized by EEE and ECC Departments, MEC, Nuh, Haryana, pp. 18-25, 1-2 Sept. 2020. ISBN No.: 978-93-5416-763-8
5	Md Zahid Hassnain, P.K. Angral and Mohd Junaid khan	Comparative Analysis of various Techniques for Transformer Protections	2020	National Conference (online) on Recent Trends in Renewable Energy and Advancement in Engineering and Technology (RTREAET-2020), Jointly organized by EEE and ECC

				Departments, MEC, Nuh, Haryana, pp. 41-43, 1-2 Sept. 2020. ISBN No.: 978-93-5416-763-8
6	M. J. Khan and Pushparaj	Electric Power Generation from Photo-voltaic Renewable Energy System	2020	National Conference (online) on Recent Trends in Renewable Energy and Advancement in Engineering and Technology (RTREAET-2020), Jointly organized by EEE and ECC Departments, MEC, Nuh, Haryana, pp. 79-84, 1-2 Sept. 2020. ISBN No.: 978-93-5416-763-8
7	Anjali Patware, Uday Panwar J. Khan	A Novel Design CNTFET based Adiabatic Logic Circuit for Low Power Applications	2020	National Conference (online) on Recent Trends in Renewable Energy and Advancement in Engineering and Technology (RTREAET-2020), Jointly organized by EEE and ECC Departments, MEC, Nuh, Haryana, pp. 97-104, 1-2 Sept. 2020. ISBN No.: 978-93-5416-763-8
8	Namrata Sharma, Dr. Uday Panwar & M. J. Khan	A Novel Approach For Analysis CNTFET Based Domino circuit in Nano-Scale Design	2020	National Conference (online) on Recent Trends in Renewable Energy and Advancement in Engineering and Technology (RTREAET-2020), Jointly organized by EEE and ECC Departments, MEC, Nuh, Haryana, pp. 111-119, 1-2 Sept. 2020. ISBN No.: 978-93-5416-763-8
9	Mohit Sanger, Mujakir Khan, Ashok Kumar and Mohd. Junaid Khan	Maximum Power Generation from Photo voltaic System	2020	National Conference (online) on Recent Trends in Renewable Energy and Advancement in Engineering and Technology (RTREAET-2020), Jointly organized by EEE and ECC Departments, MEC, Nuh, Haryana, pp. 243-248, 1-2 Sept. 2020. ISBN No.: 978-93-5416-763-8
10	Samina Parween, Mohammad Shabanand Mohammad Junaid Khan	Simulation model of Boost Converter in various Sampling Time	2020	National Conference (online) on Recent Trends in Renewable Energy and Advancement in Engineering and Technology (RTREAET-2020), Jointly organized by EEE and ECC Departments, MEC, Nuh, Haryana, pp. 249-255, 1-2 Sept. 2020. ISBN No.: 978-93-5416-763-8
11	Md Zahid Hassnain, Mohammad Junaid Khan	Analysis of Prediction of Fault by Infraredthermography	2020	National Conference (online) on Recent Trends in Renewable Energy and Advancement in Engineering and Technology (RTREAET-2020), Jointly organized by EEE and ECC Departments, MEC, Nuh, Haryana, pp. 270-273, 1-2 Sept. 2020. ISBN No.: 978-93-5416-763-8

12	Mohammad Junaid Khan, Pushparaj	Design and Implementation of DC-DC Boost Converter for variable Sampling Time Period	2020	National Conference (online) on Recent Trends in Renewable Energy and Advancement in Engineering and Technology (RTREAET-2020), Jointly organized by EEE and ECC Departments, MEC, Nuh, Haryana, pp. 282-288, 1-2 Sept. 2020. ISBN No.: 978-93-5416-763-8
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7. Book/Chapters: (Total = 03)

S. No.	Author(s) (in correct order)	Title of Book/Chapter	Book/Chapter	Year	Publishers
1	M. J. Khan, Md. Zahid Hussnain & Manish	Basic Elements of Electrical and Electronics Engineering (Accepted)	Book	2019	Khanna Publishers
2	M. J. Khan & A. Choudhary	Maximum Power Point Tracking Techniques for PV Framework under Partial Shaded Conditions: Towards Green Energy for Smart Cities. In Artificial Intelligence, Machine Learning, and Data Science Technologies: Future Impact and Well-Being for Society 5.0 (1st ed.). CRC Press. Published 12 October 2021, pp. 193-204 12, eBook ISBN 9781003153405. https://doi.org/10.1201/9781003153405-10	Chapter	2021	Taylor & Francis Group
3	M. J. Khan, L. Mathew & A. K. Yadav	Novel Applications of Soft Computing Techniques for Comparative Analysis of Maximum Power Point Tracking in Solar Photo-Voltaic System Under Perturb Conditions. In: Malik H., Iqbal A., Yadav A. (eds) Soft Computing in Condition Monitoring and Diagnostics of Electrical and Mechanical Systems, Advances in Intelligent Systems and Computing, vol 1096. PP. 363-385, 18 January 2020, Springer, Singapore, ISSN No. 2194-5357 https://doi.org/10.1007/978-981-15-1532-3_16	Chapter	2020	Springer Publishers

8. Project: (Total = 02)

S.No.	Title of Research Project	Sanctioned Authority and purpose	Sanction Date	Completion Date	Description Amount
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1	Organization of International Conference (Online) on “Recent trends in Renewable Energy & Advancement in Engineering & Technology” (RTREAET-2021) in Collaboration with HAREDA.	HAREDA, Conducting online International Conferences at MEC Nuh, Haryana for 28-29 Dec. 2021.	20.08.2021	29.12.2021	1.90 Lakh
2	Organization of various energy conservation activities under state energy efficiency research and outreach programme at Mewat Engineering College, Nuh	HAREDA, conducting Workshop and Conferences at MEC Nuh, Haryana for 27-28 Aug and 1-2 Sept 2020 respectively.	13.02.2020	2.09.2020	3 Lakh

