2024

AMELIA EARHART FELLOWS

Expanding opportunities for women in aerospace engineering and space sciences

In an effort to carry out its mission that women have access to all resources and are represented in decision-making positions on an equal basis with men, Zonta International offers the Amelia Earhart Fellowship.

The Zonta International Amelia Earhart Fellowships were established in 1938 in honor of Amelia Earhart, famed pilot and member of the Zonta Clubs of Boston and New York. The fellowships are awarded annually to women pursuing Ph.D./doctoral degrees in aerospace engineering or space sciences.

Zonta International offers the Amelia Earhart Fellowship to ensure women have equal opportunities to pursue education, careers and leadership positions in aerospace engineering and space sciences.

2024 Amelia Earhart Fellow

Bayan Abusalameh

Citizenship: Jordan and Palestine

Proposed Program: Mechanical Engineering at the National University of Singapore, Singapore

Bayan Abusalameh began her undergraduate studies in mechanical engineering at Birzeit University in 2014, where she was one of just four women in a class of more than 70 students. Faced with persistent stereotypes and dismissive comments, she became determined to advocate for increased representation of women in STEM fields.

After earning her mechanical engineering degree from Birzeit University, Ms. Abusalameh received the Chevening Scholarship to pursue a master's degree at Queen Mary University of London. There, she designed the structure for a potential first Palestinian CubeSat. She then began her Ph.D. studies at Imperial College London. She later earned a visiting studentship at the National University of Singapore, where she joined the MathexLab group under Dr. Gianmarco Mengaldo.

Her Ph.D. journey in the United Kingdom faced significant funding challenges. Despite numerous applications for grants, fellowships and scholarships, she launched a crowdfunding campaign to secure the necessary funds. This experience highlighted the systemic biases and inequalities in research funding. Nevertheless, she persevered and secured the Faculty for the Future Fellowship and Amelia Earhart fellowship.

Ms. Abusalameh's research focuses on understanding the nonlinear dynamics in micro-aerospace structures and utilizing machine learning to identify and quantify these nonlinearities. This work is critical for enhancing the safety of CubeSat missions, which experience high failure rates due to structural failures.

Ms. Abusalameh's academic success stems from her perseverance. As a self-funded Ph.D. student, she balanced her research with a part-time job as a graduate teaching assistant. Her determination to succeed and advocate for women in STEM has driven her career, and her story reflects the challenges and triumphs women encounter in STEM fields.

2024 Amelia Earhart Fellow

Hamda Al-Ali

Citizenship: United Arab Emirates

Proposed Program: Aersospace Engineering at the Imperial College London, United Kingdom

Hamda Al-Ali is a Ph.D. candidate in the Imperial Plasma Propulsion Laboratory at Imperial College London. Her research focuses on the design and experimental qualification of a novel high-power plasma propulsion system: the Spherical Tokamak Thruster. This innovative technology is inspired by the operational principles of spherical tokamaks and magnetic confinement fusion. The thruster benefits from high propellant ionization and utilization rates and is compatible with a wide range of propellants, including molecular green propellants such as water. The electrodeless design of the Spherical Tokamak Thruster eliminates the issues associated with the presence of electrodes, such as electrode erosion and cathode poisoning, thereby extending its operational lifetime while providing a high specific impulse to increase the payload mass fraction and reduce spacecraft launch cost. These features and capabilities make it an attractive candidate for deep space exploration missions. This technology will enable efficient interplanetary space exploration and make interstellar travel more feasible.

Ms. Al-Ai holds a Bachelor of Engineering and Master of Science in aerospace engineering from the University of Manchester, where she was awarded the Overall Outstanding Academic Achievement Award and graduated as the top-ranked student in her cohort.

In addition to her passion for advanced space propulsion research, Ms. Al-Ali volunteers her time in STEM outreach activities. In her free time, she enjoys horseback riding and learning new languages.

2024 Amelia Earhart Fellow

Shion Andrew

Citizenship: United States

Proposed Program: Astrophysics at Massachusetts Institute of Technology, USA

Shion Andrew is a Ph.D. student in astrophysics at the Massachusetts Institute of Technology (MIT) working in the Masui Synoptic Radio Lab. Before pursuing her Ph.D. at MIT, she graduated in 2021 from Harvey Mudd College with a bachelor's degree in physics. In 2021, she also received the Churchill Scholarship for a Master of Philosophy in Astronomy at the University of Cambridge. Her current research program focuses on radio instrumentation and very long baseline interferometry (VLBI) with the Canadian Hydrogen Intensity Mapping Experiment (CHIME) Fast Radio Burst (FRB) Collaboration.

Ms. Andrew has primarily been working on the CHIME/FRB Outriggers project to commission a VLBI network for localizing fast radio bursts at megahertz frequencies. FRBs are extragalactic millisecond-duration radio pulses of unknown astrophysical origins, and only a small number of FRBs to date have been localized to a host galaxy. VLBI localizations of a large sample of FRBs with CHIME/FRB Outriggers will provide a more holistic understanding of FRB progenitors and allow FRBs to be used as powerful tools for investigating fundamental astrophysics.

Upon completing her degree, Ms. Andrew plans to continue conducting research at the intersection of radio instrumentation and geodesy.

Outside of scientific research, Ms. Andrew enjoys volunteering as a mentor for MIT's Women in Physics organization, serving on the MIT Physics Value Committee, and reading about the intersections of history of science, science and technology studies and scientific pedagogy.

2024 Amelia Earhart Fellow

Johanna Bürger

Citizenship: Germany

Proposed Program: Physics at the Technische Universität Braunschweig, Germany

Johanna Bürger is a doctoral candidate at the Institute of Geophysics and Extraterrestrial Physics at TU Braunschweig. Her research focuses on the characterization of the physical and thermophysical properties of lunar regolith, fine-grained material covering the moon's surface, using remote sensing data and numerical models.

In her thesis, she uses surface temperature data from the Diviner Lunar Radiometer Experiment on board the Lunar Reconnaissance Orbiter. To interpret the data, she developed a thermal model that extends previous work by more directly simulating regolith grain size and regolith packing. The developed model will allow the prediction of the global regolith packing and grain size. In the first part of her thesis, Ms. Bürger compared the modeled temperatures with the measurements as a function of latitude on the lunar surface to investigate whether the regolith properties change with latitude. This comparison is interesting because during the Apollo era in the 1970s, all landing sites were near the equator, and now, upcoming lunar missions will land near the lunar poles.

