Yufan Xia

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Education

- **The Chinese University of Hong Kong (CUHK)** — Hong Kong SAR
  Masters of Philosophy in Computational Chemistry — *Aug 2022 - July 2024*
  Courses: Computational Chemistry, Advanced GPU Programming, Electro-Chemistry
- **The Australian National University (ANU)** — Canberra, Australia
  Master of Computer Science (Honor's Degree); GPA: 6.53/7 (top 10%) — *Aug 2020 - May 2022*
  Courses: Computational Theory, Statistical Machine Learning, Computer Vision, Convex Optimization, Parallel Programming, Data Mining
- **Nanjing University of Aeronautics&Astronautics (NUAA)** — Nanjing, China
  Bachelor of Applied Science (Aviation) — *Sept 2016 - June 2020*
  Courses: C Programming, Linear Algebra, Data Structure

Publication

1. **Yufan Xia**, Marco De La Pierre, Amanda S. Barnard, Giuseppe M.J. Barca, A Machine Learning Approach towards Runtime Optimisation of Matrix Multiplication, *IEEE International Parallel & Distributed Processing Symposium* (IPDPS 2023)

Accepted:

2. **Yufan Xia**, Giuseppe M.J. Barca, *Machine-Learning-Driven Runtime Optimization of BLAS Level 3 on Modern Multi-Core Systems*, *IEEE International Parallel & Distributed Processing Symposium* (IPDPS 2024)

Experience & Awards

- **Best Poster Award** — San Francisco, USA
  Conference Award — *May 2024*
  - **Best Poster Award**: I was awarded the best poster award in the IPDPS24 conference in my project titled "Machine-Learning-Driven Runtime Optimization of BLAS Level 3 on Modern Multi-Core Systems."
- **Paper Reviewer for ICONIP** — Hong Kong SAR
  Subreviewer — *Sept 2023 - Oct 2023*
  - **Subreviewer**: I reviewed three papers for ICONIP 2023 by invitation of a friend.
- **RDMA Programming Hackathon 2023** — Qingdao, China
  Team Leader, Main Contributor — *September 2022 - August 2022*
  - **Second Place in Competition**: I led my team to achieve second place in the 11th RDMA competition, winning over Nankai University and were invited to join the CCF conference for award ceremony.
- **Tutoring in Australian National University** — Canberra, Australia
  Tutor/Teaching Assistant — *December 2021 - July 2021*
  - **Tutor**: I act as a Tutor/Teaching Assistant in Computer Vision and Parallel Systems courses in ANU for satisfactory grades in those courses.
- **Department of Cloud Computing, iFlytek** — Hefei, China
  Software Developing Intern — *December 2020 - March 2021*
  - **Work Description**: I worked as an intern as level 2 software developer to code in C++ for integrating AI services/platforms for banks and government departments.

Other Academic Projects

- **Simulating Interface System with Deep Learning (Computational Chemistry)**: Develope a new DNN-backed algorithm to model reactions happening near liquid-liquid interface; I have achieved successful results (reaction without catalysis) that match with experiments; the method is including relevant features and including explicit long-range interactions into existing ML force fields. (Prepared to be submitted to the ***Journal of Chemical Theory and Computation***.)
- **Fast Solution to School Timetabling Problem using Quantum Algorithms (Computational Algorithms)**: Apply quantum annealing optimisation solvers and find the best ways to embed timetabling problems. I developed a compressed embedding method that can accelerate solution several times compared to original when testing on DWAVE platform from Canada. The result is good, while more work needs to be done for this to become a proper paper.

Course Projects

- Studying Kernel Methods in Statistical Machine Learning: Study the theory of kernel method theories, its ability to create non-linearity, and how it works in SVM. Study the effect of different kernels and parameter selection in RBF kernel.
- Improving Distributed Algorithm for PDE Advection Solver: Using parallel programming models like MPI, Pthreads, OpenMP, and CUDA to parallelise advection field updates. Several pre-existing techniques including wide halo, communication overlapping were explored, and further optimizations were tested out and proved to work.