

# Tianyu Xiong

PHD. APPLICANT

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## Education

### University of Toronto

HONORS BACHELOR OF SCIENCE

- Computer Science Specialist

St. George

2017 - 2021

## Publications

### SUBMITTED

**Xiong, T.** Multi-Tower Multi-Interest Learning for Candidate Matching in Recommender Systems. ACM/SIGIR. (2024)

### PUBLISHED

Huang, G., Ge, C., **Xiong, T.** et al. Large-scale air pollution prediction with deep convolutional networks. Sci. China Inf. Sci. 64, 192107 (2021). <https://doi.org/10.1007/s11432-020-2951-1>

Zhao, Y., **Xiong, T.**, Zheng, L., Li, Y., Chen, X. The effect of similarity on the evolution of fairness in the ultimatum game. Chaos, Solitons Fractals, 131, 109494.(2020)

## Experience

### Huawei Research - 2012 Poisson Lab

Beijing, China

#### RECOMMENDER SYSTEM ALGORITHMIC INTERN

May 2022 - Now

- Enhancing long-term user behavior modeling through the introduction and utilization of a novel technique called Long Short-term Self Attention resulted in a noteworthy 3.9% increase in the Hitrate@200
- Enhancement of Multi-Interest user behavior modeling: Designed and implemented Inverted Distance loss and successfully applied Multi-Interest Learning to Vector Retrieval, improved Hitrate@200 by 1.1%
- Daily maintenance and upgrades of WiseDataOps.

### The Hong Kong Polytechnic University - Prof. Zhang Lei

Hong Kong, China

#### RESEARCH ASSISTANT

August, 2021 - January, 2022

- Project: "Text Driven Image Cropping using CLIP". Designed and implemented an esthetic-aware natural language-guided image cropping program.
- Speed up backpropagation through "Partial Sampling of Convolution Feedback".
- "Parallelisable Feedback Mechanisms", learned and analyzed Direct Feedback Alignment based asynchronous feedback mechanism.

### Tsinghua University - Prof. Huanggao

Beijing, China

#### RESEARCH INTERN

May. 2019 - August 2019

- Publication: "Large scale air pollution prediction with deep convolutional networks. " Make spatiotemporal air pollution prediction using deep convolutional neural network. Our model attained state-of-the-art performance.

### Beihang University - Prof. Zhen Xiantong

Beijing, China

#### RESEARCH INTERN

May. 2018 - August 2018

- Group Project with Ming Fengwan: "MURA Bone Image Classification with CliqueNet." Implemented CliqueNet on MURA radiographic image classification challenge.

## Professional Development

2023 **Reliable Programming(4/4)**, Huawei Research

2021 **Becoming an Effective Teaching Assistant**, PolyU

## Professional Toolkit

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**Programming Language:**, Python, C, Julia

**Machine Learning:**, PyTorch, JAX, Sci-kit Learn

**Computer Vision:**, OpenCV, Skimage, PIL

**Scientific Computing:**, Numpy, Pandas, Sci-py

**Parallel Computing:**, OpenMP, MPI, CUDA

**Visualization:**, Matplotlib, Wandb

## Teaching Experience

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Fall 2021    **COMP2011 Data structures**, Teaching Assistant

PolyU

## Presentations

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Fall 2021. Xiong, T. *Parallelizable Feedback Mechanisms*. Research Presentation@PolyU.

Fall 2021. Xiong, T. Wang, Z. *Progressive Real-Time Rendering of One Billion Points Without Hierarchical Acceleration Structures*. COMP6706@PolyU.

Fall 2020. Xiong, T. *Memory-Efficient High-Resolution Image Analysis with Bionic Reinforcement Learning*. West Lake University.

Fall 2019. Xiong, T. Wang, L. *Cloud Image Segmentation and Classification*. CSC420H1@UofT

## Outreach & Professional Development

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### OPEN SOURCE PROJECTS

**Slideextractor**, Convert lecture video to slides.

**Jmd2notebook**, Julia markdown to ipython notebook converter.

**Context-Free-Grammar-Generator**, Generates CFG in an intuitive and pythonic manner.