ALIYAH SMITH

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(443) 929-5032 (mobile)

Research Interests: Human–Technology Interaction · Human-Centered Design · AR/VR/MR

Education

Stanford University – Stanford, CA
Doctor of Philosophy in Aeronautics & Astronautics — Expected: June 2026

- Dissertation Advisor: Monroe Kennedy III, PhD

Master of Science in Aeronautics & Astronautics — June 2021

University of Maryland, Baltimore County (UMBC) – Baltimore, MD
Bachelor of Science in Mechanical Engineering (Magna Cum Laude) — May 2019
Minor in Modern Language and Linguistics, French Specialization
Honors College Certificate

Fellowships

National Science Foundation Graduate Research Fellowship Program (GRFP)
Stanford's Enhancing Diversity in Graduate Education (EDGE) Doctoral Fellowship Program
Stanford's Aeronautics & Astronautics Departmental Fellowship

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Publications

[Paper] **A. Smith** and M. Kennedy III, "The role of consequential and functional sound in human-robot interaction: Toward audio augmented reality interfaces," *arXiv preprint* arXiv:2511.15956, 2025. (Under Review)

[Paper] **A. Smith** and M. Kennedy III, "An augmented reality interface for teleoperating robot manipulators," *arXiv preprint* arXiv:2409.18394, 2025 (Under Review)

[Extended Abstract] C. du Pasquier, J. Grannen, C. Pan, S. L. Huber, **A. Smith**, M. Kennedy, S. Song, D. Sadigh, and A. M. Okamura, "A study of perceived safety for soft robotics in caregiving tasks," *RoboSoft*, 2025.

[Paper] O. Shorinwa, J. Tucker, **A. Smith**, A. Swann, T. Chen, R. Firoozi, M. D. Kennedy, and M. Schwager, "Splat-MOVER: Multi-stage, open-vocabulary robotic manipulation via editable Gaussian splatting," *Proc. 8th Annu. Conf. Robot Learn.*, 2024.

Research Experience

Stanford University Sept. 2020 – present
Department of Mechanical Engineering, Assistive Robotics & Manipulation Lab
Graduate Research Assistant
"Advancing Human–Robot Interaction Through Mixed Reality: Vision, Haptics, and Sound"
Advisor: Monroe Kennedy III, PhD

University of Maryland, Baltimore County (UMBC) Jan. 2019 – May 2019
Department of Physics, UMBC Joint Center for Earth Systems and Technology (JCET)
Undergraduate Research Assistant
"Calculating the Geometries of the HARP-2 Polarimeter Orbit"
Advisor: J. Vanderlei Martins, PhD

National Aeronautics and Space Administration (NASA) June 2018 – Aug. 2018
Goddard Space Flight Center, Guidance, Navigation, and Control Hardware and Components Branch
Undergraduate Research Intern
"An Ultra-compact Testbed for a Prototype Star Scanner"
Advisor: Sean Semper, PhD

Texas A&M University May 2017 – Aug. 2017
Department of Aerospace Engineering, Shape Memory Alloy Research Team (SMART Lab)
Undergraduate Research Intern
"Micromechanical Modeling of High Temperature Shape Memory Alloys"
Advisor: Dimitris C. Lagoudas, PhD; Alexandros Solomou, PhD

University of Oxford June 2016 – Aug. 2016
Department of Materials, Oxford Micromechanics & Microstructure Group (O.M.G)
Undergraduate Research Intern
"Small Scale, High Cycle Fatigue on 304 Stainless Steel"
Advisor: Angus Wilkinson, PhD; Jicheng Gong, PhD

Johns Hopkins University Feb. 2014 – June 2014
Department of Chemical and Biomolecular Engineering, Gerecht Lab
High School Research Intern
"Differentiation of STEM Cells to Repair and Regenerate Tissue and Vasculature"
Advisor: Sharon Gerecht, PhD

Industry Experience

Amazon Fulfillment Technologies & Robotics Sept. 2024 – Dec. 2024
Innovation Lab
Research Scientist II Intern
"Learning from Demonstration for Bimanual Manipulation with Anthropomorphic Hands"
Manager: Taskin Padir, PhD

Teaching Experience

Teaching Assistant, Collaborative Robotics (ME326), Stanford University Jan. – Mar. 2023, 2024

- Served as one of two teaching assistants for a graduate-level course (~20 students), supporting instruction and project development
- Maintained professional and timely communication with co-instructors through in-person meetings, virtual discussions, email, and Slack
- Hosted weekly office hours to provide guidance on homework assignments and course concepts
- Led three weekly lab sessions, offering both high-level conceptual support and detailed technical assistance on ROS, LoCoBot integration, Linux workflows, and Python debugging for students' final projects

Teaching Assistant, Race, Science, and Society (FYS 102), UMBC June 2019 – Aug. 2019

- Served as the sole teaching assistant for an undergraduate-level course (49 students), providing comprehensive instructional and administrative support
- Designed and facilitated twice-weekly discussion sessions on assigned readings, graded weekly coursework, and offered individualized tutoring to reinforce key concepts and support student learning

Project Experience

- Boxbot: The Simulated Boxing Robot, Experimental Robotics (CS225A), Stanford, Spring 2023
- Design and Manufacturing of a Robotic Manipulator for a Pick and Place Task, Applied Robot Design (ME223), Stanford, Autumn 2022
- Collaborative Resource Gathering, Collaborative Robotics (ME 326), Stanford Winter 2022
- A Reinforcement Learning Approach for the Bin Packing Problem, Machine Learning (CS 229), Stanford, Autumn 2021
- Deep Learning to Predict Successful Grasp Configurations for a Robotic Manipulator, Deep Learning (CS 230), Stanford, Spring 2021
- Autonomous Navigation for Grocery Pickup, Principles of Robot Autonomy I (AA274a), Stanford, Autumn 2020
- A Reinforcement Learning Algorithm for Recycling Plants, Decision Making Under Uncertainty (AA228), Stanford, Autumn 2020

