

Qiao Liu – Curriculum Vitae

Address	James H. Clark Center Stanford, CA, 94305	Mobile Phone	(650)-283-5489
Website	http://liuqiao.me/	Email	liuqiao@stanford.edu

Academic Appointment

2021.06- Postdoctoral Scholar - Stanford University, Stanford, CA, USA
Present Department of Statistics, advised by Prof. **Wing Hung Wong**

Education

2019.09- Visiting Ph.D. student - Stanford University, Stanford, CA, USA
2021.06 Department of Statistics, advised by Prof. Wing Hung Wong

2016.09- Ph.D. student - Tsinghua University, Beijing, China
2019.09 Department of Automation, advised by Prof. Rui Jiang

2015.08- Exchange Student - Lund University, Lund, Sweden
2016.01 Department of Computer Science, GPA:**5.0/5.0**

2012.09- Bachelor in Engineering - Beihang University, Beijing, China
2016.06 ShenYuan Honors College (Special Pilot Class)
GPA:**91.5/100**

Publications

(†=co-first author; *=corresponding author)

Preprints

1. **Qiao Liu**, Zhongren Chen, Wing Hung Wong*. CausalEGM: a general causal inference framework by encoding generative modeling [J]. arXiv, 2022.
2. Zijing Gao†, **Qiao Liu**†*, Wanwen Zeng, Wing Hung Wong*, Rui Jiang*. EpiGePT: a Pretrained Transformer model for epigenomics[J]. bioRxiv, 2023.

Peer-reviewed papers (as lead author)

3. Qijin Yin, Xusheng Cao, Rui Fan, **Qiao Liu***, Rui Jiang* and Wanwen Zeng*. DeepDrug: A general graph-based deep learning framework for drug-drug interactions and drug-target interactions prediction[J]. *Quantitative Biology*, 2023 (in press).
4. **Qiao Liu**†, Wanwen Zeng†, Wei Zhang, Sicheng Wang, Hongyang Chen, Rui Jiang*, Mu Zhou*, Shaoting Zhang*. Deep generative modeling and clustering of single cell Hi-C data[J]. *Briefings in Bioinformatics*, 2023, 24(1): bbac494.
5. Wanwen Zeng†, **Qiao Liu**†, Qijin Yin†, Rui Jiang*, Wing Hung Wong*. HiChIPdb: a comprehensive database of HiChIP regulatory interactions[J]. *Nucleic Acids Research*. 2022.
6. **Qiao Liu**, Kui Hua, Xuegong Zhang, Wing Hung Wong*, Rui Jiang*. DeepCAGE: incorporating transcription factors in genome-wide prediction of chromatin accessibility[J]. *Genomics, Proteomics & Bioinformatics*, 2022.
7. **Qiao Liu**, Shengquan Chen, Rui Jiang*, Wing Hung Wong*. Simultaneous deep generative modeling and clustering of single cell genomic data[J]. *Nature Machine Intelligence*, 2021, 3(6): 536-544.

8. **Qiao Liu**, Jiaze Xu, Rui Jiang*, Wing Hung Wong*. Density estimation with deep generative neural networks [J]. *Proceedings of the National Academy of Sciences of the United States of America (PNAS)*, 2021, 118(15), e2101344118.
9. **Qiao Liu**, Zhiqiang Hu, Rui Jiang*, Mu Zhou*. Cancer drug response prediction via a hybrid graph convolutional network[J]. *Bioinformatics*, 2020. 36(Supplement_2): i911-i918. Also in *Proceedings of the 19th European Conference on Computational Biology (ECCB)*, 2020.(conference acceptance rate:20.2%)
10. **Qiao Liu**, Hairong Lv, Rui Jiang*. hicGAN infers super resolution Hi-C data with generative adversarial networks. *Bioinformatics*, 2019, 35(14): i99-i107. Also in *Proceedings of the 27th Intelligent Systems for Molecular Biology the 18th European Conference on Computational Biology (ISMB/ECCB)*, 2019. (conference acceptance rate:18.9%)
11. Pengyu Chen[†], **Qiao Liu**[†], Lan Wei, Beier Zhao, Yin Jia, Hairong Lv*, Xiaolu Fei*. Automatically structuring on Chinese ultrasound report of cerebrovascular diseases via natural language processing[J]. *IEEE Access*, 2019, 7: 89043-89050.
12. **Qiao Liu**, Fei Xia, Qijin Yin, Rui Jiang*. Chromatin accessibility prediction via a hybrid deep convolutional neural network[J]. *Bioinformatics*, 2017, 34(5): 732-738.
13. **Qiao Liu**, Mingxin Gan, Rui Jiang*. A sequence-based method to predict the impact of regulatory variants using random forest[J]. *BMC Systems Biology*, 2017, 11(2): 7. Also in *Proceedings of the 15th Asia Pacific Bioinformatics Conference (APBC)*, 2017.

