

Guochao XIE

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EDUCATION EXPERIENCES

École Polytechnique Fédérale de Lausanne, Mater of Computer Science (Software Systems). GPA: 5.54/6.0. 09/2021 – 03/2024

- Related Courses: Advanced Algorithms, Distributed Algorithms, NLP (**GPT & LLM**), Systems for Data Science (**Spark**).

The Chinese University of Hong Kong, Shenzhen, BEng of Computer Science and Engineering. 09/2017 – 07/2021

- Presidential Award for Outstanding Students. Rank: top 1%. GPA: 3.827/4.0.
- Courses: Programming (**Python, C++, JAVA**), Database (**MySQL**), Cloud Computing (**AWS**), Blockchain Systems (**Go**).

University of California, Berkeley, Summer Program. GPA: 4.0/4.0. Operating System (**C, Go**), Game Theory. 06/2019 – 08/2019

WORKING EXPERIENCES

Oracle Labs, Research Assistant. Zürich, Switzerland 09/2023 – 03/2024

- **Context:** A generic approach to generate build provenance for **SBOM, licensing** and **vulnerability audit**.
- Design and implement **Linux container** event tracing and monitoring using **eBPF** and **Python BCC**. Analyze **OpenJDK JVM** class loading. Develop a framework of monitoring, container management and analysis **pipeline** using **Python & Bash**.

Oracle Labs, Research Assistant. Zürich, Switzerland 07/2022 – 12/2022

- **Context 1:** Composition of reference architectures to support multiple application patterns on **Oracle Cloud**.
- Design a consistent **Terraform** composition solution using naming convention. Implement **Terraform** code parsing and generation using **Go**. Develop a **Terraform module** "flattening" tool to improve readability and customization using **Go**.
- **Context 2:** Shift-left (plan-phase) visualization and policy support for complex Terraform expressions.
- Design a solution to trace resource dependencies. Implement a **Terraform-core** patch in **Go**. The result outperforms all *plan-phase analysis* tools. Visualize the improved dependency inferring with a **VSCode Extension** using **JavaScript**.

SELECTED ACADEMIC PROJECTS

Linux cgroup Scalability. Robust Scalable Systems Software Lab, EPFL. 09/2021 – 06/2022

- **Topic:** Linux cgroup locking contention on **Serverless** concurrent cold-start scenarios.
- Measure and benchmark using **eBPF** and **C++**. Implement Serverless workloads using **Kubernetes, KNative, Firecracker** (AWS Microvm) and **C++**. Develop a Read-Write lock **Linux kernel patch** in **C** which is scalable on a 224-core server.

Redis Memory Optimization. The Chinese University of Hong Kong, Shenzhen. 02/2020 – 07/2020

- **Topic:** *Bucket-Based Expiration Algorithm: Improving Eviction Efficiency for In-Memory Key-Value Database.*
- Analyze the randomized expiration algorithm of **Redis**. Design a hybrid solution to evict expired keys more efficiently and reduce memory usage by storing keys to expire simultaneously into buckets. Develop a **Redis** patch in **C**. Measure the performance using **YCSB** in **Java**.
- **Publication** at MEMSYS' 20: <https://doi.org/10.1145/3422575.3422797> Supervisor: Prof. Chung, Yeh-Ching.

SKILLS

- Programming Languages: Go, Python, C, C++, Java, JavaScript, Bash, SQL, eBPF, Terraform, Linux kernel.
- Frameworks and Runtimes: GitHub Actions, JVM, Serverless, Docker, Podman, Kubernetes, React, Redis.
- Certifications: [Azure Administrator Associate \(AZ-104\)](#), [Solutions Architect Expert \(AZ-305\)](#), [Certified Kubernetes Administrator \(CKA\)](#), [Certified Kubernetes Security Specialist \(CKS\)](#), [OCI Architect Associate \(1Z0-1072\)](#).
- Cloud Providers: Azure, Oracle Cloud Infrastructure, AWS, Cloudflare.
- Languages: Native: Chinese and Cantonese. Working proficiency (C1): English. Elementary: French.