Before her doctoral program, Ms. Bürger received her bachelor's and master's degrees in physics at TU Braunschweig in 2019 and 2022. During her studies, she spent a semester abroad at the Stockholm University in Sweden and completed a research stay at the Laboratory for Atmospheric and Space Physics in Boulder, Colorado USA.

Besides her research activity, Ms. Bürger is part of the Europlanet Early Career Network, where she co-chairs a team organizing activities for early career researchers at the annual Europlanet Science Congress. She also advocates for educational equity and is a volunteer and co-founder of StudyTutors Braunschweig. This is an organization that provides free tutoring for children from disadvantaged backgrounds. She is passionate about sports, hiking, traveling and reading in her free time.

2024 Amelia Earhart Fellow

Margaret Deahn

Citizenship: United States

Proposed Program: Planetary Sciences at Purdue University, USA

Margaret Deahn is a Ph.D. student in planetary science at Purdue University. She is also an affiliate of NASA Jet Propulsion Laboratory, working as a student collaborator for the Mastcam-Z instrument on NASA's Mars 2020 rover science team.

Her research explores impact crater rims as a window into the ancient crust of Mars. In her first year of her Ph.D., she led a subset of the Mars 2020 science team in creating a photogeologic map of the rim of the Jezero crater. The map is being used as a resource for planning the rover's exploration of the rim starting in 2024. Her future research will include investigating the ancient hydrothermal systems and deep uplifted crust that may be preserved in the rims of nearby Martian craters and conducting field research on analogous terrestrial impact craters.

Ms. Deahn completed her master's degree in earth and planetary sciences at Wesleyan University, where she mapped the target descent site for NASA's upcoming DAVINCI probe in Alpha Regio, Venus and her bachelor's degree in geological sciences with minors in mathematics and geography at the State University of New York College at Geneseo. She has interned at NASA Jet Propulsion Laboratory three times, characterizing landing sites for various Mars missions. Ms. Deahn's ultimate career goal is to become a university faculty, where she can take on leadership roles on NASA missions while working with students, as she has enjoyed her teaching responsibilities at Geneseo, Wesleyan and the National Education EquityLab.

Outside of research and rover operations, Ms. Deahn is working to bring science opportunities and programs to K-12-aged students, giving outreach talks at community space events and volunteering at the local YWCA. She enjoys running, playing the cello and cuddling with her cat in her free time.

2024 Amelia Earhart Fellow

Julia Di

Citizenship: United States

Proposed Program: Mechanical Engineering at Stanford University, USA

Julia Di studies robotic perception and tactile sensing to enable physical interaction in outer space, hospitals and homes. She was previously a NASA Space Technology Research Fellow, 2019 DFJ Entrepreneurial Leadership Fellow, 2018 Brooke Owens Fellow, 2017 AIAA 20 Twenties Laureate and 2016 NASA Robotics Academy alumna.

Ms. Di graduated with a Bachelor of Science in Electrical Engineering and a minor in computer science from Columbia University in 2018, and a Master of Science in mechanical engineering from Stanford University in 2020. She first became interested in space after reading a picture book in second grade about the history of human spaceflight. She previously interned at Meta AI, GoogleX and NASA Jet Propulsion Laboratory. She has worked full-time as a software engineer and program manager at various startups in AI and robotics before returning to school in 2023.

Ms. Di is highly invested in creating and supporting a sense of community. In September 2015, she co-founded the Columbia Space Initiative (CSI). Now one of Columbia's most popular engineering organizations, CSI has won multiple NASA design challenges, held talks around the tri-state area and taught K-12 students about aerospace engineering. She was also president of Women in Computer Science (WiCS) and a Super User in the Columbia MakerSpace. At Stanford, she founded and led the Future of Embodied AI, a student think tank dedicated to building community among robotics students and sponsored through Stanford's Human-centered Artificial Intelligence initiative. She also was vice president of the American Institute of Aeronautics and Astronautics Women of Aeronautics and Astronautics
(WoAA) and is an officer in two student organizations dedicated toward marginalized gender communities: Stanford Women in Aeronautics and Astronautics (WIAA) and Stanford Mechanical Engineering Women's Group (MEWG).

You can find Ms. Di on Instagram and Twitter for content on robotics, women in STEAM and entrepreneurial tech under the handle @astroboticist.

2024 Amelia Earhart Fellow

Manisha Dwa

Citizenship: Nepal

Proposed Program: Physics and Astronomy at the Tribhuvan University, Nepal

Manisha Dwa is a trailblazing Nepalese woman in the fields of physics and astronomy education. She is pursuing her Ph.D.in physics from the Central Department of Physics (CDP), Tribhuvan University (TU),Kathmandu, Nepal. She is currently working on Blazars under the supervision of Dr. Niraj Dhital, an associate professor at CDP, TU. She completed her Master of Science and Bachelor of Science in physics from Prithvi Narayan Campus and graduated high school from Gandaki Boarding School, Pokhara. She has held several prestigious positions, including Deputy Manager at the International Astronomical Union (IAU) Office of Astronomy for Education (OAE) Node Nepal, IAU National Outreach Coordinator (NOC) and IAU National Astronomy Education Coordinator (NAEC). She is the founder of Women in Science Award (WISA) and co-founder of the National Astronomy Olympiad (NAO) in Nepal. She is also the focal contact for Universe Awareness (UNAWE) and National Contact for World Space Week, Nepal.

Her impact extends far beyond Nepal's borders. She has actively participated in prestigious international conferences, workshops and training programs organized by the IAU, International Astronautical Congress (IAC) and the United Nations. Her works and insights on astronomy education, gender equity in science and space technology for socio-economic development have garnered global recognition.

In acknowledgment of her exceptional contributions, she has received numerous accolades, including the 2021 Academy Science and Technology Promotion Award, 2022 Indrakala Scholarship Award and the 2024 Dagar Smriti Award and the "Hidden No More" International Visitors Leadership Program by the U.S. Department of State, further cementing her status as a role model and a driving force in advancing scientific literacy and promoting women in STEM fields. Her remarkable journey and pioneering efforts have paved the way for future generations of women to soar to new heights in their pursuit of excellence in astronomy, astrophysics and space science.

