

# AVA CHEN

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## EDUCATION

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<b>Columbia University</b> <i>Ph.D in Mechanical Engineering</i> <i>Advisor: Matei Ciocarlie</i>	<b>2019 – present</b> <i>New York, NY</i>
<b>Columbia University</b> <i>M.S. in Mechanical Engineering</i>	<b>2019 – 2021</b> <i>New York, NY</i>
<b>Massachusetts Institute of Technology (MIT)</b> <i>B.S. in Mechanical Engineering</i>	<b>2013 – 2017</b> <i>Cambridge, MA</i>

## HONORS

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<b>Columbia University Presidential Fellowship</b>	<b>2019 – 2023</b>
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## PUBLICATIONS

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### Peer-Reviewed Journal Articles

- [J.3] 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.” Under review, *Topics in Stroke Rehabilitation*.
- [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.” Under review, *IEEE Robotics and Automation Letters*.
- [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 *IEEE Intl. Conference on Rehabilitation Robotics (ICORR)*, 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 *IEEE Intl. Conference on Robotics and Automation (ICRA)*, 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.” In *ASME Design of Medical Devices Conference*, 2018

### 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.” Presentation in 2021 International Conference on Intelligent Robots and Systems (IROS) workshop: *Challenges and Opportunities of Human-Robot Symbiosis: from Wearable Robots to Neurorobotics*.

[\* indicates equal contribution]

## DEPARTMENTAL & COLLOQUIA TALKS

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

## TEACHING EXPERIENCE

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### Academic

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

### Extracurricular

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

## SERVICE

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### 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

### Extracurricular

Invited Panelist, WISC STEM Field Exploration Fair, Columbia University — “Behind the Lab Scenes” 2022  
Judge, Kentucky Science and Engineering Fair 2021  
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) 2015

**Professional Societies:** IEEE, ICORR, SWE

## RESEARCH STUDENTS SUPERVISED

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### 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

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**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**  
*Hardware Intern*

**Winter 2015**

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

**2012 – 2013**

## **SIDE PROJECTS**

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### **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/>