Ethan Schein

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EDUCATION

University of California, Berkeley Berkeley, CA

B.S. in Bioengineering, B.S. in Electrical Engineering and Computer Science, GPA: 3.9/4.0 May 2027

EECS Courses: Microelectronic Devices, Designing Information Devices and Systems I and II, Structure and Interpretation of Programs, Data Structures, Computer Architecture and Machine Structures, Great Ideas in Computer Architecture, Discrete Math and Probability Theory, Linear Algebra, Multivariable Calculus

BioE Courses: Engineering Devices, Biological Mass Transport & Fluid Dynamics, Properties of Materials, General Chemistry, Organic Chemistry, Engineering Molecules, Physics for Engineers I and II, Primers in Molecular Biology

Clubs: Barbell at Berkeley (Leadership), SURGE (Hardware EE Club), Engineering Solutions at Berkeley, Bicycal, Cal Cycling

WORK EXPERIENCE

Material Sciences Engineer, Contract Engineer - Kind Humanoid Jan 2024 - May 2024 | Palo Alto, CA

- Designed a multi-layered "e-skin" as a proof-of-concept capable of tensile sensing as well as mimicking human skin qualities. Skin composed of multimodal layers was less than 2cm thick, 100cm^2 with a flexible PCB.
- Experimented with various silicone and foam manufacturing to optimize Young's Modulus, ductility, toughness, creep rupture, and various other material properties for idealized material compositions mimicking human-like qualities.

Bioengineer, Contract Engineer - Sensible Robotics Sep 2023 - Dec 2023 | Berkeley, CA

- Designed 5 skin types (fingerprint, composite, knurled, checkered, and sine curve patterns) using SOLIDWORKS for robotic fingertips to enhance precision gripping of various objects. Manufactured skins using silicone polymer blend in company headquarters. Skins underwent extensive testing for various object grip precision and durability with data analysis showing a significant increase (95% confidence) in grip adhesion for a specific design type. Company adopted for production design.
- Developed a mechanical testing apparatus featuring an adjustable sliding bracket with spring for force modulation, along with Hirth joints to facilitate angular rotation of fingers. Setup used to assess grip performance of various skin designs.

Automation Tech Engineer- Micro Lithography Inc. Jun 2023 - Aug 2023 | Sunnyvale, CA

- Identified method to improve pellicle manufacture spin coating to reduce manufacturing time, limit chuck marks, and reduce pinholes. Collaborated with QC team to validate. Adopted for production, and the CEO promoted me due to cost savings.
- Designed a Python-based ML module for pellicle frame detection with 98.9% accuracy, forming initial automation detection.
- Supervised and trained interns in software applications, assigning tasks and projects to facilitate workflow.

Automation Engineer - Micro Lithography Inc. Jun 2022 - Aug 2022 | Sunnyvale, CA

- Created a streamlined image processing program in OpenCV, enabling detection of contaminated pellicles before they left the manufacturing line. Solution applied high-pass filters and contour detection to live photos on the manufacturing line with under 0.5 second scanning time per pellicle. Served as a baseline particle detection program that was adopted by company.

RESEARCH

Student Research Assistant - Lawrence Berkeley National Lab; Kern Lab Sep 2024 - Present | Berkeley, CA

- Collaborated on the optimization of the innovative "droplet on tape" (DOT) sample delivery system, responsible for creating and tuning a multi-valve syringe system for dispensing multiple different samples.
- Contributed to end-to-end preparation for XFEL beamtime, including optimizing Photosystem II crystal growth conditions, performing hands-on sample preparation under high-throughput constraints including at SLAC, and assisting with real-time data collection using femtosecond X-ray pulses to resolve catalytic intermediates in photosynthetic water splitting.

Neurosurgery Research Assistant - UCSF CHEN LAB Jan 2024 - Feb 2025 | San Francisco, CA

- Harnessed cutting-edge RNA sensing with adenosine deaminases acting on RNA (ADAR) to target multiple neuromodulators and neuropeptides for cell-type specific genetic engineering in vitro and in vivo. Developed 100s of sensors de novo and tested in vitro by pooling to identify optimal sensors for targeted regions before conducting in vivo.
- Gained proficiency in advanced genetic engineering techniques through hands-on experience with adeno-associated virus (AAV) and lentiviral vectors (LV), as well as performing principal cloning techniques and virus-like particle (VLP) formation.

Loop-mediated Isothermal Amplification (LAMP) to Detect Non-pathogenic *E. coli* in Spinach July 2022 - May 2023

- Designed and achieved a novel repeatable method for LAMP detection of *E. coli* in contaminated spinach leaves in under 60 minutes (2400% reduction compared to contemporary PCR) with a cost of $1.06 per sample test.
- Designed 6 RNA primers that were produced by DNA Technologies to target the MalB gene in *E. coli OP50* with LAMP reaction.

SKILLS

Software: SnapGene, Benchling, Python, MATLAB, AutoCAD, Fusion360, SOLIDWORKS, LabVIEW, COMSOL, KiCAD, LTspice

Lab: PCR (qPCR, PCR clean-up, Golden Gate, Site-directed Mutagenesis), Virus (LV & AAV: Plasmid Design, Transfection, Passaging, Harvesting), Cloning (Primer Design, Restriction Digest, Ligation, Transformation, Gel Purification, Gibson, plasmid preps), RNA Synthesis, LAMP, Mouse (handling, perfusion, euthanization, brain slicing), Spectroscopy (UV-vis, MS, IR)