Curriculum Vitae

Meenakshi Rawat
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Dept. of Electronics & Communication Engg.
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EDUCATION DETAILS

Ph.D. (Electrical and Computers Engineering): Department of Electrical and Computers Engineering, University of Calgary, Alberta, Canada, Sept. 2008-Sept. 2012.

M.Sc. (Electrical and Computers Engineering): Department of Electrical and Computers Engineering, University of Calgary, Alberta, Canada. Sept. 2008-April 2010 (transferred to PhD),

B.Tech. (Electrical Engineering): College of Technology, Govind Ballabh Pant University of Agriculture and Technology, Pantnagar, Uttarakhand with first class honors. July 2002- June 2006.

INDUSTRIAL EXPERIENCE

Hindustan Petroleum Corporation Limited (A Fortune Global 500 Company, India's premier Petroleum industry) from October 2007 to June 2008.

Telco construction Equipment company Limited (Joint Venture between TATA Engineering India, and Hitachi Construction Machinery Ltd. Of Japan) Jamshedpur from July 2006 to August 2007.

POSTDOCTORAL EXPERIENCE

IIT Roorkee: Assistant Professor, July 2014 till date.

Ohio State University: Research Scientist Sponsored by DARPA and Rockwell Collins, Filter-less RF Transmitter Prototyping for Ultra Wideband Software Defined Radio. July 2013 to June 2014.

University of Calgary: Project: Single band/Multi band digital predistortion and behavioral modeling including RF quadrature modulator imperfections for software defined radio transmitters. September 2012 to June 2013.

RESEARCH GUIDANCE/ MAN-POWER TRAINING

Ph. D: Completed (02), Ongoing (08)

Master of Technology: Completed (19), Ongoing (03)

TEACHING/ COURSE DEVELOPMENT:

UG Level:

ECN-311: Communication systems and techniques

ECN-312: Digital signal processing

ECN-351: IC application lab.

ECN-352: Communication lab

TIEC-01: Signal Processing

PG Level:

ECN-522: Digital signal processing and applications

ECN-513: Multirate Digital Signal Processing

ECN-614: Adaptive signal processing and techniques

TEC-491: Training Seminar

- Developed NPTEL Course on "Basics of software-defined radios and practical applications", available as MOOC course since January 2018.
- Established "Software-defined-radio Laboratory", which is accessible to UG, PG level students for advanced level project based courses.

PROFESSIONAL MEMBERSHIP AND CONTRIBUTIONS

1. Chaired the session on "Women in microwave" in 7th IEEE MTT-S International Microwave & RF Conference (IMaRC-2019), IIT Bombay, December 2019.
2. Technical chair for the session, "Waveguides and Waveguide Components", in 7th IEEE MTT-S International Microwave & RF Conference (IMaRC-2019), IIT Bombay, December 2019.
3. Technical chair for the session, "Antenna Design" in IEEE National Conf. on Commun. (NCC), Indian Institute of Science, Bengaluru, Feb. 2019.
4. Faculty advisor for IIT Roorkee IEEE ComSoc Student Branch Chapter.
5. Publication chair for 14th IEEE India Council International Conference (INDICON 2017) was organized by IEEE Uttar Pradesh Section at IIT Roorkee, Uttarakhand during 15-17 December 2017.
6. Program committee member for 11th International Conference on Industrial and Information Systems (ICIIS 2016), 3-4 December 2016.
7. Technical Program Chair for International Conference on Wireless Networks & Embedded Systems (WECON-2016) at Chitkara University, Punjab, India, from 15- 16 October 2016.
8. Technical Program Committee Member" for UPCON-2015, 4-6 December 2015.
9. One-day workshop organized under IEEE Electron Devices Society (EDS) Student Chapter on topic, "GaN Devices Fabrication, Device Modeling and Power Amplifier Design", IIT Roorkee, June 10, 2015.
10. Short courses chair for ARFTG 82nd Microwave Measurement Conference, Columbus, Ohio, USA, November 18th - 22nd, 2013.
11. Session Chair for "MM wave and Terahertz design systems' during International Microwave and RF Conference (iMARC), Bangalore, India, Dec. 15-17, 2014.
12. Contributing as reviewer for following Journals/ Transactions\conferences:

IEEE Transactions on Microwave Theory and Technique.

IEEE Transactions on Circuit and Systems-I.

IEEE Transactions on Instrumentation and Measurements.

IEEE microwave conference (IMS) 2010, 2011 and 2012.

IEEE Transactions on Communications.

