

# Tianxin Wei

Email: rouseau@mail.ustc.edu.cn Phone: (+86) 17318530968  
Address: Room 411, No.4 Building, USTC, Hefei, Anhui, 230027, P. R. China

## EDUCATION

University of Science and Technology of China (USTC), Anhui, China Aug. 2016 – July 2020  
AI talent class, School of the Gifted Young, Bachelor of Computer Science  
Overall GPA: 3.61 (87/100)  
Major GPA: 3.82 (89/100) Ranking top 10% of 224 students in the major  
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 INTERNS

- Visiting scholar in Prof. **Wei Wang & Yizhou Sun**'s group July 2019 - Sept. 2019  
Department of Computer Science, University of California, Los Angeles, USA
- Remote research intern in Prof. **Zhangyang Wang**'s group Feb. 2020 – June 2020  
Department of Electrical & Computer Engineering, University of Texas at Austin, USA
- Remote intern advised by Dr. **Ruirui Li** and **Oguz Elibol** in Amazon Alexa Group Aug. 2020 – Present

## PUBLICATIONS (\* DENOTES EQUAL CONTRIBUTION)

- **“Fast Adaptation for Cold-start Collaborative Filtering with Meta-learning”**  
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 (**Full Oral, Accept rate: 9.8%**)
- **“Model-Agnostic Counterfactual Reasoning for Eliminating Popularity Bias in Recommender System”**  
Tianxin Wei, Fuli Feng, Jiawei Chen, Chufeng Shi, Ziwei Wu, Jinfeng Yi, Xiangnan He  
Submitted to WWW 2021 as the first author
- **“Adversarial Self-supervised Learning for Speaker Identification”**  
Tianxin Wei, Ruirui Li, Oguz Elibol  
To be submitted to NAACL 2021 as the first author
- **“Unpaired Multimodal Neural Machine Translation via Reinforcement Learning”**  
Yijun Wang\*, Tianxin Wei\*, Qi Liu, Enhong Chen  
Submitted to DASFAA 2021 as the Co-first author
- **“AR-Stock: Deep Augmented Relational Stock Prediction”**  
Tianxin Wei, Yuning You, Tianlong Chen  
Submitted to AAAI 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 adaptations on fresh users with limited interactions;
- I designed a dynamic subgraph sampling 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.
- The paper, which I'm the first author, has been **accepted by ICDM 2020** as a **long paper**.

**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**

- The general aim of the recommender system is to provide personalized suggestions to users, which is opposed to suggesting popular items; however, the normal training paradigm, i.e., fitting a recommender model to recover the user behavior data with pointwise or pairwise loss, makes the model biased towards popular items;
- 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 am 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;
- The paper has been submitted to **WWW** as the first author.

**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. Also, I leveraged self-supervised learning to facilitate GCN training and to enforce global and local graph structure awareness.

**Adviser: Professor Qi Liu & Professor Enhong Chen | CS | USTC**

June. 2020 – Aug. 2020

**Project: Unpaired Multimodal Neural Machine Translation via Reinforcement Learning**

- To resolve the data scarcity problem for low resource language pairs in machine translation, I designed a translation model with the image description dataset which is much easier to obtain but harder to use than traditional multi-lingual dataset;
- Designed a novel reward function for reinforcement learning based on the image caption model to capture the consistency between the language and images;
- The paper has been submitted to **DASFAA** as the co-first author and a patent is obtained.

**Adviser: Dr. Ruirui Li & Dr. Oguz Elibol | Amazon Alexa**

Aug 2020-present

**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;
- I designed the adversarial loss to enhance the self-supervision reconstruction, to improve the identification accuracy.

## SERVICES & AWARDS & PATENTS

---

- Invited Journal Reviewer: TOIS, TKDE
- Artificial Intelligence Honor Award (Top 5%)
- Outstanding Students Scholarship for four consecutive years at USTC, 2016 - 2019 (Top 10%)
- Outstanding Freshmen Scholarship at USTC, 2016
- Zero parallel corpus Multimodal neural machine translation method. Number: CN110245364A  
Enhong Chen, Qi Liu, Yijun Wang, **Tianxin Wei**
- A meta-learning recommendation method for cold-start users. Being Processed  
Xiangnan He, **Tianxin Wei**, Ziwei Wu, Fuli Feng
- Mitigating popularity bias in recommendation system via causal inference Being Processed  
Xiangnan He, **Tianxin Wei**, Fuli Feng, Jiawei Chen, Jinfeng Yi