

SOUFIANE JOUNAID

Backend Software Engineer / Research Software Engineer
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Link Tree

EDUCATION

Khoury College of Computer Sciences, Northeastern University, Boston, MA Master of Science in Computer Science,	Jan 2021 – Aug 2023 GPA: 4.0/4.0
Vrije Universiteit Amsterdam, Amsterdam, The Netherlands Bachelor of Science in Computer Science, Minored in advanced system programming topics	Sep 2017 – Jun 2020 GPA: 8.0/10.0

TECHNICAL SKILLS

Programming Languages:	Python, C/C++, Java/Kotlin, Bash, D, R, Go, Ruby, Haskell, MatLab
Tools and Technologies:	Git, Linux, AWS, GCP, Azure, Kubernetes, Serverless, Docker, Ansible, GitOps, Grafana, Prometheus, SQL, MongoDB, Jira, Openstack, Jupyter, Terraform, Gradle/Maven, Ceph.

WORK EXPERIENCE

University of Chicago, Senior Research Software Engineer, Remote, NY	Sep 2022 – Present
<ul style="list-style-type: none">Development and operations for the Openstack-based Chameleon cloud research testbed (9000+ users) in python.<ul style="list-style-type: none">CI/CD duties include the development, deployment, and maintenance of 20+ distributed services across 3 geographical sites via ansible and docker in addition to live monitoring and alerting through Grafana.Employed various Linux utilities and shell scripting to automate various logging and repair tasks.Wrote code and tests to authenticate and manage granular hardware resource usage on the testbed.Detected and fixed various severity service/site outages in timely manner.Assisted our users through our helpdesk with troubleshooting and orchestrating complex experiments.Leading development and operations on CHI@Edge, an edge computing research testbed allowing users to reserve edge devices or enroll their own and schedule complex container workloads on them.<ul style="list-style-type: none">Leveraging a combination of BalenaCloud (out-of-band hardware management), Kubernetes (workload orchestration), Calico CNI and Wireguard (Networking and isolation) to build a distributed platform for orchestrating complex ubiquitous computing experiments on distributed edge devices.Designed and implemented various security and reliability improvements to the platform.Designed and developed container-centric tools to extend the platform with GPU and peripheral support.Developed a hardware discovery API and a webpage to display auto-updated hardware info about devices.	
IBM Research, Software Engineer Intern, Yorktown Heights, NY	Jun 2022 – Aug 2022
<ul style="list-style-type: none">Designed and implemented a containerized distributed network micro-benchmark in C++ to profile network latency and bandwidth on over 1000s of public cloud nodes within a single cloud availability zone (AZ).Employed clustering algorithms to group low-latency nodes, forming a network topology that improves the runtime of network-sensitive molecular dynamics simulation GROMACS on Kubernetes by over 50%.	
CarGurus, Software Engineer Co-op, Cambridge, MA	Jan 2022 – Jun 2022
<ul style="list-style-type: none">Implemented a load balancer in Kotlin for the primary production SEO database that serves latency-insensitive requests from weakly consistent replicas, improving the average critical job runtimes by 2x during peak hours.Collaborated in migrating CarGurus' entire Search Engine Optimization (SEO) codebase from Ruby to Kotlin.	

PROJECTS

Serverless Network File System, Northeastern University Systems Research Group	Sep 2022 – May 2023
<ul style="list-style-type: none">Designed and implemented a Serverless-powered distributed network file system (SLFS) in C++ to provide a more customizable, cost-efficient replacement to serverful distributed file systems, which SLFS outperforms by 50x.	
Kube-Flux: HPC scheduling on Kubernetes, IBM / RedHat / LLNL	Sep 2021 – Dec 2021
<ul style="list-style-type: none">Designed and implemented a job cancellation controller for the Kubernetes scheduler enabling efficient reuse of compute resources allowing HPC workloads such as GROMACS to run on Kubernetes. Released with RedHat OpenShift 4.10.	
OpenDC Serverless – Serverless Platform Simulation Model, VU Amsterdam Systems Research	Feb 2020 – Aug 2020
<ul style="list-style-type: none">Designed and implemented the first serverless platform trace-simulator allowing for accurate and in-depth performance, resource, and cost simulation of platforms such as AWS Lambda and enabling advanced exploration and accurate preview of custom policies before implementation into production. Published in IEEE CCGrid 2021 / Third place in the Amsterdam Data Science Thesis Awards 2020.	