

Andrew K. Schulz, Ph.D.

Postdoctoral Researcher, Haptic Intelligence Department, Max Planck Institute for Intelligent Systems (MPI-IS)
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RESEARCH SUMMARY

Mechanical engineer building bio-inspired meta-structures with graded stiffness, geometry, and porosity inspired by the physical intelligence of biological systems. I measure the functional gradients behind biological sensing and energy storage and rebuild them as robomaterial models for robotics, healthcare, and assistive technology.

EDUCATION

- 2018-2022 Ph.D. in Mechanical Engineering, Georgia Institute of Technology (Georgia Tech)
Thesis: *Mechanics and Materials of the Elephant Trunk with Applications to Conservation Technology*
Atlanta, Georgia, USA - GPA: 3.94/4.00 Advisor: Dr. David L. Hu
- 2013-2018 B.S. in Mathematics & Mechanical Engineering, Oklahoma State University
Thesis: *Constructing Translation and Scaling Invariant Functions of the Energy of Music Intervals*
Stillwater, Oklahoma, USA - GPA: 3.60/4.00 Advisor: Dr. Paul Fili

APPOINTMENTS

- 2023- Postdoctoral Researcher, Haptic Intelligence Department, Max Planck Institute for Intelligent Systems
- 2023- Associated Postdoc, International Max Planck Research School for Intelligent Systems (IMPRS-IS)
- 2022-2023 Postdoctoral Researcher, Locomotion in Biorobotic and Somatic Systems Group, MPI-IS
- 2022-2023 Biomimicry Launchpad Incubator 2023 Cohort, Biomimicry Institute
- 2020-2022 Graduate Research Assistant, Georgia Tech Research Institute (GTRI)
- 2018-2022 Graduate Research Assistant, Mechanical Engineering, Georgia Institute of Technology

HONORS, AWARDS, AND FELLOWSHIPS

- 2026 [Early Career Highlight Talk](#), GRC for Multiscale Mechanochemistry and Mechanobiology
- 2026 [Honorable Mention Best Poster Award](#), Unconventional Robotics Symposium
- 2025 [Best Poster Award](#), ELLIS Unit Stuttgart Summer Symposium
- 2024-2026 [Alexander von Humboldt Postdoctoral Research Fellowship](#), Alexander von Humboldt Foundation
- 2024 [Lindau Nobel Young Scientist](#) – Physics, Lindau Nobel Laureate Meeting
- 2022 [Rising Star in Engineering](#), Georgia Tech Alumni Magazine
- 2022 [Best Paper Award](#), American Society of Engineering Education, ENVIRON Division
- 2022 [CRIDC Provost Best Graduate Student Research Award](#), Georgia Institute of Technology
- 2021 [Global RCE Network Research Award Winner](#), Georgia State Ministry of the Environment
- 2021 [Class of 1941 CIOS Honor Roll](#), Georgia Institute of Technology
- 2021 [Faculty Recognition of Excellence in Teaching](#), Georgia Institute of Technology
- 2021 [Mentor of the Year – Vertically Integrated Project](#), Georgia Institute of Technology
- 2020 [Collaboration Research Fellowship](#), European Hair Research Society
- 2018-2022 [President's Fellowship](#), Georgia Institute of Technology

PUBLICATIONS

*Italics denote equivalent contribution; *denotes corresponding author(s), [Google Scholar Profile](#)*

Highlighted Publications and Pre-Print:

- S4. **Schulz, A.K.***, Kaufmann, L.V., Smith, L.T., Philip, D.S., David, H., Lazovic Zinnanti, J., Brecht, M., Richter, G., Kuchenbecker, K.J.*, "Functional Gradients Facilitate Tactile Sensing in Elephant Whiskers," [Science](#), 391 (6786), 712–718 (2026). [**Editor's Feature**]
- S3. Yunusa, M.*, **Schulz, A.K.***, Parker, T., Schneider, F., Elibob, K., Predel, M., Dzibelova, J., Rebmann, M., Gorkan, T., van Aken, P.A., Meixner, A.J., Durgen, E., Kotakoski, J., Zhang, D.*, Sitti, M.*, "Nonlinear Optical Response in Layer-Stacked Gallenene with Ferroelectric Polarization," [Advanced Materials](#), e01058 (2025).
- S2. **Schulz, A.K.**, Boyle, M., Boyle, C., Sordilla, S., Rincon, C., Hooper, S., Aubuchon, C., Reidenberg, J.S., Higgins, C., Hu, D.L.*, "Skin Wrinkles and Folds Enable Asymmetric Stretch in the Elephant Trunk," [Proceedings of the National Academy of Sciences \(PNAS\)](#), 119, 31 (2022). [**Cover Image**]
- S1. (Pre-print) **Schulz, A.K.***, Griego, S., Srot, V., Ballardini, G., Gonzalez-Vazquez, N., Sheehan, D., Predel, F., Balda Dayan, C., Philip, D.S., Vrencev, H., Lazovic, J., van Aken, P.A., Richter, G., Kuchenbecker, K.J.*, "Hair is a Functionally Graded Biological Composite, not a Uniform Fiber," [arXiv](#) (2026).

