Yule Wang

(+86)13818052590 | wyl666@sjtu.edu.cn | linkedin.com/in/yule-wang-a8002b195 | github.com/alexwangNTL

EDUCATION

Shanghai Jiao Tong University (SJTU)   Sep. 2019 – Mar. 2022

Master of Engineering - Computer Software Engineering, supervised by Prof. Dong Wang. GPA: 3.89 / 4.0   Top: 2%

- **Awards**: 2020 Huawei Scholarship

Shanghai Jiao Tong University (SJTU)   Sep. 2015 – Jun. 2019

Bachelor of Engineering - Computer Software Engineering   *GPA: 3.52 / 4.0   Top: 20%*

- **Awards**: 2018 Baidu Scholarship, 2019 Shanghai Outstanding Graduate Student, SJTU

RESEARCH AND SELECTED PUBLICATIONS

Research Interests : Information Retrieval and Recommender Systems
Research Focus : Graph Neural Networks and Fairness in Recommender Systems, Causal Inference

DemiNet: Dependency-Aware Multi-Interest Network with Self-Supervised Graph Learning for Click-Through Rate Prediction   [Submitted to WWW 2022] First Author

- For extracting user multi-route interests from the noisy user behavior sequence (UBS) and utilizing the interests' correlations, the proposed DemiNet contains the following three innovative modules:
  - ∗ In order to denoise and refine the UBS representation for accurate interests extraction, we propose a dependency-aware heterogeneous graph attention network to capture the inter-item correlations and then combine the various dependency semantics.
  - ∗ We innovatively integrate a self-supervised task into the multi-interest extraction process to filter out noisy correlations between sequence items, enhancing robustness of the multi-route interest representations.
  - ∗ We design a novel multi-route interest aggregation structure that involves interest experts focusing on corresponding interest routes and a specialized network assigning confidences depending on their interest excitation strengths.

  The experimental results on Taobao production dataset verify that DemiNet improves GAUC by + 0.6%, enhancing the model's interpretability.

ICMT: Item Cluster-Wise Multi-Objective Training for Long-Tail Recommendation   [Submitted to TOIS 2022] First Author

- In traditional recommender systems, through an empirical study, we find that head items are high likely to be recommended due to the fact that *the gradients coming from head items dominate the overall gradient update process, which further affects the optimization of tail items.* To this end, we propose a general framework namely ICMT for long-tail recommendation.
  - ∗ Firstly, counterfactual learning is utilized to decompose the global popularity impact behind user-item interactions. Next, item clusters are adaptively formulated according to item's relationship with the popularity representation.
  - ∗ After that, we consider the learning over the whole training data as a weighted aggregation of multiple item cluster-wise objectives, which can be resolved through a Pareto-Efficient solver for a harmonious overall gradient direction. Besides, a contractive loss focusing on model robustness is introduced as a regularization term.

  We instantiate ICMT with four state-of-the-art recommendation models and conduct experiments on three real-world datasets. Experimental results demonstrate that ICMT significantly alleviates the popularity bias issue in recommender systems while improving the overall recommendation accuracy.

AIRec: Attentive Intersection-based Model for Tag-Aware Recommendation   [NeuroComputing 2021] Co-Author

- This paper utilizes social tag information to enhance personalized recommendation, in which a two-layer attention network is constructed. Item-level attention extracts user implicit preferences from historical interacted items; preference level attention fuses explicit tag preference and implicit preference. In addition, the tag intersection of user and candidate item are also explicitly modeled. The final top-N recommendation is conducted through a FM.

Omni-directional ORB-SLAM2 for mobile robots [CGNCC 2018] First Author
- For improving the robustness and accuracy of robotics localization and navigation, this paper utilizes omni-directional images as input to the SLAM system for keep tracking of ORB feature points within 360° field of view in real time. To implement this method, we design an algorithm for processing omni-directional images, which includes feature points extraction on sphere surface, area selection and transformation. In addition, to reduce the time complexity, we add optimizations like pre-rotation estimation and multi-scale matching.

PROFESSIONAL EXPERIENCE

Display Advertising Research Intern at Alimama May. 2021 – Present
Alibaba Group *Beijing, China*
- Develop and enhance the advertising Click-Through Prediction performance in Tmall. In the recall stage, we add the task position feature into the user multi-route interest model based on MIND and apply feature dropout strategy. This work has been deployed in the online display advertisement system and obtained AUC +0.3% improvement on CTR.

Natural Language Processing Research Intern Sep. 2020 – Feb. 2021
ByteDance *Shanghai, China*
- Develop and enhance the performance of smart dialog system in TikTok app. Optimizing the accuracy of question recognition and classification at the main search entry based on ALBERT (Recall +0.56%); Performing SRL (Semantic Role Labeling) of user query in Q&A service based on ELECTRA, enhancing the user satisfaction rate (Ratio +0.71%).

CONTESTS

Intel Cup: Electronic Design Contest First Prize, Mar. 2018 – Aug. 2018
Shanghai Jiao Tong University *Shanghai, China*
- Design a space mapping and segmentation algorithm for omni-directional images, enhancing accuracy and robustness of robotics localization and navigation system by capturing extensive visual and depth information in real time. We implemented the algorithm with FPGA for efficient inference.

China National Internet of Things Programming Competition First Prize, May. 2017 – Aug. 2017
Shanghai Jiao Tong University *Shanghai, China*
- Develop an addressing namespace framework for IoT agents utilizing natural language understanding.

PROJECTS

SOPTOP: WiFi Streaming Education System Feb. 2019 – Sep. 2019
- Develop a commercialized multi-media streaming system for smart teaching built on FFmpeg and Kubernetes. Server end and student client end can mutually transmit 1080P, 25FPS, multi-media live streams with a delay of less than 200ms. The system has put online in Android and iOS app markets.

Image Processing Platform Oct. 2019 – Feb. 2020
- A platform where users can process images with widely-used computer vision algorithms and neural style transfer, which is constructed based on OpenCV and Tensorflow.

TECHNICAL SKILLS

Programming Languages: Python, C/C++, Java, SQL (MySQL), Latex, Matlab
Deep Learning Framework: Tensorflow, Pytorch
English: TOEFL(iBT) - 104(R-28 L-27 S-24 W-25), GRE - 322(V-152 Q-170) + 3.5(AW), CET-6 - 593
Others: Strong self-motivation and proficient communication skills