Peer-reviewed papers (as co-author)

14. Shuo Li, Weihua Zeng, Xiaohui Ni, **Qiao Liu**,...,Wing Hung Wong*, Steven M. Dubinett* and Jasmine Zhou*. Comprehensive tissue deconvolution of cell-free DNA by deep learning for disease diagnosis and monitoring[J]. *Proceedings of the National Academy of Sciences of the United States of America (PNAS)*, 120 (28) e2305236120, 2023.
15. Shuang Zhang, Yuti Liu, Shuang Chen, **Qiao Liu**, Wanwen Zeng. Applications of Transformer-based language models in bioinformatics: A survey[J]. *Bioinformatics Advances*, 2023.
16. Christopher Lance, Malte D Luecken, Daniel B Burkhardt,...,**Qiao Liu**,...,Fabian J Theis*. Multimodal single cell data integration challenge: results and lessons learned[J]. *Proceedings of Machine Learning Research (PMLR)*, 2022.
17. Zhana Duren, Fengge Chang, Fnu Naqing, Jingxue Xin, **Qiao Liu**, Wing Hung Wong*. Regulatory analysis of single cell multiome gene expression and chromatin accessibility data with scREG[J]. *Genome Biology*, 2022, 23(1): 1-19.
18. Jinxiang Ou, Yunheng Shen, Feng Wang, **Qiao Liu**, Xuegong Zhang, Hairong Lv*. AggEnhance: Aggregation enhancement by class interior points in federated learning with non-IID data[J]. *ACM Transactions on Intelligent Systems and Technology (TIST)*, 2022.
19. Qijin Yin, **Qiao Liu**, Zhuoran Fu, Rui Jiang*. scGraph: a graph neural network-based approach to automatically identify cell types[J]. *Bioinformatics*, 2022.
20. Tianxing Ma, **Qiao Liu**, Haochen Li, Mu Zhou, Rui Jiang, Xuegong Zhang*. DualGCN: a dual graph convolutional network model to predict cancer drug response[J]. *BMC bioinformatics*, 2022, 23(4): 1-13.
21. Feng Wang, Guoyizhe Wei, **Qiao Liu**, Jinxiang Ou, Xian Wei, Hairong Lv*. Boost neural networks by checkpoints [C]. *Conference on Neural Information Processing Systems (NeurIPS)*, 2021, 33. (acceptance rate:26%)
22. Shengquan Chen, **Qiao Liu**, Xuejian Cui, Rui Jiang*. OpenAnnotate: a web server to annotate the chromatin accessibility of genomic regions[J]. *Nucleic Acids Research*, 2021, 49(W1): W483-W490.
23. Kexin Ding, **Qiao Liu**, Edward Lee, Mu Zhou, Aidong Lu, Shaoting Zhang*. Feature-enhanced graph networks for genetic mutational prediction using histopathological images in colon cancer[C]. *International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 2020, (pp. 294-304).
24. Qingzhu Yang, **Qiao Liu**, Hairong Lv*. A decentralized system for medical data management via blockchain [J]. *Journal of Internet Technology*, 2020, 21(5): 1335-1345.
25. Junfeng Liu, **Qiao Liu**, Qingzhu Yang*. Mstree: a multispecies coalescent approach for estimating ancestral population size and divergence time during speciation with gene flow [J]. *Genome Biology and Evolution*, 2020, 12(5): 715-719.
26. Chencheng Xu, **Qiao Liu**, Jianyu Zhou, Minzhu Xie, Jianxing Feng, Tao Jiang*. Quantifying functional impacts of regulatory variants with multi-task Bayesian neural network[J]. *Bioinformatics*, 2020, 36(5): 1397-1404.

27. Chencheng Xu, **Qiao Liu**, Minlie Huang, Tao Jiang*. Reinforced molecular optimization with neighborhood-controlled grammars[C]. Conference on Neural Information Processing Systems (*NeurIPS*), 2020, 33. (acceptance rate:20.1%)
28. Qijin Yin, Mengmeng Wu, **Qiao Liu**, Rui Jiang*. DeepHistone: a deep learning approach to predicting histone modifications[J]. *BMC Genomics*, 2019,20(2):193.
29. Shaoming Song, Hongfei Cui, Shengquan Chen, **Qiao Liu**, Rui Jiang*. EpiFIT: Functional interpretation of transcription factors based on combination of sequence and epigenetic information[J]. *Quantitative Biology*, 2019, 1-11.
30. Bai Li, Mu Lin, **Qiao Liu**, Ya Li*, Changjun Zhou*. Protein folding optimization based on 3D off-lattice model via an improved artificial bee colony algorithm[J]. *Journal of Molecular Modeling*, 2015, 21(10): 261.

