Hengming Zhang

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Education

Harbin Institute of Technology, BS in Computer Science, Major in Bioinformatics August 2021– July 2025

- GPA: 3.71/4.0
- **Coursework:** Algorithmic Design and Analysis(95) , Data Structures and Algorithms(94), Linear Algebra and Analytic Geometry(98), Probability Theory and Mathematical Statistics (91.5), Formal Languages and Automata(93.6) , System Biology(96.5) .

National University of Singapore, Summer School of SoC May 2023– July 2023
Performance Result: A

Research Intersets

Any scientific topic with a data-driven approach, such as embodied AI and computational biology, that would allow me to actually see how my research changes the reality.

Research Experience

The control of Pancreatic cancer cell states, HIT June 2024 – now

- Using RNA-seq to get gene expression data from raw RNA sequencing data.
- Using machine learning methods (SVM) to analyze gene expression data.
- Develop Modular Response Analysis algorithm based on Bayesian methods, which can reconstruct the network topology structure of Signaling networks that play a central role in cell state changes from the obtained gene expression data.
- The hyperplane obtained by SVM quantifies the impact of the interference of network components on the cell state and predicts the corresponding contribution of cell state changes, contributing to the development of possible drug combinations

Projects

RNA-Seq tool 2024

- Developed a series of scripts to simplify the process of RNA-seq, from raw data of RNA sequencing samples to final analysis results to differential analysis, enrichment analysis and compilation analysis.
- Tools Used: R, hisat2, featureCounts.

C minus Compiler 2024

- Developed a compiler that supports a simplified C language grammar, including lexical analysis, syntax analysis, lexical analysis, and intermediate code generation.
- Tools Used: C++, GNU Bison&Flex

LSM Tree with Learned Bloom Filter 2024

- Developed a LSM Tree with Learned Bloom Filter. I use Fast Partitioned Learned Bloom Filter, a Bloom Filter using machine learning models to predict to solve memory efficiency in Bloom Filter, then this Learned Bloom Filter can help to deduct the the high cost of LSM Tree's reading and saving.
- Tools Used: Python

RDBMS 2023

- Developed a RDBMS, achieved buffer pool , record pool manager, and B+ Tree index manager.
- Tools Used: C, GNU Bison&Flex.

Awards

Academic Scholarship Awarded scholarship from university because of excellent academic performance.

Skills

Languages: C++, C, Java, Python, R, LaTeX **Tools**: torch, jax, pandas, bioconductor