

Jaeho Cho

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EDUCATION

The Cooper Union for the Advancement of Science and Art

M.Eng, B.Eng in Electrical Engineering (Joint), Bioengineering Minor

New York City, NY

Aug 2022 – May 2026*

- Half Tuition Scholarship | Myron Coe Scholarship | Full Tuition Scholarship 2025-2026
- Courses: Digital Signal Processing, Communication Theory, Engineering Electromagnetics, Digital VLSI System Design, Integrated Circuit Engineering, Theoretical Neuroscience

RESEARCH EXPERIENCE

Master's Thesis | Dr. Jabeom Koo

Jun 2025 – Present

The Cooper Union for the Advancement of Science and Art • New York, NY

- Conducting research on neuromorphic architectures for ultra-low-power brain-machine interfaces, with current efforts focused on designing a neuromorphic processing block (Analog-to-Digital Converter).
- Designed a chopper-stabilized low-noise amplifier in 65-nm CMOS using Cadence Virtuoso, achieving post-layout (PEX) verified performance of 41 dB gain over 0.6 Hz–5 kHz, 1.6 μW power consumption, and a noise-efficiency factor of 1.7.

Independent Researcher | Dr. Stanislav Mintchev, Dr. Brian Frost Laplante

Jan 2025 – Present

The Cooper Union for the Advancement of Science and Art • New York, NY

- Developing theoretical criteria for when reduced models of plastic spiking neural networks fail, and deriving corrected formulations that remain accurate as network dynamics evolve during learning.
- Investigated neural encoding and decoding through computational modeling of multi-compartment Hodgkin-Huxley neurons, attractor dynamics, and synaptic plasticity rules, implemented and analyzed in Python.

Research Volunteer | Dr. Jonathan Dropkin, Dr. Alfred Marc Illoreta

Feb 2024 – Present

The Icahn School of Medicine at Mount Sinai • New York, NY

- Trained and optimized a deep learning model (Ultralytics YOLO) for real-time surgical instrument recognition in endoscopic sinus and skull-base procedures, achieving 96.4% precision, 94.8% recall, and 96.6% mAP50.
- Designing an assistive device to improve surgeon ergonomics during prolonged procedures, validating effectiveness through EMG-based muscle fatigue analysis and computer-vision-based posture assessment.
- Conducted quantitative ergonomics studies of ENT surgeons using IMU (Opal V2R) and EMG (FREEEMG) sensor arrays; developing signal-processing pipelines for posture and mechanical-exposure analysis.

Undergraduate Researcher | Dr. Mili Shah

Sep 2023 – Present

The Cooper Union for the Advancement of Science and Art • New York, NY

- Mentoring and training four students in ROS2, PCB design, circuit prototyping, and mechanical CAD workflows, as well as broader project framing and management skills.
- Led development of a dual-arm robot; implemented motion-planning pipelines and web-based teleoperation using the ROS 2 framework.
- Building a small mobile robot for decentralized swarm self-assembly: iteratively produced multiple designs in Fusion360; implemented peer-to-peer bluetooth communication and distributed-control routines.
- Designed and fabricated a custom PCB for an e-textile sensor, presented at the 2024 ASTM International Exo Games.

Research Volunteer | Dr. Michael Long
NYU Langone Health • New York, NY

Jun 2025 – Dec 2025

- Developed signal-processing and machine-learning pipelines for vocalization analysis, including acoustic feature extraction, unsupervised clustering, dimensionality-reduction techniques, and deep neural models for syllable segmentation and classification.
- Worked on a ROS2-based automated bird-tutoring and data-collection robot to enable long-duration, minimally supervised behavioral experiments in budgie vocal learning.

PUBLICATIONS

- [1] C. Stonebraker, J. Cho, K. Liu, L. Brame, R. Shrivastava, and A. M. Illoreta, “Development of a Computer Vision System for Surgical Instrument Analysis During Endoscopic Sinus and Skull Base Surgery,” *Journal of Neurological Surgery Part B: Skull Base*, 2026.

WORK EXPERIENCE

Data and AI Intern | Hanwha TotalEnergies Petrochemical
PwC • Seoul, South Korea

May 2024 – Aug 2024

- Developed time-series forecasting models using GluonTS, Chronos, and Darts to generate three-month market predictions for petrochemical products.
- Refactored Django backend pipelines during a transition from MongoDB to ClickHouse, improving data throughput and service latency.
- Implemented a Django-based article aggregation service integrating private and public APIs to support LLM-driven sentiment analysis.

SKILLS

- **Programming:** Python, MATLAB, Rust, C, C++, Verilog, VHDL, Git, Docker, JavaScript, SQL
- **Software:** Cadence Virtuoso, LTspice, Altium, Vivado, Fusion360, ROS2, Gazebo, Blender, Onshape