Tianxin Wei

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EDUCATION

University of Science and Technology of China (USTC)   Anhui, China
Bachelor Degree in Computer Science, School of the Gifted Young   Sep. 2016 – Jul. 2020
- Overall GPA: 87 / 100; Major GPA: 89 / 100
- Rank: top 10% of 224 students
- Honors: Artificial Intelligence Talent Class
- Core Courses: Operating Systems (95) / Introduction to Artificial Intelligence (95) / Introduction to Algorithms (92) / Fundamentals of Operations Research (96) / Introduction to Pattern Recognition (94)

RESEARCH INTERNSHIPS

- Department of Computer Science, University of California, Los Angeles (UCLA)   California, USA
  Visiting Scholar in Professor **Wei Wang** & **Yizhou Sun's** Group   Jul. 2019 – Sep. 2019
  Project: Graph-based recsys; Automated meta-path discovery
- Department of Electrical & Computer Engineering, University of Texas at Austin   (Virtual) Texas, USA
  Research Intern in Professor **Zhangyang Wang's** Group   Jan. 2020 – Present
  Project: Adversarial training method for robustness in NLP; Fintech
- Amazon.com, Inc., Alexa Group   Virtual
  Remotely Advised by Dr. **Ruirui Li** and **Oguz Elibol**   Aug. 2020 – Present
  Project: Self-supervision for speaker identification

PUBLICATIONS (* DENOTES EQUAL CONTRIBUTION)

- **Fast Adaptation for Cold-start Collaborative Filtering with Meta-learning [PDF]**
  Tianxin Wei, Ziwei Wu, Ruirui Li, Ziniu Hu, Fuli Feng, Xiangnan He, Yizhou Sun, and Wei Wang.
  Accepted by the 20th IEEE International Conference on Data Mining (**ICDM 2020 Full Oral, Accept rate: 9.8%**)
- **Unpaired Multimodal Neural Machine Translation via Reinforcement Learning [PDF]**
  Tianxin Wei*, Yijun Wang*, Qi Liu, Enhong Chen
  Accepted by the 26th International Conf. on Database Systems for Advanced Applications (**DASFAA 2021 Full**)
- **Model-Agnostic Counterfactual Reasoning for Eliminating Popularity Bias in Recommender System [PDF]**
  Tianxin Wei, Fuli Feng, Jiawei Chen, Chufeng Shi, Ziwei Wu, Jinfeng Yi, Xiangnan He
  Submitted to WWW 2021
- **AR-Stock: Deep Augmented Relational Stock Prediction [PDF]**
  Tianxin Wei, Yuning You, Tianlong Chen.
  Preliminary work presented at AAAI 2021 KDF Workshop **(Oral)**
- **Adversarial Self-supervised Learning for Speaker Identification**
  Tianxin Wei, Ruirui Li, Oguz Elibol
  Submitted to NAACL 2021 as the first author

RESEARCH EXPERIENCE

Adviser: Professor Wei Wang &Yizhou Sun | Department of CS | UCLA   Aug. 2019 – Mar. 2020
Project: Fast Adaptation for Cold-start Collaborative Filtering with Meta-learning
- I proposed a novel meta-learning paradigm, named MetaCF, that aims to learn an accurate collaborative filtering model that can be well-generalized for fast adaptions on fresh users with limited interactions;
- I designed a dynamic subgraph sampling method that accounts for the dynamic arrival of fresh users and stabilizes the adaption procedure by optimizing the learning rates for adaption in a fine-grained manner. We also incorporated potential interactions to benefit the collaborative filtering models and alleviate the data sparsity problem;
- Our method has achieved 38.23%, 13.74% and 17.55% improvement over state-of-the-art baselines on Last-FM,

Amazon-Electronics, Amazon-Kindle datasets respectively.

Adviser: Vice Dean Xiangnan He | USTC & Jinfeng Yi | JD AI Research   Feb. 2020 – June 2020
Project: Eliminating Popularity Bias in Recommender System via Counterfactual Reasoning

➢ Recommender systems trained with normal training paradigm have the intrinsic bias towards popular items instead of the personalized suggestions for individual users;

➢ In this work, I explored the popularity bias issue from a novel and fundamental perspective --- cause-effect. I identified that popularity bias lies in the direct effect from the item node to the ranking score, such that an item's intrinsic property is the cause of mistakenly assigning it a higher ranking score;

➢ I was the first to formulate the causal graph for recommendation and proposed a model-agnostic counterfactual reasoning framework that trains a recommender model according to the causal graph via a multi-task training schema and performs counterfactual inference to eliminate bias;

➢ Achieved an average improvement of 197.56% over two representative models MF and LightGCN on five large-scale datasets, which is rather substantial.

Adviser: Professor Zhangyang Wang | Department of ECE | UT-Austin   Jan. 2020 – May. 2020
Project: AR-Stock: Deep Augmented Relational Stock Prediction

➢ I proposed to extend the traditional graph neural network to accurately predict stock trends by leveraging the rich information in the stock knowledge graph;

➢ I designed a geometric augmentation approach to discover hidden long-range dependencies between stocks.

➢ Leveraged self-supervised learning to facilitate GCN training and enforce global, local graph structure awareness;

➢ Achieved an improvement of 48.13% on NASDAQ and NYSE datasets over state-of-the-art models.

Adviser: Professor Qi Liu & Professor Enhong Chen | CS | USTC   May. 2019 – Aug. 2019
Project: Unpaired Multimodal Neural Machine Translation via Reinforcement Learning

➢ Machine translation models faced with the problem of sparse data for a long time. To resolve the problem, I introduced multimodal content, especially image to help build an NMT system without parallel corpora;

➢ Designed a novel reward function for reinforcement learning based on the image caption model to capture the consistency between the language and images;

➢ Improved 1.0 - 3.0 BLEU on the Multi30K, IAPR-TC12, and IKEA datasets.

Adviser: Dr. Ruirui Li & Dr. Oguz Elibol | Amazon Alexa   June. 2020 – Sep. 2020
Project: Adversarial Self-supervised Learning for Speaker Identification

➢ I introduced both frame-mask and frequency-mask based self-supervised reconstruction tasks to enhance the training of speaker identification task in the context of multi-task learning;

➢ Designed adversarial loss to enhance the self-supervised task, improving the identification accuracy.

COMMUNITY SERVICE | AWARDS | PATENTS

➢ Invited Journal Reviewer: ACM Transactions on Information Systems (TOIS)

➢ Assistant Reviewer: SIGIR 2020, WWW 2021, TKDE

➢ Artificial Intelligence Class Honor Award (Top 5% of All)

➢ Outstanding Students Scholarship for four consecutive years at USTC, 2016 - 2019 (Top 10% of All)

➢ Outstanding Freshmen Scholarship at USTC, 2016

➢ Zero Parallel Corpus Multimodal Neural Machine Translation Method | Public Number: CN110245364A

    o Enhong Chen, Qi Liu, Yijun Wang, **Tianxin Wei**

➢ A Meta-learning Recommendation Method for Cold-start Users | Being Processed

    o Xiangnan He, **Tianxin Wei,** Ziwei Wu, Fuli Feng | Processing Number: 202011271357.5

➢ Mitigating Popularity Bias in Recommendation System via Causal Inference | Being Processed

    o Xiangnan He, **Tianxin Wei**, Fuli Feng, Jiawei Chen, Jinfeng Yi