Richard Meng

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Experience

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.
- Applied engineering and design knowledge, testing, prototyping.
- 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.
- Performed live Solidworks demonstrations, presenting and explaining content.
- Supervision of students, mentorship of smaller groups, tutorials, and marking.

Research and Projects

SMALL-CELL TRAINING OF ML MOLECULAR DYNAMICS DESCRIPTORS

Python | Molecular Dynamics, Machine Learning, HPC

- Winner of L. M. Arkley Prize, Submitting to Computational Materials Science.
- An accelerated active learning approach to circumvent the superlinear scaling of atom count during training set generation.
- Our training protocol achieves up to 100× compute speedups vs. more conventional approaches while retaining comparable accuracy in benchmarks.
- Fully automated and partially parallelized active learning on computing clusters.

COMPUTATIONAL MODEL OF MANIFOLD: 3RD PLACE PEO COMPETITION

Python, OpenFOAM | Model Tuning, Fluid Dynamics

- 3rd Place: Professional Engineers Ontario, Kingston, Engineering Competition
- Development of a computational fluid dynamics model for Condair Inc., a global industrial humidifier manufacturer.

LISTEN TO THE PATH: CUHACKING HACKATHON WINNER

C#, Unity | Graph Algorithms, Maze Generation

- The team won Best Game and Best Hack (project) out of over 200 participants.
- Developed a procedural and accessible maze game with support for the visually impaired. The game is playable solely off sound cues with voice-control support.

PIN-JOINTED STRUCTURE SIMULATOR

Python, TypeScript, React, SciPy | Graph Algorithms, Energy Optimization, FEM

- Interactive web-based FEM simulation of user-defined structures under load.
- Stress and displacement calculated by gradient descent energy optimization.

Please see my personal website for more about projects, experience, and skills.

Honors & Awards

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.

CGS-M NSERC Scholarship

R. Samuel McLaughlin Fellowship

Lorne C Elder Scholarship

Lena MacNeil Scholarship

Dean's Scholar

Education

QUEEN'S UNIVERSITY

MASc Mechanical Engineering, Co-Supervised with Computer Engineering

Cumulative GPA: 4.3 / 4.3

Sep 2023 - Exp. 9/25 | Kingston, Canada

BASc Mechanical Engineering

Cum. GPA: 4.18 / 4.3 , (90+ avg.)

Sep 2018 - April 2023 | Kingston, Canada

Skills

PROGRAMMING

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

LIBRARIES/FRAMEWORKS

Git • SciPy • Pandas • NumPy • React • SLURM