

Andrew Schulz

Hu Bioloocomotion Lab

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[http://www.hu.gatech.edu/Schulz/Conservation Course Website](http://www.hu.gatech.edu/Schulz/Conservation%20Course%20Website)

EDUCATION

PhD Candidate - Mechanical Engineering - GPA: 3.9 2018-Present

Georgia Institute of Technology

Thesis advisor: David Hu, Qualifying Exams Passed: Spring 2020

BS Mechanical Engineering and Mathematics - GPA: 3.60 2013-2018

Oklahoma State University

Research Advisor: Paul Fili

EXPERIENCE

Graduate Research Assistant 2018-Present

Georgia Institute of Technology

- Research on kinematic limitations and capabilities of elephant trunks and how their allometry impacts this
- Studying elongation capability of trunk skin as well as how different hairs on elephant skin allow it to understand environment
- Understanding Conservation Issues and using Engineering Solutions with Western Lowland Gorillas, Burmese Pythons, Giant Pandas, and African Bush Elephants

Graduate Research Assistant 2020-Present

Georgia Tech Research Institute

- Teaching and Leading two project based courses HumaniTech and GaTech4Conservation
- Manage and Develop over 15 different projects for 50 students to engage and work on in 6 continents and 12 countries around the world
- Students are working to advance sustainable engineering solutions to public health and wildlife conservation

Graduate Tech Fellow 2020-Present

Georgia Institute of Technology

- Developing new teaching focus on Conservation and Sustainability Education
- Assist with classroom observations and individual consultations with TAs and postdocs
- Develop and Facilitate TA orientation and workshops for new and returning Teaching Assistants

Elephant Husbandry & Research Intern
Zoo Atlanta

2019-Present

- Assist with communicating Zoo Atlanta research with a broader audience
- Assist with Education program of bringing Zoo Atlanta Research into the Classroom for K-12 Science Classes
- Assist elephant keepers with daily elephant upkeep and training's
- Working to improve Zoo Atlanta's education, outreach, and conservation for African Elephants

TEACHING

- Fall 20: **HumaniTech - VIP**
Instructor of Record for 25 undergraduate students and two graduate students working on 8 different projects
- Fall 20: **GaTech4Wildlife - VIP**
Instructor of Record for 20 undergraduate students and two graduate students working on 6 different projects
- Spring 20: **GaTech4Wildlife - VIP**
Instructor of Record for 13 undergraduate students and two graduate students working on 4 different projects
- Fall 19: **HumaniTech - VIP**
Worked as Teaching Assistant for Vertically Integrated Project for 30 students working on 8 different projects
- Fall 19: **GaTech4Wildlife - VIP**
Worked as Teaching Assistant for Vertically Integrated Project for 12 students working on 4 different projects
- Fall 18: **Science Communication Seminar**
Worked as Teaching Assistant for Science Communication Seminar for 20 graduate students

PEER-REVIEWED JOURNAL PAPERS

2. [A. Schulz](#), Jian Ning Wu, and D. Hu, "How elephant trunks lift and wrap", *Journal of Experimental Biology* **TBD**, TBD (Under Review).
1. [A. Schulz](#), Jian Ning Wu, D. Shumate, S. Braccini Slade, S. Rivera, and D. Hu, "Elephants Use Suction to Grab Fragile Items", *Royal Society Interface* **TBD**, TBD (Submitted).

BOOK CHAPTER

- [A. Schulz](#), S. Hooper, "[Proboscidea morphology](#)", *Encyclopedia of Animal Cognition and Behavior* **Springer**, 2020 (Published).

