

Jenshan Lin

Current Affiliation and Contact Information

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Education

1994 Ph.D., Electrical Engineering, University of California at Los Angeles
1991 M.S., Electrical Engineering, University of California at Los Angeles
1987 B.S., Electrophysics, National Chiao Tung University, Hsinchu, Taiwan

Employment

08/2007-present Professor, Department of Electrical and Computer Engineering, University of Florida, Gainesville, Florida
07/2003-08/2007 Associate Professor, Department of Electrical and Computer Engineering, University of Florida, Gainesville, Florida
09/2001-06/2003 Technical Manager, High Speed Circuits Research Agere Systems, Holmdel, New Jersey
12/2000-09/2001 Technical Manager, High Speed and RF Design Research Bell Laboratories, Lucent Technologies, Murray Hill, New Jersey
07/1994-11/2000 Member of Technical Staff Bell Laboratories, AT&T/Lucent Technologies, Murray Hill, New Jersey
04/1994-06/1994 Postdoctoral Fellow University of California at Los Angeles, Los Angeles, California
07/1989-07/1990 Research Engineer Industrial Technology Research Institute (ITRI), Hsinchu, Taiwan

Other Appointments

10/2016-present Program Director, U.S. National Science Foundation
01/2014-12/2016 Editor-in-Chief, IEEE Transactions on Microwave Theory and Techniques
05/2012-08/2012 Visiting Chair Professor, National Sun Yat-Sen University, Taiwan
06/2011-07/2011 Consultant, Industrial Technology Research Institute, Hsinchu, Taiwan
06/2010-07/2010 Visiting Researcher, NTT Microsystem Integration Laboratories, Atsugi, Japan
07/2006 Visiting Professor, Department of Electrical Engineering National Taiwan University, Taipei, Taiwan

09/2001-08/2002 Visiting Professor, WINLAB
Rutgers University, Piscataway, New Jersey

Research Contributions and Research Management Experience

Interests and Expertise: RF/high-speed circuits and systems and their applications including wireless communications, optical communications, sensors, wireless power transfer, energy harvesting, biology, and medicine.

NSF Program Director:

- Leading the Communications, Circuits, and Sensing Systems (CCSS) Program in the Division of Electrical, Communications, and Cyber Systems (ECCS). Handling the proposal review, making award recommendations, and administering awards in CCSS program including CAREER and other proposals.
- Leading the cross-cutting program "Spectrum Efficiency, Energy Efficiency, and Security (SpecEES): Enabling Spectrum for All" which has \$10M/year investment starting FY2017.
- Representing ECCS in Major Research Instrumentation (MRI) program and handling the review of MRI proposals submitted to ECCS.
- Representing ECCS in several other cross-cutting programs including
 - Secure and Trustworthy Cyberspace (SaTC)
 - Computational and Data-Enabled Science and Engineering (CDS&E)
 - Cyberinfrastructure for Sustained Scientific Innovation (CSSI) - Data and Software
 - NSF/DOE Partnership in Basic Plasma Science and Engineering
- Participating in several new initiatives related to NSF's 10 Big Ideas.
- Representing NSF in two government interagency working groups under NITRD (Wireless Spectrum Research and Development Working Group and Broadband Research and Development Working Group) for strategic planning of national R&D investments related to wireless and radio frequency technologies.

Pioneering contributions in emerging research areas:

- Vital Sign and Vibration Sensing Radar
First to demonstrate a fully integrated radar sensor chip that can measure human respiration and heartbeat. Since then, this new research field has been drawing attentions and growing fast with increasing number of publications. Presented keynote speech in 2015 International Microwave Workshop Series on RF and Wireless Technologies for Biomedical and Healthcare Applications (IMWS-Bio). Published several papers and received high citations (Google Scholar: 10 papers with >100 citations each).
- Wireless Energy Transfer and Conversion
First to demonstrate wireless charging of a laptop computer. Created new technical committee in IEEE MTT-S. Contributed to the wireless power workshops that led to the creation of the new IEEE Wireless Power Transfer Conference. Presented keynote speech in 2014 IEEE Wireless Power Transfer Conference. Published several papers and received high citations (Google Scholar: 4 papers and 2 patents with >100 citations each).

Successful technology transfer and commercialization of research results:

- Noncontact and Noninvasive Detection of Vital Signs and Vibrations Using Radar
Developed several technologies covering transceiver architectures and detection

algorithms. Five patents were issued and several others are pending. The patents have been licensed by three companies for applications in home healthcare, veterinary care, biological research, and security.

- Near-field Wireless Charging of Mobile Devices
Worked with UF ECE students who founded WiPower (acquired by Qualcomm) to develop key technologies for wireless charging of cellular phones and other portable electronic devices. Two patents were issued and licensed by WiPower/Qualcomm.

Leading large multidisciplinary teams on several projects:

- NSF Major Research Instrumentation Award (PI)
Led a multi-department proposal team and received the award. Acquired \$325,000 equipment to build a 110GHz millimeter-wave device characterization system. The system and the measurement results using it have contributed to the success of faculty research projects and graduate education.
- NASA Hydrogen Research – Sensors and Sensor Systems (PI)
Led a large multidisciplinary research team from 4 departments on this \$1.1M project. Demonstrated Self-Powered Wireless Hydrogen Sensor System. Demonstrated complete wireless hydrogen leak detection system deployed at Greenway FORD in Orlando. Had a news release and covered by several news media. Published several papers and received high citations (Google Scholar: 4 papers with >100 citations).
- ONR 20GHz GaN Wide-Band Receiver (PI)
Led a large multidisciplinary research team from University of Florida, University of Hawaii, and Northrop Grumman Corporation on this \$1.15M project to work on advanced GaN device processing and high dynamic range receiver circuits demonstration.

