Yu Wang

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EDUCATION

University of Science and Technology of China *Sept. 2018 ∼ July 2022*
BS: School of the Gifted Young (Skipped the third year in high school)
Overall GPA: 3.95/4.3 (91.42/100) **Ranking**: 2/28
Advisor: Xiangnan He

University of California, San Diego *Sept. 2022 ∼ present*
PhD: Computer Science Engineering
Advisor: Julian McAuley

PUBLICATIONS[1]

Learning Concise and Descriptive Attributes for Visual Recognition.
An Yan*, **Yu Wang***, Yiwu Zhong, Chengyu Dong, Zexue He, Yujie Lu, William Yang Wang, Jingbo Shang, Julian McAuley.

Differentiable Invariant Causal Discovery. PDF
Yu Wang, An Zhang, Xiang Wang, Xiangnan He, Tat-Seng Chua.

Interpretable Outlier Summarization. PDF
Yu Wang, Lei Cao, Yizhou Yan, Samuel Madden.

Probabilistic and Variational Label Denoising.
Yu Wang, Xin Xin, Zaiqiao Meng, Xiangnan He, Joemon Jose, Fuli Feng.
Accepted to TORS (Transactions for Recommender Systems).

Controlling Bias Exposure for Fair Interpretable Predictions PDF
Zexue He, **Yu Wang**, Julian McAuley, Bodhisattwa Prasad Majumder.
Accepted to EMNLP 2022 (findings).

AutoOD: Automatic Outlier Detection. PDF
Lei Cao, Yizhou Yan, **Yu Wang**, Samuel Madden, Elke A. Rundensteiner.
Accepted to SIGMOD 2023.

Improving Out-of-Distribution Robustness via Selective Augmentation. PDF
Huaxiu Yao*, **Yu Wang***, Sai Li, Weixin Liang, Linjun Zhang, James Zou, Chelsea Finn.
Accepted to ICML 2022.

Learning Robust Recommenders through Cross-Model Agreement. PDF
Yu Wang, Xin Xin, Zaiqiao Meng, Xiangnan He, Joemon Jose, Fuli Feng.
Accepted to WWW 2022.

Meta-learning with an Adaptive Task Scheduler. PDF
Huaxiu Yao*, **Yu Wang***, Peilin Zhao, Mehrdad Mahdavi, Defu Lian, Ying Wei, Chelsea Finn
Accepted to NeurIPS 2021.

RESEARCH EXPERIENCE

Topic: Fairness in Rationale Extraction *Apr. 2022 ∼ June 2022*
Instructor: Prof. Julian McAuley, UCSD
Goal: Extract the least biased but the most informative rationale.

- Provide a novel debiasing algorithm by adjusting the predictive model's belief to select the rationale according to bias energy and task energy in the rationale.
- Experimental results indicate that our model achieves a desirable trade-off between debiasing and task performance along with producing debiased rationales as evidence.

Topic: Invariant Causal Discovery *Sept. 2021 ∼ Oct. 2021*
Instructor: Prof. Tat-Seng Chua, Dr. Xiang Wang; NExT++, NUS

[1]The mark "*" on the names means equal contribution.

Goal: Utilize dataset from multiple environments to extract the invariant causal correlations.

- Proposed Differentiable Invariant Causal Discovery(DICD) to enable robustness among multiple environments. Besides, I theoretically proved the identifiablity of DICD.
- Empirical results show that DICD achieves improvements up to 45% and 35% over the state-of-the-art baselines in linear and nonlinear setting, respectively.

Topic: Automatic Outlier Detection *Apr. 2021 ∼ Nov. 2021*
Instructor: Prof. Samuel Madden, Dr. Lei Cao; CSAIL, MIT
Goal: Detect the outliers with budgeted human evaluation resources.

- Proposed a new semi-supervised framework to fully utilize the limited human-labeled data.
- Developed a novel algorithm to generate interpretable and simple outlier summarizations.

Topic: Domain Generalization *Aug. 2021 ∼ Oct. 2021*
Instructor: Dr. Huaxiu Yao; SAIL, Stanford
Goal: Proposed the selective mixup strategy to handle the domain generalization problem.

- Proposed a novel mixup strategy for cancelling out spurious relations.
- Conducted enormous experiments on nine benchmark datasets ranging diverse domains, which demonstrate the superiority of our methods over seven previous methods.

Topic: Meta-Learning with an Adaptive Task Scheduler *Feb. 2021 ∼ May 2021*
Instructor: Dr. Huaxiu Yao; SAIL, Stanford
Goal: Construct a task sampling scheduler to deal with the meta-learning problems.

- Proposed a novel adaptive task scheduler for meta-learning.
- Conducted large-scale experiments on both an image classification benchmark (up to 13% improvement) and a real-world drug discovery dataset (up to 18% improvement).

Topic: Denoising in Recommendation *Oct. 2020 ∼ Feb. 2021*
Instructor: Prof. Xiangnan He, Dr. Xin Xin; Lab for Data Science, USTC
Goal: Debias(or denoise) in recommendation systems.

- Found the differences between the predictions of different models as the denoising signals.
- Proposed two methods to denoise the recommendation datasets in both interacted and uninteracted user-item pairs, achieving significant improvements.

PROJECT WORK

USTC-QA-System Github *Oct. 2020 ∼ Dec. 2020*
Instructor: Zhen-Hua Ling; Course: Natural Language Processing

- Collected about 200 questions specifically regarding USTC.
- Implemented a QA-system based on AskMSR(Brill et. al, EMNLP 2002) which achieved 51% accuracy on the collected test questions.

Image Segmentation Enhanced Style Transfer Github *Oct. 2020 ∼ Dec.2020*
Instructor: Yang Cao; Course: Computer Vision

- Proposed a novel framework to incorporate Image Segmentation into Style Transfer.
- Evaluated our framework based on CycleGAN and FastFCN and achieved fantastic results.

CityBrain Challenge Report *May 2021 ∼ June 2021*
Instructor: Defu Lian; Course:Introduction to Deep Learning

- Used rule-based methods to get a 24-th position in the challenge.
- Tried different Reinforcement Learning methods, and achieved the similar performance.

AWARDS AND HONORS

- Rose Fund New Lotus Scholarship (For outstanding research achievements). USTC, 2021.
- Baosteel Scholarship (One out of 402 students in School of the Gifted Young). USTC, 2021.
- Rose Fund Public Affairs Scholarship (For active leadership). USTC, 2021.
- Cyrus Tang Foundation Moral Education Scholarship. USTC, 2020.
- Huawei Scholarship (Top 3% of class). USTC, 2020.
- Excellent Student Scholarship – Gold (Top 3% of class). USTC, 2019.
- Provincial first prize in College Mathematics Competition(At most Top 7%). Anhui Province, 2019.