Qiao Fang

Machine Learning Scientist

Re.zero1910@gmail.com │ (+1) 437-221-4626 │ 101 College street west, Toronto, CA

WORK EXPERIENCE

Machine Learning scientist, Fable Therapeutics   **Jan 2025 - Present**

- Managed and built a diffusion-based model for full-atoms antibody generation and built a side-chain packer that achieves state-of-the-art 0.35 Å sidechain RMSD.
- Developed an Equiformer-based confidence model to assess fully designed antibody-antigen complexes, proving to eliminate 80 % of low-quality candidates.
- Streamlined workflows by unifying datasets, modularizing code, and containerizing models—cutting setup time 40% and duplicate work.

Machine learning associate scientist, Fable Therapeutics   **Oct 2022 - Jan 2025**

- Built a diffusion-based model that folds complete antibody structures while simultaneously generating all CDR loops bound to specified targets achieving an average CDR RMSD of 2.83 Å.
- Built an H3-CDR co-design model that optimizes structure and sequence simultaneously, reaching state-of-the-art 1.37 Å RMSD and 56.7 % sequence recovery.
- Devised a comprehensive workflow for the systematic processing of protein and antibody datasets, encompassing data collection, curation, feature extraction, and integration, to provide a robust foundation for antibody predictive modeling

EDUCATION

M.Sc. in Department of Molecular Genetics   **Sept 2020 - Sept 2022**
University of Toronto

- Publications: Kim J, McFee M, Fang Q, et al. Computational and artificial intelligence-based methods for antibody development[J]. *Trends in pharmacological sciences*, 2023, 44(3): 175-189.

PhD candidate in Academy for Advanced Interdisciplinary Studies
Peking Univeristy   **Sept 2017 - Aug 2020**

- Publications:
  Zhang L, Li Z, Skrzypczynska K M, et al. Single-cell analyses inform mechanisms of myeloid-targeted therapies in colon cancer[J]. *Cell*, 2020, 181(2): 442-459. e29.

  Zhang L, Yu X, Zheng L, et al. Lineage tracking reveals dynamic relationships of T cells in colorectal cancer[J]. *Nature*, 2018, 564(7735): 268-272.

B.Sc. in School of Life Sciences   **Sept 2013 - Sept 2017**
Peking University

KEY SKILLS

- Python
- Bash
- Javascript
- Git

- AWS
- Docker
- Pytorch
- Tensorflow

- Deep learning
- Machine learning
- Statistical learning
- English and Mandarin