Monica G. Bobra

Principal Data Scientist

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Summary

I have fifteen years 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, as well as academic and federal organizations to develop and implement novel machine learning models that improve safety, sustainability, and decision-making

Leading a community of data scientists across the state to co-develop best practices in ethical data science, and briefing legislators on interpretability and explainability 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 first-author studies and presented talks on solar flare prediction using novel machine learning algorithms and petabyte-scale image data returned by the NASA Solar Dynamics Observatory that pioneered a new field of research, won $1.8M in NASA and NSF grants, and garnered media attention

Organized conferences to foster interdisciplinary collaboration, such as Machine Learning in Heliophysics (2019), Python in Astronomy (2020), and COSPAR Data Science Workshops (2021)

Led the development of open source software as Vice-Chair of the Board for SunPy, a founding member of the Python in Heliophysics community, and an editor for the Journal of Open Source Software

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