

Cecilia Garraffo

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SUMMARY

Founder and director of AstroAI and EarthAI at the Center for Astrophysics | Harvard & Smithsonian, Dr. Garraffo is an astrophysicist and AI researcher leading interdisciplinary teams at the interface of physics and machine learning. AstroAI is the first institute dedicated to artificial intelligence for astrophysics; EarthAI extends this approach to tackle environmental challenges. Garraffo has authored over 60 publications and has a strong track record of research leadership, mentorship, and science policy. She is also in international demand as a speaker on AI and ML in science.

EDUCATION

2010 **PhD in Physics**, University of Buenos Aires, Argentina
2005 **M.S. in Astronomy**, National University of La Plata, Argentina

AWARDS

2024 **Presidential Early Career Award for Scientists and Engineers (PECASE)**
The highest honor bestowed by the U.S. government on outstanding scientists and engineers early in their careers.
2023 **Leader of the Winning Team at the European's Space Agency's Ariel Data Challenge**
International Competition.

WORK EXPERIENCE

2024 – present	Federal Scientist , Smithsonian Astrophysical Observatory.
2023 – present	Founder & Director, AstroAI , CfA Harvard & Smithsonian. The first dedicated institute for Astrophysical Artificial Intelligence.
2023 – present	Founder & Director, EarthAI , CfA Harvard & Smithsonian. Developing Artificial Intelligence with environmental impact.
2023 – present	Affiliate at the NSF Institute for Artificial Intelligence and Fundamental Interactions, MIT.
2023 – present	Affiliate at the Berkman Klein Institute for Internet and Society, Harvard Law School.
2021 – 2023	Astrophysicist , NASA's Chandra X-ray Observatory, CfA Harvard & Smithsonian.
2018 – 2021	Research Scientist at the Institute for Applied Computational Sciences, SEAS - Harvard University.
2013 – 2018	Postdoctoral Fellow , High Energy Astrophysics Division, CfA Harvard & Smithsonian
2010 – 2012	Research Associate , Brandeis University, Physics Department High-Energy and Gravitational Theory group.

RESEARCH

Garraffo develops AI methods for astrophysics, focusing on physically grounded and generative models. She has authored 64 peer-reviewed publications (h-index = 25) spanning theoretical physics, stellar astrophysics, and exoplanet science. As founder and director of AstroAI—the first institute for Astrophysical AI—she positioned SAO at the forefront of this emerging field. AstroAI members published routinely in top ML venues such as NeurIPS and ICML, the top two world’s ML conferences. Dr. Garraffo has also established AstroMind as an industrial partner, creating a new model of academic–industry collaboration that integrates science, computation, and engineering to accelerate discovery.

LEADERSHIP

2024 – present	Founder and Director of Student Pathway to Astrophysical Research Knowledge (SPARK) , the Postbaccalaureate Program at CfA Harvard & Smithsonian 2025 - present.
2024 – present	Founder and Director of AstroAI Summer REU Program at CfA Harvard & Smithsonian, host to 14 students in 2025.
2024 – present	Chair of the AI / ML Working Group for Habitable Worlds Observatory , NASA.
2023 – 2024	Creator and Chair of the AstroAI Seminar Series , CfA Harvard & Smithsonian.
2022 – 2023	Chair of the Fostering Cross-Collaborations Committee , High Energy Division, CfA Harvard & Smithsonian.

ACADEMIC SERVICE

2023 – present	Member of the AI / ML Working Group for Habitable Worlds Observatory , NASA.
2025 – present	Member of the Data Governance Policy Working Group of the Smithsonian Institution.
2024 – 2025	Member of the AI Policy Working Group of the Smithsonian Institution.
2022 – 2023	Chair of the Fostering Cross-Collaborations Committee , High Energy Division, CfA Harvard & Smithsonian.
2021 – 2024	Member of the CfA Seminar Organizing Committee , CfA — Harvard & Smithsonian.
2023 – present	Member of the Steering Committee of the AI/ML Working Group for HWO (NASA).
2023 – present	Member of the AI Policy Working Group , Smithsonian Institution.
2016 – present	Reviewer for the SI Latino Initiative Program; Chandra X-ray Observatory; NASA; Astrostatistics Interest Group (American Statistical Association); NASA-FDL; Monthly Notices of the Royal Astronomical Society (MNRAS); Nature Astronomy; The Astrophysical Journal, ICML Workshop for AI x Astro.
2016 – 2018	Member of the Women in Science Council and Postdoctoral Council , CfA — Harvard & Smithsonian.
2003 – 2006	Academic Counselor at the National University of La Plata , Argentina.
2022 – 2024	Member of the CfA Machine Learning Journal Club Organizing Committee , CfA Harvard & Smithsonian.
2022 – 2023	Member of the Code of Conduct Working Group , CfA Harvard & Smithsonian.

