Samuel A. Solomon

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EDUCATIONAL CREDENTIALS

California Institute of Technology *(Pasadena, CA)* — **June 2025**
- Ph.D. in medical and electrical engineering (2025); M.S. in medical engineering (2023) — *GPA: 4.1 / 4.0*
- *National Science Foundation GRFP fellow; Hertz fellowship finalist; Medical engineering departmental fellow*

Massachusetts Institute of Technology *(Cambridge, MA)* — **June 2020**
- B.S. in chemistry-biology and physics; minors in nuclear engineering and computer science — *GPA: 4.9 / 5.0*
- *Phi Beta Kappa scholar; Certificate in living machines; Mathematics teaching award; Chemistry department research award*

SELECTED FIRST AUTHOR PUBLICATIONS

Under review | *Observational Learning for Generative Artificial Affective Intelligence* — **2025**
Nature Electronics | *A physicochemical-sensing electronic skin for stress response monitoring* — **2024**
Nature Machine Intelligence | *Artificial Intelligence-Powered Electronic Skin* — **2023**
Science Robotics | *All-printed soft human-machine interface for robotic physicochemical sensing* — **2022**
Advanced Material | *Flexible electronics and devices as human–machine interfaces for medical robotics* — **2022**

ACADEMIA AND INDUSTRY EXPERIENCE

Caltech Gao Lab*: Human-Computer Interaction Researcher (Pasadena, CA)* — **September 2020 – Present**
- Designed the first invertible wavelet neural operator that exhibits virtually deterministic convergence to an affective profile.
- Presented a new foundational generative architecture for merging fragmented, out-of-domain time-series features and labels.
- Demonstrated personalized state anxiety therapy through generative speech, music, images via virtual and holographic reality.
- Introduced a new phase-separated float assembly technique for ultrathin [~1 μm], large-area [>200 cm²] sensor manufacturing.
- Published a new psychophysiological dataset for clinical state anxiety monitoring through EOG, EEG, EDA, temperature vitals.
- Achieved super resolution quantum imaging of biological tissue, breaking the Raleigh limit, using entangled electron scattering.
- Designed a novel wearable sweat sensor for targeting glucose, uric acid, lactate, sodium, potassium, ammonium in the sweat.
- Synthesized molecularly imprinted polymers for monitoring cortisol, dopamine, noradrenaline for mental health assessment.

Google*: Hardware Engineer Intern for the Camera Intrinsics Lab (Mountain View, CA)* — **June 2024 – September 2024**
- Modeled non-equilibrium thermodynamics of the lens for real-time physics-informed calibration of temperature-focus drift.
- Created a wavelet-based sharpness metric that reduced spatial frequency response calculation latency from $O(n\log n)$ to $O(n)$.
- Developed an Android app that reduced through-focus optical scan latency by 10-fold, targeting cross-team collaboration.

Amazon*: Software Engineer Intern for Amazon Style (Remote)* — **June 2022 – September 2022**
- Engineered a survey editor interface for dynamic user testing of new machine learning features related to user preferences.
- Implemented critical backend updates to address legal compliance, specifically concerning listing and pricing information.
- Revamped the customer-facing product info card interface, enhancing savings visibility and user recognition.

Google*: Software Engineer Intern for the Android Team (Remote)* — **January 2022 – April 2022**
- Developed a public API enabling developers to simulate various device configurations on newly introduced foldable phones.
- Diagnosed and patched up a critical bug within the Android platform that hindered developer access to folding features.

NASA: *Computational Genetics Researcher at the Jet Propulsion Laboratory (Pasadena, CA)* — **May 2020 – December 2020**
- Compared gene-wise mutations in *Klebsiella* during spaceflight through whole genome sequence pangenome analysis.
- Computationally modeled the contamination routes of bacteria (*Bacillus*, *Klebsiella*) onboard the ISS for planetary protection.

LEADERSHIP AND VENTURES

Leadership Positions:
- Treasurer of the Caltech biotechnology club, raising and managing around $10,000. — **June 2023 – June 2024**
- Director of curriculum at Nucleate Los Angeles; 2023 DEI and audience choice winner. — **May 2023 – June2024**
- Health technology analyst through the Plug and Play university investment fellowship. — **October 2023 – June 2024**
- US ambassador and 2nd place finisher (2018) for international entrepreneurship competition Incube. — **June 2019 – October 2023**

Entrepreneurial Ventures:
- Founder and organizer of course selector Turtle Pond and first-year program Beaver Buddies.
- Cofounder of Vibrant Life; disability accessibility reviews; MIT 100K Pitch Finalist; Raised $5000. — **June 2020 – Present**
- Founder of online-tutoring Mind Network; Raised $1000 (MIT Sandbox); $1000 BetterMIT winner. — **September 2019 – Present**
— **December 2018 – Present**

TECHNICAL SKILLS

Software	Python, Kotlin, Java, Javascript, CSS, HTML, C++, Matlab, Git, Android Studio, SolidWorks, AutoCAD, Fusion360
Practical	Machine Learning, Wearable Sensors, Full Stack Development, CAD Modeling, Optics, Adobe Illustrator/Photoshop.