Awards and Honors

- University of Florida Technology Innovator Awards, 2011, 2012, 2013, 2014, 2016, 2017 (for inventions licensed in the previous calendar year)
- IEEE Radio Frequency Integrated Circuits (RFIC) Symposium Tina Quach Outstanding Service Award, 2016
- Distinguished Alumnus Award, National Chiao Tung University, Taiwan, 2016
- IEEE Wireless Power Transfer Conference Best Paper Award (voted by attendees), 2015
- Honorary Chair Professor, National Taiwan University of Science and Technology, 2014
- Fellow of IEEE, 2010
- IEEE Microwave Theory and Techniques Society N. Walter Cox Award, 2007
- ETA KAPPA NU Outstanding Young Electrical Engineer Award, 1997
- UCLA School of Engineering and Applied Science Outstanding Ph.D. Award, 1994

Advisor/coauthor of students' honors and awards (student name in parentheses)

- 2018 IEEE Wireless Power Transfer Conference Best Student Paper Award (Aasrith Ganti)
- 2016 IEEE International Microwave Symposium Student Paper Competition Finalist (Tien-Yu Huang)
- 2016 IEEE Wireless Power Transfer Conference Best Student Paper Award Second Place (Ron-Chi Kuo)
- 2016 IEEE RWW BioWireless Best Student Paper Award Second Place (Tien-Yu Huang)
- 2015 IEEE IMWS-Bio Best Student Paper Award First Place (Tien-Yu Huang)
- 2014 IEEE MTT-S Student Design Competition High Sensitivity Radar 3rd Place Award (Chien-Ming Nieh, Changyu Wei, Jianxuan Tu, Meiyu Li, and TienYu Huang)
- 2012 IEEE RFIC Symposium Best Student Paper Finalist (Jason Te-Yu Kao)

- 2011 Vodafone Wireless Innovation Project Competition Finalist (Gabriel Reyes, Changzhi Li)
- 2010 IEEE Radio and Wireless Symposium Best Student Paper Award 3rd place (Yan Yan)
- 2009 IEEE Radio and Wireless Symposium Student Paper Competition Finalist (Xiaogang Yu)
- 2008 IEEE MTT-S Graduate Fellowship Award (Changzhi Li)
- 2008 IEEE MTT-S Undergraduate/Pre-Graduate Scholarship Award (Gabriel Reyes)
- 2008 IEEE International Microwave Symposium Student Paper Competition Finalist (Changzhi Li)
- 2007 IEEE Radio and Wireless Symposium Best Student Paper Award 2nd place (Changzhi Li)
- 2004 IEEE MTT-S Undergraduate/Pre-Graduate Scholarship Award (Jerry Jun)
- 2003 IEEE International Microwave Symposium Best Student Paper Award 1st place (Amy Droitcour)
- 2001 IEEE International Microwave Symposium Best Student Paper Award Honorable Mention (Amy Droitcour)
- 1997 IEEE International Microwave Symposium Best Student Paper Award 2nd place (Joel Dawson)

Professional Activities

- Fellow of IEEE – currently a member in the following societies/councils/communities: Microwave Theory and Techniques Society (MTT-S), Sensors Council, Systems Council, Council on RFID, Biometrics Council, Nanotechnology Council, Life Sciences Community, Internet of Things Community. Past member: Antennas and Propagation Society, Engineering in Medicine and Biology Society, Solid-State Circuits Society, Industrial Electronics Society, Communications Society, Standards Association

Leadership positions in society administrative committees, publications, conferences:

Editorial Board of Publications

- Editor-in-Chief, IEEE Transactions on Microwave Theory and Techniques, 2014-2016
- Editorial Advisory Board, Cambridge University Press RF and Microwave Engineering Series, 2013-present
- Guest Editor, IEEE Microwave Magazine RFIC Special Issue, Feb. 2012.
- Associate Editor, IEEE Transactions on Microwave Theory and Techniques, 2006-2010
- Guest Editor, RFIC2008 Special Issue, IEEE Transactions on Microwave Theory and Techniques, May 2009.
- Guest Editor, IEEE Microwave Magazine GOLD Special Issue, Feb. 2009.

Society Leadership Positions

- IEEE MTT-S Fellow Evaluation Committee (2014-present, vice-chair: 2018)
- Elected Member, IEEE MTT-S AdCom (1st term: 2006-2008, 2nd term: 2009-2011)
- IEEE MTT-S Technical Committee on Wireless Energy Transfer and Conversion (Founding Member; Vice Chair: 2011-2013; Chair: 2013-2015)
- Chair, Technical Coordinating Committee, IEEE MTT-S AdCom (2010-2011)
- Chair, MTT GOLD Committee (2007-2008)
- Vice Chair, Membership Services Committee, IEEE MTT-S AdCom (2006-2008)
- Vice Chair, Microwave Education Fund Committee, IEEE MTT-S AdCom (2005)

- Vice Chair, Electronic Information Committee, IEEE MTT-S AdCom (2005-2009)
- Publications Committee, IEEE MTT-S AdCom (2005-2010, 2014-2017)
- Technical Coordinating Committee, IEEE MTT-S AdCom (2010-2012, 2016-present)
- Membership Services Committee, IEEE MTT-S AdCom (2006-2008)
- Electronic Information Committee, IEEE MTT-S AdCom (2003-2009)

