

Hannah Stuart PhD
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EDUCATION

Doctor of Philosophy , Mechanical Engineering Biomimetics and Dexterous Manipulation Lab	Stanford University 2013- 2018
Master of Science , Mechanical Engineering Depth Areas: Smart Product Design, Dynamics	Stanford University 2011-2013
Bachelor of Science , Mechanical Engineering Summa Cum Laude	George Washington University 2007-2011

APPOINTMENTS

Assistant Professor, University of California at Berkeley *January 2018-present*
Department of Mechanical Engineering, College of Engineering
Principal Investigator: Embodied Dexterity Group (EDG), edg.berkeley.edu
Member: Jacobs Institute for Design Innovation Faculty Director's Council, Berkeley Artificial Intelligence Research Center (BAIR), Center for Interdisciplinary Bio-Inspiration in Education and Research (CiBER), CITRIS and the Banatao Institute, Fire Research Group at Berkeley.

AWARDS

NASA Space Technology Research Fellowship Grant # 80NSSC19K1166; Monica Li	2019-2023
UC CITRIS Seed Grant # 69085; collaboration with UC Davis	2019-2020
Gerald J. Lieberman Fellowship Award, Stanford	2016-2017
National Science Foundation Research Fellowship Program Award	2012-2016
Stanford Graduate Fellowship Program Award	2011-2016
NASA Microgravity University, Reduced Gravity Student Flight Opportunity	Summer 2011
NSF International Research Experience for Students, Beijing Jiaotong University	Summer 2010

JOURNAL PUBLICATIONS

Wang, S., Jiang, H., Huh, T.M., Sun, D., Ruotolo, W., Miller, M., Roderick, W.R.T., **Stuart, H.S.**, Cutkosky, M.R. (2019) "SpinyHand: Contact Load Sharing for a Human-Scale Climbing Robot." ASME Journal of Mechanisms and Robotics, 11(3):031009.

Stuart, H.S., Wang, S., Cutkosky, M.R. (2018) "Tunable Contact Conditions and Grasp Hydrodynamics using Gentle Fingertip Suction." IEEE Transactions on Robotics, 36(2):150-166.

Stuart, H., Wang, S., Khatib, O., Cutkosky, M.R. (2017). "The Ocean One hands: An adaptive design for robust marine manipulation." The International Journal of Robotics Research, 36(2):150-166.

Khatib, O., Yeh, X., Brantner, G., Soe, B., Kim, B., Ganguly, S., **Stuart, H.**, Wang, S., Cutkosky, M., Edsinger, A., Mullins, P., Barham, M., Voolstra, C., Salama, K., L'Hour, M., Creuze, V. (2016). "Ocean One: A Robotic Avatar for Oceanic Discovery." Robotics & Automation Magazine, 23(4):20-29. *Featured on cover of magazine.*

Aukes, D. M., Heyneman, B., Ulmen, J., **Stuart, H.**, Cutkosky, M. R., Kim, S., Garcia, P., Edsinger, A. (2014). "Design and testing of a selectively compliant underactuated hand." The International Journal of Robotics Research, 33(5):721-735.

REFEREED PROCEEDINGS

- Li, M.S., Van der Zande, R., Hernandez-Agreda, A., Bongaerts, P., and **Stuart, H.S.** “Gripper design with rotational-constrained teeth for mobile manipulation of hard, plating corals with human-portable ROVs.” 2019 IEEE-MTS OCEANS Conference Proceedings.
- Kaneishi, D., Matthew, R.P., Leu, J.E., O’Donnell, J., Tomisuka, M., **Stuart, H.S.** “Hybrid Control Interface for a Semi-soft Assistive Glove for people with Spinal Cord Injuries.” 2019 IEEE International Conference on Rehabilitation Robotics (ICORR).
- Stuart, H. S.**, Bagheri, M., Wang, S., Barnard, H., Sheng, A. L., Jenkins, M., Cutkosky, M. R. “Suction Helps in a Pinch: Improving Underwater Manipulation with Gentle Suction Flow.” 2015 IEEE/RSJ International Conference on Intelligent Robots and Systems Proceedings (IROS).
- Stuart, H. S.**, Wang, S., Gardineer, B. G., Christensen, D. L., Aukes, D. M., & Cutkosky, M. “A compliant underactuated hand with suction flow for underwater mobile manipulation.” 2014 IEEE International Conference on Robotics and Automation Proceedings (ICRA).
- Stuart, H.**, Inman, K., & Wang, X. (2013). “Initial Development of a Method for Optical Measurement of Water Droplet Formation in the Cathode Flow Channel of a PEM Fuel Cell.” 2013 ASME International Conference on Fuel Cell Science, Engineering and Technology.
- Dastoor, S., Weiss, S., **Stuart, H.**, Cutkosky, M. (2012). “Jumping Robot with a Tunable Suspension Based on Artificial Muscles.” Biomimetic and Biohybrid Systems: Lecture Notes in Computer Science, 7375:95-106.

BOOKS & CHAPTERS

- Stuart, H.** (2018). Robotic hand design for remote ocean exploration: active selection of compliance and contact conditions. Stanford University Library, Doctoral Thesis.

NON-REFEREED PUBLICATION

- Stuart, H.**, Karplus, P., Beg, H. (2012). “Haptic Classification and Faulty Sensor Compensation for a Robotic Hand.” Technical Report.

