

Yichen Liu

lyichen@berkeley.edu | +1 (267)-210-5784
1530 Sunnyvale Ave., Unit 11, Walnut Creek, CA, 94597

EDUCATION

UNIVERSITY OF CALIFORNIA - Berkeley

Berkeley, CA

1st year Ph.D. in Electrical Engineering

Expected Graduation Date: May 2027

Concentration in MEMS device and Semiconductor device Design

UNIVERSITY OF ILLINOIS at Urbana-Champaign

Champaign, IL

Bachelor of Science in Mechanical Engineering

Graduation Date: May 2022

Minor in Electrical and Computer Engineering with focus in Signal Processing and Control

Graduated with highest honors in Mechanical Engineering

GPA: 3.86/4.00

RESEARCH EXPERIENCE

Berkeley Sensor and Actuator Center

Berkeley, CA

Berkeley Autonomous Microsystems Lab

August 2022 - Current

- Developing data-efficient reinforcement learning based micro-robot controller
- Design MEMS actuator and transmission system for micro-robot application
- Project on MEMS actuator power circuit design with array switches design and fabrication
- Project on Power efficient antenna design for mesh network in agriculture application

University of Illinois Mechanical Engineering

Champaign, IL

RoboDesign Lab

November 2021 - May 2022

- Designed high strength to mass efficient prosthetic robotic arm structures
- Coordinated rapid prototyping and material testing with manufacturer

University of Illinois Electrical and Computer Engineering Department

Champaign, IL

Quantum and Nanoscale Photonics Lab

February 2021 - Current

- Lead a microscopy research project developing autofocusing procedure for quantum emitters
- Modeled simulations on diffraction of light in waveguide considering the near field effect
- Developed image analysis tool for quick candidate search in single photon emitter search

University of Illinois Electrical and Computer Engineering Department

Champaign, IL

Center for Advanced Electronics Through Machine Learning

August 2021 - October 2021

- Applied reinforcement learning on impulse response prediction of 3D electromagnetic wave in transmission lines
- Developed a program creating synthetic training data for machine learning

University of Illinois Computer Science Department

Champaign, IL

ANA AVATAR XPRIZE Robotic Team

February 2020 - September 2020

- Research and test mechanical components for robotic gripper control
- Incorporated motion-tracking technology on human-robot control

PROFESSIONAL EXPERIENCE

University of Illinois Electrical and Computer Engineering Department

Champaign, IL

Course Assistant for ECE Analog Signal Processing Course

September 2020 - May 2022

- Supervised lab for Analog Signal Processing Lab

University of Illinois Research Park

Champaign, IL

Mechanical/Hardware Intern at Life Foundry

July 2019 - February 2020

- Designed and tested mechanical components for robotic automation and mechanical transmission
- Developed and integrated firmware IMU sensors into the safety system

ORGANIZATIONS & ACTIVITIES

University of Illinois Automotive Design Projects

Champaign, IL

Aerodynamic/ Electrical Designer

September 2018 - September 2020

- Researched and designed the airfoil system in SolidWorks
- Manufactured rear wing and spoilers with carbon fibers
- Designed battery management and control board for sensor system in electrical formula car

University of Illinois Illinois Space Society

Champaign, IL

Feeding System Designer for Intercollegiate Rocket Engineering Competition

September 2018 - August 2020

- Developed firmware to sensor units for data gathering
- Analyzed propulsion unit with Finite element analysis and Computational Fluid Dynamics Analysis

SKILLS

Research Report and Presentation

- Fluent in Microsoft Office (Excel, Word, PowerPoint), OriginLab, LaTeX, Zotero, Inkscape
- Skill to design and deliver presentations and reports summarizing complex high level topics

Computer-Aided Design, Fast Prototyping, and Fabrication

- Solidwork, Fusion 360, CATIA, Autodesk, Altium Designer, LTspice
- Experience in FDM and SLA 3D printing, waterjets, laser cutter, and benchtop milling operation
- Experience in cleanroom operation with hydrofluoric acid training

Simulation

- Experience with ANSYS in stress, EM and fluid simulation, xFDTD in 3D EM wave Analysis, COMSOL in EM simulation

Computation and Data Analysis

- Experience in C++, C, java, python
- Experience in MATLAB, Simscape and Simulink
- Experience in, OpenCV, ROS, Labview
- Experience in Machine Learning with Linux, Pytorch, Tensorflow 2.0, Google CoLab, open AI gym

Fabrication Processing

- Experience in the fabrication process of MEMS and NEMS
- Experience in oxidation, photolithography diffusion, photolithography diffusion (LIGA), etching, (DRIE), metallization, characterization testing, packing

Language

- Fluent in Chinese and English

RELEVANT COURSEWORK

Mechanical Engineering	Electrical Engineering
<ul style="list-style-type: none">• ME 170 Computer-Aided Design• ME 200 Thermodynamics• ME 270 Design for Manufacturability• ME 310 Fundamentals of Fluid Dynamics• ME 320 Heat Transfer• ME 330 Engineering Materials• ME 340 Dynamics of Mechanical Systems• ME 370/1 Mechanical Design I/II• ME 487 Fabrication of MEMS/NEMS	<ul style="list-style-type: none">• ECE 110 Introduction to Electronics• ECE 210 Analog Signal Processing• ECE 310/1 Digital Signal Processing• ECE 313 Probability with Engrg Applic• ECE 329 Fields and Waves I• ECE 340 Semiconductor Electronics• ECE 342/3 Electronic Circuits• ECE 486 Control Systems• ECE 444 Theory and Fabrication of IC

ARTICLE

- In progress as the first author: Deep Reinforcement Learning-based Focusing algorithm for Quantum Emitters
- Acknowledgment in: Sahoo, S., Azzouz, H., & Bogdanov, S. I. (2021). Rapid absolute sizing of deeply subwavelength dielectric nanoparticles by confocal scanning optical microscopy. Applied Physics Letters, 118(24), [241105]. <https://doi.org/10.1063/5.0057471>
- In review proposal with Dr. Simeon Bogdanov