2024 Amelia Earhart Fellow

Hannah Hajdik

Citizenship: United States

Proposed Program: Aerospace Engineering at University of Michigan, USA

Hannah Hajdik is a Ph.D. candidate in aerospace engineering at the University of Michigan in the Multidisciplinary Design Optimization Laboratory. Her research focuses on improving geometry parameterization in design optimization to make it a more useful tool for creating the next generation of sustainable aircraft.

Many proposed paths to sustainable aviation require dramatic changes to aircraft designs, onboard systems or both. These new designs need computational methods to help designers explore their options in the absence of historical data and design intuition. New designs test the limits of existing analysis and optimization methods, and one limiting factor is the geometry that can be captured in these methods. If an optimization captures a wider range of designs and considers more details, designers can find better aircraft that meet current and future needs.

Integrating hydrogen tanks or batteries for new propulsion systems is an ongoing problem, so one part of Ms. Hajdik's dissertation focuses on sizing and integrating aircraft components while optimizing the outer shape of the aircraft. Another part addresses a persistent source of drag on aircraft designs, both traditional and not intersections, like those between a wing and a fuselage. Optimizing these problem regions have significant benefits for an aircraft's aerodynamic performance and efficiency but requires additional methods to enable the process.

Before starting graduate studies, Ms. Hajdik earned a bachelor's in aerospace engineering at the University of Tennessee, where she researched computational models of structures. Along with other Ph.D. students at the University of Michigan, she started GeMA (Gender Minorities in Aerospace), an organization for graduate students and postdoctoral fellows in Michigan's aerospace department who are marginalized because of their gender.

Ms. Hajdik enjoys cycling, reading, skiing and crocheting in her free time.

2024 Amelia Earhart Fellow

Madelyn Hoying

Citizenship: United States

Proposed Program: Aerospace Physiology at Massachusetts Institute of Technology and Harvard Medical, USA

Madelyn Hoying's Ph.D. research in the Tearney Lab at Massachusetts General Hospital investigates aerospace physiology is leading to novel medical devices for long-duration spaceflight. Her Master in Science degree research targets operations and emergency procedures in human surface exploration missions. Ms. Hoying graduated from Duquesne University in 2020 with a Bachelor of Science in biomedical engineering and a Bachelor of Arts in physics. She was also a 2020 nominee for the NCAA Woman of the Year Award.

In addition, Ms. Hoying designs and leads analog missions to test new technologies, human operations, crew dynamics and recovery procedures in simulated planetary surface exploration missions. Analog research is one of her priorities to enable effective mission planning for human space activities due to facility size and cost constraints; however, not many opportunities exist for student involvement in analog missions. To increase access to human space research and improve opportunities for international collaboration on missions, she has designed and implemented a framework for large-scale analog mission that create opportunities for student engagement and accelerate test timelines, as researchers are no longer constrained by facility space.

2024 Amelia Earhart Fellow

Mennatallah Hussein

Citizenship: Egypt

Proposed Program: Aeronautics and Astronautics at the Massachusetts Institute of Technology, USA

Mennatallah Hussein is a Ph.D. student in the Department of Aeronautics and Astronautics at the Massachusetts Institute of Technology (MIT) in the United States. She works in the Engineering Systems Laboratory with Professor Olivier de Weck. Her research focuses on space systems engineering and probabilistic modeling applied to launch vehicle failures and instabilities.

Ms. Hussein graduated with her Master of Science in aeronautics and astronautics from MIT in 2023. Her master's thesis was on a reduced order modeling of a rocket engineer turbopump inducer to assess Pogo instability. Prior to moving to Massachusetts, she worked at the Egyptian Space Agency as a Space Systems Engineer, and she was also a member of the agency's Education and Outreach efforts.

Ms. Hussein received a Bachelor of Science in aerospace engineering at Arizona State University. She was recognized as the Class of 2020 Outstanding Graduate in Aerospace Engineering for her academic achievements and on-campus involvement. In 2022, she worked at Benchmark Space Systems as a Propulsion Engineering intern.

Outside academics, Ms. Hussein was the International Chair for MIT's Graduate Association of Aeronautics and Astronautics (GA^3) in 2021, one of M.I.T.'s AeroAstro diversity scholars for the year 2024, and a co-founder of A.S.U.'s chapter for Women of Aeronautics and Astronautics (WoAA), an American Institute of Aeronautics and Astronautic-affiliated support group for women in aerospace in 2019. Ms. Hussein is passionate about contributing to space systems and propulsion advancement research and making space accessible to everyone.

2024 Amelia Earhart Fellow

Véranika Latour

Citizenship: France

Proposed Program: Mechanical Engineering at the Université Paris-Saclay, CentraleSupélec, France

Ms.Véranika Latour is a Ph.D. candidate at Macroscopic Molecular Energy and Combustion Laboratory (EM2C) Laboratory, CNRS, in France, working with Professor Sébastien Candel, Dr. Daniel Durox and Dr. Antoine Renaud.

Her research focuses on instabilities induced by the coupling between acoustics and combustion, resulting in strong pressure oscillations accompanied by intensified heat load that may eventually lead to the combustor's failure. Predicting and suppressing these instabilities is an important objective in the design of aircraft engines. Using systematic experiments in a laboratory-scale replica of an aircraft engine combustion chamber, Ms. Latour seeks to identify key parameters controlling the occurrence of combustion instabilities, characterize the injection system and flame dynamical response to incoming acoustic disturbances, and use this knowledge as input into a novel theoretical framework to predict the rate of growth and amplitude of oscillation.

Her work specifically concerns fuel composition eTects, a topic of interest where intense eTorts are expanded to replace fossil fuels with sustainable aviation fuels (SAFs). The collected experimental data and the developed theory have led to notable progress in the prediction of combustion instabilities and their unique combination may serve to guide future industrial developments.

Ms. Latour holds an engineering degree and a master's degree in aerospace science from CentraleSupélec. She spent a year as an exchange student at the University of Cambridge, following the aerospace and aerothermal engineering curriculum. She then interned at Airbus Helicopters in Germany, Safran Aircraft Engines and Airbus in France, where she worked on helicopters' windshields de-icing,reduced-order thermal models for key aircraft engine components and high-performance aerodynamic simulations.

In her free time, Ms. Latour enjoys swimming and running and often participates in races in Paris.

