Jaeho Cho

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Education

The Cooper Union for the Advancement of Science and Art — New York City, NY
M.Eng, B.Eng in Electrical Engineering (Joint), Bioengineering Minor — *Aug 2022 – May 2026*

- Half Tuition Scholarship | Myron Coe Scholarship | Full Tuition Scholarship 2025-2026
- Courses: Digital VLSI System Design, Integrated Circuit Engineering, Hardware Design, Computer Architecture, Digital Signal Processing, Engineering Electromagnetics, Probability Models & Stochastic Processes

Research Experience

Research Volunteer | Dr. Jonathan Dropkin, Dr. Alfred Marc Iloreta — *Feb 2024 – Present*
The Icahn School of Medicine at Mount Sinai • New York, NY

- Training an object detection model for surgical instrument recognition in endoscopic sinus and skull-base procedures; built end-to-end training and inference pipelines, achieving 96.4% precision and 94.8% recall.

Master's Thesis | Dr. Jabeom Koo — *Jun 2025 – May 2026*
The Cooper Union for the Advancement of Science and Art • New York, NY

- Designed a fully-differential capacitive-feedback chopper-stabilized pre-amplifier in TSMC 65-nm CMOS for LFP recording over 1 Hz to 1 kHz, achieving 24.6 dB closed-loop gain and 2.96 µVrms input-referred noise on a 93.6 nV/√Hz thermal floor, drawing 2.30 µW from a 0.8 V supply for an NEF of 6.1 and a PEF of 29.8.

Undergraduate Researcher | Dr. Mili Shah — *Sep 2023 – May 2026*
The Cooper Union for the Advancement of Science and Art • New York, NY

- Led development of a dual-arm robot; implemented motion-planning and web-based teleoperation in ROS 2.
- Designed a wireless piezoresistive pressure sensor PCB, presented at the 2024 ASTM International Exo Games.
- Designed an integrated motor control, IMU, camera, and power management PCB for the ultra-low-cost robot.

Research Volunteer | Dr. Michael Long — *Jun 2025 – Dec 2025*
NYU Langone Health • New York, NY

- Built signal-processing and ML pipelines for vocalization analysis including feature extraction, clustering, and deep neural models for syllable segmentation and classification.
- Developed a ROS2-based automated bird-tutoring robot for minimally supervised vocal learning experiments.

Projects

VLSI High Frequency Differential Operational Amplifier

- Designed a differential-to-single-ended amplifier for Bluetooth Low Energy in Cadence Virtuoso (TSMC 65nm).
- Met target specifications: 24 dB gain at 2.4 GHz, <500 µW power consumption, 10.2 GHz unity-gain frequency.
- Completed IC design layout with M1-M9 layers with no LVS errors and no DRC errors.

RF Front End Circuit

- Designed and built a Colpitts Oscillator and RC Oscillator to generate a 4.1 MHz local oscillator (LO) signal.
- Created a single-balanced active mixer utilizing the LO signal to down-convert a 3.63 MHz RF signal.
- Integrated a passive low-pass filter with a 1.6 MHz cutoff frequency to attenuate high-frequency harmonics.
- Simulated circuit in LTspice using MOSFETs, coupling caps, op-amps, feedback networks, and crystal oscillator.

Flappy Bird FPGA Implementation

- Designed and implemented a Flappy Bird game using Verilog on a Xilinx ZedBoard FPGA.
- Created logic for collision detection and randomized pipe generation using combinational and sequential logic.

Work Experience

Data and AI Intern | Hanwha TotalEnergies Petrochemical — *May 2024 – Aug 2024*
PwC • Seoul, South Korea

- Built time-series forecasting models (GluonTS, Chronos, Darts) for three-month petrochemical predictions.
- Refactored Django pipelines for MongoDB-to-ClickHouse migration, improving data throughput and latency.
- Built a Django article aggregation service integrating private and public APIs for LLM-driven sentiment analysis.

Skills

- **Programming**: Python, MATLAB, Rust, C, C++, Verilog, VHDL, Git, Docker, JavaScript, SQL
- **Software**: Cadence Virtuoso, LTspice, Altium, Vivado, PSim, Fusion360, ROS2, Gazebo, Blender, Onshape
- **Hardware**: Network Analyzer, Oscilloscope, Function Generator, PCB Layout & Debug