IEEE Access.

WORKSHOP/ SHORT COURSES/ TECHNICAL ACTIVITIES

Workshop Speaker in IEEE Conferences:

1. Lecture on “Artificial Neural Networks Based Digital Predistortion for Signal Quality Enhancement in MIMO/Multiband Transmitters” under workshop, “Machine Learning and Dimensionality Reduction Techniques for RF Components and Systems: from Modeling to Linearization" Radio &Wireless Week, San Antonio, Texas, U.S.A.
2. Lecture on "Linearization implementation challenges and techniques for 5G waveforms" under workshop “Measurement and Design Techniques for Next-Generation Communication Systems” in IEEE International Microwave Symposium (IMS) Boston, June 2019.
3. Lecture on “Advanced Applications of Nonlinear Vector Network Measurements for broadband RF Power Amplifiers Design and Linearization”, IEEE International Microwave Symposium (IMS-2018), Philadelphia, June 2018.
4. Lecture on “Broadband Behavioral Modeling and Linearization Techniques for 5G”, International Microwave Symposium (IMS-2017), Honolulu, Hawaii, U.S.A, June 2017.
5. Workshop on “Power Amplifiers and digital schemes for Efficient Multi-band/Multi-Standard Wireless Transmitters in the context of Software Defined Radios” in International Microwave and RF Conference, iMARC 2014, Dec. 15-17, 2014.
6. Workshop on, “National Conference on Emerging Trends in Vacuum Electronic Devices & Applications, IIT Roorkee, 17 Nov. -19 Nov., 2017.

Lectures/workshops to national institutes/ laboratories:

1. Instructor and co-coordinator for Training Program on “Basics of software Defined Radio Architectures and building blocks of SDR Waveform development for SDR” in Bharat Electronics Limited, Bangalore, from 15 July to 20 July 2019.
2. Instructor and co-coordinator for Training Program on "Linearized Power Amplifier" in Bharat Electronics Limited, Bangalore, from 19th July to 21st July 2018.
3. Invited lecture on "Digital base-band solutions for analog imperfection in 4G/5G SDR front-end" conducted by DEAL Dehradun from 22nd May 2018.
4. 10-day short course on “Fundamentals of Analog & Digital Communication Systems” under E&ICT Academy in IIT Roorkee, Mohali, May 13th- May 23, 2017.
5. 5-day short course in “Building blocks for 5G communication: IoT, SDR and sensor networks” as one of the lecturer as well as course Co-coordinator, under E&ICT Academy, Mohali, from March 10 –March 14 March 2017.
6. Invited talk on "Signal processing techniques to overcome hardware limitations in 4G communication systems and beyond" in Workshop Session conducted by Communication Society, BTS, & Signal Processing Society, IEEE Student Branch Chapters in MNNIT Allahabad, Mar. 3, 2017.
7. Delivered lecture titled "Practical applications of digital signal processing and filtering techniques" in the AICTE (QIP) sponsored short-term course from 6-10 July 2015.
8. Guest Lecture on "Signal processing solutions for hardware imperfection mitigation" in Faculty Development Program at UIE, Kurukshetra University, May

2014.

Participation in National Level Program/Activities:

1. NPTEL Course on “Basics of software-defined radios and practical applications”, available as MOOC course since January 2018.
2. Organized GIAN course titled “Signal Processing Techniques for Energy and Spectrum Efficient Wireless Transmitters for 4G/5G Communication "at IIT Roorkee from 22 to 26 December on 2017.
3. Scheme for Promotion of Academic & Research Collaboration (SPARC) scheme of Government of India, Joint Proposal with Prof. Fadhel Ghannouchi, University of Calgary, Canada for publications, student exchange and visiting faculty, March 2019-March 2021.
4. Impacting Research Innovation and Technology (IMPRINT2) Scheme of Government of India, since March 2019-March 2022.

PUBLICATIONS/ PATENTS

Book Chapter: (1)
Meenakshi Rawat and Patrick Roblin, “Multi-band/multi-channel power amplifier linearization” as a chapter in “Radio Frequency and Microwave Power Amplifiers: Theory, Design & Applications”, IET publications, vol. 2, pp. 345-386, 2019.

Patents: (2)

1. Meenakshi Rawat and Girish Chandra Tripathi “Baseband controlled linearization of high power amplifiers”, Indian patent applied [application no. 201911014390, March 2019].
2. Meenakshi Rawat and Girish Chandra Tripathi, “Post-compensation technique to enhance the performance of SDR (Under Application process)

Publications: (32) Citations: 974, h-index: 15, i10-index: 22

1. Karan Gumber, and Meenakshi Rawat, “Broadband RF-Predistortion Supporting Carrier Aggregation”, IET Circuits, Devices & Systems (Accepted on 30th March 2020).