2024 Amelia Earhart Fellow

Andrea López

Citizenship: Spain

Proposed Program: Aerospace Engineering Sciences at the University of Colorado Boulder, USA

Andrea López is a Ph.D. student in aerospace engineering at the University of Colorado Boulder in the Autonomous Vehicle Systems (AVS) lab.

Ms. López's research encompasses two integral components of Space Situational Awareness (SSA). The first component focuses on passive X-ray detection of objects in the vicinity of spacecraft, particularly in regions not illuminated by the Sun. Leveraging ambient plasma-induced X-ray emission and a cluster of X-ray spectrometers, this research aims to provide reliable detection capabilities for Resident Space Objects. The second component delves into relative orbit determination using advanced estimation techniques. By utilizing angles-only measurements, this aspect of the research seeks to accurately calculate the relative positions and velocities of nearby objects. These two components offer a comprehensive approach to advancing SSA, combining innovative detection methods with sophisticated estimation techniques to enhance the in-situ monitoring and tracking of space objects.

Prior to her Ph.D. at CU Boulder, Ms. López obtained a Master of Science in aerospace engineering from the Technical University of Madrid (Spain) and Université de Liège (Belgium). She worked at the European Space Agency as a Young Graduate Trainee for two years, participating in preliminary space mission designs and SSA research and development activities.

Outside of her academic pursuits, Ms.López serves as the chair of the Aerospace Graduate Student Organization at CU Boulder and holds a SCUBA certification enjoying underwater exploration as a hobby.

2024 Amelia Earhart Fellow

Eden McEwen

Citizenship: United States

Proposed Program: Optical Science at the University of Arizona, USA

Eden McEwen is a second year Ph.D. student at the Wyant College of Optical Sciences at the University of Arizona. She completed her dual bachelor's degrees in computer science and physics at University of California Berkeley. Her undergraduate and graduate work focuses on stabilizing starlight distorted by atmospheric turbulence before it enters ground-based telescopes. These systems, known as adaptive optics (AO), reshape flexible mirrors thousands of times a second to "de-twinkle" stars, capable of creating diffraction limited images rivaling the resolutions of space-based telescopes. She has worked on AOsystems on the Keck 10-meter telescope, the University of Hawaii 2.2m telescope, the MMT Observatory 6.5m telescope and the Magellan Clay 6.5m telescope.

Currently, she is a member of the extreme wavefront control lab, where she works on the Magellane Xtreme Adaptive Optics instrument (MagAO-X). This instrument delivers some of the highest resolution images of extrasolar planets in visible light in the world. It also works as a test bench for key technologies for future large telescopes and exoplanet space-based missions. Ms. McEwen's work specifically focuses on developing the control and calibration algorithms that drive the pyramid wavefront sensor, the technology chosen for the future missions dedicated to directly imaging exoplanets.

When not traveling to telescopes, Ms. McEwen enjoys engaging with her local community over the joys of optics. She spends her time creating and showcasing optical sciences demonstrations for local elementary and middle schools. She also works as a camp counselor for the local astronomy camp, guiding high school students in observation projects for a week at local telescopes. She plans on pursuing a career in astronomical instrumentation in academia to help solve some of the most challenging questions at the intersection of optics and control algorithms.

2024 Amelia Earhart Fellow

Stephanie Menten

Citizenship: United States

Proposed Program: Planetary Sciences at Purdue University, USA

Stephanie Menten's thesis research focuses on understanding the interiors and surfaces of icy moons in the outer solar system. She uses a combination of modeling and geologic analysis to study geologic processes such as volcanism, cryovolcanism, convection and volatile transport. Her work focuses on three main icy satellites: Charon, Pluto's largest moon, Ariel, a moon of Uranus and Europa, a moon of Jupiter. On Charon, she studies how interior convection, cryovolcanic flows and polar surface features are connected. On Ariel, she investigates how canyons on the moon's surface could act as locations for deposits of carbon dioxide ice. On Europa, she studies how cryovolcanism could result from subduction of Europa's ice shell. Overall, her thesis will provide more knowledge into how interior processes in icy moons can be connected to surface features we observe with spacecraft.

After completing her Ph. D., Ms. Menten aims to pursue a career in academia and desires to engage in teaching, mentoring and research. She wants to focus on guiding students to becoming future scientists and leaders in planetary science.

In her free time, Ms. Menten enjoys rock climbing, running, crocheting and spending quality time with her cat.

2024 Amelia Earhart Fellow

Samantha Moruzzi

Citizenship: United States

Proposed Program: Planetary Sciences at the University of Arizona, USA

Samantha Moruzzi has always been a firm believer that space sciences is intimately tied to geology. She graduated from Cornell University in 2020 with a Bachelor of Science in Earth and atmospheric science with a concentration in planetary science. Throughout her college career, she conducted geophysical research that spanned the solar system: modeling faults on Venus, surveying terrains on Comet 67P and analyzing thermal signatures of volcanoes in Latin America from satellite data.

She is currently a Ph.D. candidate at the Lunar and Planetary Laboratory at the University of Arizona and is on track for completion in mid-2025. She is developing geophysical models of impact basins in data-limited environments such as Pluto as windows into planetary interiors. She utilizes the topography data of the Sputnik impact basin and the widespread surface fractures returned from NASA's New Horizons mission to understand the interior structure of Pluto, its formation and its geophysical evolution. The first part of her thesis showed that Sputnik basin's topographic structure is morphologically and statistically consistent with large impact basins in inner solar system objects. This discovery has been a key study in understanding the universal processes governing impacts on rocky and icy solar system objects.

Ms. Moruzzi is currently generating a local gravity field over the Sputnik basin based on an approach that was once used to study the gravity signatures beneath Earth's oceans. Her work has put constraints on surface properties and interior composition, calling into question whether Pluto has a subsurface ocean like other icy moons in the outer solar system.

After completing her Ph.D., she intends to pursue a postdoctoral position in geophysics and planetary science, pursuing a career as a research scientist at a NASA-funded research institution. In her free time, she enjoys hiking, reading and amateur astronomy.

2024 Amelia Earhart Fellow

Barza Nisar

Citizenship: Pakistan

Proposed Program: Aerospace Science and Engineering at the University of Toronto, Canada

Barza Nisar is a Ph.D. student at the Toronto Robotics and Artificial Intelligence Lab associated with the University of Toronto Institute of Aerospace Studies. Her research focuses on enabling scene-understanding models of autonomous vehicles to perform well across various perception tasks, sensors, weather and environment conditions.

