# 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"*

## 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]

## HONORS

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

## 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 Robotics and Automation (ICRA) **2021, 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 Robot and Human Interactive Communication (RO-MAN) **2022**
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**
Carolyn David **2022 – present**
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*

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

**MIT Media Lab, Biomechatronics Group** **2013 – 2017**
*Undergraduate Researcher with Dr. Hugh Herr, Arthur Petron, and 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 and Dr. Christina Kaufman*

## 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.

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