

# Hyusim Park, Ph.D.

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Date: August 30, 2023

School of Electrical and Computer Engineering  
Oklahoma State University  
219 Engineering South  
Stillwater, OK 74078

## RESEARCH INTEREST

- Environmental and Biomedical Sensing System
- Embedded Systems
- Analog Integrated Circuit (IC) Design

## RESEARCH POSITIONS

**Assistant Professor** August, 2023 - Present  
Oklahoma State University – School of Electrical and Computer Engineering

**Postdoctoral Research Associate:** June, 2021 – July, 2023  
University of Texas at Arlington – Department of Electrical Engineering

## EDUCATION

**Ph.D. in Electrical Engineering, 2021**  
University of Texas at Arlington  
Research advisor: Prof. Sungyong Jung  
Dissertation: Realization of compact electrochemical sensing systems on a board and a chip for high-density sensor array

**M.S. in Electrical Engineering, 2016**  
KyungHee University, South Korea  
Thesis advisor: Prof. SangWoong Yoon  
Thesis: A study on negative inductors with enhanced maximum operation frequency

**B.S. in Electrical Engineering, 2014**  
KyungHee University, South Korea

## RESEARCH

### PROPOSALS AND GRANT

- **Co-PI**, “Novel Urinary Sensing System for Enhancing Alcohol *Use* Monitoring and Early Detection of Alcohol-Related Health Effects,” UTA IRP, \$20,000, 09/01/2022-08/31/2023.

### RESEARCH PROJECTS

**Postdoctoral Research Associate:** June, 2021 – August, 2023  
Electrical Engineering, University of Texas at Arlington

- *Research project:* Smart Farming

- ✓ Design and test an embedded system for smart farming system to detect greenhouse gases in the farm field.

**Research Assistant:** August, 2016 – May, 2021

Electrical Engineering, University of Texas at Arlington

- *Research project:* Gas-Phase Sensor Bag Development
  - ✓ Design and test a readout integrated circuit using CMOS 0.18 um process for a 128 electrochemical sensor array including an operational-amplifier, a multiplexer, and a successive approximation analog-to-digital converter.
  - ✓ Design and test a readout embedded system for a 128 electrochemical sensor array.
- *Research project:* Development of Smart Health Monitoring system for Livestock
  - ✓ Design and test a conductometry and cyclic voltammetry integrated circuit using CMOS 0.18 um process for acetone detection.
  - ✓ Design and test a readout embedded system for a conductometric and voltammetric electrochemical sensing.
- *Research project:* Hearing Aid Device Development
  - ✓ Design and test a front-end integrated circuit for a hearing aid device using CMOS 0.18 um process including an operational-amplifier, an analog correlator, a switched capacitor amplifier, a variable gain amplifier, a digital logic circuit for controlling a variable gain amplifier, and an analog-to-digital converter.
- *Research project:* Low-Power Glucose Monitoring System
  - ✓ Design and test a glucose sensing integrated circuit using CMOS 0.35 um process including a novel amperometric readout circuit based on threshold voltage referenced current source.

## PUBLICATION

- **H. Park**, S. Jung “Balanced Resistive Matrix Array for High-Density Electrochemical Sensor Array,” IEEE Sensors Journal, vol. 23, pp.14323-14329, July, 2023
- **H. Park**, L.H.T Nguyen, S. Lakshminarayana, Y. Sun, S. Jung “Watch-Type Dual-Mode Wearable Health Device” ECS Sens. Plus 2 012801, April, 2023
- **H. Park**, S. Lakshminarayana, L. H. T. Nguyen, C. Pan and S. Jung, "Portable Indoor Air Quality Measurement System," 2022 E-Health and Bioengineering Conference (EHB), 2022, pp. 1-4, doi: 10.1109/EHB55594.2022.9991662.
- **H. Park**, Y. Park, S. Lakshminarayana, and et.al., “Portable All-in-One Electroanalytical Device for Point of Care,” IEEE Access, vol. 10, pp. 68700-68710, 2022, doi: 10.1109/ACCESS.2022.3186678.
- S. Lakshminarayana, Y. Park, **H. Park** and S. Jung, "A Readout System for High Speed Interface of Wide Range Chemiresistive Sensor Array," in IEEE Access, vol. 10, pp. 45726-45735, 2022, doi: 10.1109/ACCESS.2022.3170486.
- **H. Park**, S. Lakshminarayana, C. Pan, H. J. Chung, S. Jung, “An Auto Adjustable Transimpedance Readout System for Wearable Healthcare Devices,” MDPI Electronics pp. 1181, April, 2022. [doi.org/10.3390/electronics11081181](https://doi.org/10.3390/electronics11081181)
- S. Lakshminarayana, Y. Park, **H. Park**, and S. Jung, “High Density Resistive Array Readout System for Wearable Electronics,” MDPI Sensors, 22, pp. 1878, Jan, 2022. [doi.org/10.3390/s22051878](https://doi.org/10.3390/s22051878)
- P. Jin, **H. Park**, S. Jung, and J. Kim, “Challenges in Urology during the COVID-19 Pandemic,” Urologia Internationalis, vol. 105. No. 1-2, pp. 3-16, Jan, 2021. doi.org/10.1159/000512880

- **H. Park**, P. Jin, S. Jung, and J. Kim, “Quick overview of diagnostic kits and smartphone apps for urologists during the COVID-19 pandemic: a narrative review,” *Translational Andrology and Urology*, vol. 10, pp. 939-953, Feb, 2021. doi: 10.21037/tau-20-1042
- **H. Park**, S. Jung, and H. Chung, “An analog correlator based CMOS analog front end with digital gain control circuit for hearing aid devices,” *Journal of Analog Integrated Circuits and Signal Processing*, vol.105, pp. 157-165, 2020. doi.org/10.1007/s10470-020-01680-3
- T. T. Huu Tran, **H. Park**, D. To, K. Gangadhara, J. Brady, J. Hart, S. Jung, and N. V. Myung, “A Multimodal Electronic Nose Based on High-Density Flexible Sensor Array of Carbon Nanotubes and Photoactive Macromolecules Hybrid Nanostructures,” 18<sup>th</sup> International Meeting on Chemical Sensors, submitted in Nov, 2019.
- **H. Park**, N. D. Karandikar, S. Jung, and K. Ryoo, “Variable Gain Potentiostat Architecture for Glucose Sensing from Blood and Tear Fluid,” *Journal of Low Power Electronics*, vol. 13, no. 2, pp. 271-278, June, 2017.