FUNDING

Garraffo has secured over \$1M in external funding just in the last year.

- 2025 **PI, \$150,000**, *AstroAI's Dedicated GPU Cluster*. Smithsonian Institution.
- 2025 **PI, \$68,355**, *Physically Realistic Generative Artificial Intelligence for Astronomy and Climate* — Smithsonian Institution FY25 Research Proposals Call, .
- 2025 **co-PI, \$74,881**, *AI for Methane Plume Detection* — Smithsonian Institution FY25 Research Proposals Call.
- 2024 **PI, \$750,000**, Sponsored Research. AstroMind.
- 2024 **PI, \$86,000**, *Fostering U.S. Latino Leadership in Emerging Interdisciplinary Sciences: AstroAI and EarthAI Fellowships at SAO* — Latino Initiative Pool, Smithsonian Institution.
- 2024 **co-PI, \$73,366**, *Exoplanet Atmospheric Properties and Biosignature Searches with Artificial Intelligence* — Smithsonian Institution FY25.
- 2024 **Recipient, \$10,000**, *Supporting AstroAI Visitors and Speakers to Foster Community Building* — Harvard Data Science Initiative.
- 2024 **PI, \$34,667**, *Seed Funding for EarthAI: Developing Artificial Intelligence for Environmental Impact* — Smithsonian Women's Committee.
- 2024 **PI, \$43,603**, *The Radiation Environment of JWST's Key Planet Host LHS 475* — Chandra X-ray Center, Cycle 25.
- 2023 **Recipient, \$10,000**, *Supporting AstroAI Collaborators and Speakers for Advancing Interdisciplinary Research* — Harvard Data Science Initiative.
- 2018 **PI, \$80,000**, *Modeling Chandra Observations of Disk-Star Interaction* — Chandra X-ray Center, Cycle 20.
- 2018 **PI, Computational Resources**, *Realistic MHD Modeling of Wind-Driven Processes in Cataclysmic Variable-Like Binaries* — NASA HEC.
- 2014 – 2018 **Co-I**, *The Extreme-UV Stellar Characterization for Atmospheric Physics and Evolution (ESCAPE)* — NASA SMEX, Phase A; *Weaving the History of the Solar Wind with Magnetic Field Lines* — HST Cycle 26; *Ionization of Protoplanetary Disks by Energetic Flare and CME Particles* — Smithsonian Institution; *The High-Energy Environment of the Triple Super-Earth Host GJ 9827* — XMM; *Characterizing the Winds of M Dwarf Stars* — HST Cycle 25; *PTFO 8-8695b: The Youngest Exoplanet or a Stellar Feature?* — Chandra X-ray Center, Cycle 18; *Lessons from Mars: Are Habitable Atmospheres on Planets Around M Dwarfs Viable?* — Smithsonian Institution Consortium for Unlocking the Mysteries of the Universe; *The First Mass and Angular Momentum Loss Measurements for a CV-like Binary* — Joint XMM and HST Program.

TEACHING

2025	Invited Lecturer , Astral-X COSPAR School , La Plata, Argentina (Dec).
2025	Invited Professor , “Curso de Inteligencia Artificial con Aplicaciones en Astrofísica”, University of Buenos Aires (Aug).
2025	Guest Lecturer in Atmospheric Sciences , Harvard University (May).
2022 – present	Thesis Committee Member , Harvard Astronomy PhD student Kevin Ortiz.
2021 – present	Instructor , Amautas – a platform for science education in Spanish.
2020 – 2022	Thesis Committee Member , Harvard Data Science M.S. student Tao Tsui.
2018 – 2021	Lecturer in Computer Sciences , Harvard University.
2018	Guest Lecturer , Department of Astronomy, Harvard University.
2007 – 2008	Teaching Assistant , University of Buenos Aires, Argentina.
2003 – 2007	Teaching Assistant , National University of La Plata, Argentina.

MENTORING

2025 – present	Supervising Manuel Perez-Carrasco, a SPARK student on “AI for Methane Plume Detection”, EarthAI.
2022 – present	Supervised over 40 AstroAI students , fellows, and interns.
2016 – present	Supervised 5 Southampton M.S. students .
2021	Mentor for Women in Data Science Cambridge Datathon , MIT.
2018 – 2021	Supervised 6 Harvard Computer Science M.S. students .
2016 – 2018	Mentor for the <i>Talented and Gifted STEM Program for Latinas in the Boston Public Schools</i> , Harvard-Smithsonian CfA.
2015 – 2018	Advisor for <i>El Universo a Tus Manos</i> Program for Undergraduate Science Majors, CfA.

