

Ethan Ye

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ENGINEERING SKILLS & HIGHLIGHTS

- **Semiconductor Nanofabrication:** lithography, depositions, etching, clean-room, 4-point probe
- **Hardware & PCB Design:** circuit schematic & PCB design (KiCad), soldering, testing, Arduino, Raspberry Pi
- **Materials Lab & Characterization:** spectroscopy, XRD, SEM/EDS, DSC, XPS, UV-Vis, physical material tests
- **Bio/Chemistry Wet Lab:** protein separation, DNA isolation, nanoparticle synthesis, bacteria growth
- **Mechanical Design/Prototyping:** SolidWorks/AutoCAD/Fusion360, 3D Printing, laser cutting, shop/tools
- **Machine Learning & Programming:** Python (sklearn, pytorch), MatLab, Java, Swift, basic ML (RF, LR, NN)
- **Industrial/Manufacturing:** production floor, machines, stamping presses, quality assurance, Excel

ENGINEERING CO-OP EXPERIENCE

R&D Lead // Aizenberg Lab & Wyss Institute - Harvard *Sep 2024 - Apr 2025, Jan 2026 - present*

- Prototyped 6 PCBs for 3 novel VOC sensors (indoor air quality, methane, sinusitis), incl. design, testing, assembly
- Analyzed sensor filter characteristics using XPS, SEM/EDS. Audited 2 Harvard classes (circuits and biomechanics)
- Acted as an advisor to assist Harvard college seniors with their thesis projects relating to chemical sensors and devices
- Chair of the lab's social committee, organizing and hosting 14 lab events with catering, team-building, and networking
- Lead weekly team meetings, collaborating with researchers and PhD students at the lab. Presented my project
- Co-authored a paper in AMT for methane sensing, 3 more papers in progress, 1 of which I am co-first author on
- Currently performing research into neural-inspired circuits and dynamic non-equilibrium modulation for sensors

Sensor Researcher // Yuning Li Lab - UWaterloo *Jun 2026 - present*

- Designed sensor scale up system for easier testing and prototyping of OFET resistor and transistor-based sensors
- Currently working with industry partner to develop sensitive, selective, scalable Ni-carbonyl sensors for use in mines

Research Associate // Aizenberg Lab - Harvard University - Remote *May - Dec 2025*

- Utilized machine learning to enhance sensor performance and analyze data from experiments + field studies
- Worked on writing, figure creation for academic papers and patents/IP, continued research during school term

Electrical Engineer & Project Manager // Origins Source Inc. *Jan - Apr 2024*

- Designed a 2-layer PCB for a Bluetooth consumer device in KiCad, from component selection to soldered prototype
- Lead several weekly project meetings; keeping track of deadlines, assigning tasks, leading team discussions, etc.
- Managed and set up systems for app development, including process flow, descriptions, documents and testing
- Did research on topics such as market, product, electrical, & efficiency, to propose ideas & facilitate decisions

Manufacturing & Production Associate // Nahanni Steel Products Inc. *May - Aug 2023*

- Gained knowledge of the manufacturing process, production floor, and experience operating stamping presses
- Quality assurance for manufactured parts, performed die & tool changes to keep production running smoothly
- Built relationships with coworkers and supervisors, learned to communicate effectively in a loud factory environment
- Palletized 2000-8000 parts daily for Ford trucks/Bronco, Ram trucks, Toyota Camry, roof shingles & more

PUBLICATIONS

- Patel, H., Gibbs, O., Ye, E. A., et al., Aizenberg, J. *Highly Selective Enteric Methane Monitoring Through Modular Sensor-Filter Assembly*. Advanced Materials Technologies, 2026. <https://doi.org/10.1002/admt.202502508>

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- Ye, E. A., Patel, H., et al., Aizenberg, J. *Olfactory manifolds of time-series sensor data enable robust chemical detection*. Manuscript in review for Science Advances.
 - Patel, H., Ye, E. A., et al., Aizenberg, J. *Indoor air quality sensor: a promise of sustainable and healthy buildings*. Manuscript in preparation.

ADDITIONAL EXPERIENCE

Designer and Programmer // Apple Education App Design *Feb - Jul 2022*

- Designed app w/ Swift focused on sustainability education, presented to a board of Apple Education directors/mentors

Finance Leader and Build Team // FIRST Robotics Team 3739 *Jan 2021 - Jun 2022*

- Constructed a strategic robot for FIRST Robotics competitions using a variety of tools, machines, and skills
- Managed finances and budgeting in order to run a successful team and utilize resources as effectively as possible

EDUCATION & AWARDS

Honours Nanotechnology Engineering BSc // University of Waterloo *2022 - 2027*

- Dean's Honours List - Engineering - 2A, 3A, 3B terms