

AVA CHEN

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EDUCATION

| | |
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| Columbia University <i>Ph.D in Mechanical Engineering</i> Advisor: Matei Ciocarlie | 2019 – present New York, NY |
| Columbia University <i>M.S. in Mechanical Engineering</i> | 2019 – 2021 New York, NY |
| Massachusetts Institute of Technology (MIT) <i>B.S. in Mechanical Engineering</i> Thesis: “Effectiveness of Active Cooling on Torque Performance for Prosthetic Applications” | 2013 – 2017 Cambridge, MA |

HONORS

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| Columbia University Presidential Fellowship | 2019 – 2023 |
| Rising Stars in Mechanical Engineering Workshop | 2022 |
| Honorable Mention, MIT MechE deFlores Design Competition | 2016 |
| Research Science Institute (RSI) | 2012 |

PUBLICATIONS

Peer-Reviewed Journal Articles

- [J.2] **A. Chen**, L. Winterbottom, S. Park, J. Xu, D.M. Nilsen, J. Stein, and M. Ciocarlie. “Thumb Stabilization and Assistance in a Robotic Hand Orthosis for Post-Stroke Hemiparesis.” *IEEE Robotics and Automation Letters*, vol. 7, no. 3, pp. 8276-8282 (2022)
- Presented in *Biomedical Robotics and Biomechatronics (BioRob)*, 2022 *IEEE RAS/EMBS Intl. Conference on*. **Finalist, BioRob2022 Best Paper Award**
- [J.1] **A. Chen**, K. Kim, and P.S. Shamble. “Rapid mid-jump production of high-performance silk by jumping spiders.” *Current Biology*, 31, R1422-R1423 (2021)

Peer-Reviewed Conference Papers

- [C.3] **A. Chen**, L. Winterbottom, K. O’Reilly, S. Park, D.M. Nilsen, J. Stein, and M. Ciocarlie. “Design of Spiral-Cable Forearm Exoskeleton to Provide Supination Adjustment for Hemiparetic Stroke Subjects.” In *Rehabilitation Robotics (ICORR)*, 2022 *IEEE Intl. Conference on*. IEEE. (2022)
- [C.2] J. Xu, C. Meeker, **A. Chen**, L. Winterbottom, M. Fraser, S. Park, L.M. Weber, M. Miya, D.M. Nilsen, J. Stein, and M. Ciocarlie. “Semi-Supervised Intent Inferral to Control a Powered Hand Orthosis for Stroke.” In *Robotics and Automation (ICRA)*, *IEEE Intl. Conference on*. IEEE. (2022)
- [C.1] T. Cervantes, W.E. Byun*, **A. Chen***, K. Kim*, K. Nealon*, J. Connor, and A. Slocum. “A Device for Quantitative Analysis of the Thumb Ulnar Collateral Ligament.” *Frontiers in Biomedical Devices*, 2018 *Design of Medical Devices*. ASME. (2018)

Submitted for Publication

- [S.1] L. Winterbottom*, **A. Chen***, R. Mendonca, D.M. Nilsen, M. Ciocarlie, and J. Stein. “Practitioner Perspectives on Rehabilitative and Assistive Utility of a Novel Robotic Orthosis for Hemiparesis Post-Stroke.” (2022)

Patents

- [P.1] M. Ciocarlie, J. Stein, **A. Chen**, S. Park, and D.M. Nilsen. “Robotic Hand Orthosis For Stroke”, Application #: US 63/249,456

Workshop Contributions

- [W.1] **A. Chen***, J. Xu*, and M. Ciocarlie. “MyHand: a Wearable Hand Orthosis for Stroke.” Workshop presentation in *Intelligent Robots and Systems (IROS)*, 2021 *Intl. Conference on*. *Challenges and Opportunities of Human-Robot Symbiosis: from Wearable Robots to Neurorobotics*. (2021)

[* indicates equal contribution]