RESEARCH GRANTS [\$50,900 - Awarded, \$962,500 - Pending]

- Zoo Atlanta Research Collaboration Grant, “Construction of Conservation Technology Devices for Zoological Housed Species”, \$1,500 (Grant Writer, Awardee & Co-PI, 4/20-4/22).
- European Hair Research Society Research Collaboration Grant, “African Elephant Sensing Capabilities through Proboscis Vibrissal Hairs”, \$2,500 (Grant Writer & Awardee, 4/19-12/19).
- Smith gall-Watts Grant, “How Elephant Trunks Traverse an Array of Pegs”, \$14,000 (Grant Writer & Awardee, 8/18 - 8/19).
- Georgia Tech Research Institute, “Teaching STEM Majors about Sustainability, Public Health, and Wildlife Conservation”, \$25,000 (Grant Writer - Awarded, 8/20-4/21).
- Army Research Office URAP& HSAP, “Bio-mechanics of Elephant Trunks and Fire Ants”, \$7,500 (Grant Writer - Awardee, 4/20-8/20).
- American Physical Society, “Division of Biological Physics Travel Award”, \$400 (Grant Writer, Awardee, 3/20).
- National Science Foundation BIO - Division of Integrative Organismal Systems, “Bear Biomechanics: Walking, Climbing, and Morphological Insights into Ursidae Family”, \$512,000 (Grant Writer - Submitted, 1/21-3/22).
- Army Research Office Grant, “Material, Mechanics, and Perception in the Elephant Trunk”, \$450,000 (Grant Writer - Pending, 1/20-12/22).

CONFERENCE TALKS

17. Seleb B., Schulz A., Wallace R., Hu D.L., “Early Outcomes of a Wildlife Conservation Course”, *Oral Presentation at Animal Behavior Society*, (Web Conference - July 24, 2020).
16. Schulz A., Plotzyk M., Julia, Boyle C., Hu D.L., Higgins C., “Stretching the Truth...About Elephant Trunks”, *Poster Presentation at Animal Behavior Society*, (Web Conference - June 11, 2020).
15. Seleb B., Schulz A., Hu D.L., “Creating a Conservation Technology Education Course”, *Oral Presentation at ConservTex Conference*, (Web Conference - May 8, 2020).
14. Schulz A., Plotzyk M., Julia, Boyle C., Hu D.L., Higgins C., “African Elephant Sensing Capabilities through Proboscis Vibrissal hairs”, *Poster Presentation at European Hair Research Association Annual Conference - Accepted*, (Sheffield, United Kingdom, June 24, 2020).
13. Schulz A., Hu D.L., “Elephant Husbandry, Research, and Conservation Education”, *Oral Presentation at Next Generation of Elephant Management Conference - Accepted*, (Tampa Bay, FL, May 24, 2020).
12. Schulz A., Lee S., Hu D.L., “The Elephant Trunk: Nature’s Soft Manipulator”, *Poster Presentation at Active Sensing: From Animals to Robots - Accepted*, (Rehovot, Israel, March 24, 2020).