Conference Leadership Positions

- Advisory Committee, IEEE RFIC Symposium (2014-present)
- International Advisory Committee, IEEE Wireless Power Transfer Conference (2014, 2016, 2017)
- Executive Committee, IEEE RFIT Symposium (2012-2013)
- Executive Committee, IEEE International Wireless Symposium (2013)
- Executive Committee, IEEE RFIC Symposium (2008-2013)
- Executive Committee, IEEE Radio and Wireless Symposium (2007, 2009)
- International Advisory Committee, Asia-Pacific Microwave Conference (2008)
- International Advisory Committee, IEEE 7th International Symposium on Communications and Information Technologies (2007)
- International Advisory Committee, IEEE International Workshop/Symposium on Radio-Frequency Integration Technology (2007, 2009)
- Chair, IEEE RFIC Symposium Executive Committee (2012-2013)
- General Co-Chair, Asia-Pacific Microwave Conference (2012)
- Technical Program Chair, IEEE Radio and Wireless Symposium (2009)
- General Chair, IEEE RFIC Symposium (2008)
- Poster Session Chair, IEEE Radio and Wireless Symposium (2008)
- Technical Program Chair, IEEE RFIC Symposium (2007)
- Technical Program Co-Chair, IEEE RFIC Symposium (2006)
- Finance Chair, IEEE Radio and Wireless Symposium (2007)
- Workshops Chair, IEEE Radio and Wireless Symposium (2006)
- Finance Chair, IEEE RFIC Symposium (2005)
- Co-Chair, Wireless and Cellular Communications Subcommittee, IEEE International Microwave Symposium Technical Program Committee (2005)
- Tutorials Chair, IEEE Wireless and Microwave Technology Conference (2005)
- Workshops Chair, IEEE Radio and Wireless Conference (2004)
- Workshops and Tutorials Chair, IEEE RFIC Symposium (2004)
- Workshop Co-Organizer, "Wireless Biomedical Applications" in IEEE Radio and Wireless Symposium (2011)
- Workshop Co-Organizer, "RFIC Technology Evolution and Reality: Challenges to Designers and Manufacturers" in IEEE RFIC Symposium (2004)
- Workshop Co-Organizer: "Advances in Bluetooth Technology" in IEEE International Microwave Symposium (2002)

Other Committee Memberships

- IEEE MTT-S MTT-10 Technical Committee on Biological Effects and Medical Applications (2015-present)
- IEEE MTT-S MTT-26 Technical Committee on Wireless Energy Transfer and Conversion (2011-present)
- IEEE MTT-S MTT-23 Technical Committee on RFIC (2009-present)
- IEEE MTT-S MTT-20 Technical Committee on Wireless Communications (2002-present)

- Technical Program Committee, IEEE International Microwave Biomedical Conference (2018)
- Technical Program Committee, IEEE International Microwave Symposium (2002-2005, 2017-present)
- Technical Program Committee, IEEE Wireless Power Transfer Conference (2013-present)
- Technical Program Committee, IEEE International Microwave and RF Conference (IMaRC), 2014-present
- Technical Program Committee, European Microwave Conference (2013-2016)
- Technical Program Committee, IEEE Benjamin Franklin Symposium on Microwave and Antenna Sub-systems (BenMAS), 2014
- Technical Program Committee, IEEE RFIC Symposium (2002-2015)
- Technical Program Committee, IEEE International Wireless Symposium (2013-2014)
- Technical Program Committee, Asia-Pacific Microwave Conference (2012-2014)
- Technical Program Committee, Radar Sensor Technology, SPIE International Symposium on Defense and Security (2008-present)
- Technical Program Committee, IEEE Radio and Wireless Symposium (2002-2010)
- Technical Program Committee, IEEE International Workshop on Radio-Frequency Integration Technology (2005)
- International Program Committee, IASTED International Conference on CIRCUITS, SIGNALS, AND SYSTEMS (2005)
- Technical Program Committee, IASTED Wireless and Optical Communications (2004)
- Technical Program Committee, IEEE Sarnoff Symposium (2001)
- Technical Program Committee, IEEE Workshop on Chip-Package Co-Design (1998-2000)
- Technical Program Committee, IEEE Symposium on IC/Package Design Integration (1999)
- Organizing Committee, IEEE Wireless Power Transfer Conference (2015)
- Steering Committee, IEEE International Microwave Biomedical Conference (2018)
- Steering Committee, IEEE International Microwave Symposium (2003, 2007, 2014, 2017)
- Steering Committee, IEEE Wireless and Microwave Technology Conference (2012)
- Steering Committee, IEEE Radio and Wireless Symposium (2004-2009)
- Steering Committee, IEEE RFIC Symposium (2003-2008)
- Balloting Committee, IEEE 802.16 Wireless MAN (later evolved to WiMAX) Standard (2001)

Institutional Program Review Committee

- Advanced R&D Advisory Committee, Industrial Technology Research Institute (ITRI), Taiwan, 2016-2018
- Assessment Committee, National Taiwan University College of Electrical Engineering and Computer Science, 2015

Proposal Review Panel

- National Science Foundation (NSF)
- IEEE Presidents' Change the World Competition
- Semiconductor Research Corporation (SRC)
- Oak Ridge Associated Universities (ORAU)
- Industrial Technology Research Institute (ITRI), Hsinchu, Taiwan
- Science & Engineering Research Council of Singapore
- Qatar National Priorities Research Program
- Research Grant Council of Hong Kong
- Research Council for Natural Sciences and Engineering, Academy of Finland
- Natural Sciences and Engineering Research Council of Canada

- King Abdulaziz City for Science and Technology (KACST), Kingdom of Saudi Arabia

University of Florida Committees

- Faculty Advisory Board, UF Center of Remote Sensing (2013-present)
- Member, Faculty Innovation Council, UF Engineering Innovation Institute (2011-present)
- Member, Search Committee, ECE Department Semmoto Endowed Chair Professor, 2016
- Member, Faculty Sabbatical Committee, College of Engineering (2012-2016)
- Member, Faculty Development (Tenure & Promotion) Committee, ECE Department (2009-2016)
- Chair, Electronics Division, ECE Department (Fall 2008-Spring 2010, Fall 2013)
- Member, Search Committee, ECE Department Neuroengineering Faculty (2013-2014)
- Member, Search Committee, College of Engineering Associate Dean for Academic Affairs, (2009)
- Elected Senator, University of Florida Faculty Senate (Aug. 2006-Aug. 2009)
- Elected Member of Faculty Council, College of Engineering (Aug. 2006-Aug. 2009)
- Member, Budget Committee, ECE Department (2008-2009)
- Member, Intel Chair Search Committee, ECE Department (2004-2007)
- Member, PhD Exam Committee, ECE Department (2004-2008)
- Member, Faculty Search Committee, ECE Department (2003-2006)
- Member, Financial Aid Committee, ECE Department (2004)