2. Karan Gumber, and Meenakshi Rawat, "Analog Predistortion Linearizer Control Schemes for Ultra-Broadband Signal Transmission in 5G Transmitters", IET Microwaves, Antennas & Propagation, (Accepted on 27th Feb 2020)

3. P. Jaraut, M. Rawat and F. M. Ghannouchi, "Efficient Linearization Technique for Crosstalk and Power Amplifier Nonlinearity Suitable for Massive MIMO Transmitters", IET Communications, vol. 14, no. 9, pp. 1485 – 1494, June 2020.

4. Y. Liu, C. Li, X. Quan, P. Roblin, M. Rawat, N. Naraharisetti, Y. Tang and K. Kang, " Multiband Linearization Technique for Broadband Signal With Multiple Closely Spaced Bands", IEEE Transactions on Microwave Theory and Techniques, vol. 67, no. 3, pp. 1115 - 1129, March 2019.

5. P. Jaraut, M. Rawat, and P. Roblin, “Digital Predistortion technique for Low resource consumption using Carrier Aggregated 4G/5G Signals,” IET Microwaves, Antennas & Propagation, vol. 13, no. 2, pp. 197 – 207, February 2019.

6. P. Jaraut, M. Rawat and F. M. Ghannouchi, "Composite Neural Network Digital

Predistortion Model for Joint Mitigation of Crosstalk, I/Q Imbalance, Nonlinearity in MIMO Transmitters," IEEE Transactions on Microwave Theory and Techniques, vol. 66, no. 11, pp. 5011 – 5020, November 2018.

7. P. Jaraut, M. Rawat and F. M. Ghannouchi, "Harmonically Related Concurrent Tri-Band Behavioral Modeling and Digital Predistortion," IEEE Transactions on Circuits and Systems II, Exp. Briefs, vol. 66, no. 6, pp.1073 - 1077, October 2018.

8. P. Jaraut, M. Rawat, and F. M. Ghannouchi, “2-D Curtailed Harmonic Memory Polynomial for reduced complexity in Concurrent Dual-Band Modeling and Digital Predistortion with the second band at Harmonic Frequency,” IET Communications, vol. 12, no. 12, pp. 1438-1447, July 2018.

9. P. Roblin, M. Rawat and V. Ratnasamy, "RF Front-End Flexibility, Self-Calibration, and Self-Linearization: Characterizing and Mitigating Nonlinearities in SDR MIMO Systems for Concurrent Multiband Operation," IEEE Microwave Magazine, vol. 19, no. 2, pp. 49-61, April 2018.

10. Girish Chandra Tripathi and Meenakshi Rawat, "RFin-RFout Linearizer System Design for Satellite Communication," IEEE Transactions on Electron Devices, vol. 65, no.6, pp. 2378-2384, June 2018.

11. Karan Gumber, and Meenakshi Rawat, "Low cost RFin-RFout predistorter linearizer for high power amplifier and ultra-wideband signals" IEEE Transactions on Instrumentation and Measurement, vol. 67, no.9, pp. 2069 - 2081, September 2018.

12. Karan Gumber and Meenakshi Rawat, "A Modified Hybrid RF Predistorter Linearizer for Ultra Wideband 5G Systems," IEEE Journal on Emerging and Selected Topics in Circuits and Systems, vol. 7, no. 4, pp. 547-557, September 2017.

13. Girish Chandra Tripathi, Meenakshi Rawat, Sudhir Kamath, and M. V. Kartikeyan, "Linearization of traveling-wave tube amplifiers using digitally supported signal injection technique." Journal of Electromagnetic Waves and Applications, Sept (2017) DOI: 10.1080/09205071.2017.1374884.

14. Praveen Jaraut, and Meenakshi Rawat, “Application of principal component analysis based effective digital predistortion technique for low-cost FPGA implementation,” International Journal of RF and Microwave Computer-Aided Engineering, 2017, DOI: 10.1002/mmce.21095.

15. Girish Chandra Tripathi, Meenakshi Rawat, “Delay compensation for 4G/5G Transmitter System Characterization” Microwave and Optical Technology Letters, vol. 59, no. 8, pp. 1887-1890, May 2017.