Invited Talks

- 2023.10 **UNC Biostats Seminar**, University of North Carolina at Chapel Hill, USA.
- 2023.04 **UC Berkeley Biostats Seminar**, UC Berkeley, USA.
- 2023.04 **Tsinghua Statistical Seminar**, Tsinghua University, China (remote).
- 2022.08 **NIH CEGS Annual Meeting**, Duke University, USA.
- 2022.08 **JSM 2022**(Joint Statistical Meetings), Washington DC, USA.
- 2022.06 **CVI Early Career Research Roundtable**, Stanford University, USA.
- 2021.12 **NeurIPS 2021**(The 35th Conference on Neural Information Processing Systems), remote talk.
- 2020.09 **ECCB 2020**(The 19th European Conference on Computational Biology), remote talk.
- 2020.03 **Center for Personal Dynamic Regulomes Seminar**, Stanford University, USA.
- 2019.11 **BIBM 2019**(IEEE International Conference on Bioinformatics & Biomedicine), San Diego, USA
- 2019.07 **ISMB 2019**(The 27th Conference on Intelligent Systems for Molecular Biology), Basel, Switzerland
- 2019.03 **BUAFAI 2019**(The First Beijing Universities Academic Forum of Artificial Intelligence), Beijing, China
- 2017.01 **APBC 2017**(The 15th Asia Pacific Bioinformatics Conference), Shenzhen, China

Selected Honors and Awards

- 2022.12 **Outstanding Ph.D. Thesis Award**, Beijing Municipal Commission of Education
- 2021.06 **Outstanding Graduates Award**, Beijing Municipal Commission of Education
- 2021.06 **Tsinghua Outstanding Ph.D. Thesis Award**, Tsinghua University
- 2021.06 **Tsinghua University Outstanding Graduates Award**, Tsinghua University
- 2020.08 **ECCB Fellowship**, International Society for Computational Biology (ISCB)
- 2019.04 **ISMB Travel Fellowship**, International Society for Computational Biology (ISCB)
- 2018.10 **National Scholarship**, Ministry of Education of China (**0.2%** domestically)
- 2016.06 **Outstanding Graduates Award**, Beijing Municipal Commission of Education
- 2015.06 **Microsoft Young Fellowship**, Microsoft Research Asia (**40** winners nationwide)

Selected Competitions

- 2021.12 **NeurIPS 2021 Competition, Multimodal Data Integration**, rank **1st**/2611 in two Joint Embedding Tasks, NeurIPS conference
- 2021.05 **RNA Unpaired Probability Prediction Competition**, rank **3rd**/1012, Baidu AI Studio, Baidu Inc
- 2019.03 **Liver Cancer Image Diagnose Competition**, rank **2nd**/1397, Digital China Innovation Contest
- 2014.10 **1st Prize in NCSMC**(The 6th National College Students Mathematical Competition), Chinese Mathematical Society
- 2014.09 **National 1st Prize in CUMCM**(Contemporary Undergraduate Mathematical Contest in Modeling), China Society for Industrial and Applied Mathematics
- 2013.10 **1st Prize in NCSMC**(The 5th National College Students Mathematical Competition), Chinese Mathematical Society

Teaching Experiences

- 2023 Summer Teaching Assistant, *Introduction to Generative Models*

2019 Fall Institute for Computational & Mathematical Engineering (ICME), Stanford University
Teaching Assistant, *Intelligent Algorithms and Systems*
Fundamental Industry Training Center, Tsinghua University

2018 Fall Teaching Assistant, *Statistical Methods with Applications*
Department of Automation, Tsinghua University

2017 Fall Teaching Assistant, *Introduction to Artificial Intelligence*
Department of Automation, Tsinghua University

Professional Activities

Member *American Statistical Association (ASA), International Society of Computational Biology (ISCB)*

Reviewer Stats Journals: *Journal of the American Statistical Association (JASA)*
ML Journals: *Nature Methods, Nature Machine Intelligence*
Engineering Applications of Artificial Intelligence, Complex & Intelligent Systems
Bioinformatics Journals: *Bioinformatics, Briefings in Bioinformatics, Bioinformatics Advances*
Genomics, Proteomics & Bioinformatic, BMC Genomics, BMC Bioinformatics,
Computational Biology, Drug Discovery Today, NAR Genomics and Bioinformatics
Biomedical Journals: *IEEE Transactions on Medical Imaging*

PC member ML conferences *AAAI 2023, 2024*