

## Chenxi Yang

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CONTACT INFORMATION	Gates Dell Complex 2317 Speedway Austin, TX, 78712	<a href="mailto:cxyang@cs.utexas.edu">cxyang@cs.utexas.edu</a> <a href="https://cs.utexas.edu/~cxyang/">https://cs.utexas.edu/~cxyang/</a>
EDUCATION	<b>The University of Texas at Austin</b> Ph.D. in Computer Science Advisor: Prof. Swarat Chaudhuri <b>Fudan University</b> B.Sc in Computer Science, <i>Honor Class</i>	<i>Sep. 2019 - Present</i>  <i>Sep. 2015 - Jun. 2019</i>
	<b>The University of Hong Kong</b> Exchange Program	<i>Aug. 2017 - Nov. 2017</i>
RESEARCH INTERESTS	My research focuses on neurosymbolic learning and safe learning. I am interested in bridging formal methods and machine learning to build trustworthy and efficient machine learning systems. Separately, I also work on building interpretable models for biology applications.	
PUBLICATIONS	<ul style="list-style-type: none"><li>• <i>Safe Neurosymbolic Learning with Differentiable Symbolic Execution.</i> <b>Chenxi Yang</b>, Swarat Chaudhuri. ICLR 2022</li><li>• <i>Scheduling DNNs on Edge Servers.</i> Jian He*, <b>Chenxi Yang*</b>, Zhaoyuan He, Ghufraan Baig, Lili Qiu. In Submission.</li><li>• <i>Sensing Peoples Time Management Activities: A Study Using Wearable Devices.</i> <b>Chenxi Yang</b>, Yang Chen, Yuan Xuan. SenSys 2018, Poster Session.</li><li>• <i>Understanding the Behavioral Differences Between American and German Users: A Data-Driven Study.</i> <b>Chenxi Yang</b>, Yang Chen, Qingyuan Gong, Xinlei He, Yu Xiao, Yuhuan Huang, Xiaoming Fu. Big Data Mining and Analytics 2018</li><li>• <i>Accelerating Mobile Applications at the Network Edge with Software-Programmable FPGAs.</i> Shuang Jiang, Dong He, <b>Chenxi Yang</b>, Chenren Xu, Guojie Luo, Yang Chen, Yunlu Liu, Jiangwei Jiang. INFOCOM 2018</li></ul>	
SELECTED RESEARCH EXPERIENCE	<b>Adversarial Robust Reinforcement Learning via Abstract Interpretation</b> <i>Advised by Prof. Swarat Chaudhuri, UT-Austin</i> <i>Jan. 2021 - Present</i> <ul style="list-style-type: none"><li>• Designed a model-based algorithm for robust reinforcement learning via abstract interpretation.</li><li>• Presented a reinforcement learning framework with formal guarantees over the <math>l_p</math> norm attack on the black box environment.</li><li>• Demonstrated experimental results verifying the above conclusions.</li></ul> <b>Safe Neurosymbolic Learning with Differentiable Symbolic Execution</b> <i>Advised by Prof. Swarat Chaudhuri, UT-Austin</i> <i>Jul. 2020 - Nov. 2021</i> <ul style="list-style-type: none"><li>• Presented the first approach to end-to-end worst-case-safe parameter learning for neural networks embedded within nondifferentiable, symbolic programs.</li><li>• Gave a new way to bring together symbolic execution and stochastic gradient estimators that might have applications in autonomous driving, critical health care, etc.</li><li>• Exhibited experimental results that indicate the advantages of this method over the state-of-the-art in verified learning.</li></ul>	

## RNA Splicing Interpretation with Neurosymbolic Models

with the *Neurosymbolic RNA Splicing Team*

Sep. 2020 - present

- Joint work with collaborators from UT-Austin, MIT and UPenn.
- Presented an interpretable model with differentiable programmatic structure for RNA splicing prediction and extracted important patterns for RNA splicing.
- Designed and implemented a synthetic mechanism to test the interpretability of neurosymbolic models in the domain where ground-truth interpretation is unknown.

## Edge Server DNN Processing Acceleration

Advised by Prof. Lili Qiu, UT-Austin

Sep. 2019 - Jun. 2020

- Designed a batching-aware DNN scheduling algorithm to efficiently support requests running the same DNN.
- Enabled collaborative DNN execution at the client side to speed up processing.
- Presented a system on commodity hardware to demonstrate the algorithm's effectiveness for video analysis.

## INTERNSHIP EXPERIENCE

### Goldman Sachs Asia L.L.C

Technology Summer Analyst

Jun. 2018 - Aug. 2018

- Worked at *Goldman Sachs Electronic Trading* (GSET) Team.
- Designed and implemented 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.

## PROFESSIONAL SERVICE

### Teaching Assistant

- CS373: Software Engineering, The University of Texas at Austin

Fall 2019, Spring 2020

### Reviewer

- Neurips'22, AIPLANS@Neurips'21

## SCHOLARSHIP, AWARDS, & HONORS

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| • PLMW@PLDI Scholarship                                      | 2022 |
| • Outstanding Graduates of Shanghai, China                   | 2019 |
| • MCM: American Mathematical Contest in Modeling (M Prize)   | 2018 |
| • National Scholarship, The Ministry of Education of China   | 2017 |
| • First Prize, Honor Program Scholarship of Computer Science | 2017 |
| • Fung Scholarship, The University of Hong Kong              | 2017 |

## PROFESSIONAL SKILLS

- Python, C/C++, Java, ...
- SQL,  $\LaTeX$ , Git, Gnuplot, Qt, Android, ...
- PyTorch, Tensorflow, ...