Richard Meng

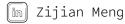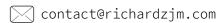richardzjm.com   RichardZJM   Zijian Meng   contact@richardzjm.com

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 EV 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 requirements 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 flexible design: the 2022-2023 vehicle still uses our design.

PROJECTS

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.
- ➔ Practically applying open-source solvers and theoretical knowledge in a team project, with constant communication with the client and adaptation to their needs.
- ➔ Developing a Python or Javascript UI for Condair's internal usage.

APDL TOOLS: ANSYS BOTTOM-UP MESHING TOOL | PYTHON, REACT, JAVASCRIPT
- ➔ External tool for mapped meshing in ANSYS which utilizes a loop finding algorithim to automatically generate areas and volumes from line definitions.
- ➔ Greatly saves time during mapped meshing school projects, >2-3 hrs on average
- ➔ Distribution with React-based web interface to class of 70 potential users

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.

NUMERICAL GEAR RATIO SIMULATOR AND OPTIMIZER | PYTHON, REACT, JAVASCRIPT
- ➔ Simulates an RC vehicle and optimizes the gear ratio for maximum velocity after traveling a specified distance. Interpolation of eletric motor torque graph and force analysis to solve the equations of motion for a RC vehicle at a given gear ratio.
- ➔ Numerical optimization (SciPy BFGS) of velocity for given criteria.

SKILLS

PROGRAMMING

Experienced:
Python

Familiar:
C# • C++ • Java • Javascript • HTML • CSS

LIBRARIES/FRAMEWORKS

React • SciPy • Pandas • NumPy

EDUCATION

QUEEN'S UNIVERSITY
BACHELORS'S IN MECHANICAL ENGINEERING
Sep 2018 - Present | Kingston, Canada
Cum. GPA: 4.17 / 4.3

COURSEWORK

COMPUTING COURSES

Discrete Math for Computing I
Discrete Math for Computing II
Intro. to Computing Science I
Intro. to Computing Science II
Programming for Engineering

RELATED COURSES

Math. & Computational Tools I
Math. & Computational Tools II
Math. & Computational Tools III
Mechatronics
Automatic Control
Computational Materials Sci.

POTENTIAL/UPCOMING

Computer Architecture
Data Structures
Logic for Computing
Systems Level Programming