Ph.D. Students Graduated (27)

Dr. Sherlie Portugal (PhD May 2018) → Technological University of Panama
 Dr. Meiyu Li (PhD August 2017) → Skyworks
 Dr. Tienyu Huang (PhD August 2017) → GLOBALFOUNDRIES
 Dr. Lawrence Fomundan (PhD May 2017)
 Dr. Ron-Chi Kuo (PhD May 2017) → PowerSphyr Inc.
 Dr. Christopher Heagney (PhD May 2016) → US Naval Air Systems Command
 Dr. Jianxuan Tu (PhD August 2015) → Intel
 Dr. Chien-Ming (Jemmy) Nieh (PhD December 2014) → Intel → Amazon Lab126
 Dr. Taesong Hwang (PhD May 2014) → Skyworks
 Dr. Raul A. Chinga (PhD December 2013) → Space Systems Loral
 Dr. Te-Yu (Jason) Kao (PhD May 2013) → Intel
 Dr. Yan Yan (PhD May 2012) → Coherent Logix → Skyworks
 Dr. Choong Heon Lee (PhD May 2012) → University of Florida → Rush University
 Dr. Xiaogang Yu (PhD January 2012) → Mckinsey & Company
 Dr. Zivin Park (PhD May 2011) → Independent Patent Agent
 Dr. Mingqi Chen (PhD December 2010) → Maxim Integrated Products → Broadcom
 Dr. Austin Chen (PhD May 2010) → Skyworks
 Dr. Joaquin Casanova (PhD May 2010) → United States Department of Agriculture → University of Florida
 Prof. Changzhi Li (PhD May 2009) → Texas Tech University
 Dr. Zhen Ning Low (PhD May 2009) → Qualcomm
 Dr. Lance Covert (PhD May 2008) → EMS Technologies → Honeywell Aerospace
 Dr. Tien-Yu Chang (PhD May 2008) → Maxlinear → Marvell → MediaTek → Samsung
 Prof. Hyeopgoo Yeo (PhD August 2007) → Samsung → HanShin University
 Dr. Sang Won Ko (PhD August 2007) → Skyworks
 Dr. Yanming Xiao (PhD May 2007) → Qualcomm

Dr. Ashok Verma (PhD May 2006) → Maxim Integrated Products
Dr. Xiuge Yang (PhD May 2006) → Ansoft --> NXP Semiconductors --> Cree

Currently supervising 3 PhD students.

Publications and Patents

271 papers in refereed journals (118) and conference proceedings (153), 2 books and 6 book chapters, 18 U.S. Patents Awarded, >100 Invited Talks (keynotes, seminars, tutorials, short courses, workshops)

Google Scholar H-index: 50

<https://scholar.google.com/citations?user=mqCyq9oAAAAJ&hl=en&oi=ao>

Articles in Refereed Journals

1. J. Lin, C. Li, C.-C. Chang, T.-H. Tsai, D. Zito, S.-F. Chang, "Review—Semiconductor Integrated Radar for Sensing Applications," *ECS Journal of Solid State Science and Technology*, Q3126-Q3142, April 2018. **(Editor's Choice)**
2. M. Li and J. Lin, "Wavelet-Transform-Based Data-Length-Variation Technique for Fast Heart Rate Detection Using 5.8-GHz CW Doppler Radar," in *IEEE Transactions on Microwave Theory and Techniques*, vol. 66, no. 1, pp. 568-576, January 2018.
3. S. Portugal, S. Roy, J. Lin, "Functional relationship between material property, applied frequency and ozone generation for dielectric barrier discharges in atmospheric air," *Scientific Reports*, Scientific Reports, 7: 6388, July 2017.
4. C. Li, Z. Peng, T.-Y. Huang, T. Fan, F.-K. Wang, T.-S. Horng, J.-M. Muñoz-Ferreras, R. Gómez-García, L. Ran, J. Lin, "A Review on Recent Progress of Portable Short-Range Noncontact Microwave Radar Systems," in *IEEE Transactions on Microwave Theory and Techniques*, vol. 65, no. 5, pp. 1692-1706, May 2017. (Invited Paper)
5. T. Y. Huang, L. F. Hayward and J. Lin, "Noninvasive Measurement and Analysis of Laboratory Rat's Cardiorespiratory Movement," in *IEEE Transactions on Microwave Theory and Techniques*, vol. 65, no. 2, pp. 574-581, Feb. 2017.
6. J. Tu, T. Hwang and J. Lin, "Respiration Rate Measurement Under 1-D Body Motion Using Single Continuous-Wave Doppler Radar Vital Sign Detection System," in *IEEE Transactions on Microwave Theory and Techniques*, vol. 64, no. 6, pp. 1937-1946, June 2016.
7. A. Ganti, J. Lin, R. A. Chinga and S. Yoshida, "Harmonically terminated high-power rectifier for wireless power transfer," *Wireless Power Transfer*, 2016, 3(2), 75–82.
8. J. Tu and J. Lin, "Fast acquisition of heart rate in non-contact vital sign radar measurement using time window variation technique," *IEEE Trans. Instrum. Meas.*, vol. 65, no. 1, pp. 112-122, January 2016.
9. T. Hwang, K. Azadet, R. S. Wilson, and J. Lin, "Nonlinearity Modeling of a Chireix Outphasing Power Amplifier," *IEEE Trans. Circuits Syst. I, Reg. Papers*, vol. 62, no. 12, pp. 2898-2907, December 2015.
10. T. Hwang, K. Azadet, R. S. Wilson, and J. Lin, "Linearization and Imbalance Correction Techniques for Broadband Outphasing Power Amplifiers," *IEEE Transactions on Microwave Theory and Techniques*, vol. 63, no. 7, pp. 2185-2198, July 2015.
11. C.-M. Nieh, C. Wei, and J. Lin, "Concurrent Detection of Vibration and Distance Using Unmodulated CW Doppler Vibration Radar with an Adaptive Beam-Steering Antenna," *IEEE Transactions on Microwave Theory and Techniques*, vol. 63, no. 6, pp. 2069-2078, June 2015.
12. R. A. Chinga, J. Lin, S. Roy, "Self-Tuning High-Voltage High-Frequency Switching Power Amplifier for Atmospheric-Based Plasma Sterilization," *IEEE Transactions on Plasma Science*, vol. 42, no. 7, pp. 1861-1869, July 2014.
13. T. Hwang, K. Azadet, R. S. Wilson, and J. Lin, "Characterization of Class-F Power Amplifier With Wide Amplitude and Phase Bandwidth for Outphasing Architecture," *IEEE Microwave and Wireless Components Letters*, vol. 24, no. 3, pp. 188-190, March 2014.