- Particle Filter for Tracking Space Objects Accelerated by Lasers, State Estimation and Filtering for Aerospace Systems (AA273), Stanford, Spring 2020

Honors, Awards, and Scholarships

- Stanford Alumni Association's Community Impact Award Recipient May 2023
- NSF Graduate Research Fellowship Program (GRFP) Honorable Mention Mar. 2019
- UMBC Meyerhoff Scholar (M27)
- The Phi Kappa Phi Honors Society
- The Phi Beta Kappa Society
- Louis Stokes Alliances for Minority Participation Program (LSAMP)
- Tau Beta Pi Engineering Honor Society
- Golden Key International Honour Society
- First Financial Federal Credit Union Scholarship Program

Presentations, Conferences, and Meetings

- "An Ultra-compact Testbed for a Prototype Star Scanner", NASA Summer Internship Poster Session**,** NASA Goddard Space Flight Center (Aug. 2018)
- "Micromechanical Modeling of High Temperature Shape Memory Alloys", LAUNCH Undergraduate Research Summer Poster Session**,** Texas A&M University (Aug. 2017)
- "Producing STEM Stars", Panelist, Congressional Black Caucus Foundation Annual Legislative Conference Sessions, Washington D.C. (Sept 2016)

Study Abroad Experience

The American University of Sharjah – Sharjah, United Arab Emirates Jan. 2018 – May 2018
Courses taken: Dynamic Systems, Elementary Arabic I, Islamic Art and Architecture, Introduction to Arabic, Turkish, and Persian Classical Music

Leadership and Volunteer Experience

Peer Reviewer Oct. 2024 – present

- Conducted peer reviews for high-impact robotics conferences, including ICRA and Humanoids

Graduate Coordinator, Mentor, Stanford Women's Community Center Nov. 2020 – June 2023

- Recruited and paired mentors and mentees for a STEM mentorship program (~100 participants yearly) and coordinated program-wide events throughout the academic year

- Mentored undergraduate students in STEM disciplines, providing guidance on research involvement, graduate school preparation, and career development

Mentor, Stanford Women in Aeronautics & Astronautics (WIAA) Sept. 2020 – June 2021

- Mentored a first-year master's student in Aeronautics & Astronautics, supporting their transition into graduate studies and advising on research direction and professional growth

Assistant Director, STEM Coordinator, Mentor, UMBC Reach Initiative Sept. 2016 – May 2019

- Recruited mentors and mentees for the mentorship program and ensured weekly mentoring sessions were well-coordinated and effectively run
- Developed and delivered hour-long lessons on a range of STEM topics for high school students
- Advised high school students interested in pursuing STEM majors, providing guidance on academic preparation and college pathways

Corresponding Secretary, UMBC MD-Delta Chapter Tau Beta Pi Sept. 2018 – May 2019

- Disseminated key information and updates to chapter members through clear and timely communication
- Collaborated with executive board members to plan, organize, and execute chapter events and initiatives

Student Coordinator, UMBC Shriver Center Sept. 2018 – May 2019

- Served as liaison for the UMBC Reach Initiative, managing all student volunteer documentation

Office Assistant, UMBC Department of Education Sept. 2016 – May 2017

- Performed administrative and clerical tasks to support Department of Education operations

Professional Affiliations and Academic Clubs

- Black in Robotics (BiR)
- The American Institute of Aeronautics and Astronautics (AIAA)
- Stanford Black Engineering Graduate Student Association (BEGSA)

Press and Blog Mentions

- Stanford Magazine: "STEM Support, In which grad students give undergrads a leg up" by Rachel Lit (2023)
- UMBC Stories: *"Appreciate the differences": How study abroad shaped four UMBC student experiences* by Catherine Borg (2019)
- WYPR On The Record: "UMBC STEM Scholar Success Heads to the West Coast" by Sheilah Kast and Maureen Harvie (2019)

- AFRO: "Getting More Blacks Interested in STEM" by Special to the AFRO (2016)

Skills

- **Research Methods & Data Analysis**: Experimental design · Usability studies · Survey development · Human-subjects research · Data collection, cleaning, visualization, and interpretation · Statistical analysis · Model training & deployment
- **Programming & Software Tools**: Python (NumPy, SciPy, pandas, scikit-learn, PyTorch) · MATLAB · C++ · C# · Julia · Git/GitHub · TensorFlow / Keras · OpenCV · Linux · LaTeX · Microsoft Office Suite
- **AR/VR/MR Tools**: Unity3D · HoloLens / Apple Vision Pro / Meta Quest · MRTK · Eye-tracking & motion capture systems · Interface prototyping
- **Robotics & Engineering Tools**: ROS / ROS2 · Gazebo · MoveIt · Robotic platforms: Kinova, UR, xArm, LoCoBots · CAD: SOLIDWORKS, Solid Edge, Onshape · 3D printing / prototyping
- **Languages**: French (limited proficiency)
- **Professional & Interpersonal Skills**: Mentoring & teaching · Collaboration on interdisciplinary teams · Project management · Scientific writing & peer review · Effective communication with technical and non-technical audiences