16. Rupender Singh, Meenakshi Rawat, "Closed-form Distribution and Analysis of a Combined Nakagami-lognormal Shadowing and Unshadowing Fading Channel", Journal of Telecommunications and Information Technology, vol. 4, December 2016.

17. Meenakshi Rawat, P. Roblin, C. Quindroit, K. Salam, C. Xie , “Concurrent Dual-band Modeling and Digital Predistortion in the Presence of Unfilterable Harmonic Signal Interference,” IEEE Transactions on Microwave Theory and Techniques, vol. 63, no. 2, pp. 95-104, February 2015.

18. Meenakshi Rawat, F. Ghannouchi, S. Bhattacharjee and H. Leung, “Generalized Rational Functions for Reduced Complexity Behavioral Modeling and Digital Predistortion of Broadband Wireless Transmitters,” IEEE Transactions on Instrumentation and Measurement., vol. 63, no. 2, pp. 485 - 498, February 2014.

19. M. Aziz, Meenakshi Rawat, F.M. Ghannouchi, “Low Complexity Distributed Model for the Compensation of Direct Conversion Transmitter’s Imperfections” IEEE Transactions on broadcasting, vol. 60, no. 3, pp. 568 - 574, September 2014.

20. L. Azpilicueta, Meenakshi Rawat, K. Rawat, F. Ghannouchi, and F. Falcone, “A Ray Launching-Neural Network Approach for Radio Wave Propagation Analysis in Complex Indoor Environments, IEEE Transactions on Antenna and Propagation, vol. 62, no.5, pp. 2777 - 2786, May 2014.

21. Meenakshi Rawat, F. M. Ghannouchi and K. Rawat, "Three-Layered Biased Memory Polynomial for Modeling and Predistortion of Transmitters with Memory," IEEE Transactions on Circuits and Systems I: Regular Papers, vol. 60, no. 3, pp. 768-777, March 2013.

22. Meenakshi Rawat, K. Rawat, R. Darraji, F. E. Alfaro, S. A. Bassam, M. Helaoui, F. M. Ghannouchi, M. Fattouche and F. Falcone, “Cooperative network solution and implementation for emergency applications with enhanced position estimation capability,” Wireless Networks, November 2013, DOI 10.1007/s11276-013-0663-0.

23. M. F. Younes, A. Kwan, Meenakshi Rawat and F. M. Ghannouchi, “Linearization of Concurrent Tri-Band Transmitters using 3-D Phase Aligned Pruned Volterra Model,” IEEE Transactions on Microwave Theory and Techniques, vol. 61, no.12, pp. 4569-4578, December 2013.

24. Meenakshi Rawat, K. Rawat, M. Younes and F. M. Ghannouchi, “Joint Mitigation of Non-Linearity and modulator imperfections in a dual-band Concurrent Transmitter Using Neural Networks,” IET Electronics Letters, vol. 49, no. 4, pp. 253-255, February 2013. (This article is also featured in editorial column titled as “Showing real nerve’)

25. F. M. Ghannouchi, M. Younes and Meenakshi Rawat, "Distortion and Impairments Mitigation and Compensation of Single and Multi-band Wireless Transmitters," IET Microwaves, Antennas & Propagation, vol. 7, no. 7, pp. 518 - 534, July 2013.

26. M. Aziz, Meenakshi Rawat and F. M. Ghannouchi, "Rational Function based model for the joint mitigation of I/Q imbalance and PA Nonlinearity," IEEE Microwave and Wireless Components Letters, vol. 23, no. 4, pp. 196-198, April 2013.

27. C. Jebali, N. Boulejfen, Meenakshi Rawat, A. Gharsallah and F. M. Ghannouchi, "Modeling of Wideband RF Power Amplifiers Using Zernike Polynomials," Wiley International Journal of RF and Microwave Computer-Aided Engineering, vol. 22, no. 3, pp. 289-296, May 2012.

28. Meenakshi Rawat and F. M. Ghannouchi, "A Mutual Distortion and Impairment Compensator for Wideband Direct Conversion Transmitters using Neural Networks," IEEE Transactions on Broadcasting, vol. 58, no. 2, pp. 168–177, June 2012.

29. Meenakshi Rawat and F. Ghannouchi, “Distributive spatiotemporal Neural Network for Nonlinear Dynamic Transmitter Modeling and Adaptive Digital Predistortion”,

IEEE Transactions on Instrumentation and Measurement, vol. 61, no. 3, pp. 595 - 608, March 2012.

