Tianxin Wei

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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: 3.61/4.3 (87/100) Ranking top 10% of 224 students

Major GPA:3.82/4.3 (89/100)

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   Jan. 2020 – Present

   Department of Electrical & Computer Engineering, University of Texas at Austin, USA

➢ Remote intern advised by Dr. **Ruirui Li** and **Oguz Elibol**   Aug. 2020 – Present

   Amazon Alexa Group

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 (**Full Oral, Accept rate: 9.8%**)

➢ **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 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

➢ **AR-Stock: Deep Augmented Relational Stock Prediction [PDF]**

   Tianxin Wei, Yuning You, Tianlong Chen

   Submitted to AAAI 2021 as the first author

➢ **Unpaired Multimodal Neural Machine Translation via Reinforcement Learning [PDF]**

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

   To be Submitted

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 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;

➢ Achieved an average improvement of 197.56% over two representative models MF and LightGCN on five large-scale datasets, which israther 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. Also, I leveraged self-supervised learning to facilitate GCN training and to enforce global and 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 have 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   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 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.   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