YUNCHENG YAO

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GitHub: https://github.com/PeterYaoNYU | Shanghai, China

EDUCATION

New York University Shanghai September 2021 – May 2025(Expected)
Bachelor of Science in Computer Science
Cumulative GPA: 3.969/4.000 | Major GPA: 4.000/4.000

Selected Coursework (Computer Science): Operating Systems (A), Computer Networking(A), Databases (A), Distributed Systems (A), Functional Programming (A), Computer Architecture (A), Data Structures (A), Machine Learning(A).

Selected Coursework (Mathematics): Probability and Statistics(A), Mathematical Statistics(A), Multivariable Calculus(A), Discrete Mathematics(A), Linear Algebra & Diff Equation(A).

RESEARCH EXPERIENCE

Accepted to [ACM Sigmetrics'24 Student Track]

MLFD: Design and Implementation of an LSTM-based, SmartNIC-Offloadable Failure Detector

Supported by NYU Shanghai Dean's Undergraduate Research Fund
Awarded Fall 2023 NYU Shanghai Best Undergraduate Research in STEM
Research project advised by Professor Olivier Marin (NYU Shanghai)

- Implement baseline and Machine Learning optimized failure detector with DPDK and TensorFlow
- Performance Analysis with Perf
- QoS analysis
- **The full paper can be found here: [pdf]**

QoS Aware 5G Scheduling (Ongoing)

- Advised by Assistant Professor Guyue Liu (Grace) and her Ph.D student Jiajin Liu (NYU Shanghai)
- **Some preliminary findings can be found here: [DOC]**
- Identify the weaknesses of the NSDI'23 RadioSaber Paper
- Propose solutions and improvements
- Optimize the 5G scheduling policies at gNBs to better meet SLA

Deadline Oriented Multicast in Byzantine Fault Tolerance

- Advised by Assistant Professor Anirudh Sivaraman (NYU Courant) and his PhD Student Daniel Qian
- Ongoing

Pushing the Limit of Ultra Low Latency Wireless Communications

- Scheduled for Summer 2024, at NYU Tandon School of Engineering.

- Co-advised by Assistant Professor Fraida Fund and Professor Shivendra Panwar from NYU Wireless Lab.

INTERESTS

I am profoundly interested in operating systems, distributed systems, and networking. I have a solid understanding of OS, various distributed protocols, consensus and concurrency control mechanisms, modern data-center networking with DPDK/RDMA, and the internals of a database system. You may find more on my personal website.

I began doing some "research" since the summer of my Junior year. I was lucky to have found supportive but critical faculty advisors, and the projects generally align with my interests in systems and networking.

TEACHING EXPERIENCE

Data Structures Learning Assistant NYU Shanghai, February 2023 – May 2023
Databases Learning Assistant (STEM Lead) NYU Shanghai, Sept 2023 – Dec 2023

- Hold weekly office hours to help with the homework
- Hold review sessions to help students preparing for exams
- Provide timely support and feedback to students during the recitation

PERSONAL WEBSITE

https://peteryaonyu.github.io/ This is a blog documenting some of my learning experience.
https://github.com/PeterYaoNYU GitHub is my homepage.

PROJECTS

An Extended Relational Database Based on CMU Bustub

- Take advantage of modern C++ 20
- An LRU-K Buffer Pool Manager for Database memory management
- An Index Based on Extendible Hash table
- Various Query Executor and Optimization Plan (Documentation Pending)
- Links to notes and details on implementation:
- https://peteryaonyu.github.io/2023/12/19/Database-Bustub-Buffer-Pool-Manager-Implementation/
- https://peteryaonyu.github.io/2024/01/13/Database-Implementation-of-an-Entendible-Hash-Index/

A MapReduce Framework in Golang

- A MapReduce Framework with Golang and RPC
- Following the guidance of the original Google's MapReduce Paper
- Links to notes and details:
- https://peteryaonyu.github.io/2024/01/09/Implementing-a-MapReduce-Framework-with-Golang-from-scratch/

Flight Reservation System Web Application

- A fully-fledged flight reservation system with Python Flask and MySQL as a backend

- Source Code Link: https://github.com/PeterYaoNYU/Flight-Reservation-System

Airbnb in NYC Visualization

- Front-end Project using JavaScript, React and d3.js.
- An interactive visualization of the Airbnb housing in New York City
- Documentation Link: https://docs.google.com/document/d/1uKw6vB4mS8MRD0xyz-BrhyW6A1AGz18ymvc51Bnzgvg/edit?usp=sharing
- Source Code Link: https://github.com/PeterYaoNYU/airbnb_infovis

Nand-to-Tetris CPU Simulation

- Link: https://github.com/PeterYaoNYU/Nand2Tetris
- Use a hardware description language to simulate a simple CPU

LANGUAGES

English: Proficient.

- TOEFL: 115 / 120 (Reading: 30, Listening: 30, Speaking: 27, Writing: 28)
- GRE: 336/340 (Verbal 166, Quant 170)

Chinese: Native

COMPUTER SKILLS

Proficient: C, C++, GoLang, SQL, Python, Haskell, OCaml, MPI C
Familiar: JAVA, JavaScript React and D3