Laura A. Hallock

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CURRENT APPOINTMENT

11/2021 – Present **Postdoctoral Researcher in Mechanical Engineering and Applied Mechanics (MEAM)**, *GRASP Laboratory, University of Pennsylvania*.
Advisors: Vijay Kumar, Michelle J. Johnson, & Nadia Figueroa
Topics: *Biomechanical sensing for rehabilitation robotics, physical human–robot collaboration*

EDUCATION

8/2021 **Ph.D. in Electrical Engineering and Computer Science (EECS)**, *University of California, Berkeley*.
Advisor: Ruzena Bajcsy
Cumulative GPA: **3.9** / 4.0
Thesis: *A Systematic Study of the Muscle Force–Deformation Relationship at the Human Elbow: Toward Physiology-Aware Assistive Device Control and Noninvasive Muscle Force Sensing*
Relevant Coursework: *Advanced Robotics, Convex Optimization, Random Processes, Hybrid Systems and Intelligent Control, Linear System Theory, Nonlinear Systems*

6/2015 **S.B. in Electrical Engineering and Computer Science (EECS)**, *Massachusetts Institute of Technology*.
Cumulative GPA: **4.9** / 5.0
Relevant Coursework: *Underactuated Robotics*, Robotics: Science and Systems, Machine Learning, Circuits and Electronics, Advances in Computer Vision*, Geometric Folding Algorithms*, Computer Systems Security** (*graduate-level course)

CURRENT RESEARCH

My research focuses on **sensing and modeling of musculoskeletal dynamics** for applications in rehabilitation robotics and physical human–robot interaction. I seek to perform **better system identification of human dynamics** to enable the design and control of **more capable assistive and rehabilitative devices** that can better replicate and enhance the functionality of the intact musculoskeletal system. Toward these objectives, I employ a **wide range of sensing modalities** (including ultrasound, MRI, surface electromyography, acoustic myography, and force sensing) to generate **physiological and data-driven models** applicable to both medical diagnostics and device design.

PUBLICATIONS

REFEREED JOURNAL / CONFERENCE PUBLICATIONS

[1] **Laura Hallock**, Bhavna Sud, Chris Mitchell, Eric Hu, Fayyaz Ahamed, Akash Velu, Amanda Schwartz, and Ruzena Bajcsy, "Toward real-time muscle force inference and device control via optical-flow-tracked muscle deformation," *IEEE Transactions on Neural Systems and Rehabilitation Engineering (TNSRE)*, pp. 2625–2634, 2021.

[2] **Laura Hallock**, Akash Velu, Amanda Schwartz, and Ruzena Bajcsy, "Muscle deformation

correlates with output force during isometric contraction," in *IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics (BioRob)*. IEEE, 2020, pp. 1188–1195.

[3] Yonatan Nozik*, **Laura Hallock***, Daniel Ho, Sai Mandava, Chris Mitchell, Thomas Hui Li, and Ruzena Bajcsy, "OpenArm 2.0: Automated segmentation of 3D tissue structures for multi-subject study of muscle deformation dynamics," in *International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*. IEEE, 2019, pp. 982–988. *Equal contribution.

[4] Jeffrey Zhang, Sravani Gajjala, Pulkit Agrawal, Geoffrey H. Tison, **Laura Hallock**, Lauren Beussink-Nelson, Mats H. Lassen, Eugene Fan, Mandar A. Aras, ChaRandle Jordan, Kirsten E. Fleischmann, Michelle Melisko, Atif Qasim, Sanjiv J. Shah, Ruzena Bajcsy, and Rahul C. Deo, "Fully automated echocardiogram interpretation in clinical practice: Feasibility and diagnostic accuracy," *Circulation*, vol. 138, no. 16, pp. 1623–1635, 2018.

[5] **Laura Hallock**, Akira Kato, and Ruzena Bajcsy, "Empirical quantification and modeling of muscle deformation: Toward ultrasound-driven assistive device control," in *IEEE International Conference on Robotics and Automation (ICRA)*. IEEE, 2018, pp. 1825–1832.

