DIXI YAO

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EDUCATION

University of Toronto — Toronto, Canada
M.A.Sc, Department of Electrical and Computer Emgineering — *Sept. 2022 –*
- Advisor: Prof. Baochun Li.

Shanghai Jiao Tong University — Shanghai, China
BEng, Department of Computer Science — *Aug. 2018 – Jun. 2022*
- AI Honors Program. Bachelor Thesis: **Research on privacy preserving methods via Transnformer**
- Advisor: Prof. Liyao Xiang, Prof. Xinbing Wang. Theme: Intelligent Edge
- Cumulative GPA: 3.87/4.3, Major GPA: 3.92/4.3 (ranking top 8%)
- Standard Testing: TOEFL: 105 (R28, L28, S23, W26), GRE: V157, Q170, W3.5
- Core Courses Performance:
  * Programming: Thinking and Approaching Programming [C++] (A+) / Data Structure [C++] (A+) / Problem Solving and Practice [C++] (A+)
  * Mathematics: Probability and Statistics (A+) / Discrete Mathematics (A+) /Algorithm and Complexity (A+) / Mathematical Foundations (A+)
  * Artificial Intelligence: Machine Learning (A) / Digital Graphics Processing (A+) / Data Mining Techniques (A) /Science and Technology Innovation (Bioinformatics) (A+)
  * Computer Networks&Systems: Computer Networks (A) /Mobile Internet (A+) /Computer Architecture (A) /Computer Organization (A) /Operating System (A-)

Max Planck Institute for Informatics — Saarbrücken,Germany
Research Intern Fellowship — *Jul. 2021 – Dec. 2021*
- Advisor: Prof. Yiting Xia. Theme: Distributed Deep Learning Benchmark

PUBLICATIONS

Privacy-Preserving Split Learning via Patch Shuffling over Transformers
Proc. IEEE International Conference on Data Mining (ICDM), Orlando, USA — *Nov 28 - Dec 1, 2022*
- **Dixi Yao**, Liyao Xiang, Hengyuan Xu, Hangyu Ye, Yingqi Chen

Context-Aware Compilation of DNN Training Pipelines across Edge and Cloud
The Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT) — *Vol. 5, No. 4, 2021*
- **Dixi Yao**, Liyao Xiang, Zifan Wang, Jiayu Xu, Chao Li, Xinbing Wang

Federated Model Search via Reinforcement Learning
Proc. IEEE International Conference on Distributed Computing Systems (ICDCS), USA — *July 7-10, 2021*
- **Dixi Yao***, Lingdong Wang*, Jiayu Xu, Liyao Xiang, Shuo Shao, Yingqi Chen, Yanjun Tong

Context-Aware Deep Model Compression for Edge Cloud Computing
Proc. IEEE International Conference on Distributed Computing Systems (ICDCS), Singapore — *July 8 - 10, 2020*
- Lingdong Wang, Liyao Xiang, Jiayu Xu, Jiaju Chen, Xing Zhao, **Dixi Yao**, Xinbing Wang, Baochun Li

PROFESSIONAL EXPERIENCES

- Teaching Assistant Experience: **MA500 Application of fuzzy Math** (Mar. 2020 – Jun. 2020).
- Course Lab Design: Edge-Cloud Computing for SJTU **EE447 Mobile Internet**.
- Two open lectures for Data Structure (over **100** students participated) and multiple tutor experiences.
- Review Experience: ICCC22
- Video recording and publishment for SJTU CS214 Algorithm and Complexity
- Programming Language: Python (torch, TF), C++, Java.
- Software and Hardware skills: Verilog, EMU8086, VMware/Vbox, Arduino, Raspberry Pi, Nvidia Jetson TX2.

Honors and Awards

- **Shanghai Jiao Tong University outstanding graduates. 2022**
- **National outstanding college student project of innovation. 2022**
- **Alumni Foundation Scholarship:** Awarded to only ***0.5%*** of students in the School of Electronic Information and Electrical Engineering. 2021
- **Huawei Scholarship:** Awarded to the top ***1%*** in the School of Electronic Information and Electrical Engineering. 2020
- **East Dong Business Scholarship:** Awarded to only ***1*** student in the Department of Computer Science. 2019
- **Honor for outstanding students:** Awarded to only ***2%*** of students in the School of Electronic Information and Electrical Engineering. 2019, 2020, 2021
- **First prize** in China Collegiate Mathematics contest. 2019
- **First prize** in National Olympiad in Informatics. 2017

Research interests

My research interests lie primarily in **developing more efficient, scalable and privacy-preserving deep learning architecture across multiple devices.**

- Machine learning (adaptive ML algorithm), AutoML (Neural Architecture Search)
- Distributed deep learning, federated learning, and context-aware architecture
- Network-accelerated architecture, cloud computing, and network optimization
- Multi-disciplinary topics in machine learning, network optimization, and distributed systems

Selected Course Projects

Simulated Five level pipeline CPU — Verilog

full mark | *Instructor: Xiaoping Huang* | *code* — *Apr. 2020 – May. 2020*

- Conducted a comprehensive learning of a new language (Hard Design language) and designed a five level pipeline CPU which can simulate a 32-bits CPU.
- Added some special feature like better branch prediction and more supported 32-bits commands

Cloud Solidwork Application — Python, Php

full mark | *Instructor: Prof. Haibing Guan* | *code* — *Sept 2020 – Nov. 2020*

- Developed a large-scale cloud platform based on Openstack and Openstack API
- Enmbedded software application into cloud patform and providing the service to students through Apache (now serverd as one of the cloud applications in SJTUCloud)

Extend Structure Entropy of Graph — Python

A+ | *Instructor: Prof. Luoyi Fu* | *code* — *Apr 2021 – Jun. 2021*

- Extended structure entropy of graph to weighted and directed graph
- Established safety index of a graph and applied it into anti device detection problem in IoT network. Decrease the time complexity from square into linear

MentorRelate — Python, Web

A+ | *Instructor: Prof. Liyao Xiang* | *code* — *Apr 2021 – Jun. 2021*

- Designed a system based on Word2Vec and information entropy to help students find suitable advisors.
- Developed a web API and Used this system personally to assist the application

ASD Saliency Map Prediction and Discrimination Based on SalGAN — Python, MatLab

full mark | *Instructor: Prof. Guantao Zhai* | *report* — *Dec. 2020 – Jan. 2021*

- Helped psychological researchers to better discriminate chidren with ASD based on their eye-tracking information.
- Adopted the method of GAN to generalize the saliency map of Autistic Spectrum Disorder (ASD) children so as to help discriminate ASD and normal children.

Intelligent Equipment Based on Brainwave — Python, C++

first prize |*Instructor: Lin Cheng* — *Sept. 2015 – Jun. 2017*

- Monitored how brainwave worked by Arduino and OpenBCI and collected a dataset about people's brainwave signal when they are watching movies of different motions (happy, sad, neutral
- Trained an MLP model to classify people's emotion with their brainwave signals.