August 2025

Ava Lakmazaheri

PhD Candidate, Mechanical Engineering, Stanford University
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ACADEMIC POSITION

Postdoctoral Fellow in Bioengineering — Starting Sep 2025
Harvard University, Boston, MA
Advisor: Patrick Slade, PhD

EDUCATION

PhD in Mechanical Engineering — Sep 2020 – Aug 2025
Stanford University, Stanford, CA
Thesis: Toward co-adaptive human-exoskeleton interaction
Advisor: Steven H. Collins, PhD

BS in Mechanical Engineering — Aug 2016 – May 2020
Olin College of Engineering, Needham, MA

RESEARCH INTERESTS

Wearable Assistive Devices · Exoskeletons · Human-Robot Interaction · Co-Adaptation · Motor Learning · Biomechanics · Rehabilitation Engineering · Adaptive Control · User-Centered Design

PUBLICATIONS

Lakmazaheri, A. and Collins, S.H. (2025). Biofeedback speeds adaptation to exoskeleton gait assistance. Under review at *Transactions on Neural Systems and Rehabilitation Engineering*.

Lakmazaheri, A. and Collins, S.H. (2025). Characterizing expert exoskeleton-assisted gait: insights to accelerate exoskeleton mastery. In press at *IEEE Transactions on Medical Robotics and Bionics*. [Invited journal publication.]

Lakmazaheri, A.*, Song, S.*, Vuong, B.B., Biskner, B., Kado, D.M. and Collins, S.H. (2024). Optimizing exoskeleton assistance to improve walking speed and energy economy for older adults. *Journal of NeuroEngineering and Rehabilitation*, 21(1), p.1. *Contributed equally.

Franks, P.W., Bryan, G.M., Martin, R.M., Reyes, R., **Lakmazaheri, A.**, and Collins, S.H. (2021). Comparing optimized exoskeleton assistance of the hip, knee, and ankle in single and multi-joint configurations. *Wearable Technologies*, 2, p.e16.

Adler, J.M., **Lakmazaheri, A.**, O'Brien, E., Palmer, A., Reid, M., Tawes, E. (2021). Identity integration in people with acquired disabilities: A qualitative study. *Journal of Personality*, 89(1), pp.84–112.

Mason, A.E., Adler, J.M., Puterman, E., **Lakmazaheri, A.**, Brucker, M., Aschbacher, K., Epel, E.S. (2019). Stress resilience: Narrative identity may buffer the longitudinal effects of chronic caregiving stress on mental health and telomere shortening. *Brain, Behavior, and Immunity,* 77, pp.101–109.

PRESENTATIONS

INVITED TALKS

Training for Adaptability: Integrating Motor Learning Frameworks into Coaching Practice (2025). Stanford Athletics, **Stanford University**, Stanford, CA.

Toward Co-Adaptive Human-Exoskeleton Interaction (2025). Bioengineering, **Harvard University**, Boston, MA.

Training and Optimization Techniques to Improve Human-Exoskeleton Interaction (2025). Department of Biomedical Engineering, **University of Delaware**, Newark, DE.

Turning Brainwaves into Action (2015). **TEDxYouth**. Zhengzhou, China.

PODIUM PRESENTATIONS

Learning from Experts: Accelerating Exoskeleton Training with Biofeedback (2025). **IEEE International Conference on Rehabilitation Robotics**, RehabWeek, Chicago, IL.

Optimizing Musculotendon Parameters to Simulate Walking with Ankle-Foot Orthoses in Children with Cerebral Palsy (2019). Center for Neurotechnology Symposium, **University of Washington**, Seattle, WA.

POSTER PRESENTATIONS

Optimizing Exoskeleton Assistance to Improve Walking Speed and Energy Economy for Older Adults (2023). **American Society of Biomechanics**, Knoxville, TN. [Thematic poster and oral presentation.]

Exploring Steady-State Visual Evoked Potentials with Video Stimuli (2019). **Society for Neuroscience**, Chicago, IL.

Brain-Actuated Robotics: Controlling a Humanoid Using Electroencephalography (2016). **London International Youth Science Forum**, London, England.

TEACHING & MENTORSHIP

Research and Professional Mentorship 2021 – Present
Advised 1 master's student (Stanford University), 3 undergraduate students (Howard University & Olin College of Engineering), and 1 high school student (Shrewsbury High School). Guided research ideation and design across independent projects. Supported technical and professional writing. Student outcomes include a co-authored peer-reviewed publication, national STEM research award, and acceptances to the NSF Research Experience for Undergraduates and MIT Summer Research Program.

Teaching Assistant for Mechanical Systems Design 2024
Stanford University
Guest lectured on energy efficiency, held weekly oral exams and twice-weekly office hours, and advised student project teams.

Guest Lecturer for Neurotechnology, Brains, and Machines 2023
Olin College of Engineering
Led discussions on ethics in neurotechnology and presented research on human-in-the-loop optimization of assistive technologies.

Teaching Assistant for Linear Algebra II & Partial Differential Equations 2018 – 2019
Olin College of Engineering
Held weekly office hours and conducted weekly 1:1 sessions with student seeking additional aid.

FELLOWSHIPS & AWARDS ($502,300)

Rising Star in Mechanical Engineering 2025
Massachusetts Institute of Technology

Best Student Paper Award 2025
IEEE International Conference on Rehabilitation Robotics

Stanford Graduate Fellowship *($300,000)* 2023 – 2025
Stanford University

NeuroTech Fellowship *($7,500)* 2022 – 2023
Stanford University

Graduate Research Fellowship *($160,000)* 2021 – 2023
National Science Foundation

Enhancing Diversity in Graduate Education Fellowship *($12,800)* 2021 – 2025
Stanford University

Undergraduate Research Fellowship *($6,000)* 2019
National Science Foundation

Clare Boothe Luce Research Fellowship *($7,000)* 2017
Henry Luce Foundation

Intel Science Talent Search Semifinalist *($1,000)* 2016
Society for Science & the Public

Best of Category/First Place, Robotics & Intelligent Machines *($8,000)* 2015
Intel International Science and Engineering Fair

SERVICE & OUTREACH

Ad-Hoc Reviewer 2023 – Present
IEEE International Conference on Biomedical Robotics and Biomechatronics
IEEE International Conference on Rehabilitation Robotics
IEEE International Conference on Intelligent Robots and Systems
IEEE Robotics and Automation Letters
Journal of Experimental Biology
Journal of Gerontology: Medical Sciences

Stanford Research Conference 2025
Volunteer judge in Experimental Life Sciences and Computational Sciences for undergraduate researchers across the nation. Provided formal individual feedback of poster presentations.

Faculty Search Committee (Teaching Track) · Stanford Mechanical Engineering 2023
Read application packets, interviewed candidates, reviewed seminars, and recommended hiring.

Stanford Biomechatronics Laboratory Outreach 2021 – 2025
Provided demonstrations of laboratory research to local older adults and underrepresented K-12 and undergraduate students interested in STEM.

Health Matters · Stanford Medicine 2021
Led booth at community event, demonstrating exoskeletons and sharing information with older adults about assistive devices to enhance mobility.

MEMBERSHIPS & AFFILIATIONS

American Society of Mechanical Engineers
American Society of Engineering Education
Society of Women in Engineering
Sigma Xi (Scientific Research Honor Society)
Stanford Mechanical Engineering Women & Gender Minorities Group
Stanford Wu Tsai Center for Mind, Brain, Computation and Technology