IN PREPARATION

[6] **Laura Hallock** and Michelle J Johnson, "SEMG- and robot-based assessment of post-stroke motor impairment on a configurable rehabilitation robot," *In preparation*.

WORKSHOPS / ABSTRACTS / POSTERS

[7] **Laura Hallock** and Ruzena Bajcsy, "The OpenArm Project: Exploring deformation as a measure of muscle force," in *Meeting of the American Society of Biomechanics (ASB)*. ASB, 2020.

[8] **Laura Hallock** and Ruzena Bajcsy, "A preliminary evaluation of acoustic myography for real-time muscle force inference," in *International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*. IEEE, 2018.

[9] **Laura Hallock** and Ruzena Bajcsy, "Beyond surface electromyography: Novel measures of muscle activation for high-degree-of-freedom assistive device control," in *PhD Student Forum, IEEE International Conference on Robotics and Automation (ICRA)*. IEEE, 2018.

[10] **Laura Hallock** and Ruzena Bajcsy, "Musculoskeletal modeling for physical HRI," in *Women in Robotics III Workshop, Robotics: Science and Systems (RSS)*, 2017.

[11] **Laura Hallock**, Robert Peter Matthew, Sarah Seko, and Ruzena Bajcsy, "Sensor-driven musculoskeletal dynamic modeling," in *International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*. IEEE, 2016.

[12] Emily Clements, Bruno Alvisio, Alessandra Babuscia, Zachary Casas, Brian Coffee, Sydney Giblin, **Laura Hallock**, Ryan Kingsbury, Michael Leaman, Naomi Lynch, Michael O'Connor, Elizabeth Qian, Frank Hall Schmidt, Maria de Soria-Santacruz, Lionel Sotomayor, Christian Valledor, Megan Tadge, Leonard Tampkins, Evan Wise, Mary Zhuang, Manuel Martinez-Sanchez, and Kerri Cahoy, "TERSat: Trapped energetic radiation satellite," in *AIAA/USU Conference on Small Satellites*, 2012.

TECHNICAL REPORTS / THESES

[13] **Laura Hallock**, "A systematic study of the muscle force–deformation relationship at the human elbow: Toward physiology-aware assistive device control and noninvasive muscle force sensing," Ph.D. dissertation, EECS Department, University of California, Berkeley, Aug 2021.

[14] **Laura Hallock**, Robert Peter Matthew, Sarah Seko, and Ruzena Bajcsy, "Sensor-driven musculoskeletal dynamic modeling," Tech. Rep., 2016.

FELLOWSHIPS / HONORS / AWARDS

10/2022 **Rising Stars in Engineering in Health**, *Workshop Selectee*.

10/2020 **Rising Stars in Mechanical Engineering**, *Workshop Selectee*.

5/2019 **UC Berkeley EECS**, *Chair's Graduate Award*.

9/2018 **NextProf Nexus**, *Workshop Selectee*.

5/2018 **UC Berkeley Graduate Division**, *Outstanding Graduate Student Instructor*.

4/2016 **NSF Graduate Research Fellowship Program (GRFP)**, *Fellow*.

2/2016 **Innovation Competition, WearRAcon 2016**, *Winning Team Member*.

5/2015 **MIT Eta Kappa Nu Computer Science and Electrical Engineering Honor Society**, *Member*.

TALKS / PRESENTATIONS

EXTERNAL

5/28/2021 **AMBER Lab, California Institute of Technology**, *A Systematic Modeling Framework for Deformation-Based Muscle Force Inference: Toward Safe and Capable Assistive Device Control*, Talk.

3/1/2021 **The Future of Mechanical Engineering Seminar Series, Stanford University**, *(Re)building Human Dexterity: Inferring Musculoskeletal Dynamics for Next-Generation Assistive Devices & Diagnostics*, Invited Talk.