Other Journal Articles:

- P13. Haider, A., Kochi, Y., **Schulz, A.K.***, Aoyama, K., Sada, A., Sato, H., Matsumoto, E.A.*, Kadodwala, M., Matsuo, K., Inoue, K.*, "Correlative Multimodal Framework Reveals Supramolecular Chirality Loss Preceding Fibrillar Rarefaction in Dermal Collagen," [ACS Nano](#), (2026).
- P12. *Nayir, T.Y., Fang, Y., Contreras, C., Schulz, A.K.**, Hartmann, F.*, "Ecosystem-Centered Robot Design: Towards Ecoresorbable Sustainability Robots (ESRs)," [Advanced Science](#), e09194 (2026).
- P11. *Gonzalez-Vazquez, N., Faulkner, R., Gamez, V., Cohen, K.E., Richter, G., Stangl, A.**, **Schulz, A.K.***, "TAMP-OS: An Open-Source Workflow for Tactile 3D-Printable Lithographs," [Integrative and Comparative Biology](#), (2026).
- P10. **Schulz, A.K.***, *Chellapurath, M.**, *Khandelwal, P.**, Rezaei, R., Merker, S., Jusufi, A.*, "Scaly-Tail Organ Enhances Static Stability During Pel's Scaly-Tailed Flying Squirrels' Arboreal Locomotion," [Journal of The Royal Society Interface](#), 22, 227 (2025).
- P9. **Schulz, A.K.**, *Plotczyk, M., Sordilla, S., Boyle, M., Singal, K., Reidenberg, J.S., Hu, D.L.**, Higgins, C.*, "Second Harmonic Generation Imaging Reveals Entanglement of Collagen Fibers in the Elephant Trunk Skin Dermis," [Communications Biology](#), 8, 17 (2025).
- P8. **Schulz, A.K.***, *Shriver, C., Patka, A., Greiner, C., Seleb, B., Watts-Hull, R., Sullivan, C., Wallace, R., Moore, R.**, "Interdisciplinary Growth of Sustainability-Minded Engineers Through Conservation Technology," [Advances in Engineering Education](#), 13, 3 (2025).
- P7. **Schulz, A.K.**, *Reveyaz, N., Kaufmann, L., Hildebrandt, T., Brecht, M.**, "Elephants Develop Wrinkles Through Both Form & Function," [Royal Society Open Science](#), 11, 240851 (2024).
- P6. *Zhang, M., Jadali, N., Schulz, A.K.**, Meyerchick, J., Hu, D.L.*, "ForageFeeder: A Low-Cost Open-Source Feeder for Randomly Distributing Food," [HardwareX](#), e00405, 14 (2023).
- P5. **Schulz, A.K.**, *Wu, J.N., Tang, C.Y., Seleb, B., Reidenberg, J.S., Elgart, N., Hu, D.L.**, "Elephants Have an Adaptable Prehensile Grip," [Bioinspiration and Biomimetics](#), 18, 026008 (2023).
- P4. *Magondu, B., Lee, A.B., Schulz, A.K., Yang, P., Buchelli, G., Meng, M., Kaminski, C., Carver, S., Hu, D.L.**, "Drying Dynamics of Pellet Feces," [Soft Matter](#), 19, 723–732 (2023).
- P3. **Schulz, A.K.***, *Shriver, C., Seleb, B., Stathatos, S., Weigel, E., Chang, Y., Bhamla, S., Hu, D., Mendelson, J.,* "Conservation Tools: The Next Generation of Engineering–Biology Collaborations," [Journal of The Royal Society Interface](#), 20, 205 (2023).
- P2. *Mohebbi, N., Schulz, A.K.*, *Spencer, T., Pos, K., Mandel, A., Casas, J., Hu, D.L.**, "The Scaling of Olfaction: Moths Have Relatively More Olfactory Surface Area Than Mammals," [Integrative and Comparative Biology](#), 62, 1 (2022).
- P1. **Schulz, A.K.**, *Wu, J.N.*, *Shumate, D., Slade, S.B., Rivera, S., Hu, D.L.**, "Suction Feeding by Elephants," [Journal of The Royal Society Interface](#), 18, 179 (2021).

