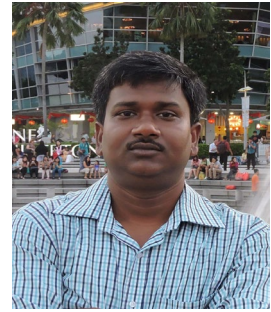


CURRICULUM VITAE

Sougata Kumar Kar, Ph.D.
Associate Professor, Dept. of ECE,
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PROFESSIONAL EXPERIENCE

Associate Professor, NIT Rourkela: April, 2023 onwards

Assistant Professor, NIT Rourkela, 2015 to March, 2023

- Teaching Instrumentation Devices, Biomedical Instrumentation, Advanced Sensors and Instrumentation, Analog Integrated Circuit Design to undergraduate and graduate students.

Research Fellow, School of EEE, Nanyang Technological University (NTU), Singapore, 2014-2015

- Designed an on-chip machine learner with classifier for Spiking Neural Networks.

Assistant Professor, NIT Silchar, 2013-2014

- Taught Analog Electronics and VLSI Circuit Design to the undergraduate students.

Research Associate/Senior Project Officer, SRIC IIT Kharagpur, 2006-2013

- Design of ASIC for MEMS Capacitive Accelerometer, Integration of MEMS with designed ASIC and commercially available IC MS3110 on PCB, hybrid integration - ASIC and MEMS dies in a single package, testing with electrostatic actuation and vibrating shaker.

R & D cum Service Engineer, Life Guards Medical Devices Pvt. Ltd., 2000 – 2003

- Implementation of electronic circuits for artificial respirator and development of electrically operated ICU respirator.

EDUCATION

- **Ph.D.** – Dept. of Electrical Engineering, IIT Kharagpur, 2013.
- **Master of Technology** - Instrumentation and Electronics Engineering, Jadavpur University, West Bengal, 2006.
- **Bachelor of Technology** - Instrumentation Engineering, Haldia Institute of Technology, West Bengal, 2000.

RESEARCH INTERESTS

- **Instrumentation:** Sensor Interfacing Circuits, Capacitive Sensors, MEMS Accelerometers, Linearization of Sensors, Precision Instrumentation.
- **Analog IC Design:** Transconductance Amplifier, Signal Generators, Low Power Designs, Analog Signal Processing. Current Mode Circuits.
- **Biomedical Circuits:** Bio-potential Acquisition and Signal Processing, Neuromorphic Circuits.

Ph.D. THESIS SUPERVISION

Completed: 2 (Supervisor- 1, Co-supervisor- 1)

On-going: 5 (Supervisor- 4, Co-supervisor- 1)

RESEARCH GRANTS

Sl. No.	Title of the project	Funding agency	Total Cost (Lakhs)	Duration	Role (PI/Co-PI)	Status
1.	Development of Pressure Measurement Module for Chamber Pressure Measurement	ARMREB	48.82	2023-2027	PI	On-going
2.	Development of a closed-loop integrated MEMS capacitive accelerometer for inertial and navigation systems.	SERB,DST, Govt. of India	58.96	2020-2023	PI	On-going
3.	Development of pH based portable arsenic bio-sensor by exploiting arsenite oxidizing bacteria	DST, Govt. of India	44.73	2017-2021	Joint PI	Completed
4.	Intelligent Surveillance Data Retriever (ISDR) for Smart city Applications	IMPRINT, Govt. of India	384.62	2017-2021	Co-PI	Completed
5.	Low Power Analog Front-end ASIC for Portable Bio potential Acquisition Systems	SERB, Govt. of India	18.46	2016-2019	PI	Completed

