

Sayali A. Alatkhar

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EDUCATION

University of Wisconsin-Madison, Madison, Wisconsin USA

- Ph.D. (Computer Science), August, 2025
- Ph.D. Thesis: Biologically interpretable latent representations in single-cell multimodalities
- Committee: Daifeng Wang (advisor), Fred Sala, Yudong Chen, André Sousa, Panos Roussos

Stony Brook University, Stony Brook, New York USA

- M.S. (Computer Science), May, 2020
- Master's Thesis: Detecting Smart Home Activity through Network Traffic Signatures.
- Committee: Samir Das (advisor), Amir Rahmati, Michalis Polychronakis, Vasudevan Nandradra

University of Pune, Pune, India

B.E. (Computer Engineering), May, 2018

PUBLICATIONS

Submitted/under-review

1. NeuroTD: A Time-Frequency Based Multimodal Learning Approach to Analyze Time Delays in Neural Activities, *submitted*, 2024, link code
Xiang Huang, Noah Cohen Kalafut, **Sayali Alatkhar**, Athan Z. Li, Qiping Dong, Qiang Chang, Daifeng Wang,
2. Personalized Single-cell Transcriptomics Reveals Molecular Diversity in Alzheimer's Disease, *in revision*, 2025, link code
Pramod Bharadwaj Chandrashekar*, **Sayali Anil Alatkhar***, Noah Cohen Kalafut*, Ting Jin*, Chirag Gupta, Ryan Burzak, Xiang Huang, Shuang Liu, Athan Z. Li, PsychAD Consortium, Kiran Girdhar, Georgios Voloudakis, Gabriel E. Hoffman, Jaroslav Bendl, John F. Fullard, Donghoon Lee, Panos Roussos#, Daifeng Wang#

Peer-reviewed/conference papers

1. ARTEMIS integrates autoencoders and Schrödinger Bridges to predict continuous dynamics of gene expression, cell population and perturbation from time-series single-cell data, *Bioinformatics*, ISMB/ECCB 2025, link code
Sayali Anil Alatkhar, Daifeng Wang,
2. CMOT: Cross-Modality Optimal Transport for multimodal inference, *Genome Biology*, 24, 163, 2023, link code
Sayali Anil Alatkhar, Daifeng Wang,
3. DeepGAMI: Deep biologically guided auxiliary learning for multimodal integration and imputation to improve phenotype prediction, *Genome Medicine* 15, 88, 2023, link code
Pramod Bharadwaj Chandrashekar, **Sayali Alatkhar**, Jiebiao Wang, Gabriel E. Hoffman, Chenfeng He, Ting Jin, Saniya Khullar, Jaroslav Bendl, John F. Fullard, Panagiotis Roussos, Daifeng Wang,
4. Single-cell network biology characterizes cell-type gene regulation for drug repurposing and phenotype prediction in Alzheimer's disease, *PLoS Computational Biology*, 18(7): e1010287, 2022
Chirag Gupta, Jielin Xu, Ting Jin, Saniya Khullar, Xiaoyu Liu, **Sayali Alatkhar**, Feixiong Cheng, Daifeng Wang, link

PROFESSIONAL EXPERIENCE	UW-Madison, Madison, WI, USA <i>Research Assistant</i>, Daifeng Wang Lab & Waisman Center August, 2021 - present • Developing interpretable machine learning methods for single-cell genomics (e.g., scRNA-seq, scATAC-seq), spatial transcriptomics and genotype data • Assisted on several NIH grant proposals Siemens Corporate Research, Princeton, NJ, USA <i>Research intern</i>, Cybersecurity Research Group May, 2019 - August, 2019 • Implemented an OCR-based homoglyph detection tool from literature for domain service monitoring • Implemented new features for Siemens threat news portal
TEACHING EXPERIENCE	UW-Madison, Madison, WI, USA Teaching Assistant-Intro to Python August, 2020 - May, 2021
POSTERS/TALKS	Posters • Research in Computational Molecular Biology (RECOMB) '21 • International Conference on Intelligent Systems for Molecular Biology (ISMB) '22 Talks • ISMB/European Conference on Computational Biology (ECCB) '25 • RECOMB/ISCB Conference on Regulatory & Systems Genomics with DREAM Challenges (RSG-DREAM) '23
MENTORING	• Abhinav Nandwani, <i>B.S. in Computer Engineering, UW-Madison</i> (Spring '25 - Present) • Ryan Burczak, <i>M.S. in Biomedical Data Science, UW-Madison</i> (Spring '24 - Fall '24)
HONORS AND AWARDS	UW-Madison CS Summer Research Fellowship Usenix Security'21 Diversity Grant Accepted into NSF Sponsored GREPSEC (Workshop for Underrepresented Groups in Security and Privacy) V Workshop'21
RELEVANT COUREWORK	UW-Madison Graduate • Machine Learning (Fred Sala) • Mathematical Foundations of Machine Learning (Robert Nowak) • Advanced Bioinformatics (Daifeng Wang)
SKILLS	• Languages: Python, R • Packages (ordered by proficiency): PyTorch, PyTorch Geometric, JAX, DGL • Applications: Visual Studio Code, Anaconda, RStudio, Cytoscape • Operating Systems: Ubuntu, Windows