Feifei Li

ffli.dev | github.com/ff98li | ff.li@mail.utoronto.ca | 416-300-6896

Education

University of Toronto Toronto, ON
Honours Bachelor of Science *May, 2018 - June, 2023*

- Specialist in Bioinformatics and Computational Biology
- Major in Statistics
- Graduated with Distinction

Experience

Peter Munk Cardiac Centre, University Health Network September 2022 – Present
Research Intern *Toronto, ON*

- Built pipelines for processing 19 CT and 12 MRI datasets from the Cancer Imaging Archive (TCIA) in one week.
- Contributed to the development of the medical image foundation model MedSAM; benchmarked the model against U-Net and DeepLabV3+ specialist models and performed evaluation for segmentation results of **86 internal validation tasks** and **60 external validation tasks**
- Distilled MedSAM's heavy ViT, reduced by **15 times** in size and boosted inference by **10 times** in speed
- Improved the classification accuracy of a pathology image foundation model on *BRCA* mutations in whole slide images of ovarian cancer from 24% to **74%** by developing a transformer-based multi-instance learning framework

Princess Margaret Cancer Centre, University Health Network May 2022 – December 2022
Research Student | R package developer *Toronto, ON*

- Supervised by Dr. Benjamin Haibe-Kains in analysing synergistic effects of drug combinations on cancer cell lines
- Investigated four scoring models for quantifying synergistic effects of drug combinations.
- Implemented drug synergy models for R package *PharmacoGx*; **3800+** downloads since the update release

Skills

Languages: R (expert), Python (advanced), Linux shell (advanced), Java (intermediate), C (intermediate)
Developer Tools: SVN and git (advanced), SLURM (advanced), Conda (advanced), Docker (intermediate)
Libraries: PyTorch (advanced), NumPy (advanced), Pandas (adavanced), Bioconductor (advanced)

Publications

- Ma, J., He, Y., **Li, F.**, Han, L., You, C., and Wang, B.: Segment Anything in Medical Images. *Nature Communications 15, 654* (2024)
- Ma, J., **Li, F.**, Wang, B., U-Mamba: Enhancing global representations with structured state spaces for medical image segmentation *arXiv preprint arXiv:2401.04722* (2024)

Working Drafts:

- **Li, F.**, Ma, J, Wang, B., Benchmarking the utilities of pathology foundation models in whole-slide image analysis

Additional Experience

CVPR 2024 Challenge: Foundation Models for Medical Vision | *Coordinator* Janurary - June 2024

- Developed the baseline model for the workshop challenge, responsible for evaluating submitted solutions.

STEM Fellowship Big Data Challenge 2020 | *R, Decision tree, PCA* May 2020

- Statistical analysis to explain severity of COVID-19 transmission in 144 countries based on their economic development and population heath status.