In a recent endeavor, she developed a self-supervised representation learning (SSL) framework for LiDARpoint clouds that can generalize across different scene understanding tasks, such as 3D semantic segmentation and 3D object detection, as well as across different LiDAR sensors.

In another work, she proposed a continual learning strategy that overcomes the issue of catastrophic forgetting when learning-based perception models are incrementally trained on data from new weather conditions. She received her Master of Science robotics from ETH Zurich, Switzerland and a Bachelor of Science in mechatronic engineering from Sabanci University, Turkey. Ms. Nisar graduated from many undergraduate studies with first rank out of 408 engineering students and thereafter received the Sabanci Top Student Ranking Award. For her master studies, she received the prestigious ETH excellence scholarship.

For her master's thesis, Ms. Nisar published inRobotics Science and Systems 2019, developed a multicopter's model-based visual inertial estimator to simultaneously estimate state and external forces. Afterward, she advanced her research in visual inertial localization for unmanned-aerial vehicles by interning at Verity Studios in Zurich. She later rejoined the Robotics and Perception Group headed by Professor Davide Scaramuzza. Before her thesis, she designed a nonlinear model predictive controller using a minimal orientation representation, enabling a multicopter to track large set points and perform 360-degree flips without encountering a representation singularity.

Apart from research, she enjoys swimming, snorkeling, learning new sports and working on fun projects with her lab and family, such as building an autonomous ChatGPT-powered vending machine on wheels.

2024 Amelia Earhart Fellow

Nana Obayashi

Citizenship: United States

Proposed Program: Robotics at École Polytechnique Fédérale de Lausanne, Switzerland

Nana Obayashi is a Ph.D. candidate in robotics at the École Polytechnique Fédérale de Lausanne(EPFL). She is part of the CREATE Lab (Computational Robot Design & Fabrication Lab) and is advised by Josie Hughes. She is passionate about creating intelligent soft robots that use their morphology and embodied intelligence for efficient locomotion in fluid environments. Leveraging interdisciplinary approaches, she integrates principles from mechanics, robotics, biology and fluid dynamics to develop novel methodologies for rapid prototyping and data-driven design.

Ms. Obayashi's research on intelligent morphologies and robot design methodologies holds significant implications for aerospace engineering. By focusing on morphing, reconfigurable and adaptable structures, her work aligns with the dynamic requirements of aerospace technology, aiding in the development of systems that can alter configurations based on changing conditions. The compliance and safety features inherent in soft robotics approaches are advantageous for human collaboration in space environments. Additionally, she is intrigued by the potential for soft robots to enhance human-robot interaction, providing companionship and mutual learning, and investigating robot aesthetics to improve user acceptance and interaction for both functional and entertainment purposes.

Outside research, Ms. Obayashi is a student representative on the IEEE Technical Committee for Soft Robotics. She also led the organization of soft robotics research. Previously, she obtained her bachelor's master's degrees in aerospace engineering from Georgia Institute of Technology, after which she worked as an aerodynamics engineer in the automotive and aviation industries.

Ms. Obayashi's hobbies include classical ballet, Japanese tea ceremony and Japanese Kimono dressing. She is also an instrument-rated private pilot and dreams of flying seaplanes someday.

2024 Amelia Earhart Fellow

Elise Özalp

Citizenship: Germany and France

Proposed Program: Aeronautics at Imperial College London, United Kingdom

Elise Özalp is a Ph.D. student in aeronautics at Imperial College London, focusing on physics-aware machine-learning for fluid dynamics. Her research, as part of the EU-funded PhyCo project, centers on developing physics-constrained adaptive learning techniques for multi-physics optimization. The utilization of machine-learning methods holds great potential to reduce the computational cost for simulating turbulent flows at fine scales.

Ms. Özalp's focus is studying the internal dynamics of recurrent neural networks for time-series forecasting of turbulent flows. Her work contributes to the mathematical basis for constraining these methods such that they reproduce the governing Navier-Stokes equations and the turbulent, chaotic nature of fluids. Her research has two main goals: reconstructing high-resolution measurements from partial observations and demonstrating the capability of recurrent neural networks to reproduce and infer complex chaotic stability properties.

Before starting her Ph.D., Ms. Özalp earned a Master of Science in computational mathematics from Technische Universität Darmstadt, Germany. She contributed to R&D research and development software development at Dassault Systèmes, where she focused on accelerating computations for electromagnetic simulations in radar systems using compressed sensing.

Parallel to her research, Ms. Özalp serves as a Ph.D. representative in her department and teaches undergraduate students the foundations of artificial intelligence for aerospace engineering. Outside of her research interests, she enjoys outdoor sports and is an avid baker.

2024 Amelia Earhart Fellow

Kanak Parmar

Citizenship: India

Proposed Program: Aerospace Engineering at Auburn University, USA

Kanak Parmar is a Ph.D. student at Auburn University, focusing on strategic implementations of artificial intelligence (AI) and machine learning (ML) for increased autonomy and robustness for spacecraft optical navigation. She has technical experience in all major components of space mission design. Additionally, she has a diverse technical background in all major forms of ML and AI, including trusted AI and cognitive engineering, data augmentation methods, custom loss function design and analyzing solution stability.

She has a master's degree in aerospace engineering, which introduced novel insights into human-AI interactive learning schemes for spaceflight applications. Her doctoral work focuses on strategically developing AI models to further enable onboard autonomy for body-centric spacecraft optical navigation and reduce reliance on ground-based flight operators for Guidance, Navigation and Control (GNC) solutions. This work earned her the 2023 American Astronautical Society (AAS) Molly K. Macauley Award in Science/Engineering.

Concurrently, she is also an astrodynamics, satellite navigation and ML specialist at Advanced Space LLC and contributes as principal investigator on two U.S. Department of Defense projects. Her interdisciplinary skill set has also earned her a research position with the Frontier Development Lab Scientific Research Program, focusing on leveraging ML to analyze and interpret measurement data from Mars planetary instruments.

Along with industry and academic activities, she is actively involved in community-driven efforts. Within Auburn University, she served multiple terms on the Graduate Student Council, and regularly contributes to the Auburn University Journal of Undergraduate Scholarship. Globally, she has participated as a delegate to multiple Space Generation Fusion Forum (SGFF) events and serves as an AI/ML technical advisor within the Space Generation Advisory Council (SGAC). She has also been invited as an expert contributor to numerous industry panel discussions at events such as the AIAA SciTech Forum and SGx.

