Chenxi Yang

CONTACT INFORMATION

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EDUCATION

The University of Texas at Austin *Sep. 2019 - Present*
Ph.D. in Computer Science
Advisor: Prof. Swarat Chaudhuri

Fudan University *Sep. 2015 - Jun. 2019*
B.Sc in Computer Science, *Honor Class*

INTERNSHIP EXPERIENCE

Google
PhD Software Engineer Intern *May. 2023 - Aug. 2023*
Student Researcher *Sep. 2023 - Jan. 2024*

- Designed and developed a pioneering method for optimizing data placement in cloud storage systems, effectively managing millions of files.
- Implemented a comprehensive machine learning strategy using production data, resulting in an estimated $12M in cost savings.
- The work is approved for productionization and is currently underway.

Goldman Sachs Asia L.L.C
Technology Summer Analyst *Jun. 2018 - Aug. 2018*

- Worked at *Goldman Sachs Electronic Trading* (GSET) Team.
- Designed and implement automatically filling-in timesheet in the firm.
- Built a workload generation tool, which simulated the procedure of trading orders flowing through the OSI layers for testing the new generation ultra low latency DMA trading gateway. The tool spotted real bugs in the system development.

SELECTED RESEARCH EXPERIENCE

Safe Reinforcement Learning for Systems
Advised by Prof. Swarat Chaudhuri, Prof. Aditya Akella, UT-Austin *Jan. 2023 - Present*

- Formulated specifications to regulate congestion control behaviors in networks.
- Built systems supporting reinforcement learning for congestion control while ensuring agent adherence to specified protocols.

Safe Neurosymbolic Learning with Differentiable Symbolic Execution
Advised by Prof. Swarat Chaudhuri, UT-Austin *Jul. 2020 - Nov. 2021*

- Introduced a poineering approach for end-to-end, worst-case-safe parameter learning for neural networks within nondifferentiable, symbolic programs.
- Developed a novel integration of symbolic execution and stochastic gradient estimators, potentializing applications in autonomous driving and critical health care.

Edge Server Video Processing Acceleration
Advised by Prof. Lili Qiu, UT-Austin *Sep. 2019 - Jun. 2020*

- Conceived a batching-aware DNN scheduling methodology to enhance edge DNN request management.
- Implemented collaborative DNN executions at the client side to speed up processing on commodity hardware.

PUBLICATIONS

- *A Practical Approach for ML-Driven Data Placement in Cloud Data Centers.*
  Chenxi Yang, Yan Li, Martin Maas, Mustafa Uysal, Ubaid Ullah Hafeez, Arif Merchant, Richard McDougall.
  In Submission.
- *Temporal Logic Constrained Policy Optimization with Cycle Experience Replay.*
  Ameesh Shah, Cameron Voloshin, **Chenxi Yang**, Abhinav Verma, Swarat Chaudhuri, Sanjit A. Seshia.
  In submission.

- *Certifiably Robust Reinforcement Learning through Model-Based Abstract Interpretation.*
  Chenxi Yang, Greg Anderson, Swarat Chaudhuri.
  SaTML 2024.
- *On a Foundation Model for Operating Systems.*
  Divyangshu Saxena, Nihal Sharma, Donghyun Kim, Rohit Dwivedula, Jiayi Chen, **Chenxi Yang**, Sriram Ravula, Zichao Hu, Aditya Akella, Joydeep Biswas, Swarat Chaudhuri, Isil Dillig, Alex Dimakis, Daehyeok Kim, Christopher Rossbach.
  Neurips 2023, ML for Systems Workshop.
- *Improved Modeling of RNA-binding Protein Motifs in An Interpretable Neural Model of RNA Splicing.*
  Kavi Gupta, **Chenxi Yang**, Kayla McCue, Osbert Bastani, Phillip A. Sharp, Christopher Burge, Armando Solar-Lezama.
  Genome Biology.
  ICML 2023, Computational Biology Workshop, Spotlight.
- *Adaptive Scheduling for Edge-Assisted DNN Serving.*
  Jian He, **Chenxi Yang**, Zhaoyuan He, Ghufran Baig, Lili Qiu.
  MASS 2023.
- *Safe Neurosymbolic Learning with Differentiable Symbolic Execution.*
  Chenxi Yang, Swarat Chaudhuri.
  ICLR 2022.
  AIPLANS (Advances in Programming Languages and Neurosymbolic Systems) Workshop in Neurips 2021
- *Sensing People's Time Management Activities: A Study Using Wearable Devices.*
  Chenxi Yang, Yang Chen, Yuan Xuan.
  SenSys 2018, Poster.
- *Understanding the Behavioral Differences Between American and German Users: A Data-Driven Study.*
  Chenxi Yang, Yang Chen, Qingyuan Gong, Xinlei He, Yu Xiao, Yuhuan Huang, Xiaoming Fu.
  Big Data Mining and Analytics 2018.
- *Accelerating Mobile Applications at the Network Edge with Software-Programmable FPGAs.*
  Shuang Jiang, Dong He, **Chenxi Yang**, Chenren Xu, Guojie Luo, Yang Chen, Yunlu Liu, Jiangwei Jiang.
  INFOCOM 2018.

PROFESSIONAL SERVICE

Teaching Assistant

- CS373: Software Engineering, The University of Texas at Austin *Fall 2019, Spring 2020*

Reviewer

- ICML 2023, 2024; ICLR 2023, 2024; Neurips 2022, 2023; AIPLANS@Neurips 2021.

SCHOLARSHIP, AWARDS, & HONORS

- PLMW@PLDI Scholarship *2022*
- Outstanding Graduates of Shanghai, China *2019*
- National Scholarship, The Ministry of Education of China *2017*

INVITED TALKS AND PRESENTATIONS

Learning File Placement Policies in Data Processing Pipelines

- AI Broadly Construed Meeting *Google Deepmind, Aug 2023*
- Storage Analytics Team *Google Cloud, Aug 2023*

Safe Neurosymbolic Learning with Differentiable Symbolic Execution

- NSF Meeting on Expedition Project *Boston, Oct 2022*
- Summer School on Neurosymbolic Programming *Caltech, Jul 2022*
- ICLR 2022 *Virtual, May 2022*

PROFESSIONAL SKILLS

- **Programming Languages**: Python, C/C++, SQL, Java, Javascript, Matlab...
- **Frameworks**: PyTorch, Tensorflow, Z3, Keras, Scikit-Learn, MySQL, LaTex, Git...