JOURNAL PUBLICATIONS

1. R. Tirupathi and **S. K. Kar**, "A 200 $\mu\text{g}/\sqrt{\text{Hz}}$, 2.7 milli-g Offset Differential Interface for Capacitive Micro Accelerometer," in *IEEE Transactions on Circuits and Systems II: Express Briefs*, vol. 68, no. 6, pp. 1753-1757, June 2021, doi: 10.1109/TCSII.2020.3041614.
2. R. Tirupathi and **S. K. Kar**, "On-Chip Implementable Auto calibration of Sensor Offset for Differential Capacitive Sensor Interfaces," in *IEEE Transactions on Instrumentation and Measurement*, vol. 70, pp. 1-9, 2021, Art no. 2001309, doi: 10.1109/TIM.2020.3023174.
3. R. Tirupathi and **S. K. Kar**, "Low-offset differential output SC interface for micro-capacitive acceleration sensors". *IET Science Measurement Technology*. 2021; 1- 13. <https://doi.org/10.1049/smt2.12029>
4. A. Panda, S. K. Kar, "A 26 μW area efficient bio-potential acquisition system with feed-forward DC offset cancellation", *AEU - International Journal of Electronics and Communications*, Vol. 136, 2021, 153754, ISSN 1434-8411
5. P. Biswal, **S. K. Kar** & B. Mukherjee, "Performance improvement of low frequency piezoelectric energy harvester incorporating holes with an in-house experimental set-up", *Meccanica* 56, 59-72 (2021). <https://doi.org/10.1007/s11012-020-01279-y>
6. P. Biswal, **S. K. Kar** & B. Mukherjee, "Design and Optimization of High-Performance Through Hole Based MEMS Energy Harvester Using PiezoMUMPs", *Journal of Electronic Materials* 50, 375-388 (2021). <https://doi.org/10.1007/s11664-020-08528-6>
7. T. B. Kumar, **S. K. Kar** and D. Boolchandani, "A wide linear range CMOS OTA and its application in continuous-time filters." *Analog Integrated Circuits and Signal Processing* 103, 283-290 (2020). <https://doi.org/10.1007/s10470-020-01621-0>
8. T. B. Kumar, A. Panda, G. K. Sharma, A. K. Johar, **S. K. Kar**, and D. Boolchandani, "Taguchi DoE

and ANOVA: A systematic perspective for performance optimization of cross-coupled channel length modulation OTA", *AEU – Int. J. of Electron. Commun.*, Volume 116, 2020, 153070, ISSN 1434-8411, <https://doi.org/10.1016/j.aeue.2020.153070>.

9. A. Panda, A. K. Singh, R. Tirupathi and **S. K. Kar**, "A Low Power Tunable Square-Wave Generator for Instrumentation Applications," *IEEE Transactions on Instrumentation and Measurement*, vol. 69, no. 7, pp. 5051-5057, July 2020, doi: 10.1109/TIM.2019.2954236.
10. **Sougata Kar**, Procheta Chatterjee, Banibrata Mukherjee, K. B. M. Swamy, and Siddhartha Sen, "A Differential Output Interfacing ASIC for Integrated Capacitive Sensors", *IEEE Transactions on Instrumentation and Measurement*, vol. 67, no. 1, pp. 196-203, Jan. 2018.
11. A. Banerjee, A. Bhaduri, S. Roy, **S. K. Kar** and A. Basu, "Spiking Neural Classifier with Lumped Dendritic Nonlinearity and Binary Synapses: A Current mode VLSI Implementation and Analysis," *Neural Computation*, MIT Press, vol. 30, no. 3, pp. 723-760, March 2018.
12. **Sougata Kar**, K. B. M. Swamy, Banibrata Mukherjee and Siddhartha Sen, "Systematic Development of Integrated Capacitance Measurement System with Sensitivity Tuning", *IEEE Transactions on Instrumentation and Measurement*, vol. 64, no. 10, pp. 2738-2746, Oct. 2015.
13. **Sougata Kar** and S. Sen, "Linearity Improvement of Source Degenerated Transconductance Amplifiers", *Analog Integrated Circuits and Signal Processing, Springer*, vol. 74, no. 2, pp. 399-407, February, 2013.
14. **Sougata Kar**, K. B. M. Swamy, B. Mukherjee and S. Sen, "Testing of MEMS Capacitive Accelerometer Structure Through Electro-static Actuation", *Microsystem Technologies, Springer*, vol. 19, no. 1, pp. 79-87, January, 2013.
15. **Sougata Kar** and Siddhartha Sen, "A Highly Linear Transconductance Amplifier in 180nm CMOS Process Technology", *Analog Integrated Circuits and Signal Processing, Springer*, vol. 72, no. 1, pp. 163-171, July, 2012.
16. **Sougata Kar** and Siddhartha Sen, "Tunable Square-Wave Generator for Integrated Sensor Applications", *IEEE Transactions on Instrumentation and Measurement*, vol. 60, no. 10, pp. 3369-3375, Oct. 2011.

PROFESSIONAL ACTIVITIES

- Associate Editor, IEEE Transactions on Instrumentation and Measurement
- Member, IEEE
- Member, IEEE Instrumentation and Measurement Society
- Member, IEEE Circuits and Systems Society
- Reviewer, IEEE Transactions on Instrumentation and Measurement
- Reviewer, IEEE Transactions on Industrial Electronics
- Reviewer, IEEE Sensors Journal
- Reviewer, International Journal of Circuit Theory and Applications