Shichao Xu

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OBJECTIVE

I am at my fourth year as a Ph.D. candidate and aiming at finding a full-time research intern/job position.

RESEARCH INTERESTS

Machine learning, Deep learning, Cyber-physical system, Learning from imperfect data

SUMMARY

I am a fourth-year Ph.D. candidate in the Computer Science Department at Northwestern University, and my advisor is Prof Qi Zhu. I also work collaboratively with Prof. Xiao Wang, Prof. Zhaoran Wang from Northwestern University, Prof. Yanzhi Wang from Northeastern University, Prof. Zheng O'Neill from Texas A&M University. I received my undergraduate degree from Shanghai Jiao Tong University (ACM Honors Class) in 2018. Previously, I was a research intern in visual computing group at MSRA, under the supervision of Jifeng Dai. I also worked as a research assistant at SJTU BCMI Lab, directed by Professor Liqing Zhang.

My research interests lie in the field of Artificial Intelligence and Cyber-Physical System, especially with the topic of learning from imperfect data. While deep learning is more and more frequently included as a component of a large complex system with various factors included, many challenges are exposed in actual development and integration. Instead of simply considering AI as a stand-alone software application, we should take more issues into account – data availability and quality, disturbance and attacks, generalization and adaptation, etc. Currently, I am focusing on the challenge of learning from imperfect data and one of our latest work Weak Adaptation Learning is accepted by ICCV 2021. And we also develop a containerized framework for building control, which makes the study of RL on this complex system much easier. Our next step is focus on the challenge of sample efficiency in RL on real-world application.

EDUCATION BACKGROUND

Northwestern University	**IL, USA**
Ph.D. in Computer Science	*09/2018-present*
Master's degree in Computer Science (GPA: 3.9/4.0)	*09/2018-06/2021*
Cornell University	**NY, USA**
Summer School	*06/2017-07/2017*
ACM Class, Zhiyuan College, Shanghai Jiao Tong University	**Shanghai, China**
Bachelor of Science in Computer Science (GPA 3.9/4.3)	*09/2014-07/2018*

RESEARCH EXPERIENCES

Northwestern University	**IL, USA**
Research Assistant in IDEAS Lab	*09/2018-present*

Shanghai Jiao Tong University   **Shanghai, China**
   Research Assistant in Center for Brain-like Computing and Machine Intelligence   *09/2014-07/2018*
Microsoft Research Asia   **Beijing, China**
   Research Intern in Visual Computing Group   *08/2017-01/2018*

SELECTED PUBLICATIONS

- Fu, Yangyang, Shichao Xu, Qi Zhu, and Zheng O'Neill. "Containerized Framework for Building Control Performance Comparisons: Model Predictive Control vs Deep Reinforcement Learning Control." (2021). *The 8th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation (BuildSys '21), 2021*

- Shichao Xu*, Lixu Wang*, Ruiqi Xu, Xiao Wang, and Qi Zhu. "Non-Transferable Learning: A New Approach for Model Verification and Authorization." [link] (latest!)

- Shichao Xu, Yangyang Fu, Yixuan Wang, Zheng O'Neill, and Qi Zhu. "Model-assisted Learning-based Framework for Sensor Fault-Tolerant Building HVAC Control." *The 8th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation (BuildSys '21), 2021, Coimbra, Portugal (acceptance ratio = 26%)*

- Shichao Xu*, Lixu Wang*, Yixuan Wang, and Qi Zhu. " Weak Adaptation Learning--Addressing Cross-domain Data Insufficiency with Weak Annotator." IEEE/CVF International Conference on Computer Vision (ICCV) 2021.

- Lixu Wang, Shichao Xu, Xiao Wang, and Qi Zhu. "Towards Class Imbalance in Federated Learning." *In 35th Conference on Artificial Intelligence (AAAI), A Virtual Conference,* 2021.

- Qi Zhu, Chao Huang, Ruochen Jiao, Shuyue Lan, Hengyi Liang, Xiangguo Liu, Yixuan Wang, Zhilu Wang, Shichao Xu "Safety-Assured Design and Adaptation of Learning-Enabled Autonomous Systems." *Proceedings of the 26th Asia and South Pacific Design Automation Conference (ASP-DAC)*. 2021.

- Yixuan Wang, Chao Huang, Zhilu Wang, Shichao Xu, Zhaoran Wang, Qi Zhu. "Cocktail: Learn a Better Neural Network Controller from Multiple Experts via Adaptive Mixing and Robust Distillation" *2021 58th ACM/IEEE Design Automation Conference (DAC)*, *Virtual Conference*, 2021.

- Rumia Masburah, Rajib Lochan Jana, Ainuddin Khan, Shichao Xu, Shuyue Lan, Soumyajit Dey, Qi Zhu, "Adaptive Learning Based Building Load Prediction for Microgrid Economic Dispatch" Design, Automation & Test in Europe Conference & Exhibition (DATE), 2021

- Shichao Xu, Yixuan Wang, Yanzhi Wang, Zheng O'Neill, and Qi Zhu. "One for Many: Transfer Learning for Building HVAC Control." In *Proceedings of the 7th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation, (BuildSys '20)*, 2020.

- Shichao Xu, Shuyue Lan, and Zhu Qi, "MaskPlus: Improving Mask Generation for Instance Segmentation" The IEEE Winter Conference on Applications of Computer Vision. 2020

- Chao Huang, Shichao Xu, Zhilu Wang, Shuyue Lan, Wenchao Li, and Qi Zhu. "Opportunistic Intermittent Control with Safety Guarantees for Autonomous Systems," *2020 57th ACM/IEEE Design Automation Conference (DAC)*, San Francisco, CA, USA, 2020, pp. 1-6

PROJECT

- DoE Project: Securing Grid-interactive Efficient Buildings (GEB) through Cyber Defense and Resilient System (CYDRES),   *06/2020–present*

AWARDS

- DAC2021 Young Fellows program   2021
- Northwestern University Ph.D. Fellowship   2018-2019
- Zhiyuan College honor scholarship   2014-2018
- Excellent students' scholarship, Shanghai Jiao Tong University   2014-2018
- Bronze medal in National Olympiad in Informatics   2013
- Gold medal in National Olympiad in Informatics in Provinces   2012