

Shaan Sengupta

Email : sengupts@oregonstate.edu

Mobile : +1-541-829-2415

1148 Kelley Engineering Center

Corvallis, OR - 97331

Website: <http://web.engr.oregonstate.edu/~sengupts>

EDUCATION

- **Oregon State University** Corvallis, OR
PhD in Electrical and Computer Engineering; 2021
- **University of Florida** Gainesville, FL
Master of Science in Electrical and Computer Engineering; 2012
- **Manipal University** Manipal, India
Bachelor of Engineering in Electrical and Electronics Engineering; 2010

EXPERIENCE

- **Texas Instruments** Tucson, AZ
Analog Design Engineer 2022 – Present
 - Mixed-signal design for temperature and humidity sensors
- **Oregon State University (Sensors and Integrated Microelectronics Lab)** Corvallis, OR
Graduate Researcher (PI: Dr. Matthew L. Johnston) 2015-2021
 - 2 full-chip tape-outs and 4 collaborative tape-outs spanning analog, mixed-signal, and digital (custom and HDL-driven) designs resulting in 10 authored/co-authored publications (journal + conf.)
 - Analog-to-Digital Conversion:**
 - Mixed-signal IC featuring a two-step 7-bit SAR ADC with a widely programmable DAC enabling non-linear transfer functions, and an on-chip histogrammer for monitoring signal statistics. Target applications are feature aware biomedical and sensing applications (180nm CMOS)
 - Single-Photon Detection:**
 - Dual-channel SiPM (silicon photomultiplier) readout IC with a current-mode front end, charge-amplifier, and tunable gain and integration time for use in gamma-ray spectroscopy (180nm CMOS)
 - All-digital Single-Photon Avalanche Diode (SPAD) based ambient light sensor in standard CMOS (130nm CMOS)
 - Design and test of SPADs, and digital control and processing circuits in standard CMOS processes for various sensing applications using optical techniques (180nm and 130nm)
 - Other Work:**
 - Design of on-chip resistive transducers for integrated, single-element anemometer (180nm CMOS)
 - PCB design and Xilinx Spartan-6 FPGA-based design for system level test and demonstration platforms
 - Teaching Assistant for graduate and undergraduate level courses on VLSI systems, comp. architecture, and electrical fundamentals
- **Texas Instruments** Tucson, AZ
Analog Design Intern 2019
 - Dual-channel low-power precision current sense amplifier
- **Intel** Hillsboro, OR
Analog Design Intern 2017
 - Simulation, analysis and characterization of biasing blocks in FIVR (Fully Integrated Voltage Regulator)
- **Verigo (UF spin-off)** Gainesville, FL
Electrical Design Engineer 2014
 - R&D for low-power RFID sensor tags for cold-chain logistics, development of automated test and calibration plans
- **University of Florida** Gainesville, FL
Research Programmer (PI: Dr. William R. Eisenstadt) 2012 – 2014
 - Hardware-software co-development of battery powered wireless multi-sensor platform for USDA and LifeSouth

TECHNICAL SKILLS

- **EDA Tools:** Cadence Virtuoso, HSpice, AFS, Synopsys DC, Encounter, ModelSim, Xilinx ISE, KiCad PCB
- **Programming:** Verilog, MATLAB, C++, C, LaTeX

PUBLICATIONS (REVERSE CHRONOLOGICAL ORDER)

- **S. Sengupta** and M.L. Johnston, “A Multichannel Analyzer with Programmable Energy Bins for Gamma Ray Spectroscopy,” *2021 IEEE 64th International Midwest Symposium on Circuits and Systems (MWSCAS)*, East Lansing, MI, USA, Aug. 2021 (*Student Paper Contest Honorable Mention*).
- **S. Sengupta** and M.L. Johnston, “A Widely Reconfigurable Piecewise-Linear ADC for Information-Aware Quantization,” *IEEE Transactions on Circuits and Systems II: Express Briefs*, Oct. 2020
- **S. Sengupta** and M.L. Johnston, “A two-step, piecewise-linear SAR ADC with programmable transfer function,” *Electronics Letters*, 2019
- K. Clocker, **S. Sengupta**, and M. Johnston, “A Fully-Integrated, Single-Element CMOS Anemometer,” *IEEE Sensors Letters*, Feb. 2019
- M. Lindsay, K. Bishop, **S. Sengupta**, M. Co, C-H. Chen, M. Cumbie, and M.L. Johnston, “Heterogeneous integration of CMOS sensors and fluidic networks using wafer-level molding,” *IEEE Transactions on Biomedical Circuits and Systems*, Oct. 2018, *Invited Paper*
- S. Bose, H. Ouh, **S. Sengupta**, and M.L. Johnston, “Parametric study of p-n junctions and structures for CMOS-integrated single-photon avalanche diodes,” *IEEE Sensors Journal*, May 2018
- **S. Sengupta**, H. Ouh, and M.L. Johnston, “An All-Digital CMOS Ambient Light Sensor using a Single Photon Avalanche Diode,” *2017 IEEE SENSORS*, Glasgow, Scotland, Oct. 2017
- H. Ouh, **S. Sengupta**, S. Bose, and M.L. Johnston, “Dual-mode, Enhanced Dynamic Range CMOS Optical Sensor for Biomedical Applications,” *2017 IEEE BioCAS*, Turin, Italy, Oct. 2017
- M. Lindsay, **S. Sengupta**, K. Bishop, M. Co, C-H. Chen, M. Cumbie, and M.L. Johnston, “Scalable Hybrid Integration of CMOS Circuits and Fluidic Networks for Biosensor Applications,” *2017 IEEE BioCAS*, Turin, Italy, Oct. 2017
- K. Clocker, **S. Sengupta**, M. Lindsay, and M.L. Johnston, “Single-Element Thermal Flow Sensor using Dual-Slope Control Scheme,” *2017 IEEE SENSORS*, Glasgow, Scotland, pp. 1-3, Oct. 2017