NOTABLE PRESENTATIONS

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| <i>Workshop presenter</i> – International Conference on Intelligent Robots and Systems, Macau | <i>Nov 2019</i> |
| <i>Workshop presenter</i> – IEEE-RAS International Conference on Humanoid Robots, Toronto | <i>Oct 2019</i> |
| <i>Podium presenter</i> – IEEE OCEANS Conference, Marseilles | <i>June 2019</i> |
| <i>Lecture series</i> – Technological University of Hamburg-Harburg | <i>June 2019</i> |
| <i>Seminar</i> – Monterey Bay Aquarium Research Institute, Moss Landing | <i>Mar 2019</i> |
| <i>Seminar</i> – Chevron, Richmond | <i>Mar 2019</i> |
| <i>Panelist</i> – Brilliance of Berkeley, Santa Monica | <i>Mar 2019</i> |
| <i>Podium presenter</i> – Bay Area Robotics Symposium, Stanford | <i>Nov 2018</i> |
| <i>Workshop presenter</i> – International Conference on Intelligent Robots and Systems, Madrid | <i>Oct 2018</i> |
| <i>Seminar</i> – NASA Jet Propulsion Lab, Pasadena | <i>Jun 2018</i> |
| <i>Podium presenter</i> – Bay Area Robotics Symposium, Berkeley | <i>Nov 2017</i> |
| <i>Seminar</i> – CITRIS Design of Robotics and Embedded Systems lecture series, Berkeley | <i>Oct 2017</i> |
| <i>Seminar</i> – University of Washington, Seattle | <i>Apr 2017</i> |
| <i>Seminar</i> – University of Colorado, Boulder | <i>Apr 2017</i> |

<i>Seminar</i> – University of California, Berkeley	<i>Mar 2017</i>
<i>Podium presenter</i> – International Conference on Intelligent Robots and Systems, Hamburg	<i>Sep 2015</i>
<i>Podium presenter</i> – International Conference on Robotics and Automation, Hong Kong	<i>Jun 2014</i>

TEACHING

Instructor, UC Berkeley

ME 179/270: Augmenting Human Dexterity	<i>Spring 2020</i>
ME 102B: Mechatronic Design	<i>Fall 2019</i>
ME 193C/292C & DES INV 190E-2: Upper-Limb Prosthesis Design	<i>Fall 2018</i>
ENGR 25: Visualization for Design	<i>Spring 2018</i>

EDG Student Researchers

Graduate:

Michael Abbott, UC Berkeley, Graduate Research (NSF GRFP 2019)	<i>Fall 2018-present</i>
Monica Li, UC Berkeley, Graduate Research (NSTRF 2019)	<i>Summer 2018-present</i>
Laura Treers, UC Berkeley, Graduate Research (NDSEG 2019)	<i>Fall 2018-present</i>

Undergraduate:

A total of 16 undergraduate researchers have conducted at least 1+ full semester of research in EDG. Notable undergraduate student research fellowship awards:

Ethan Chung, UC Berkeley (Rose Hills Summer Fellow 2019)	<i>Summer 2019</i>
Daniel Santos, UC Berkeley (NSF LSAMP, Cal NERDS 2019)	<i>Summer 2019</i>
Philippe Nadeau, ETS, University of Quebec (NSERC Scholarship 2019)	<i>Summer 2019</i>

SYNERGISTIC ACTIVITIES

Service to scientific community

- **Associate/Guest Editor:** *Frontiers in Robotics and AI* topic “Hands in the Real-World: Connecting End-Effector, Design, Sensitivity, and Behavior.” The International Conference on Robotics and Automation (ICRA) 2020 editorial board.
- **Organization of international workshops** at the *2018 International Conference on Intelligent Robots and Systems* in Madrid, Spain (Hands in the Real World). Upcoming: *2019 International Conference on Intelligent Robots and Systems* in Macau, China (Automation in Construction & Marine Bio-inspired Soft Robots).
- **Reviewer** for *Science Robotics*, *IEEE Transactions on Robotics (TRO)*, *IEEE International Conference on Robotics and Automation (ICRA)*, *IEEE International Conference on Intelligent Robots and Systems (IROS)*, *Sage International Journal of Robotics Research (IJRR)*, *IEEE Robotics and Automation Magazine (RAM)*, *ASME Journal of Mechanisms and Robotics (JMR)*
- **Membership:** Institute of Electrical and Electronics Engineers (IEEE) Robotics and Automation Society and Ocean Engineering Society, American Society of Mechanical Engineers (ASME), Tau Beta Pi Engineering Honor Society
- **Advisory board member:** Department of Mechanical and Aerospace Engineering at the George Washington University (2018-present).

Broadening participation in engineering education.

- **School-age activities in the Bay Area:**
 - Educational module development for Berkeley Girls in Engineering summer camp 2020.
 - Rosemary Elementary School (Title 1) interactive demo of the Ocean One hand for five 3rd grade classes, 120 students, March 2016.

- **Undergraduate student activities:**
 - College of Engineering Robotics Faculty Council, Chair of Undergraduate Clubs and Initial Research Experiences, Berkeley 2018.
 - Faculty advisor/mentor for EnableTech, a student DeCal to create assistive technologies.
 - Berkeley Society of Women Engineers and Tau Beta Pi invited guest/speaker: Jan 2018, Apr 2018, Apr 2019
- **Graduate student activities:**
 - Stanford Mechanical Engineering Graduate Women's Group president 2013-2014.

Community outreach

- **Exhibits for public interaction:**
 - California Academy of Science Nightlife booth, San Francisco, June 2019.
 - Humanoid robot for marine archaeology displayed in Marseille, France, 2016.
 - Bio-X Science Day lab booth poster presentation, June 2016.
- **Active Social Media presence:** Youtube channel "Embodied Dexterity Group", Facebook @EDG.UCB, Instagram @edg_ucb, Twitter @EDG_UCB