



Saroj Rout, Ph.D.

Designation: Additional Professor

Department: Department of Electronics and Communication
Engineering

(JOINED THE INSTITUTE IN 2017)

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RESEARCH INTERESTS

- ✓ High-voltage CMOS power management IC for low to medium wattage application.
- ✓ High-voltage switch-capacitor power conversion in CMOS process.
- ✓ Low-power CMOS analog integrated circuit (IC) design.
- ✓ High-performance data converters.
- ✓ RISC-V based low-power microcontrollers.

Academic Qualifications

Ph.D. (Electrical Engineering), Tufts University, USA

M.E. (Microelectronics), Birla Institute of Technology & Science (BITS) Pilani, India

B.E. (Instrumentation), Birla Institute of Technology & Science (BITS) Pilani, India

Specialization : CMOS VLSI Design

Teaching Experience/Industrial Experience/Research Experience

- ✓ 22 years of experience in CMOS analog circuit design
- ✓ 8 years of experience in semiconductor entrepreneurial activity. From 2000 to 2007
- ✓ He was an analog IC design engineer at Silicon Laboratories, Austin, Texas, USA, where he worked on high performance CMOS and BiCMOS circuits for applications such as Subscriber Line Interface Circuit (SLIC) for VoIP phones, modems for Asymmetric Digital Subscriber Line (ADSL), Direct Access Arrangement (DAA) for PC and embedded modems, RF radio tuners and RF TV tuners, of which, two of the products, DAA and SLICs, have sold more than 2 Billion units.
- ✓ He is the founder and principal engineer at Mixignal Innovations, USA, an analog IC design consulting company founded in 2009.
- ✓ He is co-founder and VP of Boston Microtechnology, a NSF-funded semiconductor startup in the Greater Boston area founded in 2014.
- ✓ He is the Principal Investigator for Small Business Innovation Research (SBIR) Phase-I, a National Science Foundation (NSF), USA, grant.
- ✓ From 1998 to 2000, he was a research assistant at Iowa State University, Iowa, USA, where he worked on low-voltage CMOS analog circuit design.
- ✓ From 2007 to 2016, he did research in active metamaterials at Tufts University, USA.

- ✓ From 1996 to 1998. He taught undergraduate electrical engineering courses at BITS Pilani. From 2007-2009, he taught analog circuit design to senior undergraduate students at Tufts University, USA.

JOURNAL&CONFERENCES

- [1] Sarangi S., Tripathy D., Mahapatra S.S., Rout S. (2020) "A Power- and Area-Efficient CMOS Bandgap Reference Circuit with an Integrated Voltage-Reference Branch". In: Goel N., Hasan S., Kalachelvi V. (eds) Modelling, Simulation and Intelligent Computing. MoSiCom 2020. Lecture Notes in Electrical Engineering, vol 659. Springer, Singapore. doi.org/10.1007/978-981-15-4775-1_16
- [2] S. Rout and S. Sonkusale, "A low-voltage high-speed terahertz spatial light modulator using active metamaterial." APL Photonics 1, 086102 (2016), doi:10.1063/1.4958739
- [3] S. Rout and S. Sonkusale, "A wireless multi-level terahertz amplitude modulator using active metamaterial-based spatial light modulation." Opt. Express 24(13) 14618-14631, June 2016. doi:10.1364/OE.24.014618
- [4] S. Rout, D. Shrekenhamer, A. C. Strikwerda, C. Bingham, R. D. Averitt, S. Sonkusale, and W. J. Padilla, "High speed terahertz modulation from metamaterials with embedded high electron mobility transistors," Opt. Express 19(10) 9968-9975, May 2011. | doi:10.1364/OE.19.009968
- [5] S. Rout, Seethalakshmy, P. Srivastava, and J. Majumdar, "Multi-modal image segmentation using a modified Hopfield neural network," Pattern Recognition, vol. 31, no. 6, pp. 743-750, Jun. 1998

ANY OTHER

PATENTS

- [1] S. Rout, A. Garlapati, and Q. Yu, "Method for calibration of a system with time-multiplexed sensors", 2018, US Patent 9939290
- [2] R. Lipka, S. Rout, and A. Garlapati, "Method and system for detecting and correcting quadrature error signals from MEMS device", 2017, US Patent No. 9702898
- [3] S. Rout, A. Garlapati, and Q. Yu, "Time-Domain multiplexed signal processing block and method for use with multiple MEMS devices", 2017, U.S. Patent No. 9699534
- [4] S. Sonkusale, W. Padilla, and S. Rout, "Active Manipulation of Electromagnetic Wave Propagation in Metamaterials," 2016, U.S. Patent 9459375
- [5] L. Gao and S. Rout, "Television receiver with automatic gain control (AGC)", 2011, U.S. Patent 8009776.
- [6] T.J. Dupuis and S. Rout, "DC holding circuit," 2005, U.S. Patent 6968055

- [7] K. F. Lee, S. Rout, and M. Goldenberg, "Integrated circuit beta compensator for external interface circuitry," 2004, U.S. Patent 6812744

BOOKS/CHAPTERS

- [1] S. Rout, and S. Sonkusale, "Active Metamaterials: Terahertz Modulators and Detectors", Springer, 2017. DOI:10.1007/978-3-319-52219-7
- [2] S. Sonkusale, W. Xu, and S. Rout., "Active metamaterials for modulation and detection", CMC: Computers, Materials & Continua, 39(3):301-315, 2014.

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