14. W.-T. Chen, R. A. Chinga, S. Yoshida, J. Lin, C.-K. Hsu, "A 36 W Wireless Power Transfer System with 82% Efficiency for LED Lighting Applications," *Transactions of The Japan Institute of Electronics Packaging*, vol. 6, no. 1, pp. 32-37, 2013.
15. L. Lu, C. Li, J. Lin, "A Regulated 3.1-10.6 GHz Linear Dual-Tuning Differential Ring Oscillator for UWB Applications," *Microwave and Optical Technology Letters*, vol. 55, no. 10, pp. 2384-2389, Oct. 2013.
16. J. Garnica, R. Chinga, J. Lin, "Wireless Power Transmission: From Far Field to Near Field," *Proceedings of IEEE, Special Issue on Wireless Power Technology, Transmission and Application*, vol. 101, no. 6, pp. 1321-1331, June 2013. (Invited)
17. C. Li, V. M. Lubecke, O. Boric-Lubecke, J. Lin, "A Review on Recent Advances in Doppler Radar Sensors for Noncontact Healthcare Monitoring," *IEEE Transactions on Microwave Theory and Techniques*, vol. 61, no. 5, pp. 2046-2060, May 2013. (Invited)
18. T. Kao, Y. Yan, T. Shen, A. Chen, J. Lin, "Design and Analysis of a 60-GHz CMOS Doppler Micro-Radar System-in-Package for Vital-Sign and Vibration Detection," *IEEE Transactions on Microwave Theory and Techniques*, vol. 61, no. 4, pp. 1649-1659, April 2013.
19. A. Y.-K. Chen, Y. Baeyens, Y.-K. Chen, J. Lin, "An 83-GHz High-Gain SiGe BiCMOS Power Amplifier Using Transmission-Line Current-Combining Technique," *IEEE Transactions on Microwave Theory and Techniques*, vol. 61, no. 4, pp. 1557-1569, April 2013.
20. T.-M. Shen, T. J. Kao, T.-Y. Huang, J. Tu, J. Lin, R.-B. Wu, "Antenna Design of 60-GHz Micro-Radar System-In-Package for Noncontact Vital Sign Detection," *IEEE Antennas and Wireless Propagation Letters*, vol. 11, pp. 1702-1705, 2012. (Invited)
21. Y. Yan, L. Cattafesta, C. Li, J. Lin, "Analysis of Detection Methods of RF Vibrometer for Complex Motion Measurement," *IEEE Transactions on Microwave Theory and Techniques*, IMS2011 Special Issue, vol. 59, no. 12, pp. 3556-3566, December 2011.
22. A. Y.-K. Chen, Y. Baeyens, Y.-K. Chen, J. Lin, "Low-power 100 GHz shunt-peaked regenerative frequency divider using 0.18 μm SiGe BiCMOS," *Electronics Letters*, vol. 47, no. 14, pp. 804-805, July 7, 2011.
23. B. H. Chu, C. Y. Chang, K. Kroll, N. Denslow, Y.-L. Wang, S. J. Pearton, J. Lin, A. M. Dabiran, A. M. Wowchak, B. Cui, P. P. Chow, J. W. Johnson, P. Rajagopal, J. C. Roberts, E. L. Piner, K. J. Linthicum, and F. Ren, "Detection of vitellogenin, an endocrine disrupter biomarker, using AlGaIn/GaN high electron mobility transistors," *Phys. Status Solidi (current topics in solid state physics)* vol. C 8, No. 7-8, pp. 2486-2488, July 2011.
24. Z. Park, J. Lin, "A Beam-Steering Broadband Microstrip Antenna for Noncontact Vital Sign Detection," *IEEE Antennas and Wireless Propagation Letters*, vol. 10, pp. 235-238, 2011.
25. A. Y.-K. Chen, Y. Baeyens, Y.-K. Chen, J. Lin, "An 80 GHz High Gain Double-Balanced Active Up-Conversion Mixer Using 0.18 μm SiGe BiCMOS Technology," *IEEE Microwave and Wireless Components Letters*, vol. 21, no. 6, pp. 326-328, June 2011.
26. J. Casanova, J. Taylor, J. Lin, "Design of a 3-D Fractal Heatsink Antenna," *IEEE Antennas and Wireless Propagation Letters*, vol. 9, pp. 1061-1064, 2010.
27. F.-K. Wang, C.-J. Li, C.-H. Hsiao, T.-S. Horng, J. Lin, K.-C. Peng, J.-K. Jau, J.-Y. Li, and C.-C. Chen, "A Novel Vital Sign Sensor Based on a Self-Injection-Locked Oscillator," *IEEE Transactions on Microwave Theory and Techniques*, IMS2010 Special Issue, vol. 58, no. 12, pp. 4112-4120, December 2010.
28. M. Chen, W. Sutton, I. Smorchkova, B. Heying, W.-B. Luo, V. Gambin, F. Oshita, R. Tsai, M. Wojtowicz, R. Kagiwada, A. Oki, J. Lin, "A 1-25 GHz GaN HEMT MMIC Low-Noise Amplifier," *IEEE Microwave and Wireless Components Letters*, vol. 20, no. 10, pp. 563-565, October 2010.
29. C. Gu, C. Li, J. Lin, J. Huangfu, L. Ran, "Instrument-Based Non-Contact Doppler Radar Vital Sign Detection System Using Heterodyne Digital Quadrature Demodulation Architecture," *IEEE Transactions on Instrumentation and Measurement*, vol. 59, no. 6, pp. 1580-1588, June 2010.
30. Z. N. Low, J. Casanova, J. Lin, "A Loosely Coupled Planar Wireless Power Transfer System Supporting Multiple Receivers," *Advances in Power Electronics*, Vol. 2010, Article ID 546529, 13 pages, 2010.
31. C. Li, X. Yu, C.-M. Lee, D. Li, L. Ran, J. Lin, "High Sensitivity Software Configurable 5.8 GHz Radar Sensor Receiver Chip in 0.13 μm CMOS for Non-contact Vital Sign Detection," *IEEE Transactions on Microwave Theory and Techniques*, RFIC2009 Special Issue, vol. 58, no. 5, pp. 1410-1419, May 2010.