DEPARTMENTAL & COLLOQUIA TALKS

“How jumping spiders use silk to orient themselves in midair.” Bauer Forum. Harvard, Cambridge MA. Oct 2018
“How Jumping Spiders Jump.” CEE 35th Anniversary Celebration. Broad Institute, Cambridge MA. Oct 2018

TEACHING EXPERIENCE

Academic

Teaching Assistant, Columbia MECE E4602 – Introduction to Robotics 2020
Lab Assistant, Harvard LS50 – Integrated Science 2018 – 2019

Extracurricular

Mentor, Columbia University Engineering the Next Generation (ENG) 2022
Mentor and Teaching Assistant, Research Science Institute (RSI at MIT) 2014
Teaching Assistant, Bellarmine University Summer Youth Camps 2012 – 2013

SERVICE

External Paper Reviewer

IEEE Intl. Conference on Robot and Human Interactive Communication (RO-MAN) 2022
IEEE Robotics and Automation Letters (RA-L) 2021, 2022
IEEE Intl. Conference on Rehabilitation Robotics (ICORR) 2022
IEEE RAS/EMBS Intl. Conference on Biomedical Robotics & Biomechatronics (BioRob) 2022
IEEE Intl. Conference on Robotics and Automation (ICRA) 2021
IEEE Transactions on Neural Systems and Rehabilitation Engineering (TNSRE) 2020

University Service

Volunteer, Robotics: Society and Systems Conference (RSS) 2022
Invited Panelist, WISC STEM Field Exploration Fair, Columbia University —“Behind the Lab Scenes” 2022

Extracurricular

Question Reviewer, U.S. DOE National Science Bowl 2022
Judge, Kentucky Science and Engineering Fair 2021
Mentor, Women in Science at Columbia (WISC) 2020 – 2021
Judge, MIT Mechanical Engineering Research Exhibition 2020
Volunteer, Adaptive Climbing Group NY 2019
Question Writer, USA Biolympiad (USABO) 2019
Volunteer, RSI at MIT 2015, 2018
Judge, Sweden Research Academy for Young Scientists (RAYS) 2015

Professional Societies: IEEE, ICORR, SWE

RESEARCH STUDENTS SUPERVISED

Masters Students

Preethika Chivukula 2021 – 2022

Undergraduate Students

Alex Deli-Ivanov 2022 – present
Joaquin Palacios 2021 – present
Kat O'Reilly [C.3] 2020 – present
Ciara Little 2020 – 2021
Katelyn G. Mitchell 2020 – 2021
Frederick Horne 2019
Rowen VonPlagenhoef 2019
Eliot Burnes 2018 – 2019
Henry Burnes 2018 – 2019
Lincoln Sorscher 2018

PREVIOUS POSITIONS

Harvard Dept. of Organismic & Evolutionary Biology, Shamble Lab 2017 – 2019
Research Assistant with Dr. Paul Shamble

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| Dephy, Inc. <i>Mechanical Engineering Intern</i> | Summer 2017, Fall 2018 |
| MIT Media Lab, Biomechatronics Group <i>Undergraduate Researcher with Dr. Hugh Herr, Arthur Petron, and Matt Carney</i> | 2013 – 2017 |
| Apple Inc. <i>Product Design Validation Engineer Intern</i> | Summer 2016 |
| Formlabs <i>Mechanical Engineering Intern</i> | Summer 2015 |
| Brain Power, LLC <i>Hardware Intern</i> | Winter 2015 |
| Cardiovascular Innovation Institute & Christine M. Kleinert Institute <i>Research Intern with Dr. Nolan Boyd and Dr. Christina Kaufman</i> | 2012 – 2013 |

SIDE PROJECTS

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| Untethered Gait Tracking for Rehabilitation Collaboration with FIGUR8, Inc. to use their wearables platform for monitoring gait trends during self recovery & long-term effects of rehabilitation post knee-reconstruction surgery. | 2018 – 2019 |
| MIT East Campus Roller Coaster Formed and led team of students to complete \$15,000 construction project in 8 days. Unofficial Guinness World Record holder for Steepest Wooden Roller Coaster. | 2015 |

More documentation on side projects at <https://www.avamakesthings.com>