# ALIYAH SMITH

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Stanford, CA 94305

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

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## *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

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## *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, "Towards Accessible Robot Control: Comparing Kinesthetic Teaching, SpaceMouse Teleoperation, and a Mixed Reality Interface," *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

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*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

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*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

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## *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

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## *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)

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## *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

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## *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

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## *Professional Affiliations and Academic Clubs*

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

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## *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)

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## *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