32. A. Y.-K. Chen, Y. Baeyens, Y.-K. Chen, J. Lin, "A W-Band Highly Linear SiGe BiCMOS Double-Balanced Active Up-Conversion Mixer Using Multi-Tanh Triplet Technique," *IEEE Microwave and Wireless Components Letters*, vol. 20, no. 4, pp. 220-222, April 2010.
33. Z. N. Low, J. Casanova, P. Maier, J. Taylor, R. A. Chinga, J. Lin, "Method of Load/Fault Detection for Loosely Coupled Planar Wireless Power Transfer System with Power Delivery Tracking," *IEEE Transactions on Industrial Electronics*, vol. 57, no. 4, pp. 1478-1486, April 2010.
34. C. Li, J. Ling, J. Li, J. Lin, "Accurate Doppler Radar Non-Contact Vital Sign Detection Using the RELAX Algorithm," *IEEE Transactions on Instrumentation and Measurement*, vol. 59, no. 3, pp. 687-695, March 2010.
35. A. Y.-K. Chen, Y. Baeyens, Y.-K. Chen, J. Lin, "A 21 dB Gain 87 GHz Low-Noise Amplifier Using 0.18 μm SiGe BiCMOS," *Electronics Letters*, vol. 46, no. 5, pp. 332-333, March 4, 2010.
36. A. Y.-K. Chen, Y. Baeyens, Y.-K. Chen, J. Lin, "A Low-Power Linear SiGe BiCMOS Low-Noise Amplifier for Millimeter-Wave Active Imaging," *IEEE Microwave and Wireless Components Letters*, vol. 20, no. 2, pp. 103-105, Feb. 2010.
37. C. Li, J. Lin, "A 1-9 GHz Linear-Wide-Tuning-Range Quadrature Ring Oscillator in 130 nm CMOS for Non-contact Vital Sign Radar Application," *IEEE Microwave and Wireless Components Letters*, Vol. 20, No. 1, pp. 34-36, Jan. 2010.
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Books

- Mostafanezhad, Isar, Olga Boric-Lubecke, and Jenshan Lin, eds. *Medical and Biological Microwave Sensors and Systems*. Cambridge University Press, 2017.
- *Microwave Noncontact Motion Sensing and Analysis*, C. Li and J. Lin, John Wiley & Sons, Hoboken, New Jersey, 2014.

Book Chapters

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- L. Lu, C. Gu, C. Li, and J. Lin, "Doppler Radar Noncontact Vital Sign Monitoring", *Neural Computation, Neural Devices, and Neural Prosthesis* (print ISBN: 978-1-4614-8150-8), Springer New York, chapter 3, pp. 41-62, 2014.
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Recent Invited Talks (2013-present)