3/10/2021 **Mechanical Engineering Seminar Series, Massachusetts Institute of Technology**, *(Re)building Human Dexterity: Inferring Musculoskeletal Dynamics for Next-Generation Assistive Devices & Diagnostics*, Invited Talk.

3/1/2021 **AeroAstro Seminar Series, Massachusetts Institute of Technology**, *(Re)building Human Dexterity: Inferring Musculoskeletal Dynamics for Next-Generation Assistive Devices & Diagnostics*, Invited Talk.

2/24/2021 **Electrical & Computer Engineering Seminar Series, Princeton University**, *(Re)building Human Dexterity: Inferring Musculoskeletal Dynamics for Next-Generation Assistive Devices & Diagnostics*, Invited Talk.

2/19/2021 **Electrical & Systems Engineering Seminar Series, University of Pennsylvania**, *(Re)building Human Dexterity: Inferring Musculoskeletal Dynamics for Next-Generation Assistive Devices & Diagnostics*, Invited Talk.

1/22/2021 **3rd NorCal Control Workshop**, *Novel Muscle Force Inference Methods for Human Dexterity Modeling & Augmentation*, Invited Talk.

12/2/2020 **IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics (BioRob)**, *Muscle Deformation Correlates with Output Force During Isometric Contraction*, Oral Presentation.

11/18/2020 **GRASP SFI Seminar Series, University of Pennsylvania**, *A Systematic Modeling Framework for Deformation-Based Muscle Force Inference: Toward Safe and Capable Assistive Device Control*, Invited Talk.

11/10/2020 **Neuromuscular Biomechanics Lab, Stanford University**, *A Systematic Modeling Framework for Deformation-Based Muscle Force Inference*, Talk.

8/7/2020 **American Society of Biomechanics Annual Conference (ASB)**, *The OpenArm Project: Exploring Deformation as a Measure of Muscle Force*, Virtual Poster.

12/6/2019 **Action Lab, Northeastern University**, *A Systematic Modeling Framework for Deformation-Based Muscle Force Inference*, Talk.

9/25/2019 **Harvard Biodesign Lab**, *A Systematic Modeling Framework for Deformation-Based Muscle Force Inference*, Talk.

7/30/2019 **Slovenská technická univerzita v Bratislave (STU)**, *A Systematic Modeling Framework for Deformation-Based Muscle Force Inference*, Invited Talk.

7/29/2019 **University of Žilina (UNIZA)**, *A Systematic Modeling Framework for Deformation-Based Muscle Force Inference*, Invited Talk.

7/24/2019 **International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)**, *OpenArm 2.0: Automated Segmentation of 3D Tissue Structures for Multi-Subject Study of Muscle Deformation Dynamics*, Poster & Lightning Talk.

7/22/2019 **Czech Institute of Informatics, Robotics and Cybernetics (CIIRC CTU)**, *A Systematic Modeling Framework for Deformation-Based Muscle Force Inference*, Invited Talk.

4/26/2019 **CITRIS/CPAR Control Theory and Automation Symposium, 2nd NorCal Control Workshop**, *System Identification of Human Musculoskeletal Dynamics*, Invited Talk.

7/18/2018 **International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)**, *A Preliminary Evaluation of Acoustic Myography for Real-Time Muscle Force Inference*, Poster.

5/22/2018 **IEEE International Conference on Robotics and Automation (ICRA)**, *Empirical Quantification and Modeling of Muscle Deformation: Toward Ultrasound-Driven Assistive Device Control*, Poster.

12/7/2017 **Center for Neural Engineering & Prostheses Annual Retreat (CNEP)**, *Quantification and Modeling of Upper-Limb Muscle Deformation: Toward Ultrasound-Driven Assistive Device Control*, Invited Talk.

7/15/2017 **Women in Robotics III Workshop, Robotics: Science and Systems (RSS)**, *Musculoskeletal Modeling for Physical HRI*, Poster.

1/22/2017 **Center for American Education and Culture (CAEC)**, *Human Musculoskeletal Dynamic Modeling: Current Research and Objectives*, Invited Talk.

