

Vivaswat Shastry

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Summary

- Developed three software packages (in Python, R and C++) of novel machine learning methods for processing genomic data with >25,000 downloads in total
- Led statistical modeling & data analysis in seven peer-reviewed publications ([Google Scholar](#))
- Designed & delivered workshops in scientific computing & data visualization for 8+ years as a Certified Software & Data Carpentry Instructor (from [The Carpentries](#))
 - Optimized Big Data workflows on high-performance computing (HPC) cloud & cluster systems
- Amateur stand-up comedian

Projects

AbbVie, North Chicago, IL

Sep 2025 – present

Postdoctoral Fellow, Computational Genomics

- Identifying drug targets with highest probability of success using AI/ML techniques

Avalo, Inc., Durham, NC

Jun 2025 – Aug 2025

Genomics Contractor

- Implemented bioinformatics pipelines for genotyping and variant calling in polyploid data

University of Chicago, Chicago, IL

Sep 2020 – Jun 2025

Graduate Research Assistant, Department of Human Genetics

- Built a ML model to estimate variant effects from biobank-scale data (published in [GENETICS](#))
- Implemented novel network analysis method to model outliers in a graph-based framework (package with user-friendly documentation: [FEEMSmix](#))
 - Decreased computational complexity of algorithm to obtain 4x speedup over current method

University of Wyoming, Laramie, WY

Jan 2018 – Aug 2020

Graduate Research Assistant, Department of Botany

- Developed novel ancestry & genotype estimation method for low-coverage sequencing data in mixed-ploidy samples (package with vignette: [popgen-entropy](#))
 - Reduced sequencing costs by 5x while maintaining high accuracy in genotyping
- Improved runtime (10x speedup) and accuracy (30% increase in precision) of a hierarchical Bayesian model using efficient sampling techniques (CRAN package: [CNVRG](#))

Education

University of Chicago, Chicago, IL

Ph.D. in Computational Genomics

Jun 2025

University of Wyoming, Laramie, WY

M.S. in Botany

Aug 2020

B.S. in Electrical Engineering, Minor in Computational Science

Dec 2017

Honors: *summa cum laude*, Tau Beta Pi

Technical Skills

- **Bioinformatics:** BLAST, bwa, GATK, PLINK, samtools, vcftools, Bioconductor
- **Machine Learning:** unsupervised clustering (PCA, k-means, LDA), deep neural networks, decision trees/random forests, support vector machines, Bayesian inference
- **Programming:**
 - **python** (NumPy, SciPy, scikit-learn, statsmodels, pandas, matplotlib, PyTorch, Tensorflow)
 - **R** (tidyverse, sp, STAN, Rmarkdown, Shiny)
- **Version Control & Workflow:** Bash, AWS, Nextflow, Docker, git/GitHub, *nix

Publications (select)

1. **Shastry V**, Musiani M, Novembre J. *Jointly representing long-range genetic similarity and spatially heterogeneous isolation-by-distance*. PLOS Genetics. 2025 Sep;21(9):e1011612.
2. **Shastry V**, Berg JJ. *Allele ages provide limited information about the strength of negative selection*. Genetics. 2025 Mar;229(3):iyae211.
3. Li Z, Rasic M, Kwan M, Sepulveda M, McIntosh C, **Shastry V**, Chen L, Finn P, Perkins D, Alegre ML. *Oral administration of the commensal *Alistipes onderdonkii* prolongs allograft survival*. American Journal of Transplantation. 2023 Feb 1;23(2):272-7.
4. **Shastry V**, Bell KL, Buerkle CA, Fordyce JA, Forister ML, Gompert Z, Lebeis SL, Lucas LK, Marion ZH, Nice CC. *A continental-scale survey of Wolbachia infections in blue butterflies reveals evidence of interspecific transfer and invasion dynamics*. G3. 2022 Oct 1;12(10):jkac213.
5. **Shastry V**, Adams PE, Lindtke D, Mandeville EG, Parchman TL, Gompert Z, Buerkle CA. *Model-based genotype and ancestry estimation for potential hybrids with mixed-ploidy*. Molecular Ecology Resources. 2021 Jul;21(5):1434-51. (selected as a Cover Article)
6. Harrison JG, Calder WJ*, **Shastry V***, Buerkle CA. *Dirichlet-multinomial modelling outperforms alternatives for analysis of microbiome and other ecological count data*. Molecular Ecology Resources. 2020 Mar;20(2):481-97. (* denotes equal contribution)

Presentations (select)

- Spatial Population Genetics Symposium at the Society of Molecular Biology and Evolution (SMBE) in Puerto Vallarta, Mexico. July 2024. (top 20% of abstracts selected for talks)
- Mid-West Population Genetics (MWPG) Meeting in Ann Arbor, MI. August 2023. (top 30% selected)
- Evolution (EVO) in Albuquerque, NM. June 2023.
- Population, Evolutionary and Quantitative Genetics (PEQG) in Pacific Grove, CA. June 2022. (top 10% selected)

Reviewer

- Molecular Ecology Resources (2)
- Cell Genomics (1)
- Heredity (1)

Scholarship

1. Aven Nelson Fellowship in Systematic Botany, 2020 (\$1,300 for best computational biology project)
2. Department of Botany Wilhelm G Solheim Scholarship, 2018 (\$600 for top incoming graduate student)
3. National Tau Beta Pi Scholarship Award, 2017 (\$2,000 for top 25% of engineering seniors in USA)
4. Carl Oslund (Wyoming Engineering Society) Scholarship, 2016 \$2,500 for top junior at UWyo)
5. Rocky Mountain International Scholarship, 2014 (\$19,250 for top 10% of international students)

Outreach & Volunteering

- Data and Software Carpentry, Biological Sciences Division, University of Chicago, 2023 – 2025
- Member, Genetics DEI Committee, University of Chicago, 2023 – 2025
- Tutor, Maroon Match, 2022 – 2024 University of Chicago
- Volunteer, Computational Biology Outreach, University of Chicago, 2021 – 2024
- Organizer, Data Science Center, University of Wyoming, 2018 – 2020
- Secretary, Tau Beta Pi Wyoming Alpha chapter, University of Wyoming, 2016 – 2017
- Treasurer, International Students Association, University of Wyoming, 2015 – 2016