9. Responsibilities: (Total = 14)

S. No.	Responsibility	Name of College/ University	Year of Session	No. of Times
1	Departmental Academic Coordinator	MEC Nuh, Haryana	2021-22	01
2	Dy. Chair of Library Committee	MEC Nuh, Haryana	2021-22	01
3	Accreditation Coordinator	MEC Nuh, Haryana	2019-21	04
4	Coordinator of AICTE Committee	MEC Nuh, Haryana	2019-21	04
5	Coordinator of AISHE Committee	MEC Nuh, Haryana	2019-21	04
6	Coordinator of Affiliation Committee	MEC Nuh, Haryana	2019-21	04
7	Dy. Chair of Academic Committee	MEC Nuh, Haryana	2019-21	04
8	Dy. Chair of Sports Committee	MEC Nuh, Haryana	2019-21	03
9	Hostel Warden	MEC Nuh, Haryana	2019-21	04
10	Class in charge of M.TECH. (1st Year)	SRMIET, Ambala	2013-14	01
11	Class in charge of M. Tech. (2nd Year)	SRMIET, Ambala	2013-14	01
12	Class Co-Ordinator of B.TECH. (ECE 3 rd year)	SIET, Bilaspur, H.P. (5.8.2011-31.7.2012)	2011-12	01
13	Member of Committee on Unfair means	SIET, Bilaspur, H.P. (5.8.2011-31.7.2012)	2011-12	01
14	Member of Transport committee	SIET, Bilaspur, H.P. (5.8.2011-31.7.2012)	2011-12	01
15	Class Co-Ordinator of B.TECH. (ECE Final Year)	SIET, Bilaspur, H.P. (7.8.2012-31.7.2013)	2012-13	01
16	Member of Discipline committee	SIET, Bilaspur, H.P. (7.8.2012-31.7.2013)	2012-13	01
17	Chairman of time table committee	SIET, Bilaspur, H.P. (6.8.2012-25.7.2013)	2012-13	01
18	Chairman of Library committee	SIET, Bilaspur, H.P. (7.8.2012-25.7.2013)	2013-14	02

10. Courses Taught: (Total = 07)

Courses No. & Title	Level (UG/PG)	Number of Times	Course developed by
EC-211, Digital Electronics Engineering- Theory and	UG	2	H. P. University

Practical			
EC-413, Digital Signal Processing- Theory and Practical	UG	1	H. P. University
BE-101, Basic Electrical and Electronics Engineering- Theory and Practical	UG	1	H. P. University
EC-424, Computer Network & Data Communication- Theory and Practical	UG	1	H. P. University
EC-311, Microprocessor Theory and Application- Theory and Practical	UG	1	H. P. University
EC-213, Circuit Theory & Network Analysis & Synthesis- Theory (Only)	UG	1	H. P. University
MTECE-102N Advanced Digital Signal Processing- Theory and Practical	PG	1	Kurukshetra University
EE-203E, Network analysis & synthesis- Theory (Only)	UG	1	Kurukshetra University
ECE-306E, Digital Signal Processing - Theory and Practical	UG	1	Kurukshetra University
EE-208E, Signals & Systems- Theory (Only)	UG	1	Kurukshetra University
MEI-6103, Digital Signal Processing – Theory and Practical	PG	2	NITTTR Chandigarh
MEI 7105, Energy Management – Theory and Practical	PG	2	NITTTR Chandigarh
MEI 6201, Microcontroller based embedded system – Theory and Practical	PG	1	NITTTR Chandigarh
MEI 6207, Instrumentation for Environmental Engineering – Theory and Practical	PG	2	NITTTR Chandigarh

11. MOOCs/SWAYAM ARPIT ONLINE COURSE CERTIFICATION

S. No.	Name of Course	Date	Grade in the proctored examination
1	Big Data Analytics For Smart Grid	16.02.2020	A
2	Real Time Power System Analysis and Smart Grid	30.06.2019	B

12. Faculty Development Programme attended (give details below): (Total = 09)

S. No.	Faculty Development Programme with name of organizer and place	Period		Duration
		From	To	
1	“NBA Accreditation and Teaching-Learning Process in Engineering” held from 15/11/2021 to 19/11/2021 at “Swami Keshvanand Institute of Technology, Management & Gramothan, Jaipur”.	15.11.2021	19.11.2021	One Week
2	AICTE Training And Learning (ATAL) Academy Online Elementary FDP on " Manufacturing Application of Automation and Robotics" from 26/07/2021 to 30/07/2021 at Graphic Era(Deemed to be University), Dehradun.	26.07.2021	30.07.2021	One Week
3	Faculty Development Programme on “Recent Trends in Electrical Engineering” conducted by the Department of Electrical & Electronics Engineering, The Oxford College of Engineering, from 12/07/2021 to 17/07/2021.	12.07.2021	17.07.2021	One Week

4	AICTE Training And Learning (ATAL) Academy Online FDP on "Recent Trends in Precision Agriculture" conducted by Sant Longowal Institute of Engineering and Technology, Longowal, Punjab.	31.05.2021	04.06.2021	One Week
5	AICTE Training And Learning (ATAL) Academy Online FDP on "Green Technology & Sustainability Engineering" conducted by Punjab Engineering College Chandigarh.	05-10-2020	09-10-2020	One Week
6	"fundamentals of Student Centered Learning Environments and Outcome Based Education" Conducted by MEC, Nuh, Haryana, India	13.01.2020	17.01.2020	One Week
7	"Latest Wireless and Computing Technologies" ICT based, Conducted by Electronics and Communication Engineering dept. at NITTTR, Chandigarh.	14.04.2020	18.04.2020	One Week
8	"Teaching and Learning for Accreditation in Technical Education" ICT based, Conducted by EE at NITTTR, Chandigarh.	27.04.2020	01.05.2020	One Week
9	"Recent Advances in Electrical Engineering" RAEE 2020" Organized by Department of EEE. VEMU Institute of Technology, P.Kothakota, Chittoor (Dt). A.P	03.06.2020	07.06.2020	One Week