2024 Amelia Earhart Fellow

Luisa Piccolo Serafim

Citizenship: Brazil and Italy

Proposed Program: Mechanical Engineering at Duke University, USA

Louisa Piccolo Serafim is a Ph.D. candidate in mechanical engineering at Duke University. As part of the Aeroelasticity Lab, she works with Dr. Earl Dowell on Fluid-Thermal-Structural Interaction in supersonic and hypersonic flows, exploring analytical and computational methods to model nonlinear aeroelastic phenomena. The goal is to consider the behavior of aerodynamic nonlinearities such as shock impingement and viscous boundary layer, in aeroelastic solutions and to provide a fast and reliable approach to understanding and predicting aeroelastic instability in high-speed flows. As part of her Ph.D. work, Ms. Piccolo Serafim participates in the NASA-hosted Aeroelastic Prediction Workshop, High-Speed Working Group, correlating her computational model with supersonic wind tunnel measurements provided by the Air Force Research Laboratory. In addition to her Ph.D. research, Ms. Piccolo Serafim mentors undergraduate and master's students in the Duke Wind Tunnel Group, where different experimental projects are being developed to explore unsteady aerodynamics in low-speed and different wing geometries.

Originally from the south of Brazil, Ms. Piccolo Serafim graduated Summa Cum Laude from the Federal University of Santa Catarina in mechanical engineering, where she worked as a research and teaching assistant and was part of different student organizations. She also spent a year as an engineering intern on Embraer's vibration and acoustic team, where she gathered experience in technological development and vibration and acoustic assessment on commercial aviation subsystems' aircraft. Aviation Week Network awarded Ms. Piccolo Serafim the 2022 20 Twenties Award for her academic performance, community involvement and the value of her research to the field. She also received the 2023 MEMS Graduate Leadership Award for her work with student engagement in the department.

2024 Amelia Earhart Fellow

Lynn Pickering

Citizenship: United States and Germany

Proposed Program: Aerospace Engineering and Engineering Mechanics at the University of Cincinnati, USA

Lynn Pickering is a Ph.D. candidate at the University of Cincinnati studying aerospace engineering and engineering mechanics. Her work focuses on building safe artificial intelligence (AI) models that provide decision-making support to humans in the aerospace industry. Specifically, she builds interpretable models and provides outputs so the human user can decide whether to trust the model.

To build safe AI models, her research focuses on fuzzy logic AI systems, particularly Hierarchical Fuzzy Systems. Fuzzy logic takes advantage of the imprecision of the real world that other computing methods avoid. Its calculations are transparent as its rules are in linguistic form, readable and understandable by humans. The goal is to create a genetic fuzzy system to work with humans on complex engineering applications.

Ms. Pickering graduated with her Bachelor of Science in aerospace engineering from the University of Cincinnati in 2020. After successfully defending her thesis, her short-term professional goals are to work toward safe AI systems in the aerospace field that enable humans to place more trust in AI, making for effective human-machine systems. In the long term, she hopes to create AI systems that assist pilots in the cockpit and to be involved in policy developments around AI to focus on creating safe AI for humans.

Outside of her research, Ms. Pickering is an organizer for the yearly Explainable Fuzzy AI Challenge, which is built to teach university students about developing safe AI on the game Asteroid Smasher. She is also an active member in the Belgian Women in Science community as she is passionate about supporting women in fields in which they are underrepresented.

In her free time, Ms. Pickering enjoys traveling, hiking, participating in outdoor activities and reading.

2024 Amelia Earhart Fellow

Carmen Possnig

Citizenship: Austria

Proposed Program: Space Physiology at the University of Innsbruck, Austria

Carmen Possnig is a Ph.D. candidate in space physiology at the University of Innsbruck. Her research focuses on changes in brain and eye blood flow in microgravity, which she simulates via bed rest studies and parabolic flights. Her research aims to keep astronauts healthy and fit on future spaceflights to the Moon and Mars.

Before starting her Ph.D., she studied medicine at the Medical University of Graz in Austria and completed her residency as a general practitioner in Vienna. Ms. Possnig then spent a year as the European Space Agency (ESA) Research medical doctor at Concordia Station in Antarctica. With temperatures below -80° C, a four-month long night, hypoxic conditions and no possibility of evacuation, Concordia is very much like a station on another planet. A crew of 13 spends each year completely isolated at the base, conducting various kinds of research. Ms. Possnig took care of ESA's biomedical and psychological research projects, investigating how humans adapt to the extreme environment.

After completing her doctoral program, Ms. Possnig envisions further advancing human space exploration and contributing to humanity's efforts of going back to the Moon and onto Mars. In addition to Earth-based space research, Ms. Possnig also hopes one day to go to space herself. In 2022, she was selected out of 22,000 applicants into the new astronaut class of the European Space Agency as a reserve astronaut.

Outside the lab, Ms. Possnig enjoys climbing mountains with her dog Callisto, knitting colorful socks while listening to audiobooks, playing the piano and writing her first sci-fi novel.

2024 Amelia Earhart Fellow

Erin Richardson

Citizenship: Canada

Proposed Program: Aerospace Engineering Sciences/Bioastronautics at the University of Colorado Boulder, USA

Erin Richardson is a Ph.D. student in bioastronautics at the University of Colorado Boulder. Her research investigates determinants of cognitive health in isolated, confined, and extreme (ICE) environments (such as outer space and the Arctic), informing crew composition, enabling adaptive autonomous systems and ultimately mitigating crew health and performance decrement.

To date, Ms. Richardson's Ph.D. research has focused on predictive modeling of human cognitive states from physiological data. Next, she will use qualitative interviews to learn how skilled operators process information in ICE settings. She will use the themes identified in the interviews to design lab-based experiments investigating neurophysiological measures of cognitive health. Finally, she will conduct field studies at Mars Desert Research Station, an analogue Martian habitat, evaluating the transfer of modeling capabilities from the lab to field settings using wearable sensors.