PRESS & MEDIA

- 2025 **Featured Scientist in Book**, “*Stories of Women in STEM: AI*” — Smithsonian Science Education Center. ssec.si.edu/women-in-artificial-intelligence.
- 2025 **Newspaper Article**, *La Nación*, the second most read newspaper in Argentina — “La astrofísica argentina Cecilia Garraffo dirige AstroAI para revolucionar la astrofísica y la investigación del universo.” lanacion.com.ar.
- 2025 **Newspaper Feature**, *Clarín*, the largest newspaper in Argentina and the second most circulated in the Spanish-speaking world. (Print).
- 2024 **Magazine Article**, “Exploring AI to Share Knowledge: Life on Exoplanets” - Article covering Garraffo and AstroAI. [Impact Magazine](#), Vol. 10 No. 1, Smithsonian Institution.
- 2024 **Newspaper Article** on AI in astrophysics highlighting AstroAI and life-marker searches on exoplanets, featuring Garraffo and AstroAI. [Folha de S. Paulo, Brazil](#).
- 2024 **Technology Article**, “Astronomers are enlisting AI to prepare for a data downpour” - Article covering Garraffo and AstroAI. [MIT Technology Review](#).
- 2024 **Feature**, *USA Today / Smithsonian Voices* — “Wonder & Awe: A Smithsonian Guide to Our Place in Space,” mini-feature including AstroAI. smithsonianmag.com.
- 2024 **Newspaper Article**, *El Destape* (Argentina) — “Una argentina, al frente del primer centro de inteligencia artificial aplicada a la astronomía.” eldestapeweb.com.
- 2024 **Coverage**, *Meteored Argentina* — “La argentina que lidera desde Harvard el primer centro de Inteligencia Artificial aplicado a la astrofísica.” meteored.com.ar.
- 2024 **Mention**, *Smithsonian Impact Magazine* — institutional feature highlighting AstroAI and EarthAI initiatives (PDF available).
- 2024 **Quoted in Congressional testimony**, *U.S. Senate Rules Committee Hearing on Artificial Intelligence* — Smithsonian testimony referencing AstroAI as a model AI program for astrophysics.
- 2024 **Interview**, *Astrobites* “*Meet the AAS Keynote Speakers: Dr. Cecilia Garraffo.*” astrobites.org.
- 2018 **Feature**, *Physics Today* — “The Space Weather on the Closest Earth-Like Exoplanet,” discussing stellar-wind modeling from Proxima Centauri. physicstoday.org.

ORGANIZATION OF WORKSHOPS AND MEETINGS

2025	Scientific Organizing Committee (SOC) member, Special Session at European Astronomical Society (EAS): The changing macrocosm of astroinformatics: big data, artificial intelligence, statistical inference, challenges, and more. Cork, Ireland.
2025	SOC member, Special Session at the American Astronomical Society (AAS) 245th: Harnessing Artificial Intelligence for Advanced Statistical Inference in Astrophysics. Washington, D.C.
2024, 2025	SOC member, AstroAI Summer Workshop, CfA Harvard & Smithsonian.
2024	SOC member, Latin American Conference on Astrophysics and Relativity (LACAR), Bogotá, Colombia.
2024	SOC member, EAS AstroAI Special Session, SOC, Padova, Italy.
2024	SOC member, SRG/eROSITA Conference, Garching, Germany.
2024	SOC member, Special Session at the AAS 243rd. The Impact of Artificial Intelligence on Astrophysics Research: Avenues and Potential Breakthroughs.
2023 – present	AstroAI Meetings Organizer, CfA Harvard & Smithsonian.
2021 – 2024	CfA Seminar Organizer, CfA Harvard & Smithsonian.
2021, 2024	Organizer, Latin American School of Relativity and Astrophysics.
2015 – 2018	Organizer, Women in Science Meetings, CfA Harvard & Smithsonian.
2014	Organizer, Annual Postdoctoral Symposium, CfA Harvard & Smithsonian.