13. Short Term Course (STC) attended (of duration 1 week or more only) (give details below):
(Total = 21)

S. No.	Short term course (STC) approved by AICTE with name of organizer and place	Period		Duration
		From	To	
1	STC on One Week Online AICTE-QIP Sponsored Short Term Course on "Issues and Challenges of Grid Connected Renewable Energy Sources (ICGCRE-22)" Organized by Department of Electrical Engineering, Jamia Millia Islamia, New Delhi"	21.02.2022	25.02.2022	One Week
2	STC on "Home Energy Audit" in context to celebrate Energy Conservation Day of 14th December, 2021, catalyzed and supported by HAREDA, Govt. of Haryana, organized by Department of Electrical and Electronics Engineering, MEC held on 15th – 21st December, 2021.	15.12.2021	21.12.2021	One Week
3	STC on "Recent & Emerging Trends in Technology" organised by Department of Civil Engineering, Mohammad Ali Jauhar University, Rampur, U.P. in Association with Mewat Engineering College, Nuh, Haryana	20.06.2020	24.06.2020	One Week
4	" Neural Network and CNN " ICT based, Conducted by Curriculum Development Centre at NITTTR, Chandigarh.	09.04.2020	13.04.2020	One Week
5	"Distributed Generation and Microgrid" Conducted by EE Dept. at NITTTR, Chandigarh.	09.12.2019	13.12.2019	One Week
6	"MATLAB/SIMULINK and its Hardware Interface" Conducted by EE Dept. at NITTTR, Chandigarh.	04.02.2019	08.02.2019	One Week
7	"Hardware in loop for Smart Grid Applications through ICT" Conducted by EE Dept. at NITTTR, Chandigarh.	09.10.2017	13.10.2017	One Week

8	“Alternate energy sources-Aspects and prospects” Conducted by EE Dept. at NITTTR, Chandigarh.	28.08.2017	01.09.2017	One Week
9	Alternate and clean energy technologies” Conducted by EE Dept. at NITTTR, Chandigarh.	27.02.2017	03.03.2017	One Week
10	“PLC Practices and Its programming” Conducted by EE Dept. at NITTTR, Chandigarh.	06.02.2017	10.02.2017	One Week
11	“Micro-grid and Smart Grid” Conducted by EE Dept. at NITTTR, Chandigarh.	16.01.2017	20.01.2017	One Week
12	“Latex Programming” Conducted by CSE Dept. at NITTTR, Chandigarh.	19.09.2016	23.09.2016	One Week
13	“Hardware in Loop Simulation for Power Electronics Applications” Conducted by EE Dept. at NITTTR, Chandigarh.	01.08.2016	05.08.2016	One Week
14	“MATLAB and SIMULINK for Engineers” Conducted by EE Dept. at NITTTR, Chandigarh.	25.07.2016	29.07.2016	One Week
15	“Soft Computing Techniques Using MATLAB” Conducted by EE Dept. at NITTTR, Chandigarh.	15.02.2016	19.02.2016	One Week
16	“Scilab Programming” Conducted by EE Dept. at NITTTR, Chandigarh.	16.11.2015	20.11.2015	One Week
17	“Renewable Energy Sources and Energy Conservation” Conducted by EE Dept. at NITTTR, Chandigarh.	01.09.2015	04.09.2015	One Week
18	“MATLAB and its Application in Engineering & Research (MATLAB-2015)” Conducted by EE Dept. at NIT, Hamirpur, H. P.	17.08.2015	21.08.2015	One Week
19	“Facts and Smart Grid Technology” Conducted by EE Dept. NITTTR, Chandigarh.	03.08.2015	07.08.2015	One Week
20	MY_SMARTPHONE” Conducted by NITTTR, Chandigarh & IGDTUW, Delhi and Sponsored by Microsoft Mobile University Relation at NITTTR, Chandigarh.	04/05/2015	08/05/2015	One Week
21	“Microcontroller based Embedded Systems” Conducted by EE Dept. at NITTTR, Chandigarh.	09.02.2015	13.02.2015	One Week
22	“HANDS ON EXPERIENCED ON MATLAB” Conducted by EE Dept. at NITTTR, Chandigarh.	19.01.2015	23.01.2015	One Week

14. Training/Seminars/Symposia/Conference/Workshops etc. attended (give details below):
(Total = 34)

S. No.	Training/ Seminars/Symposia/Conference/ Workshops with Name of Organizer and Place	Period		Duration
		From	To	
Trainings Attended: (Total = 07)				
1	Training on “Skill Development Programme on Renewable Energy” for Administrator (with focus on Solar Energy), organized by Haryana Institute of Public Administration Gurugram.	26.10.2020	30.10.2020	One Week
2	MathWorks Training Services on “Control System with MATLAB and Simulink” Conducted by Electrical Engineering Dept. at NITTTR, Chandigarh	19.08.2016	19.08.2016	One day
3	MathWorks Training Services on “ Simulink for System and Algorithm Modeling” Conducted by Electrical Engineering Dept. at NITTTR, Chandigarh	17.08.2016	18.08.2016	Two days
4	MathWorks Training Services on “Modelling Electrical Power Systems with Simscape” Conducted	22.07.2016	22.07.2016	One day

