

Hao Wu

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Professional Summary

- 9 years of experience in lab automation, optical systems, rapid prototyping and instrument integration
- Industry experience in design and fabrication of automated in-vitro diagnostic platforms
- Extensive teamwork with scientists, engineers, and product managers to design new products
- Publications: Cell (2020), Nature (2019), Nature Methods (2018), Nano Letters (2017), Nature Communications (2015), Advanced Functional Materials (2015), Journal of Physical Chemistry C (2013)

Education

Harvard University Cambridge, MA
Ph.D. in Chemistry (Biophysical Track) Expected 2021

- NSF-Simons Quantitative Biology Initiative Fellowship
- Distinction and Excellence in Teaching Award

University of California, Berkeley Berkeley, CA
B.S. Chemistry, High Honors 2011-2014

- Koo Liu Siok-Han Graduation Award in Chemistry

Engineering Experience

Hardware Engineering Intern | Verily (Google Life Sciences) Summer 2019

- Designed and built a novel microfluidic diagnostic platform (and corresponding consumables) that automates complex workflows using an innovative hardware approach
- Implemented all elements of the platform leading to a fully functional hardware prototype including integrated optical systems and electronics
- Successfully demonstrated bioassays on the product prototype at company open house
- Accomplished all project milestones and filed a patent for the device

Neuroengineering PhD Researcher | Venkatesh Murthy Lab | Harvard University 2015 - Present

- Designed and built software and hardware automated experiment platforms to perform brain imaging and animal behavioral training that generated new insights into the neural process of decision-making, winning NSF-Simons Quantitative Biology Initiative Fellowship with the design and results
- Built a low-cost, high-precision automated acute neural implant system with electronics, 3D-printed components and Raspberry Pi; the system integrated next-generation high-density electrodes (Neuropixels) to easily record hundreds of neurons in arbitrary brain regions
- Built light-shaping microscopes with projector chips for optical read-and-write access to individual neurons in the brain, resulting in three high-profile publications (Cell, Nature and Nature Methods); the microscopes allowed high-throughput optical experiments for neuroscience research and drug-screening
- Contributed video processing codes to popular (1900+ stars on GitHub) deep-learning computer vision package DeepLabCut that increased its video processing rate by 200-fold
- Developed integrated PID motion control firmware and software for real-time, computer-vision-guided tracking of ants that generated videos featured in New York Times
- Performed wet lab preparations including PCR, gel electrophoresis and DNA cloning

Imaging Software Developer | Lawrence Berkeley National Laboratory 2015

- Designed software with Python and Qt for a scanning electron microscope (SEM) customized for characterizing new-energy materials, enabling facility scientists to performance novel, automated experiments that resulted in four publications
- Wrote communication packages that control device automation through serial communication

Business Experience

Venture Capital Analyst Intern | Kendall Capital Partners Nov 2020 - Present

- Evaluated potential investments in early-stage companies incubated by scientific labs from top universities
- Conducted due diligence assessment and market research in biotechnology and medical technology

Skills

- Design & fabrication: CAD, laser cutting, 3D printing, machining, PCB design, data acquisition system (DAQ), plastic-glass bonding, medical-adhesive bonding
- Programming: Python (NumPy, PyTorch, Pandas), MATLAB, Mathematica, Qt, LabVIEW, Arduino, C++
- Hardware communication: Serial, I2C, SPI
- Software: SolidWorks, Eagle, Autodesk Inventor, Adobe Illustrator
- Wet lab: ELISA, PCR, gel electrophoresis, maintaining mammal/human cell lines, surface chemistry