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, 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 including NumPy, SciPy, pandas, Matplotlib, SunPy, statsmodels, scikit-learn, PyTorch, TensorFlow, Dask and more)

Machine learning algorithms for image data, metadata, and time series data as well as interpretability tools

Statistical Modeling (e.g. VARs, Gaussian Process)

Data Visualization (e.g. D3.js)

Cloud computing (AWS, GCP)

Git (and Continuous Integration / Continuous Delivery)

SQL

Awards

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 data science projects across the state to improve public decision-making and serving as the data science methodology expert for the state

Leading the Python open source scientific software community by organizing conferences and serving as an Editor for the *Journal of Open Source Software*

Tomorrow.io / Senior Research Data Scientist
MAY 2022 - JANUARY 2023, BOSTON MA (REMOTE)

Developed terrestrial weather prediction models using machine learning algorithms and geospatial data that enabled public and private customers, such as local governments and commercial airlines, to make automated decisions to protect their infrastructure

Stanford University / Research Scientist
APRIL 2010 - JULY 2021, STANFORD CA

Published several studies and presented talks on space weather prediction models using machine learning algorithms and image data taken by NASA satellites that enabled the federal government to protect infrastructure, such as satellites and power grids, and garnered media attention from *The Mercury News* and *Scientific American*

Led two large interdisciplinary teams to develop space weather prediction models using novel machine learning algorithms as PI and Co-I of NSF and NASA grants ($1.8M total award)

Led the development of open data and open source software as a founding member of the Python in Heliophysics and Machine Learning in Heliophysics organizations and Vice-Chair of the Board for SunPy

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

Developed flight hardware tests, operations, and software for the JAXA/NASA Hinode satellite, and developed a numerical model of solar flares that accurately reproduces observations from the satellite