

SHING KAI LAI

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EDUCATION

HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY (HKUST), HONG KONG

B.Eng. Aerospace Engineering; Extended Major in Artificial Intelligence

Sep 2021 – Jun 2025

RICE UNIVERSITY, HOUSTON, TEXAS

M.sc in Mechanical Engineering (Expected Graduation Dec 2026)

Aug 2025 – Present

SKILLS:

- **Programming & Development:** Python, C/C++, MATLAB, Bash/Linux, Git, LabVIEW, Arduino
- **Machine Learning:** PyTorch, TensorFlow, scikit-learn, Transformers, RNNs, imitation learning, reinforcement learning, time-series modeling
- **Data Engineering & Analytics:** Data collection pipelines, preprocessing, feature engineering
- **Engineering & Simulation:** SolidWorks, ANSYS Fluent, Open Foam, MATLAB/Simulink, additive manufacturing, mechanical testing, high-speed imaging

WORK EXPERIENCE

Magnetic-Field Assisted DIW 3D Printing — Manufacturing R&D Experience

Rice University, Houston, Texas

Research Assistant Scientist

Dec 2025 – Present

- Printed functional filaments by integrating LabVIEW and Python toolpath generation with Aerotech three-axis motion control and custom magnetic-field actuation, enabling programmable 3D model with optimized magnetic-pole orientation.
- Collaborated with researchers to design the DIW platform in SolidWorks and integrate the dispensing nozzle, magnetic-field unit, and Aerotech motion system into a functional customized printer.
- Optimized DIW ink formulations through literature-guided studies and printability testing of extrusion behavior, filament geometry, and layer stability.

Vibration-Assisted 3D Printing Development — Manufacturing R&D

Embry-Riddle Aeronautical University, Daytona Beach, Florida

Research Assistant

May 2024 – Sep 2024

- Designed a multi-outlet coaxial printhead in SolidWorks and fabricated it through SLA prototyping
- Generated toolpaths and programmed six-axis robotic systems to print a $400 \times 210 \times 60$ mm composite structure.
- Conducted MTS and X-ray micro-CT characterization; co-authored a manuscript submitted to *Advanced Materials*.

PROJECT EXPERIENCE

Robotics Learning & Teleoperation Data Pipeline — NVIDIA Omniverse / Isaac Sim

Hong Kong University of Science and Technology

ML & Data Pipeline Contributor

Sep 2024 – May 2025

- Co-developed a haptic-glove teleoperation workflow with the simulation/control team to collect, QA, and version demonstrations for cube-stacking with a virtual arm + dexterous hand.
- Owned the learning-data pipeline module (sequence formatting, preprocessing/augmentation) and integrated a multi-layer Transformer policy with RL fine-tuning for post-imitation improvement.
- Partnered with teammates to standardize logging/evaluation, troubleshoot failures across sim–data–training, and document the workflow to support smooth onboarding and repeatable experiments.

Power Consumption Prediction & Sensor-Integrated ML Pipeline — Applied Machine Learning

Hong Kong University of Science and Technology

ML Researcher / Energy Analytics contributor

Jan 2024 – Jun 2024

- Collaborated with a research team on an energy-focused ML project by integrating motherboard power/thermal sensors, building automated data collection + preprocessing pipelines.

- Developed a Recurrent Neural Network based power prediction model, achieving ~95% accuracy, and contributed to the resulting publication: ICCT-Pacific 2025.