Invited Perspectives and Commentaries:

- E11. *Shriver, C.**, *Davidson, A., Astley, H.C., Bhamla, S., Yung, K.L., Adams, D.S., Munteanu, V.D., Blob, R.W., Hammer, C., Taylor, S., Chang, Y., Hu, D.L., Kolar, M., Wiech, S., Mendelson III, J.R., Schulz, A.K.**, "Bridging Science Across Species: A Biomechanics Outreach Event at the Zoo," [Integrative Organismal Biology](#), (2026).
- E10. *Fitzwater, B.M.**, *Bressman, N.R., Brothers, C.A., Chen, Y., Cronin, T.J., DesJardins, N.S., Huč, S., Galvez, J.R., Gillespie, C.S., Kaelin, C., Knutie, S.A., Marquardt, J., Martínez-Miras, R., Müller, U.K., Schulz, A.K., Shanafelt, B., Sowa, S.L., Spear, C.O., Steele, A., Thompson, R., Tissot, A.G., Wyatt, M.R., Lepore, T.,* "Neurodivergent Perceptions, Experiences, and Perspectives in Academic Biological Sciences Spaces," [Integrative and Comparative Biology](#), (2026). **[Cover Image]**
- E9. **Schulz, A.K.***, *Gouge, A., Madliger, C.**, "Expanding Conservation Science Through Emerging Interdisciplinary Fields," [Integrative and Comparative Biology](#) (2026).
- E8. *Donatelli, C.M., Vanderberg, M., Martinez, L., Schulz, A.K., Paig-Tran, M., Cohen, K.E.**, "The Bioinspiration Feedback Loop: An Interdisciplinary Exchange of Processes and Progress Between Biologists and Engineers," [Integrative and Comparative Biology](#), 65, 6 (2025).

- E7. **Schulz, A.K.***, "Innovative Techniques to Investigate Comparative Biomaterials Across Disciplines and Length Scales," [*Integrative and Comparative Biology*](#), 65, 6 (2025).
- E6. Cohen, K.E.* , Donatelli, C.M., **Schulz, A.K.**, Teeple, J.B., Stankowich, T., Paig-Tran, M.* , "Biological Armors – Evolution, Materials, and Bioinspiration," [*Integrative and Comparative Biology*](#), 65, 6 (2025).
- E5. **Schulz, A.K.***, *Schwaner, M.J.**, *Manafzadeh, A.R.**, "Five Key Strategies for Organizing Interdisciplinary Scientific Events to Strengthen Careers, Collaborations, and Creativity," [*Integrative and Comparative Biology*](#) 64, 3 (2024).
- E4. **Schulz, A.K.***, "Being Neurodivergent in Academia: Autistic and Abroad," [*eLife*](#), 13: e97640 (2024).
- E3. Chellapurath, M.* , Khandelwal, P., **Schulz, A.K.**, "Bioinspired Robots Can Foster Nature Conservation," [*Frontiers in Robotics and AI*](#), 10, 1–10 (2023).
- E2. **Schulz, A.K.***, *Zhang, M.*, *Schneider, N.*, *Singal, K.*, "A Year at the Forefront of Hydrostatic Motion," [*Biology Open*](#), 12, 8 (2023). **[Cover Image]**
- E1. **Schulz, A.K.**, *Shriver, C.*, *Aubuchon, C.*, *Weigel, E.*, *Kolar, M.*, *Mendelson III, J.R.*, *Hu, D.L.**, "A Guide Towards Successful Research Collaborations Between Zoos and Universities," [*Integrative and Comparative Biology*](#), 62, 5 (2022).

Peer-Reviewed Conference Papers

- C5. **Schulz, A.K.***, *Ahmad, A.G.*, *Tucker, M.**, "Materials Matter: Investigating Functional Advantages of Bio-Inspired Materials via Simulated Robotic Hopping," [*Proceedings of the IEEE International Conference on Robotics and Automation \(ICRA\)*](#), pp. 13391-13398, (2025).
- C4. **Schulz, A.K.***, *Anderson, C.D.*, *Cooper, C.*, *Roberts, D.*, *Loyo, J.*, *Rolf, J.*, *Lewis, K.*, *Granda, N.*, *Kumar, S.N.*, "A Toolkit for Expanding Sustainability Engineering Utilizing Foundations of the Engineering for One Planet Initiative," [*Proceedings of the American Society of Engineering Education*](#), Vol. 130, Baltimore, USA (2023).
- C3. **Schulz, A.K.***, *Shriver, C.*, *Stathatos, S.*, *Moore, R.**, "Utilizing Online & Open-Source Machine Learning Tool-Kits to Leverage the Future of Sustainable Engineering," [*Proceedings of the American Society of Engineering Education*](#), Vol. 130, Baltimore, USA (2023).
- C2. **Schulz, A.K.**, *Patka, A.*, *Shriver, C.*, *Seleb, B.*, *Greiner, C.*, *Zhang, M.*, *Jadali, N.*, *Hu, D.L.**, *Moore, R.**, "A Foundational Design Experience in Conservation Technology: A Multi-Disciplinary Approach to Meeting Sustainable Development Goals," [*Proceedings of the American Society of Engineering Education*](#), Vol. 129, Minneapolis, USA (2022). **[Best Paper Award]**
- C1. **Schulz, A.K.**, *Seleb, B.*, *Greiner, C.*, *Shriver, C.*, *Hu, D.L.**, *Moore, R.*, "Toward the UN's Sustainable Development Goals (SDGs): Conservation Technology for Design Teaching & Learning," [*Proceedings of American Society of Engineering Education Southeast Division*](#), Vol. 2022, Charlotte, USA (2022).