	by Electrical Engineering Dept. at NITTTR, Chandigarh.			
5	Training Program on “OPAL -RT eMEGAsim” in NITTTR, Chandigarh by OPAL-RT Technologies India Pvt. Ltd.	23.05.2016	27.05.2016	One week
6	Training Program on “Production Deptt.” at Sciencetech Technology Pvt. Ltd. Indore.	25.06.2007	09.07.2007	15 days
7	Training Program on “Communication Networking” at Indian Western Railway Ujjain.	17.06.2008	15.07.2008	One month
Workshops Attended: (Total = 15)				
1	Workshop on “Water and Energy Conservation for Agriculture” for Youth/Farmers/Masons/Electricians, Sponsored by HAREDA, Govt. of Haryana, Jointly organized by MEC, Nuh, Haryana.	20.09.2021	20.09.2021	One Day
2	“Emerging Trends in Nanotechnology, Photonics and Biomedical Applications” organised by Department of Electronics and Communication Engineering, Sai Vidya Institute of Technology, Bengaluru in association with IEEE SVIT Student Branch held during 29th June 2021 – 1 st July 2021.	29.06.2021	01.07.2021	Three Days
3	Workshop on “Capacity Building for Energy Conservation and Water Harvesting” for Youth/Farmers/Masons/Electricians, Sponsored by HAREDA, Govt. of Haryana, Jointly organized by MEC, Nuh, Haryana.	25.03.2021	25.03.2021	One Day
4	“Fuzzy Logic Systems in Engineering Applications (FLSEA 21)” organized by the Department of Electrical and Electronics Engineering, National Institute of Technology Sikkim in collaboration with TEQIP-III	15.03.2021	19.03.2021	One Week
5	“Recent Trends in Power Systems (RTPS-2021)” organized by the Department of Electrical and Electronics Engineering, National Institute of Technology Sikkim in collaboration with TEQIP-III	23.02.2021	27.02.2021	One Week
6	Workshop on “Energy Conservation and Control” Sponsored by HAREDA, Govt. of Haryana, Jointly organized by EEE and ECC Departments, MEC, Nuh, Haryana.	27.08.2020	28.08.2020	Two Days
7	“How to Make Sanitizer at Home” conducted by MRES through Online during COVID-19	12.05.2020	12.05.2020	One Day
8	“System and Techniques for Preventing Depletion of Ground Water Table and Energy Conversion” sponsored by HAREDA at MEC, Nuh, Haryana	03.12.2019	03.12.2019	One Day
9	“Understanding Importance of IPR with focus on IPR Issues in Information Technology, Communication and Electronics” Sponsored by Ministry of Electronics and Information Technology (MeitY), jointly organized by office of patent facilitation and licensing consultancy (OPFLC), CURIN and IPR cell Chitkara University, set up by state council for science, technology & environment, Himachal Pradesh at Chitkara University, Himachal Pradesh.	15.09.2017	16.09.2017	Two days
10	Workshop on "Quantitative Data Processing, Analysis & Reporting through SPSS" at NITTTR, Chandigarh	25.05.2016	27.05.2016	Three days

	conductive by International Forum of Commerce & Management professionals and SPSS.			
11	Workshop on “Design Spark PCB Faculty Development Program (FDPs)” at NITTR, Chandigarh.	03.02.2016	04.02.2016	Two days
12	Workshop on “Hands-on Practices on Multisim” (Altair Visual Solution) at NIITTR, Chandigarh.	28.07.2015	29.07.2015	Two day
13	Workshop on “VisSim Workshop-Model Based Design for Embedded Systems” (Altair Visual Solution) at NITTR, Chandigarh.	11.02.2015	12.02.2015	Two day
14	Workshop on “Circuit & PCB designing” (CMSR Labs Ambala) at SRMIET Ambala.	29.03.2014	29.03.2014	One day
15	Workshop on MATLAB at PEC, Chandigarh.	05.03.2010	06.03.2010	Two day
Conferences Attended: (Total = 07)				
1	Online International Conference on Recent Trends in Renewable Energy and Advancement in Engineering and Technology (RTREAET-2021), Jointly organized by EEE and ECC Departments, MEC, Nuh, Haryana	28.12.2021	29.12.2021	Two Days
2	National Conference (online) on “Recent Trends in Renewable Energy and Advancement in Engineering and Technology (RTREAET-2020)” Sponsored by HAREDA, Govt. of Haryana, jointly organized by Department of EEE and ECE, MEC, Nuh	1.09.2020	2.09.2020	Two Days
3	International Conferences on Skilling for Self-Employment Organized by Colombo Plan Staff College, Manila, Philippines and NITTTR, Chandigarh held at NITTTR, Chandigarh.	21.02.2019	22.02.2019	Two Days
4	International Conferences on Recent Advances and Trends in Electrical Engineering (RATEE 2014) held at NITTTR, Chandigarh.	23.12..2014	24.12.2014	Two days
5	International Conferences on Emerging & Trends in Engineering Organized by Maharaja Agrasen University, Baddi H.P.	08.05..2015	09.05.2015	Two days
6	International conference on Education Futures organized by Neohumanist Education Research Institute (NERI) & (NITTTR) held in Chandigarh, India.	18.11.2016	19.11.2016	Two days
7	International conference on Interdisciplinary Research for Sustainable Development (IRSD) 2016 organized by Green ThinkerZ Society, India at NITTTR in Chandigarh, India.	1.12.2016	2.12.2016	Two days
Seminar Attended: (Total = 05)				
1	Seminar on “Digital India: Services and Solutions” Organized by NITTTR, Chandigarh in collaboration with Telecom Regulatory Authority Of India (TERI), Regional Office Jaipur at NITTTR Chandigarh, India.	13.09.2018	13.09.2018	One Day
2	Seminar on “NI Engineering Education & Research Seminar” at Homotel Chandigarh conducted by National Instruments India.	06.12.2017	06.12.2017	One Day
3	International Seminar on “Future Scope of Robotics and Space Science” Organized by Electronics and Communication Engineering Dept. in Associated with Enovate Skill (NITTTR, Start-up) at NITTTR, Chandigarh.	27.05.2016	27.05.2016	One Day

4	Seminar on “Engineering Education & Research Seminar” at Chandigarh, conducted by National Instruments India.	28.07.2015	28.07.2015	One Day
5	Seminar on Awareness Program on National Mission on Education through Information and Communication Technology (NMEICT) jointly organized by NIT, Kurukshetra and NITTTR, Chandigarh at NITTTR, Chandigarh.	27.09.2014	27.09.2014	One Day

15. Title of Master of Engineering: “Development of microcontroller based Soil Tester and Analyzer”. (The Thesis work with following remarks: **Very Good**).

