

Mitzi Morris

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Research Software Engineer Experience

- 2017 - present** Institute for Social and Economic Research and Policy, Columbia University, New York, NY
Senior Staff Programmer (Statistics)
Member of the core development team for Stan, an open-source probabilistic programming language for statistical modeling, and member of the Stan Governing Body.
- Developed new features in C++ and wrote a Python interface for the Stan inference engine.
 - Collaborated with epidemiologists on Bayesian models for disease data analysis.
 - Presented at workshops and conferences on probabilistic programming and statistical modeling.
- 2011 - 2012** Department of Biomedical Informatics, Columbia University, New York, NY
Programmer/Analyst (Bioinformatics)
- Developed Java programs for analysis of free-text medical notes using Lucene and MySQL.
- 2009 - 2011** Center for Genomics and Systems Biology, New York University, New York, NY
Programmer/Analyst (Genomics)
- As part of the the modENCODE project for *C. elegans*, analyzed RNA-seq data obtained from next-gen sequencer platforms. Programmed in Java, R, and Python.
- 2006 - 2007** Psych Institute Epigenomics Lab, Columbia University, NY
Programmer/Analyst (Genomics)
Supported researchers investigating the epigenetic basis of major mental disorders and cancer. Wrote Java programs, R scripts, MySQL databases.
- 2002 - 2004** Columbia Genome Center, Columbia University, NY
Senior Programmer/Analyst (Bioinformatics)
Implemented scalable text processing workflows using Java and MySQL for *Geneways*, a tool for biomedical text mining.
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Other Professional Experience

- **Lucidworks, San Francisco, CA** (2014-2016): Technical Writer for Lucene-based search analytics system.
- **AT&T Research, NJ** (2012): Developed a RESTful API for product search on mobile platforms.
- **Alias-i NY** (2008): Wrote software to cross-reference MEDLINE articles and bio-medical databases.
- **NY Times Digital, NY** (1999-2001): Revamped newsfeed and email infrastructure for nytimes.com website.
- **Viacom, NY** (1997-1998): Director of Quality Assurance and Testing. Managed team responsible for QA of popular high-traffic websites.
- **NOMOS, Pittsburgh, PA** (1993-1997): Developed C and C++ software for radiation therapy systems which required FDA approval. Wrote software test plan, supervised testing.
- **CHILDES Project, Carnegie Mellon University, Pittsburgh, PA** (1990-1993): Built software for annotating natural language corpora.

Publications

Selected Peer-reviewed Journal Articles

- Ward T, et al. Bayesian spatial modelling of localised SARS-CoV-2 transmission through mobility networks across England. *PLoS Computational Biology*, 2023. DOI: [10.1371/journal.pcbi.1011580](https://doi.org/10.1371/journal.pcbi.1011580).
modeling, programming
- Morris M, et al. Bayesian Hierarchical Spatial Models: Implementing the Besag York Mollié Model in Stan. *Spatial and Spatio-temporal Epidemiology*, 2019. DOI: [10.1016/j.sste.2019.100301](https://doi.org/10.1016/j.sste.2019.100301).
first author, modeling, programming
- Gerstein MB, et al. Integrative analysis of the *Caenorhabditis elegans* genome by the modENCODE project. *Science*. 2010;330(6012):1775-87. PubMed PMID: [21177976](https://pubmed.ncbi.nlm.nih.gov/21177976/)
programming, analysis, and visualizations, (one of 18 first authors)
- Kerkel, K., Spadola, A., Yuan, E. et al. Genomic surveys by methylation-sensitive SNP analysis identify sequence-dependent allele-specific DNA methylation. *Nature Genetics* 40, 904–908 (2008).
<https://doi.org/10.1038/ng.174>
statistical analysis
- Rzhetsky A, et al. GeneWays: a system for extracting, analyzing, visualizing, and integrating molecular pathway data. *Journal of Biomedical Informatics*. 2004 Feb;37(1):43-53. PubMed PMID: [15016385](https://pubmed.ncbi.nlm.nih.gov/15016385/)
software development

Full list: [Mitzi Morris Google Scholar Profile](#)

Online Talks and Case Studies

- The Pragmatic Probabilistic Programmer - Keynote, StanCon 2024.
- Multilevel Regression Modeling with CmdStanPy and plotnine, Stan Case Studies 2023.
- Stan Notebooks in the Cloud, Stan Case Studies 2020.
- Spatial Models in Stan: Intrinsic Auto-Regressive Models for Areal Data, Stan Case Studies 2017.

Books

Text Processing in Java. New York: Colloquial Media, 2014. 328pp.

Education

Coursework in Statistics
Coursework in Computer Science and Mathematics
M.A. in Linguistics
B.A. in French with Honors

Columbia University, NYU
Carnegie Mellon University
University of California, Santa Cruz
University of Michigan