

JIAQI ZHANG

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EDUCATION

Brown University, United States
Ph.D., Computer Science

Sep. 2021 - June. 2026 (anticipated)

Southeast University, China
B.S., Software Engineering

Sep. 2015 - Jun. 2020

GPA: **3.56**/4.00

RESEARCH INTEREST

Bioinformatics: single-cell analysis, multi-modal integration, model interpretation, gene network

Machine Learning: multi-modal learning, manifold learning, large-scale optimization, probabilistic graphical model

PUBLICATIONS

(★: conference paper; †: journal paper; △: preprint)

△ **Jiaqi Zhang**, Manav Chakravarthy, and Ritambhara Singh. scMultiNODE: Integrative and Scalable Framework for Multi-Modal Temporal Single-Cell Data. *bioRxiv*, 2024 (doi.org/10.1101/2024.10.27.620531).

★ **Jiaqi Zhang**, Erica Larschan, Jeremy Bigness, and Ritambhara Singh. scNODE: Generative Model for Temporal Single Cell Transcriptomic Data Prediction. *23rd European Conference on Computational Biology (ECCB) 2024 (Proceedings in Bioinformatics)*.

★ **Jiaqi Zhang**, Yiqin Wang, Meng Wang, and Beilun Wang. Sparse and Smooth Additive Isotonic Model in High-Dimensional Settings. *Machine Learning*, 2024 (in press).

† **Jiaqi Zhang** and Ritambhara Singh. Investigating the Complexity of Gene Co-expression Estimation for Single-cell Data. *Journal of Machine Learning for Modeling and Computing*, 2023.

† Beilun Wang, **Jiaqi Zhang**, Haoqing Xu, and Te Tao. Fast and scalable learning of sparse changes in high-dimensional graphical model structure. *Neurocomputing*, 2022.

† Qianli Yang, Zhongqiao Lin, Wenyi Zhang, Jianshu Li, Xiyuan Chen, **Jiaqi Zhang**, and Tianming Yang. Monkey plays Pac-Man with compositional strategies and hierarchical decision-making. *Elife*, 2022.

† Beilun Wang, **Jiaqi Zhang**, Yan Zhang, Meng Wang, and Sen Wang. Scalable Estimator for Multi-task Gaussian Graphical Models Based in an IoT Network. *ACM Transactions on Sensor Networks*, 17(3), June 2021.

★ **Jiaqi Zhang**, Meng Wang, Qinchu Li, Sen Wang, Xiaojun Chang, and Beilun Wang. Quadratic Sparse Gaussian Graphical Model Estimation Method for Massive Variables. *International Joint Conferences on Artificial Intelligence Organization (IJCAI)*, 2020.

AWARDS

2024 ECCB Travel Fellowship

2021-2022 Brown Graduate Fellowship

CONFERENCE AND TALKS

Title: scMultiNODE: Integrative and Scalable Framework for Multi-Modal Temporal Single-Cell Data

2024 ECCB: Poster Presentation

2024 CSHL Biological Data Science: Poster Presentation

2025 System Biology of Singel Cells (SysBioSC): Poster Presentation

Title: scNODE: Generative Model for Temporal Single Cell Transcriptomic Data Prediction

2023 MLCB, 2024 RECOMB: Poster Presentation

2024 ECCB: Selected Talk

Title: Quadratic Sparse Gaussian Graphical Model Estimation Method for Massive Variables

2020 IJCAI: Selected Talk & Poster Presentation

TECHNICAL SKILLS

Programming Language Python, R, C++, MATLAB, JAVA

Machine Learning Pytorch, Tensorflow, Pyro, Pytorch-Geometric (PyG), Python OT, Sklearn

Data Processing Numpy, Pandas, SciPy, AnnData

Bioinformatics ScanPy, Seurat

Data Visualization matplotlib, seaborn, ggplot

PROFESSIONAL COMMUNITY SERVICE

2025 Reviewer of ACM BCB conference.

2022 - 2025 Sub-reviewer of ICML, NeurIPS, ICLR, and RECOMB conferences.

TEACHING EXPERIENCE

Graduate Teaching Assistant (*Brown University*)

- **CSCI2952G Deep Learning in Genomics** (2025 Spring)

Lectured a few times, held discussion sessions and office hours, graded assignments.

Instructor: Ritambhara Singh, Ph.D.

SOFTWARE

scNODE

- A generative model that simulates and predicts realistic *in silico* single-cell gene expressions at any unmeasured timepoint.
- **Link:** <https://github.com/rsinghlab/scNODE>
- **Reference:** Zhang, Jiaqi, et al. "scNODE: generative model for temporal single cell transcriptomic data prediction." *Bioinformatics* 40.Supplement_2 (2024): ii146-ii154.

scMultiNODE

- An unsupervised integration model that combines gene expression and chromatin accessibility measurements in developing single cells, while preserving cell type variations and cellular dynamics.
- **Link:** <https://github.com/rsinghlab/scMultiNODE>

- **Reference:** Zhang, Jiaqi, Manav Chakravarthy, and Ritambhara Singh. “scMultiNODE: Integrative Model for Multi-Modal Temporal Single-Cell Data.” *bioRxiv* (2024).

PROJECT EXPERIENCE

Dropout-Aware Weighted NMF on scRNA-seq Data 2022

◊ Course final project for *CS2952Q Robust Algorithms for Machine Learning*.

Disease Prediction Using Deep Learning Methods 2022

◊ Course final project for *CS2470 Deep Learning*, collaborated with Atishay Jain and Tassallah Amina Abdullahi.

A Distributed Repaying Loan Ability Evaluating System Based on Gradient Boosting Machine 2018

◊ Responsible for software architecture and backend modules implementation.

◊ Project for a seminar course; the third prize.

An Employee Management System 2017

◊ Responsible for software architecture and core modules implementation.

◊ Project for a seminar course; the third prize.