8/19/2016 **International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)**, *Sensor-Driven Musculoskeletal Dynamic Modeling*, Poster.

INTERNAL

10/26/2018 **BAIR/CPAR/BDD Internal Weekly Seminar**, *Human Muscle Force Modeling for Enhanced Assistive Device Control*, Talk.

2/5/2018 **Seminar in Physiological Energetics and Biomechanics, UCB Integrative Biology**, *Human Musculoskeletal Dynamics Modeling: Toward Biomimetic Assistive Device Control*, Talk.

8/25/2017 **Berkeley Semiautonomous Seminar**, *Human Musculoskeletal Dynamics Modeling: Current Research and Objectives*, Talk.

7/26/2017 **Berkeley Center for Computational Imaging Seminar (BCCI)**, *Sensor-Driven Musculoskeletal Dynamics Modeling*, Talk.

TEACHING EXPERIENCE

Spring 2020 **EECS 127/227A Optimization Models in Engineering**, *Graduate Student Instructor*, University of California, Berkeley.

- Instructed students in key principles of optimization theory, including linear algebra, regression analysis, convexity, duality, and applications in machine learning and control.
- Developed and evaluated novel content for homework, discussion, and exam problems.
- Led biweekly discussion sections, both in person (initially) and virtually via Zoom (after onset of COVID-19).
- Aided in mid-semester adaptation of all course content to virtual instruction (after onset of COVID-19).

Fall 2020
Spring 2020
Fall 2019
Spring 2019
Fall 2018 **Teaching Conference for Graduate Student Instructors**, *Computer Science Discipline Cluster Workshop Leader*, University of California, Berkeley.

- Led first-time graduate student instructors in half-day workshop covering effective teaching techniques, including classroom management, curriculum development, and pedagogical principles.
- Adapted and developed course materials to cover computer-science-specific instructional challenges.
- Converted material for virtual delivery and relevance to virtual teaching (after onset of COVID-19).

Fall 2017 **EECS 106A/206A Introduction to Robotics**, *Head Graduate Student Instructor*, University of California, Berkeley.

- Instructed students in key principles of robot kinematics, dynamics, planning, and control through interactive lab sections in Python and Robot Operating System (ROS).
- Aided in maintenance of lab robot platforms, including Baxter and Sawyer robot arms and TurtleBots.
- Performed significant updates to course content, including rewrites of lab instructions for new hardware and incorporation of novel concepts.
- Wrote and gave multiple course lectures.
- Handled vast majority of course logistics, including scheduling, syllabus rewrites, online course content maintenance, and organization of extensive final projects (as well as their requisite hardware).

Winter 2017 **Robotics & AI Lecture Series**, *Lecturer*, Center for American Education and Culture.

- Co-developed comprehensive six-hour lecture series on robotics and artificial intelligence for visiting undergraduate students from China.
- Generated and delivered all content alongside two co-lecturers, including material on perception, motion planning, control, actuation, human–robot interaction, and machine learning.

Fall 2015
Fall 2014
Fall 2013
Fall 2012

EC.A790 Engineering, Art, and Science, *Associate Advisor*, Massachusetts Institute of Technology.

- Mentored freshman advisees as they developed hardware engineering projects of their choosing in the MIT Edgerton Center, assisting in project design and execution.
- Served as upperclassman academic advisor to students, aiding in course selection and overall adjustment to university life.
- Taught with Edgerton Center STEM outreach programs (Weekend Immersion in Science and Engineering, etc.).

Winter 2014

High School Physics, *Liceo Scientifico Sperimentale "Luigi Cremona"*, *Instructor*, MIT Global Teaching Labs, Milan, Italy.

- Independently developed and taught three-week physics curriculum for Italian high school students, including lectures, evaluations, and interactive experiments.
- Covered momentum/collisions, electrostatics, and electromagnetism with third-, fourth-, and fifth-year students, respectively.

