Jarred (Jonghun) Shin

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EDUCATION

Kyungpook National University, Daegu, South Korea Expected Feb 2028
B.S. in Electronics Engineering, Advanced Semiconductor Convergence major

RESEARCH EXPERIENCE

Programming a NAND flash string in TCAD, from FN tunneling to hot-carrier injection Sep 2026 – Present

- Simulated program, erase and ISPP on a 7-gate SONOS NAND string in Sentaurus TCAD (nonlocal tunneling, charge-trap layer traps).
- Compared planar and cylindrical (gate-all-around) solutions of the same stack; the cylindrical cell showed about twice the threshold shift (+7.10 V vs +3.48 V at 20 V, 100 µs).

PROJECTS

How one grain boundary changes a capacitorless DRAM cell Sep 2026 – Present

- Simulated a poly-Si capacitorless DRAM (1T-DRAM) cell in Sentaurus TCAD and varied the position and trap density of a grain boundary in the channel.
- Wrote Python scripts to generate Workbench experiment tables (47 DC and 37 memory runs) and to export read currents from transient results.

Designing an 8×8 SRAM from the cell up Sep 2026 – Present

- Designed a 6T SRAM cell and an 8×8 array with precharge, 3-to-8 row decoder, write drivers and latch-type sense amplifiers in Cadence Virtuoso.
- Sized the cell by sweeping 507 width combinations in Spectre with scripted pass/fail checks for write, read disturb and read differential voltage.

A CMOS test chip, from layout to probe station Mar 2026 – Jun 2026

- Laid out a 2 cm × 2 cm CMOS test chip in KLayout (TLM, NMOS/PMOS, inverter, NAND/NOR, three SR-latch variants) under lambda = 5 µm design rules.
- Ran a maskless-lithography dose test (optimum 50 mJ/cm² for 1 µm resist) and CF4/O2 RIE experiments in the cleanroom.

Edge UAV for real-time pothole detection Sep 2025 – Feb 2026

- Owned the drone side of a five-person project: flight platform, camera mounting and the image input feeding onboard detection.
- Team trained YOLOv8 on 5,396 images (mAP 0.898 after relabelling) and deployed it on a Jetson Orin Nano with TensorRT (FP16).

ACTIVITIES & LEADERSHIP

Tutor and buddy for international students Sep 2026 – Present
Tutor (university programme) and buddy (School of Electronics Engineering)

Engineering kits for children, with POSCO Beyond Mar 2026 – Aug 2026
Member, 19th cohort

TRAINING

SK hynix Semiconductor Curriculum, 5th cohort Sep 2026 – Present

- Selected for the self-nomination track of SK hynix's semiconductor education programme, covering memory devices, fabrication, packaging, reliability and metrology.

PUBLICATIONS

S. Lee, J. Moon, J. Shin, C. Ahn, S. Lim, "Design of Real-Time Pothole Detection and Automated Control System for UAVs Based on Edge Computing and MAVLink," submitted to the 36th Joint Conference on Communications and Information (JCCI 2026).

CERTIFICATIONS

OPIc English: Intermediate High (IH) May 2026
Ultralight Vehicle Pilot Certificate, Class 4 (unmanned multicopter)

SKILLS

Device simulation: Sentaurus TCAD (SDE, SDevice, SVisual, Workbench)
Circuit design and layout: Cadence Virtuoso, Spectre, KLayout, PSpice
Process and measurement: Maskless lithography, RIE, Probe station, Source meter (Keithley 2612B), Oscilloscope
Programming: Python, C++, Linux
Embedded: Jetson Orin Nano, Pixhawk / MAVLink, OpenCV

LANGUAGES

Korean (native), English (OPIc IH)