X Sun

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Education

UC Berkeley College Of Engineering, Berkeley, CA, USA Aug 2019 - May 2022
Majoring in Mechanical Engineering

- Jacobs Institute Innovation Catalyst Recipient ($500), 2020 Fall: led a student team to create a mobile, open-sourced USB bicycle phone charger
- Summer Undergraduate Research Fellowship, 2021
- Cal Alumni Leadership Scholarship Recipient, 2021-2022
- Jacobs Institute Innovation Catalyst Recipient ($2000), 2021 Fall: Extending work of Bear Air into real life application in face of COVID and wild fire season
- Selected Undergraduate and Graduate
- Coursework: ME C117 - Structural Aspects of Biomaterial; ME H194 - Honor Undergraduate Research; ME C201 - Modeling and Simulation of Advanced Manufacturing Process; ME 223 - Polymer Engineering; ME C225 - Fracture and Fatigue of Structural Materials ; ME 280A - Introduction to the Finite Element Analysis;
- Accumulative GPA: 3.7 / 4.0

Mater Dei High School, Santa Ana, CA, USA Aug 2016 - May 2019

- Principle's Honor List, Class of 2019
- Founder and Team Captain of Math Team & Captain of Speech and Debate Team
- Graduated with 96.28 UC transferable units (including Advanced Placements units and courses taken in community colleges)

Key Qualifications

- Experienced in research (literature review, planning and executing experiments, analyzing and organizing data, grant and paper writing)
- Skilled in data analysis and simulation with Matlab, Python, and Java & CAD with Solidworks
- Proficient with fabrication (3D printers, wood shop, metal shop, and CNC machines)

Research Experience

Research Assistant Feb 2020 - Present
Design For Nanomanufacturing Lab

- Regularly reviewing literature and proposing research ideas
- Attending group meetings, workshops and conferences in relevant fields
- Making resins with various monomer and photoinitiators for conducting different experiments
- Printing, post- processing, and evaluating optical components with CAL (Computed Axial Lithography) printer
- Assisting to upgrade the CAL printer for multi-wavelength printing
- Building a theoretical model to optimize post-processing
- Evaluating mechanical properties of a novel hydrogel resins and fabricate tools for tissue engineering and contact lenses printing
- Built a theoretical simulation for volumetric 3D printing with metal powder in ultrasonic field
- (Bear Air) Leading a team in a COVID air purification project that gained 130K initial fund from the CITRIS Institution: Literature reviewing, experimental planning and executing, product designing, paper and grant writing, communication with research partners
- Led a student team in producing a 3D printable Bacterial Viral Filter model

Research Assistant Feb 2021 - Present
O'Connell Lab

- Constantly reviewing literature and helping to brainstorm new research ideas
- Making agarose, alginate, and collagen gels with different formulas and conducting compressional & stress relaxing test with casted samples
- Printing and evaluating hydrogels with a bio fused deposition printer
- Conducting print fidelity tests and improve it by alternating print parameters: successfully printed 3D structures with overhang parts
- Meeting with graduate student mentor weekly and presenting final research result to the group

Researcher June 2019 - Present
Mentored by Professor Zhenyu Gan in Syracuse University, Mechanical & Aerospace Engineering Department

- Investigating into the impact of spring linear stiffness with a SLIP (Spring Loaded Inverted Pendulum) model

Summer Undergraduate Research Fellowship May 2021 - Aug 2021
Department of Architectural Engineering, UC Berkeley

- Created CAD models for Finite Element Analysis (FEA)
- Reviewed and summarized literature in the field
- Analyzed laminated composite material properties (Young's Modulus, Shear Modulus, Poisson's Ratio, bending strength, and bending modulus) and structural integrity in Ansys and Abqus for their use in gridshell constructions
- Organized, analyzed, and created graphs to visualize data

Mechanical Engineer And Researcher Mar 2020 - July 2020
COVID19 Project - HelpVentilator (https://www.ventilatorsos.org)

- Repurposed CPAP and BiPAP machines as ventilators for supplementary medical devices
- Created CAD model for 3D printing and press release
- Built and Tested prototype with off-shelf-products and 3D printing parts
- Created the fist website and started a Gofundme campaign for the project
- The VentilatorSOS team distributed thousands of machines across the world

Ocean Engineering Researcher Dec 2019 - Jun 2021
TAF (Theoretical & Applied Fluid Dynamics) Lab

- Operated apparatus around a large scale wave tank in O 'Brien Hall at UC Berkeley campus.
- Assisted calibrate wave gauges and force cells
- Team member of UC Berkeley MECC (Marine Energy Collegiate Competition) Team: research, design, and conduct business plan for novel marine energy technologies — Underwater UUV (unmanned underwater vehicle) Charging Station & Wave Energy Microgrid System for Isolated Communities
- Lead author of a paper published at Berkeley Scientific Journal

Other Activities

Officer in Project Grant Committee Feb 2021 - Present
American Society of Mechanical Engineers UC Berkeley Chapter

- Working on starting a pilot project providing funds to student projects in mechanical engineering classes

Engineer & Team leader & Mentor & Volunteer Feb 2016 - Present
Code Orange FRC 3476, RoboRAVE international

- 3rd Place in Innovation & Entrepreneur Competition Asia Regional 2016: Built a robot automated to deliver toilet paper in bathrooms of commercial stores
- 4th Place in FRC (First Robotics Competition) World Championship 2018

- Volunteering for various educational programs: mentor & judge

Volunteer For Youth Education Events Sep 2019 - Present
Society of Women Engineer & Berkeley Splash

- Taught Rocket and Marine Energy courses to more than 100 high school students
- Regularly volunteer for holding engineering or scientific workshops to middle and high school students

Researcher, Mechanical Team Lead Feb 2020 - May 2021
Space Technologies At California

- Worked on the mechanical control system and design & manufacturing of payload box in HAB (High altitude Balloon) Team
- Led the Mechanical Team in 2021 Spring

Mechanical Engineer Aug 2019 - May 2020
Cal Space Technologies and Rockery & UC Berkeley Solar Vehicle Team & UC Berkeley Robomaster Team

- Researched on various propulsion systems and simulation techniques of rockery
- Fabricated CCTV camera mount with laser cutting
- Created CAD model for using Ansys to analyze torsional rigidity of the car structure
- Designed and manufactured mechanical parts for additional support on the robot

Skill Sets

- Research: Design and conduct experiments & Data Analysis; Grant and paper writing; Literature review; Public speaking & team communication
- Finite Element Method Theory and Application in Ansys and Abaqus
- Mechanical Component Design in CAD and Fabrication
- Matlab Simulation & Python & Java

Publications

- Sun, X., Deng, B., Zhang, J., Kelly, M., Alam, R., & Makiharju, S. (2021). Reimagining Autonomous Underwater Vehicle Charging Stations with Wave Energy. Berkeley Scientific Journal, 25(2). https://doi.org/10.5070/BS325254504

Conference Presentations

- 2020 Fall: CITRIS COVID-19 Grant Projects Discussion — “A low-cost, accessible ventilation system for indoor air purification”
- 2020 Fall: Undergraduate Research Symposium in College of Engineering, UC Berkeley — “A low-cost, accessible ventilation system for indoor air purification”
- 2021 Summer: UC Berkeley Summer Undergraduate Research Fellowship Conference — “Investigation on Bending Behavior of Externally Carbon Fiber Reinforced Concrete Using Finite Element Method and Its Applications in Gridshell Architectures”