AVA CHEN

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EDUCATION

Columbia University — **2019 – present**
Ph.D in Mechanical Engineering — *New York, NY*
Advisor: Matei Ciocarlie

Columbia University — **2019 – 2021**
M.S. in Mechanical Engineering — *New York, NY*

Massachusetts Institute of Technology (MIT) — **2013 – 2017**
B.S. in Mechanical Engineering — *Cambridge, MA*
Thesis: "Effectiveness of Active Cooling on Torque Performance for Prosthetic Applications"

HONORS

Columbia University Presidential Fellowship — **2019 – 2023**

PUBLICATIONS

Peer-Reviewed Journal Articles

[J.1] **Chen, A.**, Kim, K., & Shamble, P.S. "Rapid mid-jump production of high-performance silk by jumping spiders". *Current Biology* (2021). In Press.

Peer-Reviewed Conference Papers

[C.4] **Chen, A.**, Winterbottom, L., Park, S., Xu, J., Nilsen, D.M., Stein, J., & Ciocarlie, M. "Thumb Assistance Via Active and Passive Exotendons in a Robotic Hand Orthosis for Stroke." Submitted to *Robotics and Automation (ICRA), 2022 IEEE Intl. Conference on.* IEEE. (2022).

[C.3] **Chen, A.**, Winterbottom, L., O'Reilly, K., Park, S., Nilsen, D.M., Stein, J., & Ciocarlie, M. "Design of Spiral-Cable Forearm Exoskeleton to Provide Supination Adjustment for Hemiparetic Stroke Subjects." Submitted to *Robotics and Automation (ICRA), 2022 IEEE Intl. Conference on.* IEEE. (2022).

[C.2] Xu, J., Meeker, C., **Chen, A.**, Winterbottom, L., Fraser, M., Park, S., Weber, L.M., Miya, M., Nilsen, D.M., Stein, J., & Ciocarlie, M. "Semi-Supervised Intent Inferral to Control a Powered Hand Orthosis for Stroke." Submitted to *Robotics and Automation (ICRA), 2022 IEEE Intl. Conference on.* IEEE. (2022).

[C.1] Cervantes, T., Byun, W.E., **Chen, A.**, Kim, K., Nealon, K., Connor, J., & Slocum, A. "A Device for Quantitative Analysis of the Thumb Ulnar Collateral Ligament". ASME. Frontiers in Biomedical Devices, *2018 Design of Medical Devices Conference.* (2018).

Patents

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

Workshop Contributions

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

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 **Fall 2020**
Lab Assistant, Harvard LS50 – Integrated Science **Springs 2018 – 2019**

Extracurricular

Mentor, Women in Science at Columbia (WISC) **2020 – 2021**
Mentor and Teaching Assistant, Research Science Institute (RSI at MIT) **Summer 2014**
Teaching Assistant, Bellarmine University Summer Youth Camps **Summers 2012 – 2013**

SERVICE

External Paper Reviewer

IEEE Robotics and Automation Letters (RA-L) **2021**
IEEE International Conference on Robotics and Automation (ICRA) **2021**
IEEE Transactions on Neural Systems and Rehabilitation Engineering (TNSRE) **2020**

Extracurricular

Judge, MIT Mechanical Engineering Research Exhibition **2020**
Volunteer, Adaptive Climbing Group NY **2019**
Question Writer, USA Biolympiad (USABO) **2019**
Judge, Sweden Research Academy for Young Scientists (RAYS) **Summer 2015**

Professional Societies: SWE; IEEE

RESEARCH STUDENTS SUPERVISED

Masters Students

Preethika Chivukula **2021 – present**

Undergraduate Students (Columbia)

Joaquin Palacios **2021 – present**
Katherine O'Reilly [C.3] **2020 – present**
Ciara Little **2020 – 2021**
Katelyn G. Mitchell **2020 – 2021**

Undergraduate Students (Harvard)

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

Dephy, Inc. **Summer 2017, Fall 2018**
Mechanical Engineering Intern

MIT Media Lab, Biomechatronics Group **2013 – 2017**
Undergraduate Researcher with Dr. Hugh Herr, Arthur Petron, & Matt Carney

Apple Inc. **Summer 2016**
Product Design Validation Engineer Intern

Formlabs **Summer 2015**
Mechanical Engineering Intern

Brain Power, LLC **Winter 2015**
Hardware Intern

Cardiovascular Innovation Institute & Christine M. Kleinert Institute **2012 – 2013**
Research Intern with Dr. Nolan Boyd & Dr. Christina Kaufman

Research Science Institute (RSI) at MIT **Summer 2012**
Research Intern with Arthur Petron

SIDE PROJECTS

Untethered Gait Tracking for Rehabilitation **2018 – 2019**
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.

MIT East Campus Roller Coaster **2015**
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.