

Yeonsu Kim

kimys0821@seoultech.ac.kr ▪ #233 CHH, 232 Gongneung-ro, Nowon-gu, Seoul, 01811, South Korea

I. EDUCATION

- | | |
|-------------------|---|
| 03/2024 – Present | M.S. Candidate in Electronic Engineering
Seoul National University of Science and Technology, Seoul, South Korea |
| 03/2020 – 02/2024 | B.S. in Electronic Engineering
Seoul National University of Science and Technology, Seoul, South Korea |

II. RESEARCH INTERESTS

- Mixed-Signal Integrated Circuits for Sensor-Readout / in Cryogenic Environment

III. RESEARCH EXPERIENCE

a) Project - Participating as a research assistant, Supervisor: Jaewon Nam (jaewon.nam@seoultech.ac.kr)

- 03/2023 ~ 11/2025 - Development of Image Sensor based on Monolithic Colloidal Quantum Dot Process (Research Service; POSTECH)
- 06/2022 ~ 02/2025 - Development of Cryogenic CMOS Interconnect Electronics for Large-Scale and Reliable Quantum Computer (NRF)
- 03/2021 ~ 02/2023 - PCIe Gen 6.0 CMOS ADC based Receiver (NRF)

b) Prototype Implementation (Tape-out)

- 10/2024 TSMC 65 nm, SPI for CMOS Qubit Controller ($2.0 \times 1.4 \text{ mm}^2$)
- 09/2024 Samsung 28 nm FD-SOI, Low pass filter for CMOS Qubit Controller ($2.0 \times 1.5 \text{ mm}^2$)
- 07/2024 Samsung 28 nm Bulk CMOS, Low pass filter for CMOS Qubit Controller ($2.0 \times 2.0 \text{ mm}^2$)
- 11/2023 NNFC 180 nm, CMOS ROIC for the monolithic I-ToF Sensor ($4.0 \times 4.0 \text{ mm}^2$)
- 09/2023 TSMC 180 nm, CMOS ROIC for the monolithic Image Sensor ($7.0 \times 7.0 \text{ mm}^2$)
- 07/2023 Samsung 28 nm Bulk CMOS, Flash ADC with Temperature Sensor ($4.0 \times 4.0 \text{ mm}^2$)
- 05/2023 NNFC 180 nm, CMOS ROIC for the monolithic Image Sensor ($4.0 \times 4.0 \text{ mm}^2$)

IV. LIST OF PUBLICATIONS

- **Y. Kim**, M. -H. Jeon, S. -H. Kim, and J.-W. Nam, "Leakage-based Temperature Sensor with Incremental Analog-to-Digital Converter", International SoC Conference (ISOCC) 2025, Korea, Oct. 2025.
- H. Yoo, M. F. Mauludin, **Y. Kim**, S. -H. Kim, E. Yoo, J.-Y. Park, J. Kim, and J.-W. Nam, "MASH Digital Delta-Sigma Modulators for the CMOS Qubit Controller", IEEE International Workshop on Quantum Computing: Circuits Systems Automation and Applications (QC-CSAA), Greece, Jul. 2025.

- M. -H. Jeon, **Y. Kim**, and J.-W Nam, “CMOS Temperature Sensor Based on DIBL Effect for Hardware Security,” *the 7th ISE Winter Conf.*, Buyeo, Jan. 2025.
- H. Yoo, **Y. Kim**, and J.-W. Nam, “Digitally Gain-Calibrated Ramp Generator in SS-ADC Employing a Binary Searching Algorithm,” the 1st Korea Image Sensor Workshop (KISW), Seoul, Jul. 2024. (Co-1st)
- **Y. Kim**, S.-H. Kim, K. Yu, and J.-W Nam, “Linear Ramp Generator using Digital Slope Calibration Technique,” *the 6th ISE Conf.*, Seoul, Dec. 2023.

김 연 수

kimys0821@seoultech.ac.kr ▪ 01811, 서울시 노원구 공릉로 232, 창학관 233 호

I. 학력

2024.03 – 현재 서울과학기술대학교 전자공학과 석사 과정 재학
2020.03 – 2024.02 서울과학기술대학교 전자공학과 학사 졸업

II. 연구 분야

- 센서 리드아웃/극저온 환경을 위한 혼성신호 집적 회로 설계

III. 연구 참여 실적

a) 연구과제 - 학생 참여연구원, 지도교수: 남재원 (jaewon.nam@seoultech.ac.kr)

- 2023.03 ~ 2025.11 - 모노리식 집적 방식 콜로이드 양자점 기반 이미지 센서 구현 연구용역 (연구용역; 포항공과대학교)
- 2022.06 ~ 2025.02 - 확장성, 신뢰성 갖춘 양자컴퓨터 실현을 위한 극저온 CMOS Interconnect Electronics 개발 (한국연구재단)
- 2021.03 ~ 2023.02 - PCIe Gen 6.0 급 데이터 전송을 위한 64GT/s CMOS 유선 수신기 IP (한국연구재단)

b) 시제품 제작

- 2024.10 - TSMC 65 nm, CMOS 큐비트 제어기를 위한 나이퀴스트 DAC ($2.0 \times 1.4 \text{ mm}^2$)
- 2024.09 - Samsung 28 nm FD-SOI, CMOS 큐비트 제어기를 위한 노이즈 셰이핑 DAC ($2.0 \times 1.5 \text{ mm}^2$)
- 2023.11 - NNFC 180 nm, 모노리식 I-ToF 센서를 위한 CMOS ROIC ($4.0 \times 4.0 \text{ mm}^2$)
- 2023.09 - TSMC 180 nm, 모노리식 이미지 센서를 위한 CMOS ROIC ($7.0 \times 7.0 \text{ mm}^2$)
- 2023.05 - NNFC 180 nm, 모노리식 이미지 센서를 위한 CMOS ROIC ($4.0 \times 4.0 \text{ mm}^2$)

IV. 학술지/학술대회 출판 목록

- 김연수, 전명현, 김수현, 남재원, “Leakage-based Temperature Sensor with Incremental Analog-to-Digital Converter,” International SoC Conference (ISOCC) 2025, Oct. 2025.
- 유현영, M. F. Mauludin, 김연수, 김수현, 유은지, 박재윤, 김주성, 남재원, “MASH Digital Delta-Sigma Modulators for the CMOS Qubit Controller,” IEEE International Workshop on Quantum Computing: Circuits Systems Automation and Applications (QC-CSAA), Jul. 2025.
- 전명현, 김연수, 남재원, “하드웨어 보안을 위한 DIBL 효과 기반 CMOS 온도센서,” 제 7 회 반도체공학회 동계학술대회, Jan. 2025.

- 유현영, 김연수, 남재원, “Digitally Gain-Calibrated Ramp Generator in SS-ADC Employing a Binary Searching Algorithm,” 이미지센서연구회 1 차 워크샵, Jul. 2024. (공동 1 저자)
- 김연수, 김수현, 유광민, 남재원, “Linear Ramp Generator using Digital Slope Calibration Technique,” 제 6 회 반도체공학회 종합학술대회, Dec. 2023.