PROFESSIONAL / DEPARTMENTAL SERVICE

8/2022 **IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics (BioRob), 2022**, *Workshop Co-Organizer*, "Closing the Loop on Upper-Limb Assistive Device Design, Sensing, Control, & Clinical Practice".

1–4/2022 **IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN), 2022**, *Associate Editor*.

7/2017 – 7/2021 **CITRIS People and Robots (CPAR) / Design of Robotics and Embedded Systems, Analysis, and Modeling (DREAM) Seminar, University of California, Berkeley**, *Organizer*.

4/2020 **IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics (BioRob), 2020**, *Paper Reviewer*.

2–3/2020 **EECS Faculty Search Committee, University of California, Berkeley**, *Student Interviewer*.

10/2018 **IEEE Robotics and Automation Letters (RA-L), 2019**, *Paper Reviewer*.

5/2018 **IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics (BioRob), 2018**, *Paper Reviewer*.

12/2017 **EE Graduate Admissions, University of California, Berkeley**, *Graduate Student Application Reviewer*.

4/2017 **IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN), 2017**, *Paper Reviewer*.

8–12/2016 **UC Berkeley Disabled Students' Program**, *Note Taker, EE 227BT Convex Optimization*.

PROFESSIONAL AFFILIATIONS

6/2020 – Present **American Society of Biomechanics (ASB)**, *Early Career Member (prev. Student Member)*.

2/2018 – Present **IEEE Robotics and Automation Society (RAS)**, *Member (prev. Graduate Student Member)*.

8/2016 – Present **IEEE Engineering in Medicine and Biology Society (EMBS)**, *Member (prev. Graduate Student Member)*.

RESEARCH MENTORING / ADVISING

CURRENT STUDENTS

PhD Yifei Simon Shao (UPenn), Tianyu Li (UPenn)

masters Bharath Teegala (UPenn), Naomi Kingoina (UPenn)

high school Tina Jiang, Ivan Zheng

SELECT FORMER STUDENTS

undergrad Chris Mitchell (now Software Engineer, Amazon), Akash Velu (now graduate student, Stanford), Bhavna Sud (now Software Engineer, Verkada), Fayyaz Ahamed (now medical student, UCSF), Eric Hu (now MD/PhD student, NYU), Amanda Schwartz (now PhD student, UMich mathematics), Varun Bhatia (now graduate student, CMU RI), Jaeyun Stella Seo (now graduate student, UCB), Yonatan Nozik (now PhD student, CMU ECE), Sachiko Matsumoto (now PhD student, UCSD robotics), Nandita Iyer (now Software Engineer, Twitter), David Wang (now Firmware Integration Engineer, Tesla), Sai Mandava (now Software Engineer, Intuit), Thomas Li (now Software Engineer, Lyft), Kireet Agrawal (now Software Engineer, ThoughtSpot), Michelle He (now Robotics & Controls Engineer, Johnson & Johnson), Ian McDonald (now Site Reliability Engineer, Atlassian), Daniel Ho (now Software Engineer, Mapbox), Aaron Sy (now Engineer, YouTube), Jeffrey Zhang (now PhD student, UIUC CS), Shivani Sharma (now Assistant Program Manager, GM)

high school Prerana Kiran (now undergraduate student, UIUC)

ADDITIONAL RESEARCH / PROFESSIONAL EXPERIENCE

6/2017 **Siemens Healthineers**, *Intern*, Princeton, NJ.

- Developed end-to-end, extensible pipeline for analysis of knee biomechanics — supporting arbitrary force conditions and varying material properties — including mesh manipulation (ParaView) and finite element analysis (deal.II, C++).
- Completed thorough review of existing knee modeling literature, including evaluation of clinical relevance and modeling feasibility.

9/2014 – 6/2015 **Biomechatronics Group, Media Lab, Massachusetts Institute of Technology**, *Undergraduate Researcher*, Cambridge, MA.

