NAM V. DO

Software Engineer

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PROFESSIONAL SUMMARY

I am a software engineer with a few years of experience in different domains. I began my career with audio call application development, which deepened my understanding of computer networks including some media streaming protocols. Later I joined a company developing a search engine product, which has taught me the fundamentals of crawling, indexing, and search services. My recent work includes building data migration services and utilities for asynchronous programming. Currently, I'm also developing a scientific programming application focused on pattern similarity analysis across various data types (text, image, music, etc...). Through this project, I've had a wonderful opportunity to practice my engineering skills in research comprehension, data compression, CI/CD, scalable software design implementation, CS and programming theory, and thorough testing with 100+ unit and integration tests. Occasionally I write technical posts on my blog for SE and CS topics that I've learned and found interesting rendering more than 16K unique visitors per month.

EDUCATION

Bachelor of Computer Software Engineering   *2018 - 2023*
FPT University, Vietnam
GPA: 8.43/10.0

- Relevant Coursework: Computer Networking (10/10), Computer Organization & Architecture (9.2/10), Data Structures & Algorithms (9.0/10), Programming Fundamentals (8.9/10), Operating System (8.7/10), Software Architecture and Design (8.5/10), Object-Oriented Programming (8.9/10), Introduction to Computer Science (8.8/10)
- Extracurricular activities: JS Club - Member of the expertise department

PROFESSIONAL EXPERIENCE

Software Engineer, Petabyte Storage   *October 2024 - Present*
California, USA (Remote)
CompLearn 2.0 openscienceresearchpark.com
Web-based scientific programming tool using Normalized Compression Distance (NCD) to find similarity patterns in any kind of data. Works directly under Dr. Cilibrasi's guidance:

- Successfully compiled QSearch native code (C++) to WebAssembly utilizing Emscripten, enabling seamless browser execution
- Implemented NCD and QSearch workers for matrix calculations and tree visualization rendering.
- Implemented a List Editor supporting different input formats, e.g. FASTA sequences, and language translations to custom file upload
- Created 3D quartet tree visualization with balls and springs using ThreeJS and Fiber.
- Implemented multiple-layer caching strategy for faster FASTA animal suggestions retrieval.
- Implemented FASTA animal suggestions with automated taxonomic group detection and de-duplication.
- Integrated multiple compression algorithms (gzip/zlib, LZMA) to adapt different kinds of input formats.
- NCD with LZMA compression option caching using CRC-32 (Cyclic Redundancy Check 32 bits).
- Implemented a FASTA parser supporting multiple formats: file-based, API-sourced, with headers/headless.

- Written extensive number of unit and integration tests for core components: animal suggestions search, parsers, caches, workers, and Genbank public APIs.
- Implemented CI/CD pipelines to automate builds, tests, and deployments using Docker, Github Action, and shell scripting.

Software Engineer, CompaxDigital   *September 2023 - Present*
Hanoi, Vietnam
BSS Software (AAX)

- Implemented a generic data migration library written in Java to be used internally in different client-specific projects.
- Took part in a Postgres message queue implementation to reduce deployment complexities. Conduct thorough performance tests comparing with the existing message queue interfaces in the system.
- Contributed to GUI development of the next generation of AAX (AAX4).
- Built asynchronous programming utility in Java with support retries and backoff.
- Implemented campaign exclusion logic using fundamental set operations.

Software Engineer, Coc Coc   *September 2021 - July 2023*
Hanoi, Vietnam
Coc Coc Search Engine (30+M MAU)

- Implemented a monitoring service for 10+ vertical search components with automatic anomaly detection and notification.
- Implemented a Finance search service with 4 components: banking interest rates, currency and cryptocurrency rates, and stock prices, generating 1.8M+ monthly queries.
- Implemented the Job search service processing 120K+ daily listings from various sources.
- Implemented the E-Government service facilitating efficient search across a large number of government documents.
- Integrated Olympiads service into existing Coc Coc edu ecosystem, enhancing results for student olympiad contests search.
- Implemented automated GitLab CI pipelines and Grafana metrics monitoring to track the number of queries in a certain period.
- Maintained other vertical components including Soccer, Weather, Movies, University Hub, etc...
- Supported one developer and one intern to help them finish their tasks.

Software Engineer, Giao Hang Tiet Kiem   *February 2021 - September 2021*
Hanoi, Vietnam
GCall (part of GChat)

- Researched and analyzed existing open-source solutions for media streaming applications.
- Took part in developing major components of the application (i.e. business logic service, media streaming service). After a few months, the app was shipped to users on mobile devices.

TECHNICAL SKILLS

- **Programming Languages:** JavaScript/TypeScript, Java, C++, Rust
- **Web Technologies:** SpringBoot, React, Node.js, WebAssembly, WebRTC
- **DevOps & Tools:** Docker, Git, GitHub Actions, GitLab CI, NGINX, Redis
- **Data & Backend:** PostgreSQL, Message Queues, Data Compression
- **Specialized Skills:** Normalized Compression Distance (NCD), Search Engine Development, Concurrent Programming

Professional Development

- Concurrent Programming in Java (Coursera, 2024)
- Parallel Programming in Java (Coursera, 2023)
- Text Retrieval and Search Engines (Coursera, 2023)
- Natural Language Processing with Classification (Coursera, 2023)
- Functional Programming Principles in Scala (Coursera, 2020)
- Learning How to Learn (Coursera, 2019)

Projects & Technical Writing

Technical Blog   *2019 - Present*
Learn to Code Together

- Written 100+ blog posts about computer science, programming tutorials, and software engineering problems while I learn something new and interesting with more than 16K unique visitors per month.

OSS contributions

- **CompLearn 2.0:** Advanced scientific programming application for pattern similarity analysis
- **Rust Coding Challenges:** Educational repository to practice computer science fundamental and engineering problems using Rust.
- **Simple Async Helper:** A simple Java utility library to make asynchronous programming in Java a little bit easier.

References

Dr. Rudi Cilibrasi
Computer Scientist, CompLearn 2.0 Project Lead
California Institute of Technology

Joy Hughes
Senior Computational Geometry Engineer
California Institute of Technology