Shichao Xu

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OBJECTIVE

- I am looking for a full-time research scientist/engineer position.

ABOUT ME

- I am a final-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. Zhaoran Wang from Northwestern University, Prof. Zheng O'Neill from Texas A&M, Prof. Yanzhi Wang from Northeastern University. I received my undergraduate degree from Shanghai Jiao Tong University (ACM Class). Currently I work as a research intern in OPPO and then have internship in Google research after summer quarter.

RESEARCH INTERESTS

- My current research interests mainly focus on **Learning from Limited or Imperfect Data**, especially for dealing with the problem of **data insufficiency**, and **imperfect data quality**. The related topics include **deep representation learning**, **domain adaptation**, **self/weakly/semi-supervised learning**, **transfer learning**, and **reinforcement learning** with application to vision, multi-modal, and control problems. And my recent project is related to **vision-language pre-training (VLP)** and **zero-shot multi-label classification**, and we have achieved the state-of-the-art performance on both multi-label classification and zero-shot multi-label classification task.

PROGRAMMING SKILLS

C, C++, Python, HTML, Shell, PyTorch, TensorFlow

EDUCATION

Northwestern University, Evanston, Illinois, USA

- Ph.D. in Computer Science — Sep 2018 – Jun 2023
  - Adviser: Prof. Qi Zhu
  - Cumulative GPA: 3.9 / 4.0
- M.S. in Computer Science — Sep 2018 – Jun 2021
  - Cumulative GPA: 3.9 / 4.0

Cornell University, Ithaca, New York, USA

- Summer school — Jun 2017 – Jul 2017
  - Invited by Prof. Elaine Shi
  - Take courses and talks, work with Prof. Carla Gomes

Shanghai Jiao Tong University, Shanghai, China

- B.S. in Computer Science — Sep 2014 – Jul 2018
  - ACM Class alumnin, Cumulative GPA: 3.9 / 4.3
  - Adviser: Prof. Liqing Zhang

WORK EXPERIENCE

Google Research, Irvine, California, USA

- Research Intern, Ads Group — Sep 2022 – Dec 2022
  - Fall internship, working on multi-task learning in NLP, learning from noisy data and improving labeling quality.
  - Supervisors: Fangcheng Sun, Pietro Kreitlon Carolino

OPPO Research, Palo Alto, California, USA

- Research Intern, Video Group — May 2022 – Aug 2022
  - Working on vision-language pre-training (VLP) model and (zero-shot) multi-label image classification.
  - We have achieved much better results than previous state-of-the-art method on multi-label image classification and zero-shot multi-label image classification. And we are waiting for CVPR submission.
  - Working on (zero-shot) multi-label action recognition on video data.
  - Supervisors: Jen-Hao Hsiao

Northwestern University, Evanston, Illinois, USA

- Research Assistant, IDEAS Lab — Sep 2018 – present
  - Working on the research of learning from limited/imperfect data, also collaborate with multiple groups on vision and control tasks, with 10+ publications (including one oral paper in ICLR as the first author).
  - DoE Project: Securing Grid-interactive Efficient Buildings (GEB) through Cyber Defense and Resilient System
  - Supervisors: Prof. Qi Zhu
- Teaching Assistant, Computer Science Department — Sep 2021 – Jan 2022
  - CS 213: Introduction to Computer Systems

Microsoft Research Asia, Beijing, China

- Research Intern, Visual Computing Group — Aug 2017 – Jan 2018
  - Work on object detection with the setting of training from scratch, and neural architecture search for object detection.

- Supervisors: Jifeng Dai

Shanghai Jiao Tong University, Shanghai, China

- Research Assistant, Center for Brain-like Computing and Machine Intelligence   Jun 2015 – Jul 2018
  - Supervisors: Prof. Liqing Zhang
- Teaching Assistant, Zhiyuan College   Sep 2016 – Jul 2017
  - Compiler Design and Implementation (MS208, Spring 2017)

PUBLICATIONS

AS FIRST/CO-FIRST AUTHOR

Shichao Xu, Yikang Li, Qi Zhu, Jen Hao Hsiao "Alignment Makes It Better: A Gift For (Zero-Shot) Multi-Label Classification," *State-of-the-art on Multi-Label Classification and Zero-shot Multi-Label Classification, under submission*

Shichao Xu, Yangyang Fu, Yixuan Wang, Zhuoran Yang, Zheng O'Neill, Zhaoran Wang and Qi Zhu "Accelerate Online Reinforcement Learning for Building HVAC Control with Heterogeneous Expert Guidances," Under review, 2022.

Lixu Wang*, Shichao Xu*, Ruiqi Xu, Xiao Wang, and Qi Zhu "Non-Transferable Learning: A New Approach for Model Verification and Authorization," *International Conference on Learning Representations (ICLR), Oral*, 2022.

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)*, Coimbra, Portugal (acceptance ratio = 26%), 2021.

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.

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 (WACV)*, 2020.

OTHER SELECTED COLLABORATIONS

Jiahua Dong, Lixu Wang, Zhen Fang, Gan Sun, Shichao Xu, Xiao Wang, and Qi Zhu "Federated Class-Incremental Learning," *IEEE/CVF Conference on CVPR*, 2022.

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," *BuildSys '21*, 2021.

Lixu Wang, Shichao Xu, Xiao Wang, and Qi Zhu "Towards Class Imbalance in Federated Learning," *In 35th Conference on Artificial Intelligence (AAAI)*, 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," *58th ACM/IEEE Design Automation Conference (DAC)*, 2021.

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

More collaboration works can be found [here]

AWARDS & SCHOLARSHIPS

- DAC2021 Young Fellows program   2021
- Northwestern University Ph.D. Fellowship   2018
- 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