Summer Zhou

Cambridge, MA

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Education

- **Massachusetts Institute of Technology (MIT)** — Cambridge, MA
  Bachelor of Science in Computer Science and Engineering (6-3) — *2023 – 2027*
  - Relevant Coursework: Discrete Math, Probability and Random Variables, Fundamentals of Statistics, Linear Algebra, Differential Equations, Multivariable Calculus, Design and Analysis of Algorithms, Computation Structures, Quantitative Methods for Natural Language Processing, Introduction to C and Assembly, Introduction to Machine Learning, Introduction to Algorithms

Past Internship

- **Tower Research Capital** — Summer 2026
  Incoming Quantative Trading Intern — *New York, NY*
  - Working on China Future index
- **Biostate AI Inc.** — Nov 2024 – Aug 2025
  Software Engineering/Machine Learning Intern — *Palo Alto, CA/Remote*
  - Contributed to building a full-stack ML pipeline for prognostic signal prediction from RNA-seq data, experimented with self-supervised learning, foundation model integration, and Transformer variants. Results on my research can be found at https://www.biorxiv.org/content/10.1101/2025.08.15.670537v1
  - Produced benchmark results for the K-Dense Analyst system, a hierarchical multi-agent system we created for fully automated bioinformatics analysis, as described in https://arxiv.org/abs/2508.07043.
  - Designed and built a full-stack, responsive web portal for rapid gene information lookup, emphasizing broad data coverage, performance, and a user-friendly interface. Website: https://gene.biostate.ai/
  - Built a comprehensive pipeline that retrieves published papers, ranks their relevancy, and integrates the Claude API to generate, score, and refine blog posts through prompt engineering.
  - Produced detailed technical patent diagrams for "Profiling Expressed Mutations Through Normalized RNA Sequencing."
- **MIT-IBM Watson AI Lab, MIT ORC** — Summer 2024
  Machine Learning Research Intern — *Cambridge, MA*
  - Partnered with MIT Operations Research Center and IBM researchers to develop Transformer and LSTM time-series forecasting models for Boston Scientific, significantly reducing MAPE relative to baseline.
  - Developed hierarchical loss functions for multi-tier sales forecasting, leveraging softmax-based ratio normalization to ensure consistency across aggregation levels.
  - Processed and prepared large-scale sales datasets using NumPy and pandas.
- **Tencent** — Summer 2023
  Machine Learning Research Intern — *Shenzhen, China*
  - Optimized ML-based super-resolution models (ECBSR, ESRGAN) to enhance graphics quality in Tencent gaming and streaming products, achieving improvement over the benchmark in visual quality metrics while reducing inference time.
  - Conducted literature review and research on state-of-the-art super-resolution models to inform optimization strategies.
- **Research Science Institute** — Summer 2022
  Number Theory Research — *Cambridge, MA*
  - Researched in MIT Mathematics Department, investigated "Products of Values of Polynomials in Finite Fields," applying combinatorial and algebraic techniques to derive new theorems.

Awards

- 2019–2023 USACO (United States of America Computing Olympiad) – Platinum Division Qualifier
- 2022 NACLO (North America Computational Linguistics Olympiad) – Invitational Round 19th, 17th in US, 1st in MA
- 2022 Yale Girls in Math – Individual Top 15
- 2020 ARML China (American Regional Mathematics League with ASDAN China) – National Individual Top 100
- 2018–2023 American Math Competition – AIME Qualifier

Skills

- **Programming Languages:** Python, C++, C, Java, HTML, CSS, React, LaTeX
- **Libraries:** React, TensorFlow, PyTorch, scikit-learn, NumPy, Pandas
- **Additional Skills:** Machine Learning, Natural Language Processing, Computer Vision, App Development, Web Development