16. U.G. Projects Guided: (Total = 08)

S. No.	Project Name	College/ University	Group of Student/Award
1	Many projects from batch 2019 to till date (05 projects)	MECW, Nuh, Haryana	
2	Microcontroller based prepaid Energy Meter	SIET, Bilaspur, H.P.	Seven(2013)
3	GSM based Authenticated Appliances	SIET, Bilaspur, H.P.	Six (2013)
4	Microcontroller based Smart Cooler	SRMIET, Ambala, HR.	Three (2014)

17. U.G. Projects undertaken: (Total = 02)

S. No.	Project Name	Topic Name
1	Major project	Robot with Moving Object Tracker & Collision Avoidance System
2	Minor Project	Stress Meter

18. Self-Appraisal of Academic & other Activities: (Total = 42)

a. Expert Lectures/Keynote Speakers/ Demonstrations/other Activity: (Total = 03)			
S. No.	Description of Activity	Date/Year	Place
1	Keynote speaker at RT20, OPAL-RT’s 12 th International Conference on Real-Time Simulation, virtual edition, from June 18th 2020 9am EDT to June 19th 2020 9am EDT	18-19.06.2020	Virtual due to COVID-19
2	Deliver the demonstration on Hybrid Renewable Energy System during STC on “Energy Management and Conservation”, Conducted by Electrical Engineering Dept. from 18.09.2017 to 22.09.2017 at NITTTR, Chandigarh.	20.09.2017	NITTTR, Chandigarh
3	Delivered a lecture in online workshop on “Energy Conservation and Control” Jointly organized by EEE and ECC Departments, MEC, Nuh, Haryan, 27-28 August, 2020.	27-28 August, 2020.	MEC, Nuh, Haryan
Presented Paper in International/National Conferences: (Total = 13)			
1	Presented Paper in International Conference (online) on Recent Trends in Renewable Energy and Advancement in Engineering and Technology (RTREAET-2021), Jointly organized by EEE and ECC Departments, MEC, Nuh, Haryana.	28-29.12.2021	Nuh, Haryana
2	Presented Paper in International Conference (online) on Recent Trends in Renewable Energy and Advancement in Engineering and Technology (RTREAET-2021), Jointly organized by EEE and	28-29.12.2021	Nuh, Haryana

	ECC Departments, MEC, Nuh, Haryana.		
3	Presented Paper in International Conference (online) on Recent Trends in Renewable Energy and Advancement in Engineering and Technology (RTREAET-2021), Jointly organized by EEE and ECC Departments, MEC, Nuh, Haryana.	28-29.12.2021	Nuh, Haryana
4	Presented Paper in National Conference (online) on Recent Trends in Renewable Energy and Advancement in Engineering and Technology (RTREAET-2020), Jointly organized by EEE and ECC Departments, MEC, Nuh, Haryana.	1-2.09.2020	Nuh, Haryana
5	Presented Paper in National Conference (online) on Recent Trends in Renewable Energy and Advancement in Engineering and Technology (RTREAET-2020), Jointly organized by EEE and ECC Departments, MEC, Nuh, Haryana.	1-2.09.2020	Nuh, Haryana
6	Presented Paper in National Conference (online) on Recent Trends in Renewable Energy and Advancement in Engineering and Technology (RTREAET-2020), Jointly organized by EEE and ECC Departments, MEC, Nuh, Haryana.	1-2.09.2020	Nuh, Haryana
7	Presented Paper in National Conference (online) on Recent Trends in Renewable Energy and Advancement in Engineering and Technology (RTREAET-2020), Jointly organized by EEE and ECC Departments, MEC, Nuh, Haryana.	1-2.09.2020	Nuh, Haryana
8	Presented Paper in National Conference (online) on Recent Trends in Renewable Energy and Advancement in Engineering and Technology (RTREAET-2020), Jointly organized by EEE and ECC Departments, MEC, Nuh, Haryana.	1-2.09.2020	Nuh, Haryana
9	Presented Paper in RPIIT 2020: Online International Conference on latest trends in “Engineering, Management, Hotel Management Pharmacy, Nursing, Physiotherapy” Karnaal, Haryana	24-25.07.2020	Karnaal, Haryana
10	Presented Paper in IEEE International Conference, RDCAPE, Amity University, Noida, India.	26-27.10.2017	Noida, India
11	Presented Paper in 12 th IEEE INDICON JMI, New Delhi, India.	17-20.12.2015	New Delhi, India
12	Presented Paper in 2 nd AIP International Conference on Communication Systems, BKBIET, Pilani, India.	18-20.10.2015	Pilani, India
13	International Conferences on Recent Advances and Trends in Electrical Engineering (RATEE 2014) held at NITTTR, Chandigarh, India	23-24.12.2014	Chandigarh, India
b. Organizing Committee: (Total = 12)			
1	Organized Secretary in Online International Conference on Recent Trends in Renewable Energy and Advancement in Engineering and Technology (RTREAET-2021), Sponsored by HAREDA, Jointly organized by EEE and ECC Departments, MEC, Nuh, Haryana.	28-29.12.2021	2 days
2	Coordinated in conducting the Intellectual Property Awareness program under National Intellectual Property Awareness Mission (NIPAM), Govt. of India on December 23, 2021, Organized by Intellectual Property Office, India	23.12.2021	23.12.2021
3	Organized Secretary in Conducting the Energy Conservation Activities (STC on Home Energy Audit and Events Quiz Competition & Cycle Rally) Sponsored by HAREDA, organized by EEE department, MEC, Nuh, Haryana.	8-19 December, 2021	12 Days
4	Technical Expert (Electricians) in the Capacity Building Project “Water and Energy Conservation for Agriculture”, Catalyzed and Supported By HAREDA, Govt. of Haryana from 05 th August to 20 th Sept, 2021 which was organized by Mewat Engineering College (Wakf), Nuh, Haryana.	05 th August to 20 th Sept, 2021	1.5 Month