1. J. Lin, "Communications, Circuits, and Sensing Systems Program in NSF," in NSF Workshop: Recent Advances and Future Research Directions in RF Technologies from MHz to THz, IEEE International Microwave Symposium, Honolulu, HI, June 8, 2017. **(Opening Keynote)**
2. J. Lin, "Spectral-Efficient Detection of Vital Signs and Motions Using CW Radar: Applications in Biology, Medicine, and Beyond," U.S. Interagency Government Working Group NITRD Wireless Spectrum Research and Development (WSRD) meeting, February 2, 2017. **(Invited)**
3. J. Lin, "A Perspective on Far-Field and Near-Field Wireless Power Transfer," EU COST IC1301 Wireless Power Transmission for Sustainable Electronics (WIPE) 6th Management Committee Meeting and Working Group Workshop, Aveiro, Portugal, May 3, 2016. **(Invited Keynote)**
4. J. Lin, "Noncontact Vital Sign Detection Using Microwave Radar: Applications in Biology, Medicine, and Beyond," National Chiao Tung University, Tainan Campus, Taiwan, April 8, 2016. **(Invited)**
5. J. Lin, "Noncontact Vital Sign Detection Using Microwave Radar: Applications in Biology, Medicine, and Beyond" and "Status of IEEE Transactions on Microwave Theory and Techniques," Zhejiang University, Hangzhou, China, March 17, 2016. **(Invited)**
6. J. Lin, "From Communication Circuits to Sensor Systems," National Science Foundation, Washington, DC, March 7, 2016. **(Invited)**
7. J. Lin, "Noncontact Vital Sign Detection Using Microwave Radar: Applications in Biology, Medicine, and Beyond," IEEE Tainan Chapter, Taiwan, December 15, 2015. **(Invited)**
8. J. Lin, "Noncontact Vital Sign Detection Using Microwave Radar: Applications in Biology, Medicine, and Beyond," Nanjing University of Aeronautics and Astronautics, Nanjing, China, December 10, 2015. **(Invited)**
9. J. Lin, "Noncontact Vital Sign Detection Using Microwave Radar: Applications in Biology, Medicine, and Beyond," Southeast University, Nanjing, China, December 9, 2015. **(Invited)**
10. J. Lin, "Wireless Power Transfer: From Far Field to Near Field," EU COST Wireless Networks: From Energy Harvesting to Information Processing, CTTC, Castelldefels, Barcelona, Spain, 9-13 November, 2015. **(Invited)**
11. J. Lin, "Noncontact Vital Sign Detection Using Microwave Radar: Applications in Biology, Medicine, and Beyond," *IEEE IMWS-Bio 2015*, Taipei, Taiwan, September 2015. **(Invited Keynote)**
12. J. Lin, "Wireless Power Transfer: From Far Field to Near Field," IEEE International Microwave Symposium Workshop on Wireless Power Transmission and Scavenging, Phoenix, AZ, May 22, 2015. **(Invited)**
13. C. Li and J. Lin, "RFIC Integration of CW Radar Transceivers for Vibration and Vital Sign Detection," IEEE International Microwave Symposium Workshop on Modern Radar Systems for High resolution ranging, indoor localization, and vital signs detection, Phoenix, AZ, May 17, 2015. **(Invited)**
14. J. Lin and N. Shinohara, "Wireless Power Transfer in 21st Century: Technologies Covering Far Field and Near Field," Tutorial in 16th annual IEEE Wireless and Microwave Technology Conference (WAMICON), Cocoa Beach, April 15, 2015. **(Invited)**
15. J. Lin, "Wireless Power Transfer: From Far Field to Near Field," Wireless Power Summit, Berkeley, November 20, 2014. **(Invited)**
16. J. Lin, "An Overview of Wireless Power Transfer Technologies from Far-Field to Near-Field," Workshop on Wireless Power Transfer, Taichung, November 11, 2014. **(Invited)**
17. J. Lin, "An Overview of Wireless Power Transfer Technologies from Far-Field to Near-Field," Workshop on Wireless Power Transfer, Taipei, November 10, 2014. **(Invited)**
18. J. Lin, "Wireless Energy Transfer and Conversion: the Wireless Power in 21st Century," IEEE Wireless Power Transfer Conference, Jeju, Korea, May 9, 2014. **(Invited Keynote)**

19. J. Lin, "Noncontact Detection of Vital Signs and Vibrations Using Micro-Radar," Tianjin University, May 6, 2014. **(Invited)**
20. J. Lin, "Wireless Power Transmission: From Far-Field to Near-Field," Tianjin University, May 6, 2014. **(Invited)**
21. J. Lin, "5.8 GHz and 60 GHz Radar Chips for Vital Signs and Vibration Sensing," IEEE International Wireless Symposium Workshop "Integrated Radar Designs and Detecting Algorithms for Transportation and Vital Sensing Applications," Xi'an, China, March 24, 2014. **(Invited)**
22. J. Lin, "IEEE Transactions on Microwave Theory and Techniques – the Transition" and "Volunteering in MTT Society," IEEE MTT-S Taipei Chapter and National Taiwan University, Taipei, Taiwan, December 18, 2013. **(Invited)**
23. J. Lin, "IEEE Transactions on Microwave Theory and Techniques – the Transition," Chang Gung University, Taipei, Taiwan, December 17, 2013. **(Invited)**
24. J. Lin, "IEEE Transactions on Microwave Theory and Techniques – the Transition" and "Volunteering in MTT Society," IEEE MTT-S Tainan Chapter and National Sun Yat-Sen University, Kaohsiung, Taiwan, December 13, 2013. **(Invited)**
25. J. Lin, "Micro-Radar Sensors for Noncontact Detection of Vital Signs and Vibration," IEEE MTT/AP Singapore Chapter and Nanyang Technological University, December 11, 2013. **(Invited)**
26. J. Lin, "Micro-Radar Sensors for Noncontact Detection of Vital Signs and Vibrations," Texas Instruments Web Seminar, August 29, 2013. **(Invited)**
27. J. Lin, "CMOS Micro-radars for Noncontact Detection of Human Vital Signs," IEEE International Microwave Symposium Workshop on Radio Frequency Systems for Indoor Localization, Seattle, June 2, 2013. **(Invited)**
28. J. Lin, IEEE International Wireless Symposium Panel Session "Wireless Power Transfer: An Old Technology Sparks a Modern Revolution," Beijing, China, April 15, 2013. **(Invited)**
29. J. Lin, "Wireless Power Transmission: From Far-Field to Near-Field," IEEE Norwegian MTT/AP Chapter, Oslo, Norway, March 8, 2013. **(Invited)**
30. J. Lin, "Noncontact Detection of Vital Signs and Vibrations Using Micro-Radar," IEEE Norwegian MTT/AP Chapter, Oslo, Norway, March 8, 2013. **(Invited)**
31. J. Lin, "Micro-Radar Sensors for Non-contact Pervasive Monitoring of Respiration and Heartbeat," Symposium on Engineering Medicine and Biology Applications, Tainan, Taiwan, February 2, 2013. **(Invited)**
32. J. Lin, "Micro-Radar Sensors for Noncontact Detection of Vital Signs and Vibrations," University of Southern California, Los Angeles, CA, January 18, 2013. **(Invited)**