Workshop, Work-in-Progress, and Short Papers

- W7. *Mughrabi, M.H.*, **Schulz, A.K.**, *Faulkner, R.*, *Seifi, H.*, *Kuchenbecker, K.J.*, "Enhancing Quadruped Guidance Through a Flexible Physical Link," [*IEEE International Conference on Robotics and Automation \(ICRA\)*](#), Workshop Paper (2 pages), (2026).
- W6. *Fazlollahi, F.*, *Seifi, H.*, *Ballardini, G.*, *Taghizadeh, Z.*, **Schulz, A.K.**, *MacLean, K.E.*, *Kuchenbecker, K.J.*, "Quantifying Haptic Quality: External Measurements Match Expert Assessments of Texture Rendering Across Devices," [*IEEE World Haptics Conference*](#), Work-in-Progress Paper (2 pages), (2025).
- W5. *Simancek, R.*, *Willman, H.*, *Ismail, A.*, *Telepo, E.*, *Matthew, V.*, **Schulz, A.K.***, "Bridging the Green Skills Gap: Engaging Undergraduate Students as Changemakers in Engineering Education," [*Proceedings of the American Society of Engineering Education*](#), Vol. 132, Quebec, Canada (2025).
- W4. **Schulz, A.K.**, *Andrussow, I.*, *Farsijani, F.*, *Faulkner, R.*, *Kuchenbecker, K.J.*, "Bio-Inspired Gradient (BIG) Whiskers: Stiffness Shifting Structures Provide Dynamic Functional Benefits for Contact Sensing," [*IEEE International Conference on Soft Robotics \(RoboSoft\)*](#), Extended Abstract (2 pages), (2025).
- W3. *Matthew, V.**, *Machesky, J.*, *Simancek, R.*, *Willman, H.*, *Ismail, A.*, *Telepo, E.*, **Schulz, A.K.***, "Empowering Change: The Role of Student Changemakers in Advancing Sustainability within Engineering Education," [*Proceedings of the*](#)

- Fazlollahi, F., Seifi, H., Ballardini, G., Taghizadeh, Z., **Schulz, A.K.**, MacLean, K.E., Kuchenbecker, K.J.,
W2. "Quantifying Haptic Quality: External Measurements Match Expert Assessments of Stiffness Rendering Across Devices," [IEEE Haptics Symposium](#), Work-in-Progress Paper (2 pages), (2024).
- Schulz, A.K.**, Fournery, E., Sordilla, S., Sukhwani, A., Hu, D.L., "Elephant Trunk Skin: Nature's Flexible Kevlar,"
W1. [IEEE/RSJ International Conference on Intelligent Robots and Systems \(IROS\)](#), Work-in-Progress Paper (2 pages), (2020).

Selected Presentations and Demonstrations

*total conference abstracts include 26 poster presentations and 53 oral presentations

- Schulz, A.K.***, Kaufmann, L.V., Smith, L.T., Philip, D.S., David, H., Lazovic Zinnanti, J., Brecht, M., Richter, G.,
H5. Kuchenbecker, K.J.*, "Functional Gradients Facilitate Tactile Sensing in Elephant Whiskers," *Unconventional Robotics Symposium* (Delft, Netherlands, September, 2026). [**Honorable Mention – Best Poster Presentation**]
- Schulz, A.K.***, Griego, S., Srot, V., Ballardini, G., Gonzalez-Vazquez, N., Sheehan, D., Predel, F., Balda Dayan, C.,
H4. Philip, D.S., Vrencev, H., Lazovic, J., van Aken, P.A., Richter, G., Kuchenbecker, K.J.*, "Hair is a functional gradient composite, not a uniform fiber," *Gordon Research Conference on Mechanochemistry and Mechanobiology*, (Lewiston, USA, July 2026). [**Selected Oral Presentation**]
- Schulz, A.K.**, Farsijani, F., Philip, D.S., Griego, S., Faulkner, R., Andrussow, I., Kuchenbecker, K.J., "Material
H3. Intelligence of Animal Whiskers," Demonstration and poster presentation at IMPRS-IS Stuttgart Boot Camp (Stuttgart, Germany, September 2025). [**Best Demonstration Winner**]
- Schulz, A.K.**, Andrussow, I., Farsijani, F., Faulkner, R., Kuchenbecker, K.J., "Material Intelligence of Animal
H2. Whiskers," Poster presentation at ELLIS Unit Stuttgart Summer Symposium (Germany, June 2025). [**Best Poster Winner**]
- Schulz, A.K.**, Andrussow, I., Farsijani, F., Kuchenbecker, K.J., "Bio-Inspired Gradient (BIG) Whiskers: Stiffness
H1. Shifting Structures Provide Dynamic Functional Benefits for Contact Sensing," Poster presentation at Robosoft 2025 (Lausanne, Switzerland, April 2025). [**Selected Oral Presentation**]

