Ziqi Chen

220 Lincoln Tower, 1800 Cannon Drive, Columbus, OH 43210
(614) 282-6497 ⋄ chen.8484@buckeyemail.osu.edu

EDUCATION

The Ohio State University, Columbus, US
PhD candidate — *Aug. 2019 - current*
Master student — *Aug. 2018 - May 2019*
Department of Computer Science and Engineering

Wuhan University, Wuhan, China — *Sept. 2014 - Jun. 2018*
Bachelor of Engineering
School of Computer Science

PUBLICATION

* below indicates equal contributions.

1. Bo Peng, **Ziqi Chen**, Srinivasan Parthasarathy, and Xia Ning. Modeling sequences as star graphs to address over-smoothing in self-attentive sequential recommendation. *ACM Transactions on Knowledge Discovery from Data*, 18(8):1–24, Aug. 2024

2. Frazier N. Baker, **Ziqi Chen**, Daniel Adu-Ampratwum, and Xia Ning. Rlsync: Offline–online reinforcement learning for synthon completion. *Journal of Chemical Information and Modeling*, Aug. 2024

3. Botao Yu, Frazier N. Baker*, **Ziqi Chen***, Xia Ning, and Huan Sun. LlaSMol: Advancing large language models for chemistry with a large-scale, comprehensive, high-quality instruction tuning dataset. In *First Conference on Language Modeling*, 2024

4. **Ziqi Chen**, Bo Peng, Srinivasan Parthasarathy, and Xia Ning. Shape-conditioned 3d molecule generation via equivariant diffusion models. In *NeurIPS 2023 Generative AI and Biology (GenBio) Workshop*, 2023

5. Bo Peng, Ben Burns, **Ziqi Chen**, Srinivasan Parthasarathy, and Xia Ning. Towards efficient and effective adaptation of large language models for sequential recommendation. *arXiv:2308.11890*, 2023

6. Yonghyun Nam, Anastasia Lucas, Jae-Seung Yun, Seung Mi Lee, Ji Won Park, **Ziqi Chen**, Brian Lee, Xia Ning, Li Shen, Anurag Verma, and Dokyoon Kim. Development of complemented comprehensive networks for rapid screening of repurposable drugs applicable to new emerging disease outbreaks. *Journal of Translational Medicine*, 21(1), Jun. 2023

7. **Ziqi Chen**, Oluwatosin R. Ayinde, James R. Fuchs, Huan Sun, and Xia Ning. G^2retro as a two-step graph generative models for retrosynthesis prediction. *Communications Chemistry*, 6(102), May 2023 (figured in Celebrating Women in Chemistry)

8. **Ziqi Chen**, Martin Renqiang Min, Hongyu Guo, Chao Cheng, Trevor Clancy, and Xia Ning. T-cell receptor optimization with reinforcement learning and mutation polices for precision immunotherapy. In *Research in Computational Molecular Biology. RECOMB 2023. Lecture Notes in Computer Science*, pages 174–191. Springer Nature Switzerland, Apr. 2023

9. **Ziqi Chen***, Baoyi Zhang*, Hongyu Guo, Prashant Emani, Trevor Clancy, Chongming Jiang, Mark Gerstein, Xia Ning, Chao Cheng, and Martin Renqiang Min. Binding peptide generation for MHC class I proteins with deep reinforcement learning. *Bioinformatics*, 39(2):btad055, Jan. 2023

10. **Ziqi Chen***, Bo Peng*, Vassilis N. Ioannidis, Mufei Li, George Karypis, and Xia Ning. A knowledge graph of clinical trials (CTKG). *Scientific Reports*, 12(4724), Mar. 2022

11. **Ziqi Chen**, Martin Renqiang Min, Srinivasan Parthasarathy, and Xia Ning. A deep generative model for molecule optimization via one fragment modification. *Nature Machine Intelligence*, 3:1040–1049, Dec. 2021

12. **Ziqi Chen**, Martin Renqiang Min, and Xia Ning. Ranking-based convolutional neural network models for peptide-MHC class I binding prediction. *Frontiers in Molecular Biosciences*, 8:634836, May 2021

PATENT APPLICATION

1. Xia Ning and **Ziqi Chen**. Generative AI methods and systems for small molecule structure generation, Application No. 63/519,833, Date of Application: Aug. 2023

2. Xia Ning and **Ziqi Chen**. Retrosynthesis prediction system and method using graph generative models, Application No. PCT/US2023/017546, Date of Application: Apr. 2023

3. Renqiang Min, Hans Peter Graf, and **Ziqi Chen**. Peptide search system for immunotherapy, U.S. Patent US20230083313A1, Mar. 2023

4. Renqiang Min, Hans Peter Graf, and **Ziqi Chen**. Binding peptide generation for MHC class I proteins with deep reinforcement learning, U.S. Patent US20230083313A1, Mar. 2023

WORK EXPERIENCE

Google, Mountain View, US *May 2024 - Aug. 2024*
Software Engineer Intern, Machine Learning

- I explored and developed various sequence model architectures, such as parametric attention and hierarchical sequential transduction units (HSTU), to improve recommendation performance based on long user sequence data.

Meta Platforms, Menlo Park, US *May 2022 - Aug. 2022*
Software Engineer Intern, Machine Learning

- I explored reinforcement learning algorithms to improve feed ranking in Facebook.
- I developed a deep Q-learning model to personalize feed re-ranking using predictions from a multi-task learning framework. A/B testing results demonstrate notable improvements in user engagement metrics with this model.
- I developed a model based on off-policy reinforcement learning algorithm for slate re-ranking.

NEC Labs America, Princeton, US *May 2021 - Aug. 2021*
Research Intern

- I developed a framework PepPPO based on proximal policy optimization (PPO) to optimize random initial peptides through mutating amino acids step by step until the mutated peptides can be predicted to be presented by a given MHC class I protein. This work is accepted by Bioinformatics.
- I developed a framework TCRPPO based on PPO to learn a mutation policy to optimize CDR3 sequences of β chains in T-cell receptors for any given peptide sequences. I also developed a reward function that combines the likelihoods of mutated sequences being valid TCRs with the probabilities of mutated sequences recognizing peptides from a peptide-TCR interaction predictor. This work is accepted by Research in Computational Molecular Biology 2023.

ACADEMIC ACHIEVEMENT

Excellence in Graduate Student Research, Department of Biomedical Informatics, The Ohio State University *2023*

REVIEW EXPERIENCE

Reviewer: Nature Communications, RecSys, KDD, AAAI, WSDM, ICDM

TECHNICAL STRENGTH

Program Languages	Python, Shell Script, SQL, JAVA
Software & Tools	Pytorch, Tensorflow, Numpy
OS	Linux, Windows