resume

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Technical Skills

- **Languages:** C++ (17/20), Rust, Python, Bash, CMake
- **HPC & GPU:** HIP (ROCm), CUDA, Kokkos, MPI, OpenMP
- **Systems & Tools:** Linux, Docker, Git, Slurm

Education

- **National Ilan University**, Department of Computer Science and Information Engineering (2023/09 - Present)
- **National Tainan Industrial High School**, Information Technology (2020/09 - 2023/06)

Work Experience

HPC Engineering Intern, National Center for High-performance Computing (NCHC)

Remote, during semester (2025/11 - Present)

- Focusing on software deployment and performance validation within the **AMD ROCm ecosystem**.
- Deployed a single-node multi-GPU (MI325X*8) inference environment using Docker Compose (with LMCache, vLLM), enhancing large language model inference efficiency through PD separation.

Projects

Libraries

hippp - Write GPU program with RAII

- Developed a modern C++ header-only library leveraging **RAII** to manage GPU resources on the ROCm stack.
- Simplified GPU programming workflow by reducing boilerplate code and preventing memory leaks.

Algorithms

ROCm-mini-nbody - A simple gravitational N-body simulation with ROCm optimizations

- Ported *mini-nbody*, a simple gravitational N-body simulation, to **HIP/ROCm** using `hipify-perl` and CMake, enabling execution on AMD GPUs.

rocOdyssey - ROCm version of Odyssey (GPU-based GRRT)

- Ported *Odyssey*, a General Relativistic Ray-Tracing code, from CUDA to **HIP/ROCm** to enable black hole simulations on AMD GPUs.
- Tuned kernel launch parameters for AMD CDNA/RDNA architectures: optimized **Wavefront size to 64** and **Thread Block size to 256**, achieving maximum compute unit occupancy.

Accelerating AE-QTS Algorithm with Kokkos

- Accelerated the AE-QTS algorithm by migrating from single-threaded Python to the **Kokkos** performance portability framework.
- Enabled cross-platform execution on both AMD and NVIDIA GPUs, achieving performance parity with the native CUDA implementation.

System Applications

- yush - Simple and modern shell
- yu - Package manager wrapper
- cmake-init - CMake project initializer

Competitions

4th HiPAC High-Performance Application Competition - Honorable Mention

- Accelerated **LAMMPS** molecular dynamics simulations in a multi-node environment (2 nodes × 8 NVIDIA V100 GPUs).
- Devised a resource scheduling strategy: utilized off-peak hours for high-load testing and optimized execution scripts to minimize runtime, maximizing the team's testing window.

National Center for High-Performance Computing International Student Cluster Competition (SCC)

- **Selected for National Team Training**: Undergoing intensive HPC training to represent Taiwan in international supercomputing competitions.

ISC 2026 Student Cluster Competition - Team Leader (In Preparation)

Contributions

ROCm Ecosystem Contributions

- **ROCm rocHPL - Add gfx1201 and ROCm 7.0 support**: Updated CMake build logic to support the latest **gfx1201 (RDNA4)** architecture, resolving hardware compatibility issues for benchmark testing.
- **GitHub Linguist - Add HIP language support**: Added syntax highlighting support for HIP, improving code statistics and readability for global projects.
- **Github gitignore - Add HIP.gitignore**: Standardized `.gitignore` templates for HIP projects to enhance developer experience.

Community

- **TANET & NCS 2025 -** Conference Staff
- **SITCON X -** Speaker (Topic: Project Introduction & System Programming)
- **SCIST S3 Algorithm Course -** Online Teaching Assistant
- **Jianbei Electrical Engineering Club -** Club Instructor
- **Southern Nine Schools Information Club -** Team Mentor (Joint Tea Party & Winter Training)
- **National Tainan Industrial High School Web Design Club -** President & Instructor