

Hanhee Lee

Engineering Science — Machine Intelligence, University of Toronto
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EDUCATION

University of Toronto (3rd Year GPA: 3.97/4.00 | cGPA: 3.76/4.00) Sep. 2022 - May 2027 (Expected)
Bachelor of Applied Science in Engineering Science - Machine Intelligence Major Toronto, Canada

- **Relevant coursework:** ML Theory, RL, Control Theory, Probability & Statistics, Operating Systems, Matrix Algebra & Optimization

EXPERIENCE

Machine Learning Research Engineer Sep. 2025 - Present
Huawei Toronto, Canada

- Optimized contrastive language-audio pretraining embeddings for source separation, achieving +1dB SDRi across 7 classes
- Built a data-cleaning pipeline using large foundational models over ~120k samples, filtering 25% of leaked/misclassified audio
- Implemented SFT and GRPO with emotion rewards to an LLM TTS model, resulting in +15% Emo2Vec accuracy and expressiveness across 6 emotions
- Built a 2-stage scalable, synthetic data pipeline producing ~1000 hours of audio

Software Engineer Intern Jan. 2025 - Nov. 2025
Savi Finance Toronto, Canada

- Built an agentic tax-recommendation worker that returns structured JSON deduction recommendations
- Shipped 2 Mongoose schemas and 7 GraphQL resolvers for recommendation lifecycles on edge devices
- Enforced schema-validated agent outputs across 12 financial recommendation types

Applied Machine Learning Researcher [GitHub](#) [Portfolio](#) May 2024 - Aug. 2024
National University of Singapore under Prof. Erik Birgersson Singapore

- Trained a 50k-parameter MLP for fuel-cell dynamics, achieving 3% MAE on unseen test set
- Developed genetic search algorithm over the MLP objective to design fuel cells, validated in COMSOL simulation at 2% error
- Tuned hyperparameters with Optuna across 30+ configurations, cutting iterations by 40% and MAE by 15% vs. grid search

PROJECTS

Anti-Money Laundering IMI Big Data & AI Competition - [in](#) [GitHub](#) [Portfolio](#) Oct. 2025 - Apr. 2026

- Engineered 44 features across 61k customers, mapped to 254 FINTRAC-backed red flags
- Selected Isolation Forest for anomaly scoring under ~1% label scarcity
- Added SHAP explanations mapping top features to AML patterns under a 4-tier risk model

Eyas: Security Cam Agent (HuggingFace Build Small Hackathon) - [in](#) [GitHub](#) [Portfolio](#) [YouTube](#) Jun. - Jul. 2026

- Built an 8.7B-parameter on-device detection-tracking-reasoning stack with no cloud inference
- Enforced JSON-schema event logging within a 4096-token context budget

InstruNET: Multi-Instrument Identification - [GitHub](#) [Portfolio](#) Jan. - Apr. 2025

- Trained a 950K-parameter CNN for instrument classification, reaching 82% accuracy (+10% vs. YAMNet)
- Improved dataset diversity by 25% via SMOTE and class balancing for underrepresented instruments

Smart Fit: Wearable Device for Exercise Classification - [GitHub](#) Dec. 2024 - Jan. 2025

- Classified 6 barbell exercises from wearable sensors, achieving 96% accuracy
- Engineered 15+ sensor features, improving classification accuracy by 10%

AWARDS & HONOURS

- **Best Agent, HuggingFace Build Small Hackathon (\$1,000)** (Jul. 2026): Won among 817 teams for a local CCTV agent under a 32B-parameter constraint
- **1st Place, 7th Annual IMI Big Data & AI Competition (\$15,000)** (Oct. 2025–Apr. 2026): Won among 430 competitors across 90+ teams for an end-to-end AML detection and interpretability pipeline
- **ESROP & Mitacs Global Research Award (\$3,500 & \$5,000), UofT** (May–Aug. 2024): 12-week research internship at NUS under Prof. Erik Birgersson on ML strategies for optimizing fuel cell technologies
- **Faculty of Applied Science Award, UofT** (Sep. 2022): \$5,000 Faculty of Applied Science admission award
- **Dean's Honour Roll, UofT** (2022–2025): Year 1–3
- **2× Ironman Triathlon Finisher** (2025–2026): Ironman Ottawa (2025), Ironman Lake Placid (2026)
- **4× Marathon Finisher** (2024–2025): Toronto Marathon (2024–25), TCS Toronto Waterfront Marathon (2024–25)

TECHNICAL SKILLS

- **Languages:** Python, MATLAB, TypeScript, GraphQL
- **Libraries:** PyTorch, Librosa, Transformers, NumPy, Pandas, HuggingFace, Scikit-learn
- **ML & AI:** LLMs/LALMs (TTS, Qwen-series), Post-Training (SFT, DPO, GRPO), Representation Learning (CLIP, CLAP, VAEs)
- **Tools:** Linux, Git, Docker, Ollama, Conda, LaTeX, Jira, Jupyter

TEACHING & SERVICE

Vice President of Engineering

University of Toronto Machine Intelligence Student Team (UTMIST)

Aug. 2026 - Present

Toronto, Canada

- Leading a 100-person Engineering Department across 12 ML project teams

Machine Learning Projects Director

University of Toronto Machine Intelligence Student Team (UTMIST)

Jun. 2025 - Aug. 2026

Toronto, Canada

- Directed 4 technical teams (~40 developers) to 4 UTMIST showcase projects
- Standardized project proposal and repository templates, reducing onboarding time and siloing

Machine Learning Engineer Team Lead -

University of Toronto Machine Intelligence Student Team (UTMIST)

Jan. 2026 - Jul. 2026

Toronto, Canada

- Applied transfer learning to large backbone models for detecting AI-generated images

NSight Mentor

University of Toronto Engineering Science

Sep. 2025 - Apr. 2026

Toronto, Canada

- Mentored 3 first-year Engineering Science students on research pathways, job applications, and resume workshops
- Supported mentees in securing research experiences including placement with Professor Jerger, ESROP Global, and international research opportunities

Academic Director

Google Developer Group – UTSC

Jun. 2025 - Nov. 2025

Toronto, Canada

- Supported academic programming through AI and Web Development workshops and bootcamps for the UofT developer community

VP Content

Engineers Without Borders

2023 - 2024

Toronto, Canada

- Organized and led a 2-day UN case study competition on sustainable consumption and production, attended by over 100 high school students

Frosh Leader

University of Toronto Faculty of Applied Science & Engineering

Jun. 2023 - Sep. 2026

Toronto, Canada

- Planned orientation with head leaders and supported onboarding for incoming engineering cohorts