

Monica G. Bobra

Principal Data Scientist

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Summary

I have over a decade of experience working as a research scientist. I develop novel machine learning algorithms and apply them to complex data to glean insights and inform public decision-making. I develop open data and open source scientific software for data-intensive research. I provide expertise on data science workflows by publishing papers, giving talks, organizing conferences, developing new communities, mentoring students, and serving on committees and boards.

Education

University of New Hampshire, Durham NH

M.S. Physics
JANUARY 2010

Boston University, Boston MA

B.A. Astronomy
B.S. Communication
MAY 2004

Skills

Python scientific software stack
Machine learning model development
together with interpretability tools
Statistical modeling
Data visualization
Cloud computing
Git (and CI/CD)

Awards

Robert H. Goddard Exceptional Achievement
for Science Award (2024)
NASA Group Achievement Award — SunPy
Development Team (2024)
American Astronomical Society Solar
Physics Division Popular Media Award (2021)
NASA Group Achievement Award — Solar
Dynamics Observatory Team (2017)
Robert H. Goddard Exceptional Achievement
for Science Award (2016)
NASA Space Grant Fellowship (2008 - 2009)
NASA Group Achievement Award — Hinode
Team (2007)

Experience

State of California, Office of Data and Innovation / Principal Data Scientist

MAY 2023 - PRESENT, SACRAMENTO & SAN FRANCISCO BAY AREA, CA

Leading new initiatives with partner departments, such as the California Natural Resources Agency and the California Environmental Protection Agency, to develop and implement machine learning models to improve safety, sustainability, and decision-making

Forging partnerships with research institutes, like the NASA Ames Research Center and NASA Jet Propulsion Laboratory, to convert research into action

Organizing and leading a community of data science practitioners across the state to co-develop best practices in ethical data science, and briefing legislators on ethics in data science

Supporting, together with other departments, the Governor's Executive Order on Generative AI

Stanford University / Research Scientist

APRIL 2010 - JULY 2021, STANFORD CA

Published [several studies](#) and [presented talks](#) on solar flare prediction using machine learning algorithms and large datasets returned by NASA satellites that pioneered a new field of research, garnered media attention, and won \$1.8M in grants

Organized conferences to foster interdisciplinary collaboration, such as Machine Learning in Heliophysics (2019), Python in Astronomy (2020), and COSPAR Data Science Workshops (2021), and led the development of open source software as a founding member of the Python in Heliophysics community

Led a culture of open scholarship at Stanford Data Science as a founding member of the Center for Open and REproducible Science

Wrote science policy to inform the direction of data science at a federal level as a member of the National Academy of Sciences Heliophysics Mid-Decadal Committee (2020)

Harvard-Smithsonian Center for Astrophysics / Astrophysicist

OCTOBER 2005 - AUGUST 2007, CAMBRIDGE MA

Worked on two NASA satellites and developed a solar magnetic field model that accurately reproduces observations from these satellites