30. Meenakshi Rawat, K. Rawat, and F. M. Ghannouchi, "Recent Advances on Signal Processing Solutions for Distortion Mitigation Due to Power Amplifier and Non-Ideality of Transmitter System," Recent Patents on Signal Processing, vol. 1: no. 2, pp. 135-142, December 2011.

31. Meenakshi Rawat, K. Rawat and F.M. Ghannouchi, "Adaptive Digital Predistortion of Wireless Power Amplifiers/Transmitters Using Dynamic Real-Valued Focused Time-Delay Line Neural Networks," IEEE Transactions on Microwave Theory and Techniques, vol. 58, no. 1, pp. 95-104, January 2010.

32. K. Rawat, Meenakshi Rawat and F.M. Ghannouchi, "Compensating I-Q Imperfections in Hybrid RF/Digital Predistortion with Adapted Look up Table Implemented in FPGA," IEEE Transactions on Circuits and Systems II, vol. 57, no. 5, pp. 389-393, May 2010.

Conferences: (44)

1. Girish Chandra Tripathi and Meenakshi Rawat, "Linear Vector Signal Generator for X-band Communication" IEEE Radio Wireless Week (RWW-2019), Texas, United States, 25-29 January 2020.

2. A. Kumar and M. Rawat, "A novel analog predistortion linearization technique for RF-in RF-out power amplifier," IEEE MTT-S International Microwave & RF Conference (IMaRC-2019), IIT Bombay, Mumbai, India, 13-15 December 2019.

3. Shipra and M. Rawat, "Digital Predistortion Technique for Massive MIMO Cross Interference," IEEE MTT-S International Microwave & RF Conference (IMaRC-2019), IIT Bombay, Mumbai, India, 13-15 December 2019.

4. G. C. Tripathi and M. Rawat "SDR Solution for Wider Bandwidth Enhanced Quality Communication," IEEE MTT-S International Microwave & RF Conference (IMaRC-2019), IIT Bombay, Mumbai, India, 13-15 December 2019.

5. Girish Chandra Tripathi and Meenakshi Rawat, "Robust Linearization of Power Amplifier in the presence of Transceiver Noise" IEEE Asia-Pacific Microwave Conference, Singapore, 10-13 December 2019.

6. G. C. Tripathi and M. Rawat "Characterization of Hardware Impairments in Software Defined Radio" IEEE Uttar Pradesh Section International Conference on Electrical, Electronics and Computer Engineering (UPCON-2019)" AMU, Aligarh, 8 -10 November. 2019. (Received best student paper award).

7. G. C. Tripathi, M. Rawat and K. Rawat, "Swish Activation Based Deep Neural Network Predistorter for RF-PA," IEEE Region 10 Conference (TENCON), Kochi, India, 17-20 October 2019, pp. 1239-1242.

8. M. Dewal and M. Rawat, "Signal Quality Enhancement for Power and Spectrum Efficient OFDM based Communication," IEEE International Conference on Computing, Power and Communication Technologies (GUCON), Delhi, India, 27-28 September 2019, pp. 115-120.

9. G. C. Tripathi, M. Rawat and P. Roblin, "Harmonic Cancellation Technique for Ultra-Wideband Filter-Less 5G Transmitter," IEEE ARFTG Microwave

Measurement Conference (ARFTG), Boston, MA, USA, 7th June 2019, pp. 1-4.

10. D. Phartiyal and M. Rawat, “LSTM-Deep Neural Networks based Predistortion Linearizer for High Power Amplifiers,” National Conference on Communications (NCC), Bangalore, India, 20-23 February 2019, pp. 1-5.

11. G. C. Tripathi and M. Rawat, “Predistortion Linearizer Design for Ku Band RF Power Amplifier,” National Conference on Communications (NCC), Bangalore, India, 20-23 February 2019, pp. 1-6.

12. A. V. Agrawal and M. Rawat, “RFPA Nonlinearity Compensation with MIMO Diversity for Indoor Channels,” IEEE Uttar Pradesh Section International Conference on Electrical, Electronics and Computer Engineering (UPCON), Gorakhpur, 2-4 November 2018, pp. 1-5.

13. R. Singh and M. Rawat, "Unified Analysis of Secrecy Capacity Over N*Nakagami Cascaded Fading Channel," IEEE International Symposium on Communications and Information Technologies (ISCIT), Bangkok, 26-29 September 2018, pp. 422-427.

14. D. Arora and M. Rawat, “Beam Shaping using Genetic Algorithm for Large Array Beamforming,” IEEE International Conference on Signal Processing and Integrated Networks (SPIN), Noida, 22-23 February 2018, pp. 936-939.