1/2013 – 5/2013

- Developed physical circuitry and software infrastructure in C for communication between BiOM active ankle-foot prosthesis and artificial gastrocnemius via Raspberry Pi UART. Worked to maximize speed of communication and explored possible control infrastructures for resulting electromechanical platform.
- Modified Raspberry Pi computer to allow for real-time feedback between motor of robotic knee and user of the prosthesis. (Rebuilt Raspbian OS kernel to communicate with motor via controller area network — CAN — protocol.)

5/2014 – 8/2014 **DRC Tartan Rescue, National Robotics Engineering Center**, *Intern*, Pittsburgh, PA.

- Developed perception software for DARPA Robotics Challenge's CHIMP robot.
- Wrote modular C++ infrastructure for real-time point-cloud-based grasping of objects with minimal operator intervention.
- Incorporated segmentation / grasp placement techniques / heuristics (principal component analysis, sample consensus, etc.).

2/2014 – 5/2014 **Edgerton Center, Massachusetts Institute of Technology**, *Undergraduate Researcher*, Cambridge, MA.

- Developed haptic and auditory feedback system for novel visualization of mathematical functions (as an assistive technology) in Python using Arduino and Leap Motion Controller.
- Mentored younger students working on the project.

6/2013 – 8/2013 **Centro de Astro-Ingeniería (Astro-Engineering Center), Pontificia Universidad Católica de Chile**, *Intern*, Santiago, Chile.

- Characterized parameters of InGaAs near-IR detector for use in university observatory and spectroscopy experiments.
- Aided in development of C++ software to drive detector in Linux-based operating systems.
- Investigated modifications to existing visible light spectrograph design for use in the near infrared spectrum using Zemax.
- Worked almost exclusively in Spanish.

6/2012 – 8/2012 **Cirrus Logic, Energy, Exploration, and Lighting Division**, *Product Test Engineering Intern*, Austin, TX.

- Trained in basics of mixed signal integrated circuit (IC) design, fabrication, and testing procedures.
- Executed chip testing using Teradyne FLEX machinery and related IG-XL software. Catalogued and presented data (including timeline of IC failures) for review by colleagues.

1/2012 – 2/2012 **Space Systems Lab, Massachusetts Institute of Technology**, *Undergraduate Researcher*, Cambridge, MA.

- Collaborated as structures subteam member on Trapped Energetic Radiation Satellite (TERSat) project for investigation of possible reduction of Van Allen radiation damage of satellites.
- Designed and executed CAD model and drawings of avionics box in SolidWorks.

7/2011 – 8/2011 **Plasma Dynamics Lab, University of Texas at Austin**, *Research Assistant*, Austin, TX.

- Tested relative channel detection capabilities of multichannel HgCdTe detector using LabVIEW for data acquisition. (Detector used in testing of piezoelectric sensors for mapping of ocean floor.)
- Analyzed and plotted data in Mathematica.

6/2010 – 8/2010 **Center for Nonlinear Dynamics, University of Texas at Austin**, *Research Assistant*, Austin, TX.

- Researched LiF crystal surface roughness using atomic force microscopy and laser diffraction apparatus.
- Etched, machined, and soldered circuit boards for use in thermocouples.
- Configured circuitry's IO interface using Arduino and LabVIEW software.

OUTREACH / LEADERSHIP

6/2022 – 8/2022 **Army Educational Outreach Program (AEOP)**, *Mentor*, University of Pennsylvania.

- Mentored two high school students from underserved populations through summer research project on implementing ultrasound sensing on rehabilitation robot platform, including hardware attachment design and real-time image processing.

9/2017 – 8/2021 **EECS Peers**, *Peer Advisor*, University of California, Berkeley.

- Served as a resource to fellow graduate students to discuss stress, work-life balance, and other academic and personal challenges of graduate school.
- Held office hours to facilitate low-barrier communication.

9/2017 – 5/2021 **BAIR Undergraduate Mentoring Program**, *Mentor*, University of California, Berkeley.

