Yingying (Aemilia) Gong

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Education

California Institute of Technology, Expected Graduation in Mar 2026 **Sep 2022 – Present**
BS. in Computer Science *GPA: 4.0/4.0*
Featured Coursework: Algorithms, Software Design, Computer Systems, Data Structures, Machine Learning, Statistics

Skills

Languages: Python, C/C++, Java, Rust, JavaScript, HTML, CSS, Swift, MATLAB, R
Technologies: Git, AWS, React.js, MySQL, Tableau, Linux **Methodologies:** Agile, Scrum, OOP, DevOps, CI/CD

Internship

Software Engineering Intern | *New Relic, Inc. Portland, Oregon* **Jun.2024– Present**
Intern at Capacity Engineering Team in Cloud Platform Services

- Analyzing time-series data of CPU utilization in data streaming; data clean-up and pipeline building.
- Building machine learning models to predict CPU utilization, as a backend for RESTful API in data traffic monitoring.

Projects (Software Development)

Command Line Tools: Zip and Grep | Rust **Apr.- Jun.2024**

- **Zip:** Data compression tool using DEFLATE stream, canonical huffman coding and LZ77 algorithm.
- **Grep:** Regular expression matching backed by a nondeterministic finite automata (NFA) engine.
- **10k codes in total from scratch**; wrote unit, functional, and integration tests; profiled performance for optimization.

DSPIN: Network Constructor for scRNA-seq Data | Python Package on PyPI **Jun.- Dec.2023**

- Built the API with Object-Oriented Design, encapsulated functions for intuitive use by non-technical clients.
- Improved the computational efficiency up to about 250% by pseudolikelihood algorithms for high parameters.
- Transformed laboratory codes into a polished, industry-standard Python package, ensuring robustness.

2D Physics Engine for Video Game | C, Javascript by Emscripten compiler and SDL2 library **Apr.– Jun.2023**

- Led a Team of 4, familiarized with quality control, following agile and scrum methodologies.
- Developed memory-efficient C libraries for Physics forces and graphics in polygons by vector math.
- Designed a multimedia 2D video game, "Beaver Run", with the Physics engine, visualized by SDL2.

Fast ASAN Allocator: Error Detection in Memory Allocation | C **Nov.- Dec.2023**

- Implemented error reporting features akin to asan to detect errors such as Invalid Free and Memory Leak.
- Maintained an array of metadata to store information about each allocation and a quarantine mechanism.

Research

Machine Learning for Science | *Data Enginnering* **Apr.– Dec. 2023**
Advisor: Dr. Matt Thomson, California Institute of Technology, Pasadena, CA

- Worked directly with the principal investigator and a senior Phd on a research project pending publishing.
- Analyzed large scale (1M+ times 10k+) high dimensional data by dimensional reduction and clustering.
- Reconstructed integration networks from 2M+ of cells by stochastic gradient descent and MCMC algorithm.

Leadership & Activities

Team Leader , Citadel's Women's Datathon **Feb. 2024**

- Led a team of 4 building a linear regression model to predict stock price in the energy sector.

Participant , Virtu Financial's Wintership **Jan. 2024**

- Selected as 1 of 17 undergrads to learn about market making, automatic trading, and finance technology.

Technical Assistant , AI Bootcamp for Professors and Graduate Researchers **Sep.- Dec. 2023**

- Prepared course materials such as slides and tutorial notebooks for unsupervised learning.