15. P. Jaraut, M. Rawat and F. M. Ghannouchi, “Curtailed Digital Predistortion Model for Crosstalk in MIMO Transmitters,” IEEE/MTT-S International Microwave Symposium (IMS), Philadelphia, PA, 10-15 June 2018, pp. 927-930.

16. D. Arora and M. Rawat, “Hybrid Beamforming Utilization Perspective for Future 5G Millimeter Wave Communication,” IEEE International WIE Conference on Electrical and Computer Engineering (WIECON-ECE), Dehradun, 18-19 December 2017, pp. 149-152.

17. P. Jaraut and M. Rawat, “3D Generalized Coefficient Supported Model for Concurrent Dual-Band Digital Predistortion of Envelope Tracking Power Amplifier,” IEEE MTT-S International Microwave and RF Conference (IMaRC), Ahmedabad, 11-13 December 2017, pp. 1-4.

18. G. C. Tripathi and M. Rawat, “A Low-Cost Test Bench for the Characterization of Microwave Devices Using Modulated Envelope Signal,” IEEE MTT-S International Microwave and RF Conference (IMaRC), Ahmedabad, 11-13 December 2017, pp. 1-5. (Received best student paper award)

19. D. Arora and M. Rawat, “Comparative analysis of beamforming techniques for wideband signals,” IEEE International Conference on Computing and Communication Technologies for Smart Nation (IC3TSN), Gurgaon, 12-14 October 2017, pp. 51-54.

20. P. Jaraut, G. C. Tripathi, M. Rawat and P. Roblin, “Independent component analysis for multi-carrier transmission for 4G/5G power amplifiers,” IEEE ARFTG Microwave Measurement Conference (ARFTG), Honololu, HI, 9th June 2017, pp. 1-4.

21. R. Singh and M. Rawat, “Statistical model of channel capacity for MRC combiner in log normal fading channels,” IEEE International Conference on Industrial and

Information Systems (ICIIS), Roorkee, 3-4 December 2016, pp. 393-398.

22. P. Jaraut and M. Rawat, “Complexity and numerical stability investigation in concurrent dual-band modeling of ultra-wideband power amplifiers for harmonically related signals,” IEEE Asia-Pacific Microwave Conference (APMC), New Delhi, 5-9 December 2016, pp. 1-4.

23. K. Gumber and M. Rawat, “Digital predistorter design using linear spline and its fixed point implementation," IEEE Asia-Pacific Microwave Conference (APMC), New Delhi, 5-9 December 2016, pp. 1-4.

24. K. Gumber, P. Jaraut, M. Rawat and K. Rawat, “Digitally assisted analog predistortion technique for power amplifier,” IEEE ARFTG Microwave Measurement Conference (ARFTG), Austin, TX, 8-9 December 2016, pp. 1-4.

25. L. Azpilicueta, M. Rawat, K. Rawat, F. Falcone, “A new propagation prediction approach based on Ray Launching and Neural Network techniques for complex environments,” IEEE International Symposium on Antennas and Propagation/USNC-URSI National Radio Science, Fajardo, Puerto Rico, 26 June- 1 July 2016.

26. R. Singh, M. Rawat and P. Jaraut, “Novel implementation topology for three level delta sigma modulation based transmitter,” IEEE Applied Electromagnetics Conference (AEMC), Guwahati, 18-21 December, pp. 1-2.

27. G. C. Tripathi, P. Jaraut, M. Rawat and L. N. Reddy, “Digital predistortion of power amplifiers with diversity technique in 4G MIMO transceivers,” IEEE MTT-S International Microwave and RF Conference (IMaRC), Hyderabad, 10-12 December 2015, pp. 209-211.

28. R. Singh, G. C. Tripathi and M. Rawat, “Performance analysis of multilevel delta sigma modulators for 3G/4G communication,” IEEE UP Section Conference on Electrical Computer and Electronics (UPCON), Allahabad, 4-6 December 2015, pp. 1-5.

29. G. C. Tripathi, P. Jaraut, M. Rawat and L. N. Reddy, “Low cost implementation of software defined radio for improved transmit quality of 4G signals,” IEEE Communication, Control and Intelligent Systems (CCIS), Mathura, 7-8 November 2015, pp. 108-112.

30. H. Yu, V. Ratnasamy, P. Roblin, M. Rawat and C. Xie, "Automatic feed-forward cancellation of modulated harmonic," IEEE 86th ARFTG Microwave Measurement Conference, Atlanta, GA, 3-4 December, 2015, pp. 1-3.

