

# Wang Jiefan

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## EDUCATION

### Bachelor of Computing

*Honours w. Distinction (CGPA: 4.33) - Focus in Parallel Computing and Database Systems*

National University of Singapore

Aug. 2021 – July 2025

## EXTRA-CURRICULAR

### Team Kent Ridge (NUS High-Performance Cluster Computing Interest Group)

June 2024 - July 2025

- Co-founder, captain of competition group of 20+ students.
- Wrote whitepapers on HPC technologies such as CUDA GPGPU programming, massively-distributed software parallelization frameworks such as OpenACC, advanced C++ features and memory-aware software optimizations.
- Designed and built private multi-node research cluster, administered with Ansible, running on Rocky Linux, serving a Gluster-distributed XFS filesystem and integrated with the Spack package manager, and monitored through Grafana.

## ACHIEVEMENTS

### ISC25 HPC-AI Online Student Cluster Competition

Aug. 2024 - June 2025

- **3rd Place.**
- Significantly rewrote the uphys module of ICON (the Icosahedral Nonhydrostatic Weather and Climate Model) using C++26 std::par compiler assisted offloading, paired with explicit memory-pinning CUDA routines to minimize inter-device buffer transfers.
- Achieved a roughly  $\times 257$  mean runtime improvement ( $>4\text{hrs} \rightarrow 56.1\text{s}$ ) when running the atm\_R2B08.nc simulation using the DRKZ Levante system's GPU resources.

### SC24 Indy-Student Cluster Competition

July - Nov. 2024

- **Highest HPLinpack Score** (22.6 TFLOPS across 30 AMD EPYC-Milan CPU Nodes).
- Implemented custom MPI collective topologies to accelerate the HPL Linear algebra benchmark on the University of Indiana's JetStream2 supercomputer.
- Developed runtime architectures, kernel patches and parameter optimizations to enable scalable and efficient execution of the Nanoscale Molecular Dynamics simulation.

## PROFESSIONAL EXPERIENCE

### **Backend Software Engineer - Global E-Commerce (Europe)**

Singapore

*TikTok Pte. Ltd*

June 2025 - Present

- Implemented performance optimizations, such as asynchronous querying and task scheduling policies, to business logic of the TikTok shop seller platform that resulted in a  $>60\%$  YoY increase in quarterly onboarding rate across all EU regions.
- Service OnCalls to maintain the stability and security of relevant systems, including performing data center disaster recovery and loss prevention/control.

### **Backend Platform Developer Intern**

Singapore

*Shopee Pte. Ltd.*

May - Aug. 2024

- Developed Virtual Gateway feature for internal container networking platform in Go using gRPC and etcd, to automate and segregate the allocation of subnets to hundreds of in-production Virtual Private Clouds (VPCs) across global business units.
- Implemented Quality of Service (QoS) policies for internal container networking platform, by dynamically setting Differentiated Services Code Point values in IP headers using cgroup-attached eBPF programs, to enable client-side configuration of TCP traffic priorities for hundreds of baremetal VPC servers.

### **Teaching Assistant**

Singapore

*National University of Singapore*

Aug. 2023 - May. 2025

- CS2109S Introduction to Machine Learning (AY23/24 Sem 1), CS3211 Parallel and Concurrent Programming (AY23/24, AY24/25 Sem 2), CS3210 Parallel Computing (AY24/25 Sem 1/2)
- Wrote new lesson material, created coding assignments, conducted weekly tutorial sessions and provided consultation to students on distributed systems programming topics such as cache-coherence protocols, the C++ memory model and lock-free programming.

## PROJECTS

### The Conq Programming Language | Rust, WebAssembly

Jan. – April 2024

- General-purpose programming language implemented with LLVM-MLIR toolchain and compiles to WASM with HTML Canvas bindings.

### Order-Matching System | C++

Sep. – Nov. 2023

- Socket-based HFT-inspired multi-threading order-matching engine which utilizes custom extension of `std::priority_queue` that is thread-safe, supports arbitrary removal and iteration.
- ... and many more, at [nafelj.me](http://nafelj.me) and [github.com/Nafeij](https://github.com/Nafeij)

## SKILLS

**Languages:** C\C++, Fortran, Java, Kotlin, Go, Python, Typescript, Rust, PostgreSQL, SQLite, HTML\CSS, WebAssembly

**Frameworks:** React, OpenMP, OpenACC, React Native, Node.js, Next.js, gRPC, Flask, Ansible, Spack, Django, JUnit, NumPy, Pandas, PyTorch, Cilium

**Technologies:** Operating Systems, Git, MPI, OpenMPI, eBPF, etcd, Kubernetes, ROCm, CUDA, Nvidia HPC SDK, Slurm, PBS, Singularity, Gluster, GraphQL, Jenkins, Firebase, OpenStack, JIRA

**Non-technical / Other:** Mathematics, Project Management, CI/CD, Systems Compliance, Specification Design, Employee engagement, Small-team Organizational Skills, Communication Skills

## MISCELLANEOUS

I am a **Singaporean citizen**.