11. Schulz A., Boyle C., Higgins C., Hu D.L., “African Elephant Sensing Capabilities through Skin and Hair”, *Oral presentation at American Physical Society Annual March Meeting - Submitted* , (Denver, CO, March 3, 2020).
10. Schulz A., Rincon C., Hu D.L., “Elephant Trunks Behave like Telescoping Poles”, *Oral Presentation at Society of Integrative and Comparative Biology 2020 National Meeting - Accepted* , (Austin, TX, January 6, 2020).
9. Schulz A., Ayala J., Zhao W., Rong H., Hu D.L., “Panda Cub Climbing for Conservation”, *Oral Presentation at Society of Integrative and Comparative Biology 2020 National Meeting - Accepted* , (Austin, TX, January 4, 2020).
8. Schulz A., Ayala J., Zhao W., Rong H., Hu D.L., “Using Climbing to grade Panda Cubs for Reintroduction”, *Oral Presentation at Annual Conference of Chinese Committee of Giant Panda Breeding Techniques* , (Chengdu, China, November 8th, 2019).
7. Zhao R., Schulz A., Ayala J., Hu D.L., “Climbing Ability of Giant Pandas”, *Society of Integrative and Comparative Biology 2019 Meeting* , (Winston Salem, NC, October 26, 2019).
6. Seleb B., Schulz A., Wallace R., Hu D.L., “Engineering Effective Elephant Encounters”, *Society of Integrative and Comparative Biology 2019 Meeting* , (Winston Salem, NC, October 26th, 2019).
5. Schulz A., Hu D.L., “Mechanics of Elephant Trunk Wrinkles”, *Oral presentation at American Physical Society Annual March Meeting* , (Boston, MA, March 7, 2019).
4. Schulz A., Lee A., Wheeler-Toppen J., “Fantastic Phenomena: How research on the physics and biology of animal motion can drive 3D Lessons”, *Oral presentation at Georgia Science Teachers Association Annual Meeting* , (Columbus, GA, February 15, 2019).
3. Schulz A., Wu J, Hu, D.L., “Elephants wrap their trunks around objects to better distribute forces”, *Oral presentation at Society of Integrative and Comparative Biology 2019 National Meeting* , (Tampa Bay, FL, January 5, 2019).
2. Schulz A., Wu J, Hu, D.L., “How an elephant trunk lifts and wraps”, *American Physical Society Division of Fluid Dynamics National Conference* , (Atlanta, GA, November 19, 2018).
1. Schulz A., Wu J, Hu, D.L., “Elephant Power Lifters”, *Society of Integrative and Comparative Biology 2018 Meeting* , (Clemson, SC, November 10, 2018).

SYNERGISTIC ACTIVITIES

- President of Georgia Tech Mechanical Engineering Graduate Association
- Member of Tech to Teaching Program
- Member of Woodruff School Graduate Research Development Committee
- Zoo Atlanta Docent
- Elephant Managers Association Husbandry Committee Member

AWARDS

- 2018,2019,2020 Georgia Institute of Technology Presidential Fellowship
- 2020 American Physical Society Division of Biological Physics Travel Award

PRESS

3. Susan Milius, “[How pandas use their head as a kind of extra limb for climbing](#)”, *ScienceNews* , (January 28, 2020).
2. Kimberly Hickok, “[Some Pandas Use Their Head to Climb. Others Just ... Can't. And It's So Unbearably Cute.](#)”, *LiveScience* , (January 08, 2020).
1. Kimberly Hickok, “[Elephants' Trunks are Like Super-Strong Gumby Arms](#)”, *LiveScience* , (January 07, 2020).

UNDERGRADUATE STUDENTS

- Yunshu Zhang: **Elephant Soft Robotic Manipulator**
Received Presidents Undergraduate Research Award - Fall 2018, Biomedical Engineering Graduate Student at Cornell
- Rose Zhao: **Ontogenetic Arboreal Locomotion in the Giant Panda**
rSICB Presenter 2019, Georgia Tech PURA Award - Fall 2020
- Sara Singer: **Elephant Trunk Sensing Ability**
Received Presidents Undergraduate Research Award - Fall 2019
- Benjamin Seleb: **Mitigation of Human Elephant Conflict utilizing infra-sound**
Georgia Tech PURA Award - Spring 2018, SICB Presenter 2020, Mechanical Engineering Graduate Student at Georgia Tech
- Lauren Connolly: **Scaling of Climbing Biomechanics**
- Emily Fourney: **Mechanical Properties of Elephant Wrinkles and Folds**
- Madeline Boyle: **Elephant Elongation Limits and Capabilities**
- Ajay Sukhwani: **Elephant Trunk Navigation of Obstacles**
- Sophia Sordilla: **Elephant Skin Histochemistry and Microscopy**
ARO Undergraduate Research Apprenticeship Program (URAP) Recipient
- Alex Ford: **Developing a Portable Bioaerosol Detection Unit**
APS DFD 2020 Presenter, Georgia Tech PURA Award - Fall 2020

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