Qiutong Men

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EDUCATION

- **New York University Shanghai** — Shanghai, CN
  BS, Computer Science; Minor in Maths; GPA: 3.81(Major 3.94). Advisor: Guyue Liu — *Sept. 2020 – Dec. 2023*
    - **Relevant Courses**: Computer Networks, Distributed Sys(MS-level), Operating Sys(MS-level), Computer Arch, Databases, Prog Langs(MS-level), Compiler(MS-level), Big Data and ML Sys(MS-level), Processing Big Data for Analytics
- **New York University** — NY, US
  Visiting — *Sept. 2022 – Aug. 2023*

SKILLS

- **Prog Langs**: C/C++(familiar, with large project experience), Python(familiar, with research experience), {Elixir, OCaml, Scala}(in Distributed System and Big Data projects), {SQL, JS, Java}(in Fullstack intern and projects).
- **Frameworks & Tools**: Linux, {Hadoop, Spark, Hive, Flink}(in Big Data projects), {k8s, Envoy, Istio, OpenTelemetry}(in Distributed System projects and research), React.js, Nginx

EXPERIENCE

- **New York University** — NY, US
  Student Researcher — *May. 2023 – Now*
    - Lead the project FTMesh, utilizing the special architecture of Service Meshes to reduce the latency of service failure recovery. Design and implement the system upon Kubernetes and Istio, extend the Envoy Proxy and Envoy Go Control Plane using C++ and Go for high performance state replication and recovery, finish literature review, lead the motivational and evaluation experiments. Submit an ACM SRC abstract as the first author.

- **New York University Tandon** — NY, US
  Student Developer — *Jan. 2023 – May. 2023*
    - Implement the Access Control List mechanism for Corelink Server in Holodeck High-speed Research Network program. Develop and test the SQL schema, server side query builder, authentication, and role-based access control logics.

- **New York University Shanghai** — Shanghai, CN
  Research Assistant — *Dec. 2021 – Now*
    - 1) Lead the project SecMonitor, and win the excellence award in 2nd CSCC OS Feature Designing Track. 2) Optimize the scalability of the open-source GNS3 network emulator, eliminate redundant operations in initialization phase. Enable dynamic and finer granularity privilege management on network operations, by building a Telnet-based reference monitor for network devices. 3) Design and implement a novel network anonymization mechanism with PhD students, enhance secure outsourcing of network configurations.

- **Privoce, Inc.** — Remote, US
  Fullstack Engineer Intern — *June. 2021 – Sept. 2021*
    - Lead the development of a React-based Chrome extension product. Enable posting and viewing bullet-comment on top of the video player of YouTube, sharing quick reactions to YouTube videos within private social networks, and viewing others sharing in an embedded Timeline on YouTube homepage. Design the data model of Neo4j, and integrate authentication system using Authing. Deploy and maintain the backend server on AWS.

PROJECTS

- **Query-driven OpenTelemetry**: Based on the design principle of Snicket, overcoming the high latency problem by implementing efficient and light-weight span filter in OpenTelemetry library. Reduce 6.3% latency when enabling, and incur merely 1% overhead when exporting full spans. Final rate is A. See GitHub Repo for details.
- **K8s deployment of C++ Webserver with Distributed Tracing**: Implement high-performance C++ Webserver based on Beast library, compose Istio configuration and docker images. Build a k8s cluster on bare-metal machines from scratch. Modify Jaeger Tracing configuration for performance optimization and OTLP compatibility. Drill in C++ source code of OpenTelemetry library and fix bugs. See Github Repo for details.
- **Compiler Toolchain**: Build a multi-diagram compiler toolchain in OCaml, supporting compiling ML, Scheme, and C-style languages to MIPS assembly. Build a MIPS simulator to run the compiled binary. Implement dataflow liveness analysis, and graph-coloring register allocation algorithms for optimization.
- **SecMonitor**: An e-BPF based monitor for container privileges, supporting multi-threaded container and SECCOMP configuration generation, reducing 30% - 60% unnecessary system call privileges. Decouple the monitoring from kernel version and ISA type and avoid 400+ single trace-points using the unified kernel entry trace-point, achieve write-once-run-anywhere and high efficiency. Implement in Python/Rust, and a React-based visualization tool. Develop in 2022 CSCC OS Feature Designing Track, selected into Final Round and issued Excellence Award. See GitHub Repo for details.

- **High Scalability and Telnet-based Reference Monitor in GNS3**: Re-design the current node information model in GNS3 and introduce NFS to the cluster, achieve cluster-wise availability and automatic resource allocation with single upload of nodes, thus reduce the initialization work from $O(N)$ to $O(1)$. Design the State Machine model for Telnet command Reference Monitor, improve the granularity of privilege management in network operations from per-command-name to every possible real command, and enable support in-time dynamic management. Implement an evaluation pipeline tool for the project.
- **TikTok Youth**: A simplified back-end for Tik-Tok(Douyin) in Go. Using gorm, gin, and MySQL. Developed at 3rd ByteDance Youth Camp as a co-author. Design the database model and develop the social relationships features. Our team of 6 ranked 16th among 800+ students in the advanced group, and was awarded the Team of Innovation. See Github Repo for details.
- **YouTube Sphere**: A Chrome extension enabling user to share quick response within their private social network at the video page, and view others' response in an embedded timeline on YouTube homapage. First powered by MySQL and shift to Neo4j. Deploy and manage it on AWS EC2 with Route53 and Lambda. I lead the whole lifecycle of the project with another intern. Made at Privoce, Inc. See Github Repos (1) and (2) for details.

AWARDS

2023 New York University Shanghai Recognition Award (with $5500 scholarship)	NYUSH
2023 NYU Tandon UGSRP scholarship admitted	NYU Tandon
2020-21, 2021-22, 2022-23 Dean's List	NYUSH
2021, 2022 Dean's Undergraduate Research Fund	NYUSH
2022 China System Capability Contest in OS Feature Designing - Final Round, Excellence Award	
2022 Mathematical Contest in Modeling Honorable Mentions	COMAP
3rd ByteDance Youth Camp Backend Track Advanced Group - Team of Innovation	ByteDance
National Olympics in Informatics Winter Camp - 3rd Award	CCF
National Olympics in Informatics in Provinces - 1st Award	CCF
Xiaomi National Collegiate Programming Contest - Bronze	Xiaomi Technologies
Xiaomi Online Judge - Excellent Volunteer	Xiaomi Technologies

MISCS

- **Xiaomi OJ Volunteer**: Verify and create algorithm tasks for contests on Xiaomi Online Judge.
- **Logic Clock and Raft implementation in Elixir**: Finish the course lab of Distributed Systems at NYU GSAS.
- **Airline Ticketing and Management System**: Full-stack development in React.js, SpringBoot, and MySQL for the course Databases. Earn full score.