31. M. Rawat, P. Roblin, C. Quindroit, K. Salam and C. Xie, “Digitally supported feed-forward harmonic cancellation for filter-less ultra-wideband transmitters,” IEEE International Microwave and RF Conference (IMaRC), Bangalore, 15-17 December 2014, pp. 84-87.

32. M. Rawat, P. Roblin, C. Quindroit, N. Naraharisetti, K. Salam, C. Xie, “Characterization and modeling scheme for harmonics at power amplifier output” IEEE ARFTG Microwave Measurement Conference, Tampa, FL, 6th June 2014, pp. 1-4.

33. N. Naraharisetti, P. Roblin, C. Quindroit, M. Rawat and S. Gheitanchi, “2D quasi exact inverse of PA model in digital predistorter for concurrent dual-band system,”

IEEE Wireless and Microwave Technology Conference (WAMICON), Tampa, FL, 6 June 2014, pp. 1-4.

34. C. Quindroit, M. Rawat, N. Naraharisetti, P. Roblin, S. Gheitanchi and D. Chaillot, “Digitally modified filter-less receiver for 2D digital predistortion Of concurrent dual-band power amplifiers,” IEEE MTT-S International Microwave Symposium (IMS), Tampa, FL, 1-6 June 2014, pp. 1-4.

35. Meenakshi Rawat, N. Naraharisetti, C. Quindroit, P. Roblin, R. Pond, K. Salam, C. Xie, “Concurrent dual-band transmitter behavioral modeling with physically motivated 2-D rational functions,” IEEE ARFTG Microwave Measurement Conference, Columbus, OH, 18-21 November 2013, pp. 1-4.

36. N. Naraharisetti, P. Roblin, C. Quindroit, M. Rawat and S. Gheitanchi, "Quasi-exact inverse PA model for digital predistorter linearization," IEEE ARFTG Microwave Measurement Conference, Columbus, OH, 18-21 November 2013, pp. 1-4.

37. M. Younes, A. Kwan, M. Rawat and F. M. Ghannouchi, “Three-Dimensional digital predistorter for concurrent tri-band power amplifier linearization,” IEEE MTT-S International Microwave Symposium Digest (MTT), Seattle, WA, 2-7 June 2013, pp. 1-4.

38. Meenakshi Rawat, Karun Rawat, F. Esparza, R. Darraji, V. Torres, Francisco Falcone, Fadhel Ghannouchi, “Directional beam forming for smart antenna with Ray-launching and neural networks”, accepted in the 2011 IEEE AP-S International Symposium on Antennas and Propagation and 2011 USNC/URSI National Radio Science Meeting, Spokane, Washington, USA, July 3-8, 2011.

39. M. Rawat and F. Ghannouchi, “Adaptive linearization of transmitter in the presence of I/Q Imbalance using distributed spatio-temporal neural network,” IEEE International Conference on Wireless Information Technology and Systems (ICWITS), Maui, HI, 11-16 November 2012, pp. 1-4.

40. K. Rawat, M. Rawat, M. S. Hashmi, F. Falcone and F. M. Ghannouchi, “Dual-band phase offset line with required transmission phases at two operational frequencies,” IEEE/MTT-S International Microwave Symposium Digest, Montreal, QC, 17-22 June 2012, pp. 1-3.

41. S. Bhattacharjee, K. Rawat, M. Rawat, D. Wang, M. Helaoui, H. Leung, F. Ghannouchi, “Joint Evaluation and Mitigation of RF Impairments and Nonlinear Distortion in WiMAX Transceiver under Nakagami-m Fading Channel,” IEEE Canadian Conference on Electrical and Computer Engineering(CCECE), Niagara Falls, ON, 8-11 May, 2011, pp. 926-929.

42. V. Torres, F. Esparza, Meenakshi Rawat, K. Rawat, R. Darraji, F. M. Ghannouchi, Francisco Falcone, “Analysis of performance modeling of Wireless Systems in complex Indoor Scenarios”, accepted in the 2011 IEEE AP-S International Symposium on Antennas and Propagation and 2011 USNC/URSI National Radio Science Meeting, Spokane, Washington, USA, July 3-8, 2011.

43. F. E. Alfaro, Meenakshi Rawat, R. Darraji, K. Rawat, V. Torres, F. Falcone and F. M. Ghannouchi, "RF Environment Behavior Modeling Based on 3-D Ray-Tracing and Neural Networks to Mitigate Multipath in Indoor Position Estimation," Wireless Innovation Conference, Washington DC, USA, 30 November - 3 December

2010.

