Jehan Yang

CONTACT INFORMATION
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EDUCATION

Carnegie Mellon University (CMU), PA — 2022–Current

- PhD in Biomedical Engineering.
- Advisor: Prof. Zackory Erickson and Prof. Douglas Weber.

California Institute of Technology (Caltech), CA — 2020–2022

- M.S. in Electrical Engineering, GPA: **4.0**.
- Advisor: Prof. Aaron D. Ames.
- Course Projects:"RRT-Based Path Planning for Walking", "Optimal Control with Control Barrier Functions for Walking."

University of California–Berkeley (UC Berkeley), CA. — 2015–2020

- B.S. in Mechanical Engineering, Minor in Electrical Engineering/Computer Science, GPA: **3.7**.
- Course Projects: Lead of "NERF Prosthesis Project" awarded "Best ME Capstone Project."

RESEARCH EXPERIENCE

AMBER Lab - Advanced Prosthetics, Caltech — Dec. 2020–Jun. 2022
Department of Mechanical and Civil Engineering and Control and Dynamical Systems

- Led insole pressure sensor integration to integrate all forces for first model-dependent prosthesis control paper with real-time measured ground forces. Accepted to *RA-L* and *2022 ICRA*.
- Established C++ UDP networking for Windows OS UP Board and Linux Beagle Bone Black.
- Reduced communication delays from 10 ms to 0.5 ms using C++ multi-threading and varying packet sending method. Used Batch and C# scripting to reduce reset times from 1 min to 10 s.

Gu Research Group - Soft Robotics, UC Berkeley — Sep. 2018–May 2020
Mechanical Engineering Department (ME)

- Designed, built, and programmed low-cost biomimetic prosthetic finger with artificial bones and ligaments actuated by 6 pneumatic artificial muscles. Proposed original project, awarded 1 of 20 senior-class fellowships, and presented at a conference with the Haas Scholars Program.
- Co-designed parameters and tested soft robotic joint. Awarded funding by Amazon and published in *Advanced Intelligent Systems* journal.

Biomimetic Millisystems Lab, UC Berkeley — May 2016–Dec. 2017
Electrical Engineering/Computer Science Department (EECS)

- Co-designed experimental procedures, and improved novel dynamic foot for improved landing and perching on diverse surfaces, co-authoring *2018 ICRA* paper.
- Built and iterated VelociRoACH robot AutoCAD designs using fiberglass microspines and control of hopping to successfully climb step 1x robot body height.

PUBLICATIONS

1. R. Gehlhar, **J. Yang**, and A. D. Ames, "Model-Dependent Prosthesis Control with Real-Time Force Sensing," accepted to *IEEE Robotics and Automation Letters* and *2022 IEEE International Conference for Robotics and Automation*, 2022.
2. K. G. Demir, Z. Zhang, **J. Yang**, and G. X. Gu, "Computational and Experimental Design Exploration of 3D-Printed Soft Pneumatic Actuators," in *Advanced Intelligent Systems*, 2020.
3. J. S. Lee, M. Plecnik, **J. Yang**, and R. S. Fearing, "Self-engaging spined gripper with dynamic penetration and release for steep jumps," in *2018 IEEE International Conference for Robotics and Automation*, 2018.

PRESENTATIONS

1. **J. Yang**, and G. X. Gu, "Biomimetic Finger Towards Dexterous Manipulation,", in *2020 Haas Scholars Winter Conference*, 2020.

TECHNICAL SKILLS

- *Programming Languages*: C/C++, MATLAB, Python, Java, C#, Batch, Bash, HTML, CSS.
- *Technical Softwares*: ROS, Solidworks, Siemens NX, AutoCAD, Git, Simulink, ImageJ, EAGLE.
- *Hardware Expertise*: Exact-constraint design, machining, embedded systems, 3D printing, PCB.

