Richard Meng

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Work Experience

COMPUTATIONAL MODELING INTERN | Reactor Chemistry, Canadian Nuclear Labs

September 2025 – December 2025 | Chalk River, Canada

- Collaborating with experimentalists to model helium in neutron-irradiated 304 stainless steel from a salvaged component of the National Research Universal reactor.
- Object Kinetic Monte Carlo simulations for helium and defect distribution and effects

PRODUCT ENGINEERING INTERN | R&D Fluid Transport, Hanon Systems Canada

May 2021 – June 2022 | Belleville, Canada

- Developed and organized the builds of fluid transport prototypes for automotive thermals. Work included projects for electric vehicles from Ford, GM, and Lucid.
- Completed 342 prototype build requests under historically high demand.
- "Best engineering intern in the history of Hanon Belleville" (From Available Ref. Ltr.)

LEAD LAB TEACHING ASSISTANT | Engineering Graphics

Fall 2023, 2024 | Kingston, Canada

- Led and organized 2 other TAs in lab sessions of more than 80 students.
- Live demonstrations, supervision of students, tutorials, and marking.

Research and Projects

MOMENT TENSOR POTENTIAL ALGORITHMIC ADVANCES AND GPU SUPPORT

C++, Kokkos, CUDA tools, Python | Parallel Algorithms, Machine Learning Optimizations

1 Manuscript Submitted; 1 Manuscript Under Internal Review

- Proposed a cost-aware basis function pruning algorithim, optimizing cost-accuracy.
- Improved CPU and new GPU implementations with case studies reaching 1M+ atoms.
- Collective speedups of 13× on CPU with equal or better accuracy.

SMALL-CELL TRAINING OF ML MOLECULAR DYNAMICS POTENTIAL

Python | Molecular Dynamics, Machine Learning, High-Performance Computing

Published in Computational Materials Science

- An accelerated machine learning potential model training method by preferentially selecting small atomic cells during active learning.
- Yields significant speedups while retaining validation and physical property accuracy.

LISTEN TO THE PATH: CUHACKING 2021 HACKATHON WINNER

C#, Unity | Graph Algorithms, Maze Generation

- Accessible game for the visually impaired; won Best Project among 200+ participants

COMPUTATIONAL MODEL OF MANIFOLD: 3RD PLACE PEO COMPETITION

Python, OpenFOAM | Model Tuning, Fluid Dynamics

- 3rd Place (2023): Professional Engineers Ontario, Kingston, Engineering Competition

Please see my personal website for additional information.

Honors & Awards

Best UNENE 2024 Student Thesis
Best student thesis (7-min presentation) at UNENE 2024.

L. M. Arkley Prize
Best Mech. Eng. undergrad research paper, supported by an oral presentation.

Colin T. Bayne Memorial Award
Graduating Mech. Eng. student showing most proficiency in innovative design.

Conn-Gilbert Award
Highest average in the core courses in thermodynamics.

Alexander Bell CGS-M Scholarship

R. Samuel McLaughlin Fellowship

Lorne C Elder Scholarship

Lena MacNeil Scholarship

Dean's Scholar

Education

QUEEN'S UNIVERSITY, CANADA

MASc Mechanical Engineering, Co-Supervised with Computer Engineering
Cumulative GPA: 4.3 / 4.3
Sep 2023 - Expected Dec 2025

BASc Mechanical Engineering
Cumulative GPA: 4.18 / 4.3
Sep 2018 - April 2023

Skills

PROGRAMMING

Python • C++ • C# • JavaScript • TypeScript • HTML • CSS • LaTeX

LIBRARIES/FRAMEWORKS

MPI • Kokkos • NumPy • SLURM • Git • CUDA