Ms. Richardson completed her undergraduate degree in engineering Science at the University of Toronto with a major in aerospace engineering and a minor in robotics and mechatronics. She completed her master's in aerospace engineering sciences at University of Colorado Boulder with a certificate in data science. She is passionate about space exploration and has had the opportunity to work on projects ranging from asteroid sampling and Mars rovers to studying the effects of microgravity on the human body on a parabolic flight.

She also completed her private pilot license, learned to scuba dive and spent time backpacking in remote settings, helping her better understand the perspectives of operators in high-consequence environments that her research aims to serve.

Ms. Richardson is passionate about empowering youth to pursue STEM pathways and enjoys volunteering with the Canadian Association for Girls in Science and Let's Talk Science. Inspired by generations of space innovation, she is excited to see what the future holds for human spaceflight and hopes to travel to space herself one day!

2024 Amelia Earhart Fellow

Keziban Saloglu

Citizenship: Turkey

Proposed Program: Aerospace Engineering at Auburn University, USA

Keziban Saloglu is pursuing her Ph.D. in aerospace engineering at Auburn University in the Aero-Astro Computational and Experimental Lab. Her research focuses on developing numerical methods for spacecraft trajectory optimization. The trajectory optimization research field applies numerical techniques to produce optimal trajectories for spacecraft to accomplish mission goals. Ms. Saloglu's research goal is to tackle key challenges in trajectory optimization for spacecraft equipped with chemical or electric thrusters by proposing techniques or enhancing the existing methods.

Ms. Saloglu has been developing a software tool that performs impulse placement by starting from a two or three-impulse base trajectory which greatly decreases the search space. This tool allows an infeasible trajectory to become feasible by dividing impulses into smaller magnitudes without the loss of optimality. The next step in her research is to perform co-optimization of low-thrust trajectory, solar array size and the thruster operation modes for spacecraft. It is possible to have a better estimate of the trajectory with minimal correction required during the actual mission, have a precise mass budget and determine the optimal operation modes of the thrusters by performing co-optimization.

Ms. Saloglu will be one of the recipients of the Alabama EPSCoR Graduate Research Scholars Program for the 2024-2025 academic year. Before starting her Ph.D., she worked as an attitude and orbit control systems engineer in Turkey for three years. After concluding her Ph.D., Ms. Saloglu plans to play key roles in the spacecraft's mission and trajectory design.

Ms. Saloglu's goals include inspiring and empowering the next generation of female engineers by providing mentorship and guidance. In her free time, she volunteers at Turkish Student Organization events, reading sci-fi novels and watercolor painting.

2024 Amelia Earhart Fellow

Shruti Tandon

Citizenship: India

Proposed Program: Aerospace Engineering at the Indian Institute of Technology Madras, India

Shruti Tandon is pursuing her Ph.D. at the Department of Aerospace Engineering at the Indian Institute of Technology Madras. Working with Professor R. I. Sujith, she is also affiliated to the Center of Excellence for studying critical transitions in complex systems. Her research focuses on understanding, modeling and predicting dynamical transition to order in turbulent thermo-fluid systems such as in combustors.

Gas-turbine and rocket engines can exhibit combustion instability characterized by catastrophically high-amplitude self-sustained acoustic oscillations that can lead to restricted operational margins of engines. Ms. Tandon focuses on unraveling the spatial pattern and evolution of interactions between turbulent flow, flame dynamics and duct acoustics in combustion chambers. She adopts the perspective of complex systems theory, according to which the emergence of order results from self-organized interactions between subsystems. To identify such interactions, she develops methods employing advanced tools from network theory. A network is essentially a set of nodes, e.g. people, connected by links representing their relations, e.g. family relations. In fluid systems, however, these connections are hidden and are extracted through statistical methods.

Ms.Tandon employs various statistical measures combined with multilayer, multi-variate and time-varying networks to deduce the physical mechanisms leading to emergent order in combustion systems. Her approach also reveals critical locations in the flow where interactions foster self-organized feedback between subsystems even prior to the emergence of order. Identifying such critical locations is crucial for developing efficient control strategies to mitigate combustion instability and increase operational margin of combustors.

She is also working on expanding her approach to predict the occurrence of cyclones that emerge due to thermo-fluid interactions in the atmosphere. In the future, Ms. Tandon plans to become an academician and continue researching emergent dynamics in turbulent fluid and thermo-fluid systems. She enjoys writing poetry and crocheting in her free time.

2024 Amelia Earhart Fellow

Hannah Tomio

Citizenship: United States

Proposed Program: Aeronautics and Astronautics at the Massachusetts Institute of Technology, USA

Hannah Tomio is a Ph.D. candidate and NASA Space Technology Graduate Research Opportunities (NSTGRO) fellow in the Department of Aeronautics and Astronautics at MIT. As a member of the Space, Telecommunications, Astronomy and Radiation (STAR) Lab, her research focuses on developing miniaturized laser instruments suitable for small satellite platforms for communications and remote sensing applications.

Her thesis seeks to demonstrate the feasibility of high precision ranging over optical inter-satellite communication links and advance the necessary technologies to enable this concept to become an operational capability for the next generation of laser communication systems. These range of measurements can be used for improved orbit determination, the positioning and coordination of satellites in a constellation and the synchronization of spacecraft clocks for distributed scientific instruments. This research effort is conducted in collaboration with NASA Goddard Space Flight Center, where she is currently a Pathways Intern. Ms. Tomio has also completed internships at NASA's Jet Propulsion Laboratory (JPL), Boeing and Tethers Unlimited. As a Matthew Isakowitz fellow, she interned at Made inSpace.

Before coming to MIT, Ms. Tomio received a Bachelor of Science in electrical and computer engineering from Carnegie Mellon University and a master's in aerospace engineering from Tohoku University in Sendai, Japan, supported by a Japanese Government (MEXT) scholarship. In addition to research, she enjoys learning languages, snowboarding and running along the Charles River.

2024 Amelia Earhart Fellow

Ria Vijayan

Citizenship: India

Proposed Program: Electrical Engineering and Information Technology at the Technical University of Vienna (TU Wien, Austria

Ria Vijayan is working with the German Aerospace Center (DLR), Munich, on her Ph.D. research in the field of orbit servicing (OOS). In robotic OOS missions, an orbital manipulator approaches and grasps a defunct client satellite to perform maintenance and repair. She is pursuing her Ph.D. research, in affiliation with the Technical University of Vienna, and her main interests cover dynamic modeling, nonlinear control and optimization, with a particular focus on control methods for OOS missions.