Teaching

Lab Assistant for EE16B, UC Berkeley — Jan. 2019–May 2019
Designing Information Devices and Systems II

Internship Experiences

Miso Robotics, Pasadena, CA — Jun. 2022–Aug. 2022
Automating fast-food tasks such as deep-frying and pouring drinks with robotics

- Implemented compliant control in robot arm to decrease force during collisions by 80% and potentially allow human-robot interaction.
- Set up buildroot to build custom OS in embedded board in automated beverage robot.

Nuro, Mountain View, CA — May 2020–Sep. 2020
Self-driving electric car startup focusing on city-wide delivery systems.

- Designed architecture of dynamic interior system using Siemens NX for 2000lb R3 cars.
- Modeled nonlinear system of equations in Python to solve packaging of large wire harnesses.

Covariant, Berkeley, CA — Sep. 2019–Feb. 2020
Robotics startup focused on high-performance sorting tasks in warehouses.

- Co-designed, simulated, and fabricated 200kg robot station shipped to 2020 AMCon.
- Fabricated robot station for 1000s of item resets for deep reinforcement learning.

NASA-Caltech JPL, La Cañada Flintridge, CA — Jun. 2018–Aug. 2018
U.S. government facility for space missions featuring robotics.

- Led design and fabrication of 5mm thick hexapod robot chassis using 3D-printed composites.
- Designed coupling for 4mm thick motor and coded firmware for Hall sensors to detect peaks.

Universal Creative, Orlando, FL — Jan. 2018–May 2018
Managing company of design and engineering for Universal Studios theme parks.

- Verified engineering designs for actuated human-safe equipment carrying 1000s of lbs.
- Modeled designs for integrating various 10-foot actuated equipment in Revit architecture plan. Wrote GNU Octave code and report to model large chain catenary for verification of clearances.

Honors and Awards

- **Graduate Research Fellowship Program**, NSF. 2020–Current
- **Haas Scholars Program Fellowship**, UC Berkeley. 2019–2020
- **Rose Hills Independent Fellowship**, UC Berkeley. 2019
- *Lead of Best ME Capstone Project*, UC Berkeley. 2019
- *Dean's List*, UC Berkeley. 2019–2020

Outreach

Pioneers in Engineering, Berkeley, CA
A robotics education 501(c)3 non-profit mentoring 20 underserved high schools in the Bay Area.

- *Treasurer* — Sep. 2019–Current
  - Lead book-keeping to maintain publicly supported 501(c)3 status of Pioneers in Engineering.
  - Collaborate with team of volunteers to perform accounting for all transactions of a $50,000/year budget for 20 schools, and to file detailed federal and state business tax forms every year.
- *Mechanical Team Coordinator* — May 2016–Jan. 2018
  - Managed a 15-person engineering team for projects on gear fabrication, drivetrain prototyping, and enclosure designs.
  - Trained a team of six engineering students to manufacture and produce a robotics platform with CAD, improving end-user satisfaction rate by 60% and reducing hardware costs by half.

Diversity, Equity, and Inclusion Committee, UC Berkeley
The first committee to address diversity and inclusion in the ME department.

- *Undergraduate Committee Member* — Sep. 2019–May 2020
  - Advocated for the inclusion in research of first-generation and lower SES students, beginning talks with the ME Department to budget for fellowships funding disadvantaged students.

GenOne, UC Berkeley
A first-generation engineering student mentorship organization.

- *Founder* — Sep. 2019–May 2020
  - Paired 5 student mentors and mentees up of first-generation engineering students.
  - Discussed with faculty on best practices for supporting disadvantaged students.

Miscellaneous Skills

- A.A. in Business Administration from Foothill College
- Emergency Medicine Technician (EMT) Licensed (160 hours) with >350 hours work experience
- First Aid, CPR, and Mental Health First Aid Certified
- HAM Radio Technician Licensed–Callsign: KN6IEZ
- Fluent English, conversational Mandarin, limited-working Italian and Spanish