Richard Meng

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Experience

HANON SYSTEMS CANADA | Mechanical Engineering Intern

May 2021 – June 2022 | Belleville, Canada

- Developed and organized the builds of fluid transport prototypes for automotive HVAC. Work included projects for electric vehicles from Ford, GM, and Lucid.
- Applied thermodynamic, engineering, manufacturing, and design knowledge to coordinate with technicians and take hands-on action.
- Completed 342 prototypes build requests under historically high demand.
- Exercised communication and teamwork skills with multi-disciplinary teams including manufacturing engineering, quality assurance, prototype technicians, CAD designers, and logistics.
- ”Best engineering intern in the history of Hanon Belleville” (Reference on request)

QUEEN'S BAJA SAE OFF-ROAD VEHICLE DESIGN TEAM

September 2019 – March 2020 | Kingston, Canada

- Researched, designed, manufactured, and tested the vehicle’s anti-roll bar.
- Utilized computer models and finite element methods to tune the bar rigidity and help minimize mass within safety constraints.
- Robust and adaptable design: the 2022-2023 vehicle still uses our design.

Projects

MACHINE LEARNING INTERATOMIC POTENTIAL TRAINING | Python, HPC, Shell

- Training of a force field for molecular dynamics simulations on potassium metal.
- Computation of a quantum mechanical dataset for training (active and passive). Validation against the dataset and physical property prediction.
- HPC simulations on Compute Canada clusters
- Pre-processing and refinement of the datasets and model hyperparameters.

CFD-DRIVEN REDESIGN OF STEAM MANIFOLD: CONDAIR INC. | Python

- Currently developing a computational fluid dynamics model to analyze Condair Inc’s short absorption manifold and propose design optimizations.
- Application of open-source solvers and theoretical knowledge in a team project, with constant communication with the client and adaptation to their needs.
- Development of a Python or web-based UI for Condair’s internal usage.

PIN-JOINTED STRUCTURE SIMULATOR | Python, React, TypeScript

- Interactive web app simulating user-defined structures under gravitational load.
- Stress and displacement calculations by numerical energy optimization method.
- Customizable strucuture properties; presets and JSON load/save system.
- Prototyping and iterative improvement in Python; final build in TypeScript (React).

LISTEN TO THE PATH: HACKATHON WINNER | C#, Unity

- Developed a procedural maze game with support for the visually impaired. All information for positioning and movement can be obtained soley off sound cues.
- Maze generation using depth-first search. Optional voice-controlled movement.
- Creative problem solving and teamwork under time constraints (24hrs).
- The team won ”Best Game” and ”Best Hack” (project) out of over 200 particpants.

Objective

Graduating student with a proven academic and professional track record. Looking to transition into computational sciences or software engineering through academic research, work experience, and personal projects. Looking for a summer internship before entering co-supervised MASc (Mech + ECE).

See website for more about projects, experience, and skills.

Skills

CAD

SolidWorks • Solid Edge

PROGRAMMING

Experienced:
Python

Familiar:
Bash • Git • C# • C++ • Javascript • TypeScript • HTML • CSS

LIBRARIES/FRAMEWORKS

React • SciPy • Pandas • NumPy

Education

QUEEN'S UNIVERSITY

MASc Co-Supervised: Mechanical and Computer Engineering

Sep 2023 | Kingston, Canada

BASc Mechanical Engineering

Sep 2018 - Present | Kingston, Canada
Cum. GPA: 4.19 / 4.3