5	Co-Chair of the three sessions in ECCE Asia 2021 Organised by Electrical Machines and Drives Laboratory (E3-04-04 2, Engineering Drive 3, Department of Electrical and Computer Engineering) of National University of Singapore.	24-27.05.2021	Four Days
6	Technical Expert (Electricians) in the Capacity Building Project “Energy Conservation & Water Harvesting”, Catalyzed and Supported By HAREDA, Govt. of Haryana from 27 th Jan to 31 st March, 2021 which was organized by Mewat Engineering College (Wakf), Nuh, Haryana.	27 th Jan to 31 st March, 2021	2 Month
7	Organized Secretary in workshop (online) on Energy Conservation and Control, Sponsored by HAREDA, Jointly organized by EEE and ECC Departments, MEC, Nuh, Haryan.	27-28.08.2020	Nuh, Haryana
8	Organized Secretary in National Conference (online) on Recent Trends in Renewable Energy and Advancement in Engineering and Technology (RTREAET-2020), Sponsored by HAREDA, Jointly organized by EEE and ECC Departments, MEC, Nuh, Haryan.	1-2.09.2020	Nuh, Haryana
9	Merituous Contribution in Outreach Committee in workshop (online) on Energy Conservation and Control, Jointly organized by EEE and ECC Departments, MEC, Nuh, Haryan.	27-28.08.2020	Nuh, Haryana
10	Coordinator in seminar on “Cleanliness Drive” organized by Mewat Engineering College, Nuh, Haryana (HWB, Govt. Of Haryana), held on 2 nd october 2019.	2.10.2019	Nuh, Haryana
11	Member of Technical Program in Organizing Committee for IEEE sponsored International Conference “Recent Developments in Control, Automation & Power Engineering (RDCAPE-2017)”, Amity Noida, India	26-27 October 2017	Amity University, Noida, UP
12	Merituous Contribution in Editorial Team for organizing International Conference on “Recent Advances and Trends in Electrical Engineering (RATEE- 2014)”, NITTTR, Chandigarh.	23-24 December 2014	NITTTR, Chandigarh
c. Membership in Professional Societies: (Total = 05)			
1	International Association of Computer Science and Information Technology (IACSIT), (membership number: 80344728)	2011	Singapore
2	i-Xplore International Research Journal Consortium (IIRJC), (membership number: 12064)	2012	India
3	International Association of Engineers (IAENG), (membership number: 205967)	2.01.2018	Hong Kong
4	Editorial Board member of Information Engineering and Applied Computing (IEAC), Whioce Publishing PTE LTD, http://ojs.whioce.com/index.php/ieac/about/editorialTeamBio/7159	From 23.02.2019	Singapore
5	Editorial Board member of Insight-Electronic PiscoMed Publishing Pte. Ltd, (membership No. CIE201900021)	From 20.05.2019	Singapore
d. Reviewer of International Journal /Conference: (Total = 09)			
1	IEEE Transactions on Industrial Informatics		
2	IET Power Electronics		
3	Energy Strategy Reviews, Elsevier		
4	International Journal of Environment, Development and Sustainability, Springer		
5	Journal of Electronic Materials (JEMS), Springer		
6	International Journal of Engineering & Technology, Science Publishing Corporation, Publisher of International Academic Journals		
7	Journal of Engineering Science and Technology Review, EMaTTech Journals Editorial Manager		
8	International Journal of Power Electronics and Drive Systems (IJPEDS), IAES Indonesia publication		
9	IEEE, Conference, RDCAPE 2017, Amity Noida		

19. Extra-curricular activities undertaken: (Total = 07)

S. No.	Activity/ Competition	Date/Year	Place
1	Startup Manthan 2017 (Business Plan Competition for Students of Technical/ Management Institute of Northern region)	20.04.2017	NITTTR Chandigarh
2	Won a medal in 10,000 Meters Race	11.03.2011	PEC University of Technology Chandigarh
3	Chandigarh Marathon 5k.m RACE	13.03.2011	PEC University of Technology Chandigarh
4	Dcode in VYOM Event	25-27.03.2011	PEC University of Technology Chandigarh
5	Boffin Quest in VYOM Event	25-27.03.2011	PEC University of Technology Chandigarh
6	Kabaddi in UMANG Event	27.03.2007	GEC Ujjain, M. P.

20. References: (Total = 04)

S. No.	Name	Designation	Address	Email	Mobile No.
1	Nagendra Sah	Professor	ECE Deptt. PEC, Chandigarh	nagsah@yahoo.com	9872301552
2	Lini Mathew	Professor & Head	EE Deptt. NITTTR, Chandigarh	lenimathew@yahoo.com	9876440458
3	Dilip Kumar	Professor	ECE Deptt. SLIET, Longowal, Punjab	dilip.k78@gmail.com	9417213652
	Amod Kumar	Professor & Head (Former, Chief Scientist and Head, Business Initiatives & Project Planning (BIPP), CSIR-CSIO, Sector 30-C, Chandigarh – 160030)	ECE Deptt. NITTTR, Chandigarh	csioamod@yahoo.com	9872516830
4	Irfan Khan	Professor	ECE Deptt. CCET, Chandigarh, UT	irfan0706@gmail.com	9368082629



Review of Recent Trends in Optimization Techniques for Hybrid Renewable Energy System

Mohammad Junaid Khan¹

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Abstract

Due to non-linear characteristics of renewable energy sources, a Maximum Power Point Tracking (MPPT) technique is adopted to maximize the output power. In this research article, on the basis of state of art review of renewable energy systems such as solar Photo-voltaic, Wind Turbine, Fuel Cell and Hybrid Renewable Energy System. The investigators have gone through the various MPPT techniques for different renewable energy systems out of which artificial intelligence based hybrid MPPT technique gives better performance as compared to other MPPT techniques.

Abbreviations

AFDCA	Adaptive Fixed Duty Cycle Algorithm
ANFIS	Adaptive Neuro-Fuzzy Inference System
BDF-RG	Brushless Doubly-Fed Reluctance Generator
BSA	Binary Search Algorithm
DG	Diesel Generator
D-MPPT	Distributed MPPT
dSPACE	Digital Signal Processing and Control Engineering
ESC	Extreme Seeking Control
FC	Fuel Cell
FCEV	Fuel Cell Electric Vehicles
FDE	Functional Differential Equations
FL	Fuzzy Logic
FPGA	Field Programmable Gate Array
GA	Genetic Algorithm
GESC	Global Extremum Seeking Control
GSO	Golden-Section Optimization
HPS	Hybrid Power System
HRES	Hybrid Renewable Energy Sources
HS	Hybrid System
INC	Incremental Conductance
LM	Luke's Method
LPSO	Leader Particle Swarm Optimization
LVRT	Low-Voltage Ride-Through
MPP	Maximum Power Point
MPPT	Maximum Power Point Tracking

MPV-PSO	Modified Particle Velocity-Based Particle Swarm Optimization
NN	Neural Network
OC	Optimal Control Problems
OV	Operating Voltage
PGS	PV Generation Systems
PHEV	Plug-in Hybrid Electric Vehicle
PI	Proportional–Integral
PIC	Peripheral Interface Controller
PID	Proportional–Integral–Derivative
PMSG	Permanent Magnet Synchronous Generator
PSC	Partial Shading Conditions
PSO	Particle Swarm Optimization
PV	Photo-voltaic
RBFN	Radial Basis Function Network
RCC	Ripple Correlation Control
RTO	Real-Time Optimization
SMC	Sliding Mode Control
SOFCs	Solid Oxide Fuel Cells
VHDL	Very High-Speed Description Language
WG	Wind-Generator
WGS	Wind Generation System
WPS	Water Pumping System
WT	Wind Turbine

1 Introduction

Due to raising the environmental issues and oil prices, the demand for utilizing alternative energy sources is increasing significantly. In the last decade, the Alternative energy sources and its applications have been studied.