MISSION INVOLVEMENT & COLLABORATIONS

2023 – 2024	Member of the Management Team of the Line Emission Mapper X-ray probe concept.
2023	PI for the Normal Incidence Extreme Ultraviolet Photometer (NExtUP) SmallSat Mission Concept.
2020 – 2023	Deputy PI for the Normal Incidence Extreme Ultraviolet Photometer (NExtUP) SmallSat Mission Concept.
2020 – 2024	Member of the Science Team for the Extreme-UV Stellar Characterization for Atmospheric Physics and Evolution (ESCAPE), small explorer (SMEX) mission concept.
2020 – 2024	Member of NASA's <i>Living With a Star</i> collaboration team; member of NASA's NeXSS's <i>Living Breathing Planet</i>; member of <i>The COCOA-PUFS Project</i>, Space Telescope Institute.

SELECTED INVITED AND PLENARY TALKS

- 2025 *Using AI to push the boundaries of discovery, from deep space to the search for life*. Invited Speaker at [AI Unlocked: Where innovation meets imagination](#), hosted by the Special Competitive Studies Project, a non-profit, non-partisan project chaired by Eric Schmidt, National Landing/Crystal City in Arlington, VA, Oct.
- 2025 *Más allá con IA: explorando el universo*. Invited Speaker at [Nerdearla](#), Buenos Aires, Sept.
- 2025 *AI, Are We Alone?* — Invited Featured Speaker, Digital-Life-Design (DLD) Future Hub: Impact of AI, Munich, Sept.
- 2025 *From Earth to the Stars* — Featured Speaker, Shared Futures: The AI Forum (Aspen Institute & Patrick McGovern Foundation), Washington, D.C., Jun.
- 2025 *The AI Discovery Revolution in Astronomy* — Invited Speaker, [National Museum of Natural History's Science Symposium](#), Smithsonian Institution, May.
- 2025 *Finding Life with AI* — Invited Speaker, Exoplanet Day, Smithsonian Astrophysical Observatory, Cambridge, MA, Apr.
- 2025 *Revolutionizing Astronomy Through AI* — Lunch Speaker, Smithsonian Institution Board of Regents Meeting, Washington, D.C., Apr.
- 2025 *The AI Discovery Revolution in Astronomy* — Colloquium Speaker, Saint Mary's University, Halifax, Canada, Apr.
- 2025 *The AI Discovery Revolution in Astronomy* — Invited Speaker, American Physical Society (APS) Meeting, Mar.
- 2025 *From the Cosmos to Compassion: Sparking Human Collaboration and Cross-Disciplinary Breakthroughs in Applied AI* — Panel Speaker, [AI-Powered Women Summit](#), MIT, Jan.
- 2024 *La Astronomía en la Era de la Inteligencia Artificial* — Invited Speaker, Universidad Nacional de La Plata, Argentina, Nov.
- 2024 *Transforming Astronomical Discovery with AI: Challenges and Opportunities in the Age of Big Data* — Physics Colloquium, New York University, Nov.
- 2024 *Transforming Astronomical Discovery with AI: Challenges and Opportunities in the Age of Big Data* — Colloquium, Leibniz Institute for Astrophysics, Potsdam, Germany, Oct.
- 2024 *The AI Discovery Revolution in Astronomy* — Plenary Speaker, AI Goes MAD² Workshop, Instituto de Física Teórica, Madrid, Spain, Oct.
- 2024 *La Revolución de la Astronomía en la Era de la Inteligencia Artificial* — Invited Seminar, Universidad Politécnica de Madrid, Spain, Oct.
- 2024 *Revolucionando la Astronomía con Inteligencia Artificial* — Planetario Galileo Galilei, Buenos Aires, Argentina, Aug.
- 2024 *Leveraging AI to Transform the Astronomy Data Revolution into a Discovery Revolution* — Plenary Speaker, American Astronomical Society (AAS) Summer Meeting, Madison, WI, Jun.
- 2023 *AstroAI: Enabling Next Generation Astrophysics* — Caltech Astronomy Colloquium, Nov.
- 2023 *AstroAI: Enabling Next Generation Astrophysics* — Columbia University Astronomy Colloquium, Nov.
- 2023 *AstroAI: Advancing Astrophysical Research through Tailored Artificial Intelligence* — American Museum of Natural History (AMNH), NY, Oct.
- 2023 *AstroAI: Enabling Next Generation Astrophysics* — Center for Computational Astrophysics, Flatiron Institute, NY, Oct.
- 2022 *Stellar High-Energy Radiation and its Effects on Exoplanets* — Astronomy Colloquia, University of Washington and University of Sheffield, UK.
- 2022 *StelNet: A Hierarchical Bayesian Neural Network for Stellar Characterization* — Invited Speaker, [European Astronomical Society Annual Meeting](#), Valencia, Jun.
- 2022 *The Role of Magnetic Complexity in the Rotation Evolution of Cool Stars* — Invited Speaker, [Fifty Years of the Skumanich Relations Conference](#), Boulder, CO, Mar.

