Michael Tu

(314) 378-1349 | michael.tu@yale.edu | https://github.com/tumichaels
https://www.linkedin.com/in/michael-tu-a5b4a41bb

Education

Yale University New Haven, CT
B.S., M.S. in Computer Science *May 2025*

- *Relevant coursework*: Algorithms, Linear Algebra, Parallel Programming, Intermediate Machine Learning, Zero Knowledge Proofs, Distributed Systems, Operating Systems, Computer Architecture
- *Activities:* Yale Community Kitchen (Coordinator), Yale Men's Water Polo (Business Manager)
- *Awards:* Andy Keidel Undergraduate Endowment Award (2022), Tetelman Fellowship for International Research (2023), Yale Richter Fellowship (2024)

Experience

Yale Applied Cryptography Laboratory New Haven, CT
Research Assistant *Jan 2025 – present*

- Designed a new protocol that allows users to privately query data from two servers without revealing their request, reducing server workload and improving efficiency for real-world privacy applications
- Led a team of 4 (2 graduate, 1 undergrad) in building a custom C++ encryption library implementing ring-LWE; contributed to cryptographic design, API architecture, and optimization
- Verified security proofs and privacy guarantees for the private information retrieval protocol; coordinated with lab PI to validate assumptions and threat models for upcoming publication

Yale Disaggregated Memory Group New Haven, CT
Research Assistant *May 2024 – Dec 2024*

- Analyzed memory access distributions for LLama3 and DLRM ml models to construct a performance model for distributed memory architectures, focusing on CXL 3.0 remote memory.
- Discovered significant skew in memory access patterns for models like LLama3, leading ongoing efforts to further characterize these skews across different operational phases.

Yale University Computer Science Department New Haven, CT
Teaching Assistant (CPSC 323 - Intro to Systems Programming) *Jan 2023 – Present*

- Instructed over 200 students about C programming, software design, and operating systems concepts
- Coordinated 17 TAs to host weekly office hours and provide assignment feedback during the semester

Projects

NCCL simulator / Raft Implementation *November 2024*

- Implemented Raft consensus protocol in around 600 lines of Golang code
- Designed and implemented NCCL functionality in Golang + used 2-3 simulated GPUs on NCCL to perform distributed computation

Smart Software-L3 Switch *May 2024*

- Designed and developed a smart Layer 3 (L3) switch in P4 language, including functionality for ARP table and IP routing table management
- Built a software controller for implementation of modified OSPF protocol to optimize IP packet routing.

CPSC 420 Processor *Jan 2023 - May 2023*

- Designed and implemented a 5-stage pipelined processor in Verilog for a custom variant of the MIPS ISA
- Extended processor to support dual instruction fetch, out-of-order commit, and 1-instruction speculation

Skills

Programming Languages: C++, C, Python, Verilog, Racket, HTML/CSS, Java, Assembly, Golang, Cuda
Developer Tools: Git, Github, Protobuf, Jupyter Notebook, LaTeX(Overleaf/R Markdown), Figma,VS Code, Linux, Windows, Bash, Excel
Misc: Cryptography