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Artificial neural network-based maximum power point tracking controller for real-time hybrid renewable energy system

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Abstract

Development of various maximum power point tracking (MPPT) control techniques for proposed systems such as solar photo-voltaic (PV), wind turbine (WT), fuel cell (FC) and hybrid renewable energy system (HRES). HRES is the combination of PV, WT and FC which is connected parallelly by DC link. It is implemented in real-time using OPAL-RT system. In this research article, the MPPT algorithms viz. Perturb and Observe (P&O), Fuzzy Logic (FL), Artificial Neural Network and Adaptive Neuro-Fuzzy Inference System (ANFIS) have been analyzed and compared. Results have been carried out to record tracking performance of MPPT controllers by introducing changes in the radiation, wind speed hydrogen fuel rate. It has been observed that the proposed HRES using ANFIS-based MPPT controller provides better response as compared to other specified MPPT controllers.

Keywords ANFIS · ANN · FC · FL controller · Hardware in the loop (HIL) · HRES · MPPT algorithms · OPAL-RT simulator · P&O · Power converters · PV and WT

1 Introduction

In recent years, the rising ecological issues such as greenhouse gas emission and energy cost have motivated novel research into alternative approaches of production of electrical power. An enormous deal of new research is going on to search out for non-polluting renewable energy sources and explore the precision of renewable energy frameworks to enhance the efficiency and reduce the cost of power in per peak watt (Khan et al. 2017; Yadav et al. 2018; Khan 2020; Kewat et al. 2018). A dynamic prototype of an HRES including a wind-driven self-excited induction generator, PV framework and the power preparing circuit has been developed (Valenciaga and Puleston 2005). A modest and cost-effective MPPT algorithm has been presented for the solar PV and WT without evaluating the

ecological situations (Giraud and Salameh 2001). Maoum et al. have presented experimental and theoretical examine for the appraisal of fast and reliable MPPT control methods, for example, voltage- and current-based MPPT techniques for PV systems (Masoum et al. 2002).

Kamal et al. proposed control technique develops FL-based MPPT controller for providing the maximum power coefficient for a static pitch and sudden changes of load (Kamal et al. (2010)). Rowe et al. established a one-dimensional non-isothermal prototypical of a proton exchange membrane FC (PEM-FC) and analyzed the impact about different outline and working states on the cell performance, thermal response, and water controlling to realize the underlying mechanism (Rowe and Li 2001).

A non-recurrent radial-basis-function ANN has been employed to build meta models to signify the steady-state associations among the stack power, the compressor voltage, the stack current, and the oxygen movement (Hasikos et al. 2009).

Real-time simulation-based comparative analysis of FL, ANN, ANFIS techniques using MATLABTM/ dSPACETM platform for PV system shows the better performance of ANFIS-based MPPT technique as compared to other control methods (Karanjkar et al. 2014a). ANFIS and ANN

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A Novel Hybrid Maximum Power Point Tracking Controller Based on Artificial Intelligence for Solar Photovoltaic System Under Variable Environmental Conditions

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Abstract

Solar Photo-voltaic (PV) arrays have non-linear characteristics with distinctive maximum power point (MPP) which relies on ecological conditions such as solar radiation and ambient temperature. In order to obtain continuous maximum power (MP) from PV arrays under varying ecological conditions, maximum power point tracking (MPPT) control methods are employed. MPPT is utilized to extract MP from the solar-PV array; high-performance soft computing techniques can be used. In this paper, the proposed hybrid MPPT algorithm is used in the solar-PV system with variable climatic conditions. The performance of the proposed hybrid MPPT algorithm with different membership functions is analyzed to optimize the MPP. Simulation results establish that with the application of MPPT controller such as Perturb and Observe, Fuzzy Logic and a proposed hybrid MPPT for the solar-PV system, the proposed hybrid MPPT controller provides more accurate performance and also reduces the fluctuation about the MPP as compared to other MPPT techniques.

Keywords Solar photo-voltaic · Maximum power point tracking algorithms · Perturb and observe · Fuzzy logic controller · Proposed hybrid controller

1 Introduction

The demand of power is increasing day-by-day throughout the world. The conventional power sources are reducing gradually and produce emissions of greenhouse gases to the environment. This issue can be overcome, to encourage society towards the innovative development of alternative renewable energy (RE) sources. Renewable energy sources are used in grid-connected and can be found in rural and remote areas where the public grid is not available. Solar PV array is the device that converts solar energy into electrical energy [1, 2]. Some benefits are offered by renewable

energy sources such as PV system. PV systems are sustainable, clean and easy to maintain. It is non-linear RE sources, need of MPPT techniques for finding maximum power from solar-PV system. Numerous MPPT control techniques have been proposed and established to sustain the characteristics of PV renewable energy system operation at MPP. MPPT techniques are used to track the MPP by minimum deviations. PO, Incremental Conductance (INC) and hill-climbing methods are generally used in yielding the MPP at a uniform level of insolation [3–6]. The comparative analysis of PO and INC algorithm had simulated in the MATLAB/ SIMULINK environment [7]. These control techniques are failed under non-uniform insolation level.