*A full list of conference abstracts can be shared as supplemental items upon request.

Data Repositories

- D3. Gonzalez-Vazquez, N., Faulkner, R., Gamez, V., Cohen, K.E., Richter, G., Stangl, A., **Schulz, A.K.**, "TAMP-OS: Tactile Accessible Microscopy Printing (Open-Source)," [GitHub](#) (2026).
- D2. Smith, L., **Schulz, A.K.**, "GradientLab: Functionally Graded Whisker Simulations," [GitHub](#) (2025).
- D1. *Rokhmanova, N.*, **Schulz, A.K.**, "Explaining Scientific Findings Through Figures in Publications, Presentations, and Posters," [GitHub](#), 230+ stars (2023).

FUNDED GRANTS

*indicates grants were converted from EUR to USD

Fellowships and Research Grants as Principal Investigator (PI):

2024-2026	Humboldt Postdoctoral Research Award , Alexander von Humboldt Stiftung	\$107,400*
2024	Sustainability in Research Award , Lemelson Foundation	\$9,900*
2020-2021	Department Chair Research Award , Georgia Institute of Technology	\$25,000
2020-2022	Zoo Atlanta Collaborative Research Grant , Zoo Atlanta	\$1,500
2019-2020	Graduate Student Research Award , European Hair Research Society	\$2,500
2018-2019	Smithgall-Watts Research Grant , Georgia Institute of Technology	\$15,000

Research Grants as Co-Investigator or Named Contributor:

2025	Grassroots Project Seed Funding , Max Planck Institute for Intelligent Systems	\$29,600*
2023-2026	Sustainable Development Goals Joint Venture , Swiss National Science Foundation	\$59,200*
2022	Army Undergraduate Research Grant , Army Research Laboratory	\$9,000
2022-2023	Engineering Collaborative Seed Funding , Georgia Institute of Technology	\$25,000
2022	Center for Bioinspired Design (CBID) , National Science Foundation: DRL	\$5,000
2021	Army Undergraduate Research Grant , Army Research Laboratory	\$9,000
2021-2022	Collaborative Research Grant , Georgia Tech Research Institute	\$118,600
2020-2021	Public Health Research Grant , Georgia Tech Research Institute	\$24,400
2020	Army Undergraduate Research Grant , Army Research Laboratory	\$7,000

Travel and Small Awards:

2018-2022 [Competitive travel and conference awards: International Physics of Living Systems; American Physical Society, Division of Biological Physics; Army Research Laboratory; Georgia Institute of Technology \(x4\)](#) \$17,500

INVITED TALKS

Research Seminars: Mechanical Engineering, Robotics, and Materials Science Departments

2026 (*upcoming*) Technical University of Munich, Bio-inspired Materials Seminar Series
2025 University of Washington, Mechanical Engineering Seminar Series (Zhao Group)
2025 University of Michigan, Mechanical Engineering Seminar Series (Shorter and Moore Groups)
2025 Hiroshima University, Knotted Chiral Meta Matter Weekly Seminar (WPI-SKCM Institute)
2025 CNRS Physics Institute Biomimetics and Fluid Structures Seminar (Godoy-Diana Group)
2024 Texas A&M, Bioinspired Design Seminar Series (Layton Lab)
2024 University of Minnesota, Mechanical Engineering Seminar Series
2024 Rice University, Mechanical Engineering Seminar Series
2023 University of Stuttgart, Weekly Biomechanics Seminar Series (Schmidt Lab)
2023 Arizona State University, Engineering for One Planet Network
2023 Max Planck Institute for Intelligent Systems, Department Seminar (Kuchenbecker Department)
2022 Max Planck Institute for Intelligent Systems, LBaSS Group Invited Speaker (Jusuifi Group)

