Jierui Li

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Education

Carnegie Mellon University **Aug 2023 – May 2025**
Master of Science in Mechanical Engineering | GPA: 3.96/4.0 *Pittsburgh, PA*

University of Pittsburgh **Aug 2021 – May 2023**
Bachelor of Science in Mechanical Engineering | GPA: 3.901/4.0 *Pittsburgh, PA*

Sichuan University **Sep 2019 – Jul 2021**
Bachelor of Engineering in Mechanical Engineering | GPA: 3.51/4.0 *Chengdu, China*

Relevant Coursework

• Intermediate Programming • Deep Learning for Engineers • Natural Language Processing • Generative AI

Professional Experience

ENN Energy Holdings Limited **Jul 2023 – Aug 2023**
Test Engineer Intern – Mechanical *Langfang, China*

- Calculated rotor imbalance and imbalance mass under various balance grades based on collected data.
- Investigated vibration spectrum analysis of micro gas turbine core engine using collected vibration data.

Projects

Generative AI for Engineering CAD Automation **Mar 2025 – May 2025**
Course Project — 10623 Generative AI *Carnegie Mellon University*

- Collected and processed 100,000+ CAD sketches for training multimodal generative models.
- Mapped CAD textual descriptions and sketches into a unified latent space via pretrained RoBERTa and ViT encoders.
- Implemented a Transformer decoder to autoregressively generate structured CAD representations.
- Utilized a pretrained Qwen 2.5 VL model to generate CAD sequences as a baseline for comparison.

Task Planning for Robotic Limestone Mining **Sep 2023 – May 2025**
Research Assistant — Prof. Kenji Shimada's Lab *Carnegie Mellon University*

- Design and deploy advanced algorithms to optimize digging point selection and mining vehicle routing, maximizing ore collection efficiency through reinforcement learning techniques.
- Engineer Proximal Policy Optimization and Transformer-based encoders to optimize ore grade selection and minimize transportation costs.
- Strategically designed reward functions and model architectures to achieve 90–95% optimality with reduced computational cost.

Hydrogel Fatigue Testing — Design, Experimentation, and Analysis **May 2022 – Jan 2023**
Research Assistant — Prof. Qihan Liu's Lab *University of Pittsburgh*

- Designed and built a fatigue testing apparatus using a linear-motion system to replace traditional circular actuators for cyclic tensile-compressive loading.
- Responsible for mechanical transmission design, stress analysis, assembly, and system calibration.
- Conducted fatigue tests on hydrogels at varying stretch frequencies to collect mechanical performance data.
- Analyzed fracture energy and energy release rates using MATLAB; visualized correlations between crack propagation speed and loading frequency.

Technical Skills

Languages: Python, C++, Java, MATLAB

ML/DL Frameworks: PyTorch, scikit-learn, Hugging Face Transformers, OpenCV

3D Modeling: SOLIDWORKS, CATIA, Ansys

Teaching

Carnegie Mellon University **Sep 2024 – May 2025**
Teaching Assistant — Deep Learning for Engineers, AI/ML for Engineers *Pittsburgh, PA*

- Supported instruction for 100+ students in graduate-level ML/DL courses; held weekly office hours.
- Provided guidance on PyTorch, CNNs, Diffusion Models, and Transformers; clarified concepts on Piazza.
- Graded assignments and exams with detailed feedback on model implementation and performance.