44. S. Tiwari, R. Darraji, S. A. Bassam, A. Kwan, K. Rawat, Meenakshi Rawat, M. Fattouche, F.M. Ghannouchi, “Practical result of wireless indoor position estimation by using hybrid TDOA/RSS algorithm," IEEE CCECE, Calgary, AB, 2-5 May 2010, pp. 1-5.

AWARDS / RECOGNITION

1. Received Young Faculty Research Fellowship (YFRF) under Visvesvaraya Ph.D. scheme of Meity, Digital India Corporation.
2. Best Paper award in ARFTG 83rd, Microwave Measurements for Emerging Technologies, June 6th, 2014 - Tampa, Florida, Tampa Marriott Waterside Hotel & Marina, Tampa, USA.
3. Best interactive paper award in ARFTG 82nd Microwave Measurement Conference, November 18th - 22nd, 2013, Columbus, Ohio.
4. DARPA/ Rockwell Collins joined research grant received for work as research scientist in Ohio State University.
5. Overall championship and first prize in 3rd Annual Smart Radio Challenge conducted by Wireless Innovation Forum as a team. Personal contribution was to implement position estimation algorithms and application of neural network for indoor multipath environment modeling along with Ray-tracing.
6. Recipient of Research Production Award in years 2009, 2010 and 2011 by University of Calgary.

RESEARCH PROJECTS/ COMMERCIALIZATION OF TECHNOLOGY

A. Technology Development/Commercialization of Technology

Director and Co-founder of startup “Linearized Amplifier Technologies and Services Private Limited”.

B. Details of Research Projects as PI

1. "RF-DSP co-design techniques for energy/spectral efficient Massive MIMO/ carrier aggregation in 5G communication", Sponsoring Agency: IMPacting Research, INnovation and Technology (IMPRINT-II), Science and Engineering Research Board, Amount: 54.11 Lac, 8 March 2019-7 March 2022, Co-PI: Prof. Manav Bhatnagar (IIT Delhi), Prof. Debashish Ghosh, Dr. Amalendu Patnaik.
2. “Hybrid (RF/ Digital) pre-distortion linearizer design for 13.75-14.5 GHz high power travelling wave tube amplifier”, Sponsoring Agency: Extramural Research and Intellectual Property Rights, Amount: 59.75 Lac, 02 June 2016-31 March 2020, Co-PI: Prof. M.V. Kartikeyan.
3. "Software defined techniques for hardware limitations in spectrum and power efficient 4G/5G communication ", Sponsoring Agency: Science and Engineering Research Board, Delhi, India, Government of India, Amount: 40.5 Lacs, 21 March 2017-20 March 2020, Co-PI: Prof. M.V. Kartikeyan.
4. "Physical Layer development for Reconfigurable SDR" Sponsoring Agency: Vedang Radio Pvt. Ltd, Amount: 5 Lacs, 25 January 2017-24 January 2019, Co-PI: Dr. Karun Rawat.
5. "Radio Frequency Front End Signal Processing Algorithms" Sponsoring Agency: Lekha Wireless Pvt. Ltd, Amount: 1.35 Lacs, 02 March 2017-01 March 2018.

6. Infrastructural grant, Sponsoring Agency: DeitY, Government of India, under Visvesvaraya PhD Scheme for Electronics and IT, Amount: 5 Lac, June02, 2016-(ongoing).
7. “Characterization and Digital pre-compensation techniques for 3G+ signals in dual-band transmitters", Faculty Initiation grant, IIT Roorkee, Amount: Rs. 10.0 Lac, Feb. 2015-Jan 2017.

C. Details of Research Projects as Co-PI

1. "Scheme for financial assistance for setting up of Electronics and ICT academy", Sponsoring Agency: Department of Electronics and information technology, Amount: 1000 Lacs, Duration: 5 years, Status: (ongoing), PI: Prof. Sanjeev Manhas, Co-PI: Dr. Sudip Roy, Dr. Meenakshi Rawat, Prof. Anand Bulusu.
1. “Radio Frequency Power Amplifier Design & Distortion Mitigation for Energy and Spectrum Efficient 5G Wireless Transmitters”, Scheme for Promotion of Academic and Research Collaboration (SPARC), Amount:45.22 Lacs, 2 years, Status: (ongoing since March 2019), PI: Dr. Karun Rawat, Co-PI: Dr. Meenakshi Rawat.

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