Research Seminars: Biology, Museum, and Interdisciplinary Venues

2026 University of Washington, Friday Harbor Labs Summer School (Summers Lab)
2026 Max Planck Institute for Biological Intelligence, Department Seminar (Baldwin Department)
2025 Technical University of Munich, Environmental Lecture Seminar Series
2025 Max Planck Institute for Biological Intelligence, Invited Seminar to the Institute (Hoffman Group)
2025 CNRS Museum of Natural History Seminar Series (Pouydebat Group)
2024 Rice University, BioSciences Summer Seminar Series (Rummel Lab)
2023 Naturkunde Museum Stuttgart, Invited Scientist Seminar Series (Merker Lab)
2023 The Royal Society, Invited Monthly Seminar Series (Open-Science Week)
2023 City University of Hong Kong, Morphology Faculty Invited Speaker Series (Dean Lab)
2022 Georgia Institute of Technology, Physics of Living Systems Lunch & Learn (Goldman Lab)
2022 Bernstein Center for Computational Neuroscience, Humboldt University (Brecht Lab)
2022 Northeastern Ohio Medical School, Biomechanics Invited Seminar Series (Butcher Lab)
2022 Emory University, Atlanta Neuromechanics Group
2021 Animal Dynamics, Monthly Scientific Series
2021 The Smithsonian Institute, Bio-inspired Design Summer Seminar Series
2021 University of Chicago, Mandible Meeting – Medical School (Ross Lab)
2020 Imperial College London, Department of Bioengineering (Higgins Lab)
2020 Georgia Institute of Technology, Physics of Living Systems Lunch & Learn (Goldman Lab)

Workshops, Panels, and Symposia

2027 (*upcoming*) "Material Intelligence of Keratinous Biomaterials," Invited symposium speaker for the SICB Annual Meeting Special Symposium on Biological Slender Structures – Pittsburgh, USA
2026 "Hair is a functional gradient composite, not a uniform fiber," Invited speaker for the Gordon Research Conference (GRC) on Multiscale Mechanochemistry and Mechanobiology – Lewiston, USA
2026 "Animals4All – Creating Tactilely Accessible Biological Imaging and Materials Research," Invited symposium speaker for the *SICB Annual Meeting* Special Symposium on Accessibility – Portland, USA
2026 "Conservation and Sustainable Technology Alongside Zoological Organizations," Invited symposium speaker for the *SICB Annual Meeting* Special Symposium on Open-Source Tools – Portland, USA
2025 "What Materials Science Can Teach Us About Touch," Invited Speaker for 2025 Workshop on Designing for Tactile and Embodied Learning by the Tactile Media Alliance – Atlanta, USA
2025 "Bridging Bio-inspired Design and Materials Science," Invited symposium speaker for the *SICB Annual Meeting* Special Symposium on Bio-inspired Research, Simulation, and Collaboration – Atlanta, USA
2025 "Bio-inspired Meta-Structures of the Elephant Trunk," Invited symposium speaker for the *SICB Annual Meeting* Special Symposium on Muscular Hydrostats – Atlanta, USA
2024 "Connecting Skin Mechanics to Bioinspired Engineering," Invited speaker for spring 2024 Alexander von Humboldt Fellow Banquet – Berlin, Germany
2024 "Biomechanics of the Elephant Trunk," Invited speaker for the Annual IEEE Conference on Soft Robotics (Robosoft) Workshop entitled Embodied Exploration of Muscular Hydrostats – San Diego, USA

2024	"Understanding Muscle-skin Connections Across Length Scales in the Elephant Trunk Using Modeling, Mimics, and Mechanics," Invited Speaker to ExoSkins Scientific Workshop – Atlanta, USA
2024	"Understanding the Skin Mechanics of Elephant Trunks across Length Scales," Invited symposium speaker for <i>SICB Annual Meeting</i> Special Symposium on Biomechanical Modeling – Seattle, USA
2024	"Morphological Methods in Evolutionary Biomechanics," Invited Speaker for the Integrative Organismal Modeling of Movement Workshop at <i>SICB Annual Meeting</i> – Seattle, USA
2024	"Connecting Undergraduate Students to Sustainability," Invited workshop presentation panel at American Society of Engineering Education 2024 annual meeting – Portland, USA
2023	"Educating Engineers on Sustainable Development Goals," Invited workshop presentation panel at the Engineers for a Sustainable World Annual Conference – Tempe, USA
2023	"Biomechanics of Elephant Trunks Across Length Scales," Invited seminar speaker for the Comparative Biomechanics special session at the International Society of Biomechanics – Fukuoka, Japan

Discussion Leader

2026	"Invited Moderator for Neurodivergent Scientist Panel," SICB Annual Meeting 2026
2025	"Invited Moderator for Biodiversity Panel," Climate Robotics Summit Annual Meeting 2025

Public Talks: Atlanta Science Tavern, Monthly Scientist Seminar Series; The Explorers Club, National Elephant Day Event; Golden Triangle Asian Elephant Foundation, Elephant Expert Series; Atlanta Public Schools, National Science Foundation Teacher Forum; Georgia Science Teachers Association, Zoo Education and Research; Zoo Atlanta, Zoo Research Quarterly Update.

