

# Yinxi Li (Larry)

✉ y3395li@uwaterloo.ca    ☎ 6478865322    🔗 larryinx.github.io    in linkedin.com/in/yinxi-li-071089233

## Education

### University of Waterloo, Canada

Jan 2025 – April 2027

M.Math. in Computer Science, Advisor: [Pengyu Nie](#) 🔗

- **Research Interests:** LLM for Code, LLM for Mathematical Reasoning
- **Coursework:** Machine Learning for SE, Computational Linguistics, Mining & Analysis of SE Data
- GPA: 97.7/100

### The Chinese University of Hong Kong, Hong Kong (SAR)

Sept 2020 – July 2024

B.Sc. in Computer Science

- **ELITE Stream** 🔗: A selective honors program requiring exceptional performance in higher mathematics and computer science, including PhD-level coursework and rigorous technical prerequisites.
- **Coursework:** Foundations of Optimization, Machine Learning Theory, Fundamentals of AI

### ETH Zürich, Switzerland

Feb 2023 – Sept 2023

Exchange Student

- **Coursework:** Rigorous Software Engineering, Introduction to ML, Data Modelling and Databases

## Academic Research & Project Experience

### Unit Test Transplantation with Retrieval-Augmented Generation

Sept 2024 – Dec 2024

- Developed a retrieval-augmented generation pipeline for test transplantation to improve unit test generation in API building frameworks
- Analyzed model performance on 2,000+ unit test cases extracted from 7 diverse open-source repositories, identifying optimization opportunities and proposing enhancement strategies

### Optimizing Structure of Vision-Language Retrieval System

Aug 2023 – June 2024

ELITE Stream Final Year Project, Supervisor: [Eric Lo](#) 🔗

- Developed and integrated a proxy model, increasing object detection speed by 50% while maintaining minimal accuracy degradation
- Implemented a vision-language analytics system for diversified top-K query results on large video datasets, with an optimized retrieval structure boosting inference speed by up to 1000x.
- Optimized the structure to retrieve the top-K relevant images related to the natural language query, reducing the time from  $\mathcal{O}(n^2 \cdot d)$  to  $\mathcal{O}(n \cdot d)$
- Conducted comparative experiments against two baselines using Retrieval Mean Average Precision and Average Pairwise Similarity metrics, demonstrating superior retrieval accuracy and result diversity
- Performed ablation studies validating the contribution of each structural component to overall system performance, confirming the effectiveness of the proposed architecture

### Adaptive Streaming for Short-Video Services

June 2022 – Aug 2022

CUHK Summer Research, Supervisor: [Lee Yiu-Bun](#) 🔗

- Implemented ABR (the adaptive bit rate) algorithms, e.g. BBA, BOLA, Pensieve(reinforcement learning method) and compared the performance
- Tuned the simulator to focus on testing short video samples

## Competition

### World University Students' Digital Intelligence Competition Invitational Tournament (by Tencent)

April 2023 - July 2023

Ranked first among overseas institutions, Supervisor: [Tan LEE](#) 🔗

- Developed a multi-agent reinforcement learning model with Resnet, LSTM, and Attention Layer for "Honor of Kings"
- Optimized reinforcement learning model, reward function, and custom agent strategy

## Research Internship Experience

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### Research Assistant

Remote

Southern University of Science and Technology, Supervisor: [SONG Xuan](#) 

Aug 2024 - Oct 2024

- Developed an expert knowledge collaboration system for the automotive quality inspection value chain based on large language model and retrieval-augmented generation

### Research Intern

Shenzhen, China

Research Institute of Tsinghua University in Shenzhen

April 2024 - June 2024

- Implemented statistical, machine learning, and deep learning methods for multivariable time series anomaly detection
- Utilized variational autoencoder model structure for anomaly detection, enhancing customer monitoring of load data

### Research Intern

Changchun, China

Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences

June 2020 - Aug 2020

- Optimized object detection of moving objects in specific directions in videos

## Research Community Service

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**Teaching Assistant:** CS 246 (25 Spring, UWaterloo)

**Sub-Reviews:** ASE 2025

## Association Activities Experience

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### CUHK Mainland Undergraduate Association (19th & 20th cabinet)

Aug 2021 - July 2023

- Principal of Information Department: Managed communication channels between 1,200+ mainland students and the student union
- Assistant of Sports Department: Coordinated the organization of Sports Festival and E-sports Tournament events

### CUHK Mainland Undergraduate Association Orientation Camp

Aug 2021 - July 2023

- Big Group Leader in 2022 MUA OCamp: Supervised 7 small groups and coordinated campus integration activities for 60+ mainland freshmen, providing comprehensive guidance on academic and daily life adjustment in Hong Kong
- Small Group Leader in 2021 MUA OCamp: Led and mentored a group of 10 incoming students during orientation activities

## Technologies

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**Programming Languages:** Python, C++, C, Java, Shell Script

**Machine Learning:** PyTorch, Accelerate, Ollama, vLLM, DeepSpeed

**Web Development:** JavaScript, React, Node.js, HTML, CSS, PHP

**Development Tools:** Git, Docker, Slurm, SQL