Artificial Intelligence (AI) based MPPT control techniques such as FL Controller, Neural Network (NN) control method and Adaptive Neuro-Fuzzy Inference System (ANFIS) etc. These AI MPPT techniques have the advantage that no requirement of information about internal factors of the PV renewable energy system including less computational efforts and compact outcome in favour of the multivariable problems [8]. Sawant et. al [9] have been described various MPPT techniques based on swarm intelligence and evolutionary techniques. The main goal

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Practice article

An AIAPO MPPT controller based real time adaptive maximum power point tracking technique for wind turbine system

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ABSTRACT

Nowadays, the energy demand is increasing all over the world and conventional energy sources like fossil fuels are gradually emitting less harmful gases (as greenhouse gases). Therefore, the renewable energy (RE) sources are affordable and sustainable, which is essential to increase the demand for power generation. This manuscript proposes a novel Artificial Intelligence Based Adaptive P&O (AIAPO) for real-time adaptive hybrid Maximum Power Point Tracking (MPPT) controller to attain Maximum Power Point (MPP) from the Wind Turbine (WT) system. The major objective of the proposed method is “to increase the mathematical calculation of the controller design and eliminate the disadvantage of the conventional MPPT and fuzzy logic (FL) controller”. In the proposed method, the optimum perturbation is computed with respect to the variation of WS by FL controller. This optimum perturbation is fed into adaptive P&O technique that is desirable duty-cycle generated for dc–dc power converter using proposed system to achieve the MPP tracking and to enhance the efficiency of the proposed framework. It is estimated that these features can improve the power track by decreasing the steady-state fluctuations of the output power as well as improve the transient performance. Real-time outcomes with novel tracking technique is likened to the existing perturb & observe (P&O), fuzzy logic (FL) depend maximum power point tracking techniques for Wind Turbine Induction Generator (WTIG) system. The proposed algorithm is used to improve the results and to compare the power fluctuations on MPPT with variable wind speed (WS). The statistical analysis of proposed and existing techniques like P&O, FL and SVM are also analyzed. In the proposed method, the best value attains 230.5365, worst value attains 210.5934, mean value attains 230.952 and standard deviation attains 0.05314.

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1. Introduction

The increasing power generation requirement results in conventional energy sources such as fossil fuels and increasing greenhouse gases emission. Consequently, power production via RE sources can be globally used and developed. The RE system can reduce the use of conventional energy sources while producing power with sustainable, affordable, green and clean energy. It can also reduce the greenhouse gas emissions. The WT system provides improved performance in a variable speed power generation system instead of fixed speed power generation system [1, 2]. The variable speed power generation mode needs a smart control approach for improving the effectiveness of the WT power system. Several researches have been made on the control approach of variable speed WT system [3–5]. Few MPPT techniques are found maximum power (MP) for WT framework [6]. These MPPT techniques like Hill Climb Search (HCS) control method, do not require prior learning of the system, also independent of wind turbine and generator. The existing MPPT technique depending

on P&O is commonly utilized as stable result with slow changes in the WS to attain MPP. This technique provides the duty-ratio of boost converter [7].

Kalaitzakis et al. [8] have introduced a wind generator (WG) framework with dc–dc buck converter including MPPT technique, which is implemented in the micro-controller. The experimental outcomes indicate that the WG's optimum power of output is maximized as 11–50 percent when using the MPPT technique. Various MPPT techniques are developed in WT system to attain MP [9–14]. The MPPT techniques are used for non-linear control systems, for example conventional MPPT method [15,16], P & O [11], hill-climb method [12], and hybrid techniques [9,10,12]. Fig. 1 shows the WT power (P_T) of different WS is well-defined by the Square-Law. Here, the electrical torque is directly proportional to the rotor speed square ($k\omega_r^2$). It is perceived that the maximum power (MP) trajectory falls on $k\omega_r^3$ curve and vary with WS, i.e., drive train torque could shift in $k\omega_r^2$ curve. To wide range based on WS variation, the challenge is to achieve the MP by adaptively modify controller gain (k) [12].




Additionally, the MP trajectory is driven by variations in ecological parameters, like air density [13]. Artificial Intelligence (AI)

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Article

Fuzzy-Logic-Based Comparative Analysis of Different Maximum Power Point Tracking Controllers for Hybrid Renewable Energy Systems

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Abstract: There is an increasing demand for power production day by day all over the globe; thus, hybrid frameworks have an essential role in producing sufficient power for the desirable load due to increasing power demand. The proposed hybrid renewable energy (HRE) systems are used to provide power in different areas to conquer the intermittence of wind and solar resources. The HRE system incorporates more than one renewable energy (RE) system. In this research article, the optimum power generation of different combinations of RE using different Maximum Power Point Tracking (MPPT) control methods is presented. The Fuel Cell (FC), FC–Photovoltaic (PV), FC–Wind (W), and FC–PV–W systems are developed to examine different MPPT controllers. The results show that the FC–PV–W HRE system produces the maximum power as compared to the FC, FC–PV, and FC–W systems. The FC–PV–W HRE system produces increased power compared to 94.24% from the FC system, 37.17% from the FC–PV hybrid system, and 15.8% from the FC–W hybrid framework with a Perturb and Observe (P&O) controller and, similarly, 74.57% from the FC system, 10.3% from the FC–PV hybrid system, and 31.64% from the FC–W hybrid system using a fuzzy logic (FL) controller, indicating that the best combination is the FC–PV–W hybrid system using an FL controller, which is useful for maximum power generation with reduced oscillations.

Keywords: FC model; PV model; W model; HRE system; DC–DC power converters; MPPT controllers; P&O controller; FL controller



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1. Introduction

The global demand for electrical energy is gradually increasing, and the search for replacements for fossil fuels is done on a priority basis. Conventional energy sources, such as fossil fuels (FF), are not sustainable and produce greenhouse gas emissions, polluting the environment. The usage of RE frameworks, for example, PV and wind turbine (WT) power, are needed due to a lack of FF supplies and an adverse environment. The use of more than one RE source to create an HRE system has fantastic potential for distributed power generation. PV and WT are primary RE sources, with an FC system as a backup power supply. PV and WT systems are not only environmentally friendly and long-lasting, but they are also well-designed, widely used, and cost-effective. Apart from these RE sources, FC has also been exploited to meet rising energy demand [1]. Solar PV and WT power generation systems require storage energy units including super capacitors and