MENTORSHIP AND TEACHING

Mentorship – M.S. Students - Ongoing

2026	M.S. advisor for Vasiliki Kotsali in Materials Science, Master's Thesis: Synthesis of keratin-derived crystal-like structures for biodegradable hydrogels, University of Stuttgart
2026	M.S. co-advisor for Ingrid Suaste in Materials Science, Master's Thesis: Structure, function, and elemental makeup of cellulose-enriched bird nests, University of Stuttgart
2026	M.S. co-advisor for Ezgi Sezer in Materials Science, Master's Thesis: Functional gradient 3D printing for diverse bio-inspired meta-structures applications, University of Stuttgart

Mentorship – M.S. Students - Concluded

2026	M.S. co-advisor for Marcela Regina Esparza-Lopez in Materials Science, Master's Thesis: Mechanical Characterization of Au Nano-particles, University of Stuttgart
2025	M.S. co-advisor for Natalia Gonzalez-Vazquez in Materials Science, Master's Thesis: Geometry Dependent Magnetic Properties of FePt Thin Films on Spherical SiO ₂ Substrates, University of Stuttgart
2025	M.S. co-advisor for Deepti Philip in Materials Science, Master's Thesis: Structural Characterization of Functionally Graded Keratinous Biomaterials, University of Stuttgart
2025	M.S. co-advisor for Svetlana Griego in Materials Science, Master's Thesis: Calcium Enrichment and the Temporal Emergence of Mechanical Gradients in Mammalian Keratin Fibers, University of Stuttgart
2021	M.S. co-advisor for Elias Irick in Mechanical Engineering, Master's Thesis: Adapting a Commercialized Tracker for Wildlife Applications, Georgia Institute of Technology

Mentorship – Undergraduate Students & Research Assistants

Ph.D. Student - Georgia Tech & GTRI (2018-2022): 32 undergraduate researchers advised, including eight who went on to receive NSF Graduate Research Fellowships (GRFP), six Army Research Office Undergraduate Research Apprenticeship Program (ARO URAP) awardees, and 13 recipients of the President's Undergraduate Research Award.

Postdoctoral Researcher MPI-IS (2022-present): 5 full-time research engineers, 11 part-time research assistants (HiWis), and several interns advised across computer science, materials science, engineering, and mechatronics.

Teaching Certificates

2021	Certificate of Teaching , Center for Teaching & Learning, Georgia Institute of Technology
2021	CIRTL Associate Certificate , Center for Integration of Research, Teaching, and Learning
2020	Faculty Learning Community on Incorporating SDGs into Curriculum , Georgia Institute of Technology

Teaching Positions

Vertically Integrated Projects (HumaniTech and Tech4Wildlife) are multi-semester, team-based research courses I created at Georgia Tech, enrolling undergraduate and graduate students together to design technology for public health and wildlife conservation.

Term	School	Course Title	Course Code	Role	Enrollment	Effectiveness*
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F2022	Georgia Tech	HumaniTech	VIP4601/6601	Instructor	26	4.99/5.00
S2022	Georgia Tech	HumaniTech	VIP4601/6601	Instructor	18	4.95/5.00
F2022	Georgia Tech	Tech4Wildlife	VIP4601/6601	Instructor	22	5.00/5.00
F2021	Georgia Tech	HumaniTech	VIP4601/6601	Instructor	25	4.95/5.00
F2021	Georgia Tech	Tech4Wildlife	VIP4601/6601	Instructor	15	5.00/5.00
S2021	Georgia Tech	HumaniTech	VIP4601/6601	Instructor	24	5.00/5.00
S2021	Georgia Tech	Tech4Wildlife	VIP4601/6601	Instructor	20	5.00/5.00
F2020	Georgia Tech	HumaniTech	VIP4601/6601	Instructor	30	N/A
F2020	Georgia Tech	Tech4Wildlife	VIP4601/6601	Instructor	12	N/A
S2020	Georgia Tech	Tech4Wildlife	VIP4601/6601	TA	8	N/A
F2019	Georgia Tech	HumaniTech	VIP4601/6601	TA	40	N/A
F2019	Georgia Tech	Tech4Wildlife	VIP4601/6601	TA	4	N/A

