Amirhossein Najafizadeh

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Education

Stony Brook University — **Stony Brook, New York**

Ph.D. in Computer Science, GPA: 3.92 — *Aug 2024 – Aug 2029*

Relevant Coursework: System Security, Distributed Systems, Computer Networks, Visualization

Scholarships: Awarded a one-year full scholarship for being among the top applicants

Amirkabir University (Tehran Polytechnic) — **Tehran, Iran**

Bachelor of Engineering in Computer Engineering, GPA: 3.63 — *Aug 2018 – Dec 2023*

Relevant Coursework: Cloud Computing, Data Security, Database Design, Web Engineering

Honors: Graduated among top 10% of class 2024

Technical Skills

Programming Languages: Go, Python, ShellScript (5 years), C, JavaScript (4 years), C++, Java (2 years)

Operating Systems: Linux, Ubuntu, Debian, MacOS, Windows (5 years)

Cloud Systems: Kubernetes, OpenShift (3 years), OpenStack, VMware vSphere (1 year)

Storage Systems: SQL/MySQL, PostgreSQL, MongoDB, Redis (4 years), Prometheus (2 years)

Professional Experience

Snapp Cloud! — **Tehran, Iran**

Cloud Engineer — *Nov 2023 – Aug 2024*

- Maintained and deployed Operators on Kubernetes and OpenShift platforms, utilizing tools such as OLM and Helm Charts for applications including StreamZ, RedisCluster, and PostgreSQL.
- Developed Kubernetes Operators, including the Ceph-S3 Operator and Quota Operator.
- Managed centralized monitoring tools such as Prometheus, Grafana, Loki, and Thanos.
- Facilitated application delivery using ArgoCD for both public and private applications.
- Managed over 1,000 VMs, 200 bare-metal servers, and 5 clusters using OpenShift and OpenStack.

Snapp — **Tehran, Iran**

Software Engineer — *Nov 2021 – Oct 2023*

- Manage central message queues and real-time services, utilizing technologies such as NATS, EMQX, and Kafka.
- Administer the shared cabs' panel and reporting services using Go, Redis, and MySQL.
- Implement user authentication for EMQX clusters using Go.
- Develop and support in-app communication tools, including call and chat functionalities using Go and WebRTC.

Academic Research & Projects

Stony Brook University — **Stony Brook, New York**

Multi-cloud Hybrid GPU Clusters for AI Workloads — *Jan 2025 – Present*

- Set up a 3-node Kubernetes cluster using Ansible and Terraform to utilize NVIDIA GPU cards.
- Migrated cluster storage to NFS to enable a transition to high-speed GPFS storage.
- Investigated AI/ML workload performance on running nodes.
- Developed a prediction model to forecast GPU performance for workloads.
- Rescheduled AI/ML jobs based on performance using a custom scheduler called Autopilot by IBM.

Stony Brook University — **Stony Brook, New York**

Telescope Proxy: Smart ABR for InterPlanetary File System — *Feb 2025 – Apr 2025*

- Built a proxy using Go-Fiber to enhance video streaming with IPFS as the storage backend.
- Dynamically adjusted bandwidth predictions by incorporating probabilistic models for replica selection, enabling more accurate quality adaptation in multi-replica environments.
- Replaces stateful proxy servers with scalable, stateless services.
- Added File-based segment cache tracking system for better cache management.
- Collected real-time metrics with Prometheus and implemented distributed tracing using OpenTelemetry (Jaeger).

Amirkabir University **Tehran, Iran**
PTaaS (Penetration Testing as a Service) *May 2022 – Dec 2023*
- Developed a full-stack service using Golang, Vue.js, and PostgreSQL to perform automated penetration testing.
- Used Nmap to detect system vulnerabilities.
- Wrote simple Go scripts to perform various tests.
- Developed an orchestration system to run tests in parallel within isolated environments.

Independent Projects

NFS Metrics Exporter: Technologies: Go, Prometheus, NFS
- Developed a cloud native Prometheus exporter for exporting NFS computation metrics from client side.

Amazon EC2 Practice: Technologies: Go, PostreSQL, Docker, NginX, Kubernetes, Ansible, Terraform
- Built a full-stack application (frontend, backend, and database), containerized it with Docker, and deployed it with Nginx on a system provisioned with Ansible and Terraform. Provided Docker images and Helm charts for Kubernetes deployment.

MQTT Blackbox Exporter: Technologies: Go, Prometheus, Jaeger, EMQX, Helm Charts
- Developed a system to connect, subscribe and publish over MQTT broker to check its status.

Apaxos: Technologies: Go, MongoDB, PAXOS, gRPC
- Developed a distributed transaction management service designed to replicate transactions across multiple nodes, ensure data consistency, and tolerate node failures. To achieve these goals, a modified version of the PAXOS consensus protocol was used to support multiple values in a single instance.

PBFT: Technologies: Go, MongoDB, PBFT, TLS/SSL, Threshold Signature
- Developed a transaction management system that operates in an insecure environment using the Linear-PBFT consensus protocol, implementing both normal operation and view-change routines.

System-call Blocker: Technologies: C, eBPF, BCC, LSM
- Used eBPF and LSM probes to block file creation, command execution, and network connections for subjects.

ELK Operator: Technologies: Go, Operator-SDK, Kubernetes
- A Kubernetes operator for setting up Elasticsearch, Logstash, and Kibana instances on your cluster.

SafeX: Technologies: C, Ptrace, Function-hooking
- Built a sandboxing tool that redirects file writes to `/tmp` and blocks access to paths listed in `~/.safenoread`.

Leadership Experience

Stony Brook University **Stony Brook, New York**
Operating Systems Teaching Assistant *Aug 2024 – Dec 2024*
- Led lab and recitation sessions for 40 students, focusing on operating systems, Linux, and XV6.
- Collaborated with faculty and fellow TAs to design and evaluate assignments, provide one-on-one student support, and enhance course materials.

Amirkabir University **Tehran, Iran**
Cloud Computing Teaching Assistant *Jan 2023 – May 2023*
- Led lab sessions for 70 students, teaching virtualization, QEMU, Docker, and Kubernetes.
- Delivered live sessions on practical Docker and Kubernetes usage for developers.

Amirkabir University **Tehran, Iran**
Secretary and organizer of the 13th Linux Festival *Apr 2022 – May 2022*
- Organized a weekly festival focused on Linux and open-source projects.
- Hosted over 14 technical talks and workshops for more than 120 participants.

Publications & Recognitions

Publication: Amir Zadeh. *Having Your Kubernetes Over NFS*. Published on the ITNEXT platform on Medium. Visit at `https://itnext.io/having-your-kubernetes-over-nfs-0510d5ed9b0b`

Publication: Amir Zadeh, Seyed Ahmad Javadi. *Jump Over Golang Channels: A Method to Prioritize Tasks in Go Channel Queues*. This paper presents a solution to bypass low-priority tasks in Golang channel queues and compares its performance to traditional Go channels. Published on ResearchGate. Visit at `http://dx.doi.org/10.13140/RG.2.2.28045.92646`