

# NAM DO

*Graduate Research Assistant*

 [namvdo11@gmail.com](mailto:namvdo11@gmail.com) •  [namvdo](https://github.com/namvdo) •  [namvdo.ai](https://namvdo.ai) •  [openscienceresearchpark.com](https://openscienceresearchpark.com)

## PROFESSIONAL SUMMARY

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Software engineer with 4+ years building high-performance systems—from media streaming applications to search infrastructure serving millions of monthly queries. Developed scientific computing tools for pattern analysis using NCD (Normalized Compression Distance), WebAssembly, and 3D visualization. Experienced in data compression, computer graphics, scientific computing, and low-level optimizations. Designed and implemented a complete software solution from inception to fully automated releases. Currently a Research Assistant in Edge Intelligence, studying and doing research in dynamical systems and mobile robot localization. Active technical blogger documenting implementations across computer science fundamentals.

## EDUCATION

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### MSc in Computer Science and Engineering

2025 - 2027

University of Oulu, Finland

- Relevant Coursework: NLP and Text Mining, Data Mining, Introduction to Mathematical Optimization, Deep Learning, Multi-modal Data Fusion
- Research projects: Visualization of set-valued dynamical systems, Benchmarking localization algorithms with learning-based algorithms

### 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

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### Graduate Research Assistant, University of Oulu

Jan 2026 - present

Oulu, Finland (Part-time)

*Edge Intelligence: Future Computing Group - Center for Ubiquitous Computing (UBICOMP)*

- Working in Edge Orchestration Simulator under the supervision of Prof. Lauri Lovén

### Software Engineer, Petabyte Storage

October 2024 - October 2025

California, USA (Remote)

*CompLearn 2.0: Web-based scientific programming tool using Normalized Compression Distance (NCD) to find similarity patterns in any kind of data.*

- Compiled QSearch native C++ code to WebAssembly using Emscripten, enabling efficient browser-based execution.
- Built NCD and QSearch workers for matrix calculations and tree visualizations.
- Implemented K-Grid algorithm for clustering visualization with simulated annealing.

- Developed a List Editor supporting multiple input formats, including FASTA sequences, with custom file uploads and translations.
- Created interactive 3D quartet tree visualizations using ThreeJS and Fiber.
- Implemented multi-layer caching to perform faster FASTA animal suggestions retrieval.
- Automated taxonomic group detection and de-duplication for FASTA animal suggestions.
- Integrated compression algorithms (gzip/zlib, LZMA, zstd) to efficiently handle data of varying sizes.
- Cached NCD results with different supported compression algorithms using Content-Addressable Storage (CRC-32) for efficient reuse.
- Designed a FASTA parser supporting file-based and API-sourced inputs with or without headers.
- Wrote extensive unit and integration tests for core components such as parsers, caches, workers, and public Genbank APIs.
- Implemented CI/CD pipelines with Docker, GitHub Actions, and shell scripting for automated builds, tests, and deployments.

**Software Engineer, CompaxDigital**

*September 2023 - Present*

Hanoi, Vietnam

*AAX: Business Supporting System with clients worldwide*

- Designed and implemented seamless CI pipelines to enforce working flow and convention from development activities to full automated releases.
- Designed and implemented standard conventional commit format, semantic versioning, and internal format for mobile app project with multiple clients.
- Improved the CI pipelines to achieve at least 3x performance gain by aggressive multi-layer caching, parallel processing, tweaking JVM memory and GC options, Gradle build optimization with proper memory alignment, and limiting supported architectures for Android builds.
- Designed and implemented core components and structures for the multi-client monorepo project, significantly involved in improving UI/UX experience.
- Built a generic library in Java to support data migration in other client-specific projects.
- Participated in the implementation of a Postgres message queue service. Conducted performance tests comparing it with existing message queue services in the system and documented the findings.
- Contributed to the development of the new GUI generation (AAX4).
- Implemented sell campaign exclusion logic using fundamental set operations.
- Wrote a small shared library for asynchronous programming (with support retries, backoff).

**Software Engineer, Coc Coc**

*September 2021 - July 2023*

Hanoi, Vietnam

*Coc Coc Search Engine*

- Built a monitoring service for 10+ vertical search components with automatic anomaly detection and notifications.
- Developed a Finance search service with 4 components (banking rates, currency, cryptocurrency, stock prices) handling 1.8M+ monthly queries.
- Created a Job search service processing 120K+ daily listings from multiple sources.
- Implemented an E-Government search service for efficient access to large volumes of government documents.

- Integrated the Olympiads service into the Coc Coc edu ecosystem, improving search results for student contests.
- Automated GitLab CI pipelines and set up Grafana metrics to monitor query volumes over time.
- Maintained vertical components such as Soccer, Weather, Movies, and University Hub.
- Mentored one developer and one intern, supporting task completion.

### Software Engineer, Giao Hang Tiet Kiem

February 2021 - September 2021

Hanoi, Vietnam

*GCall (part of GChat): audio call software enabling communication for both internal employees and external users*

- Research different open-source technologies and media stream-enabled technologies from WebRTC, RPT, SMTP, and tools like FFmpeg, containers (webm, mp4), and video/audio codecs (vp8/9, h-264).
- Took part in the development of both the business logic service (Spring Boot application) and the media service (using ion-sfu). Implemented an audio call application integrated into the GHTK chat application for GHTK users on mobile devices.

## TECHNICAL WRITING & PROJECTS

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### Technical Blog

2019 - Present

[namvdo's blog](#)

- Authored 100+ blog posts on computer science, programming tutorials, and software engineering topics that I've learned and found interesting. [One post](#) explaining Branch prediction got over 160K views on Reddit and was #1 in the r/programming subreddit with more than 6 million programming folks for over a day.

### OSS contributions

- **Rust Coding Challenges:** Educational repository to practice computer science fundamental and engineering problems using Rust.
- **Jen:** Image processing, generative photography, cellular automata.
- **Set-valued dynamical systems:** Visualization of set-valued dynamical systems with additive bounded noise

## REFERENCES

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### [Dr. Rudi Cilibrasi](#)

Computer Scientist, CompLearn 2.0 Project Lead  
California Institute of Technology

### [Joy Hughes](#)

Senior Computational Geometry Engineer  
California Institute of Technology