- 2021 *StelNet: A Hierarchical Bayesian Neural Network for Stellar Characterization* — Data Science Colloquium, Universidad de San Martín, Argentina, May.
- 2021 *Stellar High-Energy Radiation and its Effects on Exoplanets* — Chandra X-ray Center Special Talk, Feb.
- 2020 *Estudiando Estrellas para Entender Planetas* — Physics Colloquium, Universidad de Buenos Aires, Oct.
- 2020 *En Busca de Planetas Habitables Usando Redes Neuronales* — International Invited Speaker, Festival de Astronomía, Colombia, Jan.
- 2019 *StellarNet: A Bayesian Neural Network for Stellar Evolution* — CMM Pucon Symposium, Chile, Aug.
- 2019 *Stellar Spin to Planetary Atmospheres* — Planet-Star Connections in the Era of TESS and Gaia, Kavli Institute for Theoretical Physics, Santa Barbara, CA, Jun.
- 2018 *Stellar Activity and Rotation in Cool Stars* — Keynote Speaker, Einstein Fellows Symposium, Cambridge, MA, Oct.
- 2018 *Stellar Activity and its Impact on Exoplanets* — Invited Talk, “First Light in a New Era of Astrophysics,” Aarhus, Denmark, Jul.
- 2018 *Gone With the Wind: From Stellar Spin to Planetary Atmospheres* — CfA Summer Colloquium, Jun.
- 2018 *The Revolution Revolution* — Invited Talk, Institute for Theory and Computation (ITC), CfA, Feb.
- 2017 *From Stars to Planets* — Invited Colloquium, Boston College, Newton, MA, Nov.
- 2017 *Magnetic Complexity: The Missing Piece That Solves Two Puzzles* — Invited Talk, “Stars and Planets Science Extravaganza 2!”, CfA, Oct.
- 2017 *Stellar Activity Evolution: Impact on Exoplanets and CV Evolution* — Invited Astrophysics Colloquium, Boston University, Feb.
- 2016 *The Missing Morphology Term in Stellar Rotation Evolution* — Plenary Talk, 19th Cambridge Workshop on Cool Stars, Solar Systems, and the Sun, Uppsala, Sweden, Jun.

INVITED PANELS

- 2025 *Nerdearla Panel*. Invited Panelist at [Planetario Galileo Galilei](#), Buenos Aires, Sep.
- 2025 *Made in Argentina*. Invited Panelist at [Nerdearla](#), Buenos Aires, Sep.
- 2025 *Astronomers Looking Down: A Sustainable Earth Incubator* — Invited Panelist at [South by Southwest](#), Austin, TX, Mar.
- 2025 *The Role of AI in Astrophysics* — Invited Speaker and Panelist, Brown Advisory, Austin, TX, Mar.

OUTREACH AND SCIENTIFIC JOURNALISM

2025	<i>Universo IA</i> , invited speaker at the Galileo Galilei Planetarium, Buenos Aires, Aug.
2024	<i>Revolucionando la Astronomía con IA</i> , invited speaker at the Galileo Galilei Planetarium, Buenos Aires, Argentina.
2023	<i>Los Misterios del Universo e Inteligencia Artificial</i> , talk for Amautas.
2023	<i>AI in Astronomy</i> , presentation for 6th grade, Chenery Middle School, Belmont, MA.
2023 – present	Faculty for <i>Amautas</i> , platform for science outreach in Spanish.
2021	<i>Mirar el Cielo Viendo el Origen</i> , C. Garraffo, G. Giribet, J. R. Martinez Galarza, & C. Aguirre, article for <i>Antesis, Argentina</i> .
2016	<i>El hombre en el paisaje cósmico</i> , C. Garraffo, G. Giribet, & K. Poppenhaeger, article for <i>Antesis, Argentina</i> .
2010	“ <i>Supernova SN 1979C: El agujero negro más joven?</i> ”, C. Garraffo & G. Giribet, article for <i>CienciaNet</i> , Argentina.
2016	Mentor through the <i>YouthAstroNet</i> program at CfA.
2023	<i>Apasionadas por el Universo</i> , video for the Galileo Galilei Planetarium, Buenos Aires, Argentina.
2014	Caption author for Chandra X-ray Observatory images, NASA Headquarters.
2013	Video presentation on black holes for Shamrock Elementary School, Oct.

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