Samuel Chi Laam Wu

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PROFILE

My interests lie in the intersection of high performance computing (HPC) and machine learning (ML). Among this area, I am focused on accelerators, numerical methods for ML, and generative models (e.g. normalising flows, flow-matching).

EDUCATION

THE UNIVERSITY OF EDINBURGH
Edinburgh, Scotland

MSc High Performance Computing with Data Science
Sep 2024 - Aug 2025

Grade: Distinction (predicted)
Dissertation: Parallel Tridiagonal Solvers for Neural Networks
Relevant courses: Accelerated Systems, HPC Architectures, ML at Scale, Machine Learning and Pattern Recognition

LANCASTER UNIVERSITY
Lancaster, England

BSc (Hons) Computer Science (Study Abroad)
Oct 2021 - Jun 2024

Grade: First class honours - 80% overall (86% in third year)
Dissertation: Accelerated Symbol-level GRAND for High-Order Modulation (achieved 100%)

THE AUSTRALIAN NATIONAL UNIVERSITY
Canberra, Australia

Study Abroad Year with specialisation in Systems and Architecture
Jul 2022 - Jun 2023

Grade: 81.4% (High Distinction equivalent)

PROJECTS

MSC DISSERTATION - PARALLEL TRIDIAGONAL SOLVERS FOR NEURAL NETWORKS
- First reproducibility study of DeepPCR with custom Triton kernels across NVIDIA V100 and AMD MI300x GPUs
- Confirmed original speedups while identifying performance boundaries through roofline analysis and parameter sweeps

AMD AI SPRINT HACKATHON
- Optimised Mistral-8x7B LLM inference using vLLM v1 framework on AMD MI300x GPUs
- Used a Docker-based ROCm pipeline, achieving a 10% improvement in total token throughput

VISION TRANSFORMER (ViT) FOR WEATHER CLASSIFICATION
- Re-implementation of the Transformer architecture (and extension to ViT), with MixUp data augmentation
- Achieved 28x speedup on ERA5 weather classification across multiple NVIDIA V100s using PyTorch Distributed

PARALLEL LAX-WENDROFF ADVECTION SOLVER
- CUDA and OpenMPI based Lax-Wendroff solver written in C; simulations conducted on the Gadi supercomputer
- Achieved 88% peak performance on CUDA variant using cache-aware loop reordering and tiling optimisations

WORK EXPERIENCE

TEACHING ASSISTANT FOR OPERATING SYSTEMS & COMPUTER NETWORKS
Bailrigg, Lancaster

Lancaster University School of Computing and Communications
Oct 2023 – Mar 2024

- Managed completion of assignments during labs and volunteered to tutor in extra sessions, increasing student support
- Guided second year students in understanding the Linux kernel architecture and assimilate concurrency concepts

BACK END DEVELOPER
Bailrigg, Lancaster

IT Partnering and Innovation at Lancaster University
Oct 2023 – Dec 2023

- Enhanced system reliability with Microsoft Orleans in AWS using C# .NET for a location-based booking service
- Refactored custom API for occupancy admins to manage organisation spaces, improving administrative efficiency

PUBLIC SPEAKING

- Delivered lightning talk "HPC and ML workloads on Kubernetes" at Yorkshire DevOps meet-up to 100 attendees
- Conducted workshop "Adversarial Attacks on Aligned Language Models" at LUHack to 20 participants

SKILLS

Programming Languages and Relevant Libraries
C, C++, C#, Java, Python, SQL, Matplotlib, NumPy, Pandas, PyTorch, Scikit-learn, SciPy