- Served as mentor to help increase research participation (in AI/robotics) of students from traditionally underrepresented groups by providing guidance in course selection, academic studies, independent preparation, career choices, and general advice.
- Met one-on-one with undergraduate mentees to provide targeted advice.

7/2020 **Awesome Girls: Family STEM Series**, *Webinar Co-Presenter*, Girl Scouts of Northern California.

- Aided in development and presentation of live interactive webinar on the engineering design process for >120 middle-school girls and their families during COVID-19.

9/2019 – 12/2019 **LAGSES Fellowship Mentoring Program**, *Mentor*, University of California, Berkeley.

9/2017 – 10/2017

- Mentored undergraduate and first-year graduate students applying for NSF Graduate Research Fellowship Program (GRFP).
- Aided in several iterations of major essay revisions and offered general advice to applicants.
- Two mentees subsequently received NSF GRFP award.

8/2018 – 8/2019 **EECS Graduate Student Association**, *Visit Days Co-Chair*, University of California, Berkeley.

- Coordinated logistics for EECS admitted graduate student weekend, including attendee housing, transit, and activities.
- Organized 75+ graduate student volunteers facilitating two full days of events for 150+ prospective student attendees.

7/2019 **UC Berkeley Girls in Engineering (GiE)**, *Module Instructor*, University of California, Berkeley.

- Lectured on bio-inspired robotic design to middle-school camp attendees.
- Facilitated construction of piezoelectric "origami" robots.

8/2018 **UC Berkeley AI4ALL**, *Camp Mentor*, University of California, Berkeley.

- Advised team of three high school students in weeklong imitation learning project in MuJoCo, including mathematical foundations, coding, and final project presentation.
- Provided advice on entering the artificial intelligence field regardless of K–12 academic background.

5/2017 – 5/2018 **Women in Computer Science and Engineering (WICSE)**, *Outreach Chair*, University of California, Berkeley.

- Organized and led interactive seminars for undergraduate students on how to acquire research positions and approach them effectively, as well as how to build a successful graduate school application.
- Organized and led Girl Scout Engineering Fun Day, a full-day STEM outreach event attended by ~100 elementary- and middle-school students, including technical activities, lab tours, and instructional panels.

2/2017 – 2/2018 **Next Scholars**, *Mentor*, New York Academy of Sciences.

- Served as remote mentor to undergraduate student in computer science via online learning platform and regular Skype meetings.
- Facilitated completion of mentee's program coursework (including modules on leadership, communication, critical thinking, and career preparation) and offered general academic advice.

11/2016 – 12/2016 **Linear System Theory Tutoring Program**, *Tutor*, University of California, Berkeley.

- Provided one-on-one guidance to student of UCB EE 221A Linear System Theory course.

9/2012 – 6/2015 **MIT Educational Studies Program (ESP)**, *Special Programs Instructor*, Massachusetts Institute of Technology.

- Developed and taught classes to middle and high school students for *Splash!* and *Spark!* weekend programs.
- Topics included computational origami, swing dancing, and "Extemporaneous Five-Minute Classes on Absolutely Anything."

5/2012 – 6/2015 **OrigaMIT**, *Office Manager / Instructor*, Massachusetts Institute of Technology.

- Taught design and execution of origami models from both algorithmic and artistic perspectives.
- Aided in organization of seminars and outreach events.

5/2012 – 6/2015 **American Jiu-Jitsu @ MIT**, *President / Recruitment Chair*, Massachusetts Institute of Technology.

- Handled AJJ club logistics, including scheduling, recruitment, publicity, and events.
- Organized and participated in self-defense seminars for prospective students and members of the MIT community.

LANGUAGES

technical Python, C/C++, MATLAB, Linux / bash, Robot Operating System (ROS)

spoken English (native), Spanish (proficient)

ADDITIONAL CERTIFICATIONS

9/14/2020 **Adult, Child and Baby First Aid/CPR/AED Certified**, American Red Cross, *Valid through 9/14/2022*.

11/28/2020 **1st Dan / Black Belt**, Yongmudo Hapkido.

Last updated January 11, 2023.