Ms. Vijayan's research concentrates on the post-grasp stage of an OOS mission. The aim is to address challenges such as maintaining communication with Earth while stabilizing the grasped satellite, and regulating grasping forces during capture to avoid mechanical damage. The research covers Lyapunov stability analysis, sensor and actuator constraints, and experimental validation on the hardware-in-the-loop testing facility (OOS-Sim) at DLR.

Ms. Vijayan joined DLR in 2021 as a research engineer and is actively working on EU and ESA space projects. Apart from scientific publications associated with her research, she also currently holds one patent, with two others under review. She previously worked as a research assistant at the University of Wuerzburg, in the field of dynamics and control for spacecraft formation flying. Ms. Vijayan received her master's degree in Space Science & Technology as an Erasmus SpaceMaster scholar from Lulea Technological University, Sweden, in 2018. Her thesis work was demonstrated on the ExoMars rover prototype at DLR. She graduated with a bachelor’s degree in Mechanical Engineering from BMSCE, India, in 2016.

Besides her research in OOS that aims to promote a sustainable space environment, Ms. Vijayan is also mindful of lifestyle choices on Earth being more sustainable. She volunteers at the JUNO women’s cafe for refugees in Munich. In her free time she likes doing jigsaw puzzles, singing with friends, playing badminton and enjoying her cup of chai when it rains.

2024 Amelia Earhart Fellow

Rebecca Wang

Citizenship: United States

Proposed Program: Aeronautics and Astronautics at Stanford University, USA

Rebecca Wang is currently a Ph.D. candidate and National Science Foundation fellow in the department of aeronautics & astronautics at Stanford University. Under the guidance of Professor Todd Walter in the GPS Research Lab, her research focuses on developing algorithms and analysis techniques fort he integrity of multi-GNSS (global navigation satellite systems) navigation. Providing integrity for aviation and the growing market of autonomous vehicles is crucial. As new GNSSs become recently operational, understanding their performance is essential to developing integrity for these systems.

Analyzing the newest signals and anomalous events on nearly 100 satellites across the U.S., European and Chinese satellite constellations has been foundational to her Ph.D. work. As a researcher in satellite-based navigation algorithms and signals, her published research and recommendations have been adopted by the U.S. Space Force, subsequently leading to the improved accuracy of GPS signals. Beyond research, she is passionate about empowering young women to stay true to their identity while studying STEM.

Prior to her Ph.D. at Stanford, Ms. Wang obtained a master's in aeronautics & astronautics at Stanford University, a master's in global affairs at Tsinghua University on a Schwarzman Scholarship and a bachelor's in aerospace engineering at the University of Texas at Austin. She has held multiple internships at several organizations, including several space start-ups and SpaceX, where she designed, built and tested Starship nosecone structure to survive atmospheric re-entry conditions.

Outside of her academic life, Ms. Wang enjoys spending time with friends, playing music and discovering the vibrant social dance scene in the California Bay Area.

2024 Amelia Earhart Fellow

Kierra Wilk

Citizenship: United States

Proposed Program: Earth, Environmental and Planetary Science at Brown University, USA

Kierra Wilk is a Ph.D. candidate at Brown University studying planetary science. She received her Bachelor of Science in geology and a minor in astrobiology from Rensselaer Polytechnic Institute in 2021 and her Master of Science in Earth, environmental and planetary Science from Brown University in 2023.

Her research focuses on using laboratory reflectance spectroscopy to understand remote signatures of water on airless bodies such as the moon. Understanding the origin and distribution of volatiles, including water, on the moon is pivotal for constraining its history and evolution. The presence and distribution of water on the lunar surface also holds important implications for space exploration and in-situ resource utilization. In addition to studying the moon, she has published work on Mars and is interested in the geologic mapping of planetary bodies such as Europa. Ms. Wilk is actively involved with two upcoming NASA missions, Lunar Trailblazer and Europa Clipper.

After completing her Ph.D., Ms. Wilk will join the Planetary Geology, Geophysics and Geochemistry Laboratory at NASA Goddard Space Flight Center as a research scientist. Beyond her research, Ms. Wilk is passionate about science education and outreach. She is involved in several outreach programs aimed at encouraging K-12 students, in particular young women and people of color, to pursue a career in STEM. Additionally, she is president of a graduate student organization Graduate Students of Color in STEM (GSOCnSTEM) at Brown University, which aims to build community for graduate students of color, increase interactions between faculty and graduate students and increase representation in STEM.

In her free time, Ms. Wilk enjoys reading thriller novels and painting her nails.

2024 Amelia Earhart Fellow

Zoelle Wong

Citizenship: United States

Proposed Program: Aerospace Engineering at Georgia Institute of Technology, USA

Zoelle Wong is a Ph.D. student and National Science Fellow in aerospace engineering at Georgia Institute of Technology (GT) in the Computational and Experimental Rotorcraft Engineering and Aerodynamics Lab (CEREAL). Ms. Wong is working towards designing eco-friendly circuit breakers for substation power grids by replacing SF6 with supercritical CO2 (sCO2).

Her research focuses on modeling the fluid and thermomagnetic interactions of partially ionized sCO2. Her research involves temperature ranges from 10,000 to 20,000 K with pressures near 100 bar. Current knowledge of plasma in these operating conditions remain largely unexplored, as most of the work was completed at atmospheric pressures. Because the fluid can transition to the transcritical phase, this problem presents challenges in predicting the onset of non-equilibrium thermodynamics and non-ideal gas behavior. To address these questions, Ms. Wong is taking an iterative approach between modelling and experiments, as models can inform decisions in the experimental design process while experimental results can provide model inputs and validation for the computational model. This interdisciplinary approach is done in collaboration with the Plasma Dielectrics Lab at GT.

Prior to beginning her doctoral studies, Ms. Wong graduated from the University of Texas at Austin in 2022 with two bachelor's degrees in aerospace engineering and Asian culture languages with an emphasis in Chinese. In conjunction with her studies, she co-founded Fermata Reeds Inc. and interned at METECS and the Jet Propulsion Laboratory.

After earning her Ph.D., Ms. Wong desires to work at a national research lab then return to academia. Outside her doctoral studies, she is the president of the Atlanta Chapter Vertical Flight Society. She also enjoys watching C-/K-dramas, taking long walks and spending time with family and friends.