**Effectiveness column describes average of end of the semester anonymous student surveys.*

Course Development

2026	Worked at the University of Washington Friday Harbor Labs Summer REU and Graduate Student Summer Program as a Biomaterials, Mechanics, and Controls Instructor for 18 Graduate Students
2024-2025	Developed a course for incoming graduate students to learn about effective networking in academic spaces , including conferences, socials, and professional societies
2023-2025	Developed a teaching method for graduate students to learn about creating effective data visualizations and teach courses annually to IMPRS-IS Ph.D. Students
2021	Co-led the creation of a massive open online course (MOOC) for conservation technology called the Conservation Futures Toolkit
2020-2022	Designed and taught a course on Humanitarian AI and Machine Learning for Public Health, named HumaniTech, with collaborators from Georgia Tech Research Institute (GTRI)
2020-2022	Designed and taught a new course at Georgia Tech, working on creating conservation technology using AI and Machine Learning with collaborators from GTRI and the University of Georgia

Guest Lectures: Bio-inspired Design (Texas A&M; University of Miami & Bronx Zoo Joint Program; Georgia Institute of Technology; George Washington University); Comparative Biomechanics (Boise State University); Biomaterials (University of Texas at San Antonio); Zoo Biology & Conservation Tech (University of Zurich); Science Communication (Algoma University, UMass Amherst).

SERVICE

To the Profession

SICB - Society for Integrative and Comparative Biology; ASEE – American Society for Engineering Education

2026-	Chair, Gordon Research Seminar (GRS) on Mechanobiology and Mechanochemistry
2025-	Chair, Nominating Committee, SICB Division of Comparative Biomechanics
2024-	Co-chair, SICB Future Faculty Working Group, SICB
2023-2024	Chair, Student-Postdoctoral Affairs Committee, SICB
2022-2025	Student/Postdoctoral Affairs Committee Rep., Division of Comparative Biomechanics, SICB
2021	Co-chair – South Eastern Regional SICB Conference – Zoo Atlanta
2020-	Founder and Organizer – Zoo Biomechanics Day in collaboration with SICB

Peer Reviewer: Grants (*NSF IOS, France ANR*); Journals (*Science Advances, Advanced Materials, iScience, PLOS ONE*, and 6+ others); Conferences (*IEEE ICRA, World Haptics*, and 3+ others).

To the Institution

MPI-IS – Max Planck Institute for Intelligent Systems; GTME - Georgia Tech Mechanical Engineering Department

2025-	Co-founder, NeurodivergNet, Max Planck Society
2024-	PostdocNet Election Committee, MPI-IS
2024-	Co-founder, Neurodivergent Days at Max Planck Institute, MPI-IS
2023-	Co-organizer, Athena Diversity, Equity, and Inclusion Initiative, MPI-IS
2020-2022	Founder and President, Georgia Tech for Conservation Technology Student Organization
2020-2021	Graduate Member on the Qualifying Exams Development Community
2019-2021	Co-founder, Graduate Student Mental Health Committee
2018-2021	President, Mechanical Engineering Graduate Association - GTME

To the Community

2026-	Scout for the Global Inclusive Founders Fund
2020-2022	Docent on Animal Research, Zoo Atlanta
2019-2022	Featured Researcher for Georgia Tech Alumni Association for K-12 VIP Visitors
2018-2022	Panelist, Georgia Science Teachers Association Conference – Elephant Biomechanics

**A full list of service can be shared as supplemental items upon request*

MEDIA COVERAGE AND SCIENCE COMMUNICATION

- 2026 Schulz et al., 2026 *Science* covered in [The New York Times](#), [NPR](#), [Washington Post](#), [Scientific American](#), [Spektrum der Wissenschaft](#), and over [200 other news outlets](#).
- 2024 Schulz et al., 2024 *Royal Society Open Science* covered in [Science](#), [Nature](#), [Science Friday](#), [NPR](#) and [50 other news outlets](#).
- 2023 Research featured in American Museum of Natural History exhibit [Secret World of Elephants Exhibit](#).
- 2023 Elephant research featured in Ze Frank's *True Facts* video series: [True Facts: Elephants YouTube Feature](#) (2.6 million views).
- 2022 Schulz et al., 2022 *Proceedings of the National Academy of Sciences* (PNAS) covered in [The New York Times](#), [Science Friday](#), [Smithsonian](#), and over [40 other news outlets](#).
- 2021 Schulz et al., 2021 *Journal of The Royal Society Interface* covered in [Nature](#), [The New York Times](#), [NPR](#), [All Things Considered](#), [The Atlantic](#), [Smithsonian Magazine](#), [JEB](#), and [70 other news outlets](#).

**A full list of media coverage can be shared as supplemental items upon request.*