Patents Awarded

1. United States Patent 9,833,200: Low IF architectures for noncontact vital sign detection, December 5, 2017. **(licensed)**
2. United States Patent 9,774,239: Method and apparatus for providing power, September 26, 2017.
3. United States Patent 9,477,812: Random body movement cancellation for non-contact vital sign detection, October 25, 2016. **(licensed)**
4. United States Patent 9,200,945: Wavelength Division Sensing RF Vibrometer for Accurate Measurement of Complex Vibrations, December 1, 2015. **(licensed)**
5. United States Patent 8,814,805: Complex Signal Demodulation and Angular Demodulation for Non-contact Vital Sign Detection, August 26, 2014. **(licensed)**
6. United States Patent 8,721,554: Random Body Movement Cancellation For Non-Contact Vital Sign Detection, May 13, 2014. **(licensed)**
7. United States Patent 8,674,551: Method and Apparatus for Contactless Power Transfer, March 18, 2014. **(licensed)**
8. United States Patent 8,578,757: System for Hydrogen Sensing, November 12, 2013.
9. United States Patent 8,232,793: Method and apparatus of load detection for a planar wireless power system, July 31, 2012. **(licensed)**
10. United States Patent 7,903,020: System and Methods for Remote Sensing Using Double-Sideband Signals, March 8, 2011. **(licensed)**
11. United States Patent 7,848,896: Non-Contact Measurement System for Accurate Measurement of Frequency and Amplitude of Mechanical Vibration, December 7, 2010. **(licensed)**

12. United States Patent 7,463,108: Active 90-degree phase shifter with LC-type emitter degeneration and quadrature modulator IC using the same, December 9, 2008.
13. United States Patent 6,922,108: Active balun circuit for single-ended to differential RF signal conversion with enhanced common-mode rejection, July 26, 2005.
Significance of contribution: The invention describes a circuit that greatly enhances the signal quality of differential RF signal when converted from single-ended RF signal.
14. United States Patent 6,208,846: Method and apparatus for enhancing transmitter circuit efficiency of mobile radio units by selectable switching of power amplifier, March 27, 2001
Significance of contribution: The invention significantly improves the talk time of cellular phones by using a simple switch that controls the transmitted power.
15. United States Patent 5,940,291: Low-complexity adaptive controller, August 17, 1999.
Significance of contribution: The invention provides a method to significantly improve the reception of wireless RF signals by using a smart antenna with adaptive controller.
16. United States Patent 5,832,365: Communication system comprising an active-antenna repeater, November 3, 1998.
Significance of contribution: The invention significantly improves the transmission range of wireless RF signals by using a radio repeater that can adaptively optimize the relay range.
17. United States Patent 5,724,005: Linear power amplifier with automatic gate/base bias control for optimum efficiency, March 3, 1998.
Significance of contribution: The invention significantly improves the efficiency of cellular phone power amplifier and talk time by using automatic bias control.
18. United States Patent 5,620,909: Method of depositing thin passivating film on microminiature semiconductor devices, April 15, 1997.
Significance of contribution: The invention provides an improved method to passivate semiconductor surfaces to improve device reliability without adding extra parasitic capacitance that would degrade the frequency response.

Patent Applications:

1. US Patent Application Publication 20160374622-A1: RANDOM BODY MOVEMENT CANCELLATION FOR NON-CONTACT VITAL SIGN DETECTION, December 29, 2016. **(licensed)**
2. Invention Disclosure UF#16135: Wireless Power Transmitter with Enhanced Spatial Freedom, submitted Feb. 8, 2016.
3. International Patent Application PCT/US15/54669: Method and Apparatus for Non-contact Fast Vital Sign Acquisition Based on Radar Signal, filed on October 8, 2015. **(licensed)**
4. US Patent Application Publication US- 2015-0241555-A1: Method and Apparatus for Doppler Radar Signal Recovery of Target Displacement, published on August 27, 2015. **(licensed)**
5. US Patent Application 62/064,861: Method and Apparatus for Heart Rate measurement Utilizing Spectrum Resolution Enhancement, filed on October 16, 2014.
6. US Patent Application Publication US-2013-0184567-A1, published on 7/18/2013.
US Patent Application 13/550,025, Systems and Methods of Position and Movement Detection for Urological Diagnosis and Treatment, filed July 16, 2012. (Xie, Lin, Yu, Sun)

News Release/Media Coverage

1. Inside Science TV: "Wirelessly Monitoring Your Pet 24/7," June 3, 2014.
<http://www.insidescience.org/content/wirelessly-monitoring-your-pet-247/1650>
2. "'Star Trek' for animals: A wireless medical monitor for your pet," Jan. 15, 2014.
<http://news.ufl.edu/2014/01/15/tricorder/>
3. "Engineers: New sensor could help treat, combat diabetes, other diseases," Jan. 21, 2010.
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4. "Engineers: Wireless crib monitor keeps tabs on baby's breathing," Dec. 2, 2008.
<http://news.ufl.edu/2008/12/02/baby-monitor/>
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The technology was reported by several online media including Scientific American, Science Daily, PhysOrg, Medical News Today, etc.
5. "UF engineers: Wireless charger provides efficient cord-free charging," Dec. 12, 2007.
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The technology was reported in TODAY TV show, UF Explore Magazine, Engadget, How Stuff Works, etc.
6. "For the future hydrogen economy, a tiny, self-powered sensor," May 24, 2006.
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The technology was reported by several online media including Science Daily, PhysOrg, RFID Journal, Fuel Cell Today, etc.
7. "CURIOUS ABOUT YOUR VITAL SIGNS? ONE DAY SOON, CHECK YOUR LAPTOP," May 16, 2005.
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<http://news.ufl.edu/2005/05/16/heart-monitor/>
The technology was reported by several online media including National Academy of Engineering Radio News, MSN, Science Daily, PhysOrg, Health Orbit, etc.
8. "Innovative silicon-chip design from Lucent's Bell Labs may speed rollout and lower costs of wireless networks," February 7, 2001