En Yi Hou

Incoming graduate student interested in model-based RL and world-model AI

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RESEARCH INTERESTS

Deeply passionate about model-based reinforcement learning, world models, robot learning, predictive representations, intervention and recovery, and applied NLP. I believe future AI systems cannot be simply generative; they need predictive world models and planning, a direction I later found echoed in Yann LeCun's arguments for world-model-based AI.

EDUCATION

Granted May/June 2026

McGill University, B.Sc. Computer Science

CGPA: 4.00/4.00. Dean's Honour List (top 10%). Faculty of Science Scholarship (top 5%). George & Lidia Petras Scholarship.

Incoming / conditionally admitted

Tsinghua University, Incoming Graduate Student, Master in Advanced Computing

Focus: machine learning, reinforcement learning, advanced computing, and research preparation.

Vanier College, DEC in Computer Science and Mathematics

Science R-Score: 37.0. Dean's Honour List (top 10%).

SELECTED RESEARCH

Cost-Aware Teacher-Side Intervention in RoboPianist

Reinforcement Learning, Robot Learning, RoboPianist, SAC, Intervention

- Designed a paired-branch benchmark comparing immediate correction with no-intervention continuation.
- Generated a 14,464-row Human-Like Proxy Error benchmark with 20-step intervention-value labels.
- Compared local critic/action signals against learned MLP intervention models.

Dreamer-Style World Model Reimplementation with Action-KL Regularization

Model-Based RL, World Models, Dreamer, RSSM, PyTorch

- Implemented a simplified Dreamer-style agent with latent RSSM dynamics and imagined actor-critic training.
- Studied action-KL regularization against a slow-moving reference policy across five control tasks.

PII Detection in Educational Texts with DeBERTa

NLP, Transformers, Token Classification, Privacy

- Built a recall-oriented PII detector with document-grouped validation, reweighting, dropout, and ensembling.
- Reached approximately 0.95 micro-F5 in best validation settings while analyzing missed PII and false positives.

Zero-Shot Cross-Lingual Sentiment Transfer with XLM-R on MARC

NLP, Multilingual Transfer, Representation Analysis

- Fine-tuned one XLM-R model per language across six languages and evaluated all source-target pairs.
- Analyzed transfer asymmetry and tokenizer-level overlap as an interpretable transfer proxy.

EXPERIENCE

June 2024 - May 2025

Hydro-Quebec, Data Science Intern

- Analyzed more than 100 million transaction and production records using SQL and Python.
- Developed predictive models that gave the team AI-assisted forecasting signals for operational decisions.
- Improved reporting accuracy by approximately 15% through data cleaning, validation, and pipeline analysis.

- Automated recurring SQL/Python reporting workflows, saving more than 5 hours per week.
- Collaborated with engineers and analysts to diagnose pipeline bottlenecks and improve data integrity.

June 2022 - September 2022

AISA Inc., Full-Stack Web Developer Intern

- Developed responsive front-end interfaces and backend/database features for transactional web applications.
- Optimized SQL queries and caching strategies, improving page load time by approximately 40%.

AWARDS

1st Place UdeMHacks 2025; 1st Place McGill RobotHack 2023; 1st Place Concordia WarHacks 2023; 3rd Place Datathon 2023; Dean's Honour List at McGill University (top 10%); Faculty of Science Scholarship at McGill University (top 5%); George & Lidia Petras Scholarship at McGill University; Dean's Honour List at Vanier College (top 10%).

SKILLS

Python, C++, Java, JavaScript, SQL, Bash; PyTorch, Hugging Face Transformers, DeBERTa, XLM-R; model-based RL, RSSM dynamics, actor-critic methods, DQN, SAC critic-based evaluation; Git, Docker, Linux, PyTest, JUnit, PostgreSQL, MySQL, MongoDB, React, Spring Boot.