# Abed K. Musaffar

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## Education

*University of California, Santa Barbara* — Santa Barbara, CA
College of Engineering, Ph.D. Mechanical Engineering — 2022 – Present
College of Engineering, B.S. Mechanical Engineering — 2018 – 2022

## Selected Publications

**A. Musaffar,** A. Gokhale, S. Zeng, R. Tadayon, A. Singh, and F. Bullo. Learning to lie: Reinforcement learning-driven adversarial attacks on human-AI teams and LLMs. *ICLR Workshop on Human-AI Coevolution, 2025* **(Spotlight Nomination)**

## Professional Experience

Venturi Astrolab, *Engineering Intern* — Hawthorne, CA (Summer 2021)

*Description:* Designed payload adapter plate, developed structural suspension member, assisted in rover assembly, and developed sample payloads currently on display on company website. **Performance translated into $15,000 of funding towards a senior capstone project at UCSB.**

NASA Ames Research Center, *Engineering Intern* — Moffett Field, CA (Summer 2020–Fall 2021)

*Description:* Gained exposure to YoloV3 and DeepLabV3, two wide-spread computer vision architectures. Trained both models to identify forest trails for use in an unmanned ground vehicle.

Daly Group, *Undergraduate Researcher* — Santa Barbara, CA (Winter 2020 – Spring 2022)

*Description:* Developed novel edge detection algorithms in Python for automated characterization of crack opening displacements in ceramic matrix composites. **Published two co-author publications in the Journal of the European Ceramic Society.**

NASA Ames Research Center, *Engineering Intern* — Moffett Field, CA (Summer 2019)

*Description:* Developed browser-based physics simulations of six-rod soft robotic structures. Learned locomotion pattern for structure via monte carlo simulations and implemented patterns on hardware.**Published one technical memorandum as a lead author and two technical memorandums as co-author.**

## Academic Experience

Lunar Regolith Excavator, *Senior Capstone Team Leader* — Santa Barbara, CA (Fall 2021 – Spring 2022)

*Description:* Recruited and led a team of students at UCSB to design and manufacture the Advanced Regolith Excavation System (ARES) for Venturi Astrolab's FLEX lunar rover. Independently secured funding for the project in the amount of $15,000. Assisted in the development of multiple mechanical systems and solely developed all electrical and control systems. **Won the Most Outstanding Technical Design in Mechanical Engineering award (2022) with a $3,000 cash prize and published a paper in the Space Resources Round Table XXII conference.**

Ocean Drifter, *Junior Capstone Project Member* — Santa Barbara, CA (Spring 2021)

*Description:* Designed a concept for a low-mass drifter capable of autonomous drone deployment for monitoring ocean currents.

Rocket Propulsion Laboratory, *Chief Technology Officer* — Santa Barbara, CA (Spring 2019 – Spring 2020)

*Description:* Participated in the design of a liquid cryogen bi-propellant rocket for the FAR MARS competition. Assisted in the development of the cryogenic feed system that would facilitate transportation of cryogen from container to engine for ignition. Oversaw development of Safety Operating Procedures.

**Outreach Experience**

Summer Research Academies *Research Mentor* Santa Barbara, CA (Summer 2023)

*Description:* Mentored 30 high school students across 10 unique summer research projects applying ML to fields such as biology, aerospace, and materials science in a course titled *Decoding the Black Box: Building Trustworthy ML Models for the Physical World*. Responsibilities included teaching technical communication, providing project feedback, and leading lab sessions for hands-on skill development. **By the course's conclusion, my guidance enabled all ten project teams to produce technical reports and deliver presentations showcasing their contributions.**

Space for All Initiative, *Founder & Organizer* San Jose, CA (Fall 2021 – Spring 2022)

*Description:* **Independently awarded $1,000 to establish the Space for All initiative, aimed at engaging underrepresented minorities with aerospace engineering and STEM.** Sponsored over 50 students for a visit to the Hiller Aviation Museum in San Carlos, CA. Collaborated with the San Jose Astronomical Association and local university graduate students to organize a community solar viewing event, featuring educational lessons on the forces of flight, celestial bodies, complimentary food, and the opportunity to view the sun through multiple unique telescopes. **The initiative fostered community pride and provided mentorship to over 50 school-age students, inspiring them to pursue careers in STEM and aerospace.**

**Awards**

ICLR Workshop on Human-AI Coevolution Spotlight Nominee (Winter 2025)
Most Outstanding Technical Design in Mechanical Engineering Capstone (Spring 2022)
Zed Factor Fellow, *awarded Forbes' Science Award 2020's Most Interesting Newcomer* (Spring 2020 – Spring 2021)
Dean's Honor Award (Fall 2020 – Spring 2022)
College of Engineering Honors (Fall 2020 – Spring 2022)

*Last Updated: March 7, 2025*