Wentao Ning

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Research Interests: Recommender System

Education

The University of Hong Kong (HKU) — Hong Kong SAR
Ph.D. in Computer Science — 2020–2024 (Expected)

Southern University of Science and Technology (SUSTech) — Shenzhen, China
B.Eng. in Computer Science and Technology, GPA: 3.73/4.00 — 2016–2020

Internship

TikTok, ByteDance — Shanghai, China
Recommendation Algorithm Intern — Nov. 2022 - Mar., 2023

- Leverage different recommendation strategies to increase publish rate of TikTok creators.
  - Imitation Effect: Train a model using daily user-publish-video data to learn which kinds of videos that a user can create. Promote author publishing by recommending them more they-can-create videos.
  - Traffic Incentives: Using uplift models to find users that are insensitive to unpopular (low video views) videos. Recommend more unpopular videos to them to promote author publishing and prevent user losing.
  - Comment Incentives: Investigate the correlation between #comments authors received and #publications of them. Increase the recommendation of low-comment videos to encourage author publishing.

TCL Corporate Research(HK) — Hong Kong SAR
Research Intern — Jun. - Aug., 2021

- Propose an automatic effective meta-path searching framework for existing meta-path-based recommenders.
- Propose a GNN-based method for recommendation by using meta-paths.

Huawei Technologies — Dongguan, China
Site Reliability Engineer Intern — Jul. - Aug., 2019

- Mainly engage in monitoring system development. Implement an anomaly alert and email notification system.
- Complete 17 instructing documents, 3 demo (database migration tool, monitoring interface customization, key data query and alarm service) and 5 improvement suggestions.

Research Projects *(I am the first author of all below projects)*

- **Leverage Local and Global Popularity for recommendation** (Submitted to SIGIR'23)
  - Analyze the limitations of existing popularity-aware methods that consider item popularity from a global perspective and propose local popularity to tackle these limitations.
  - Propose the LGP framework based on casual graphs to jointly utilize local and global popularity for recommendation, which is general and can adapt to different recommendation models and use cases.
- **Multi-domain Recommendation with Domain Disentangling and Alignment** (Submitted to KDD'23)
  - Propose an embedding disentangling architecture for multi-domain recommendation, which explicitly disentangles inter-domain and intra-domain knowledge at the embedding level.
  - Formulate a random walk-based domain alignment strategy to identify similar users/items from different domains, which helps to share knowledge and avoid over-fitting.
- **Automatic Meta-Path Discovery for Effective Graph-Based Recommendation** (Accepted by CIKM'22)

  - Propose a general reinforcement learning-based meta-path selection framework RMS, which is the first framework that can be plugged into any meta-path-based recommendation models.
  - Develop a new meta-path-based recommendation method RMS-HRec and design training strategies to fully explore the potential of meta-paths for recommendation tasks.

- **Towards Efficient MaxBRNN Computation for Streaming Updates** (Accepted by ICDE'21)
  - Propose a novel problem called streaming MaxBRNN in spatial database area, which finds the optimal region to deploy a new service point when both the service points and client points are under continuous updates.
  - Devise an efficient slot partitioning-based algorithm (SlotP), which divides the space into equal-sized slots and processes each slot independently. SlotP is 2-3 orders of magnitude faster than SoTA baselines.

- **CheetahVIS: A Visual Analytical System for Large Urban Bus Data.** (Accepted by VLDB'20)
  - Built a visual analytical system CheetahVIS for efficient massive urban bus data analysis, which builds upon Spark and provides a visual analytical platform for the stakeholders (e.g., city planner, data analysts).

Publications

1. **Wentao Ning**, Reynold Cheng, Jiajun Shen, Nur Al Hasan Haldar, Ben Kao, Xiao Yan, Nan Huo, Tian Li, Wai Kit Lam, Bo Tang. **Automatic Meta-Path Discovery for Effective Graph-Based Recommendation.** In CIKM (**CCF-B**), 2022.

2. Reynold Cheng, Chenhao Ma, Xiaodong Li, Yixiang Fang, Ye Liu, Victor Y.L. Wong, Esther Lee, Tai Hing Lam, Sai Yin Ho, Man Ping Wang, Weijie Gong, **Wentao Ning**, Ben Kao. **The Social Technology and Research (STAR) Lab in the University of Hong Kong.** ACM SIGMOD Record, 2022.

3. **Wentao Ning**, Xiao Yan, and Bo Tang. **"Towards Efficient MaxBRNN Computation for Streaming Updates."** In ICDE (**CCF-A**), 2021.

4. **Wentao Ning**, Qiandong Tang, Yi Zhao, Chuan Yang, Xiaofeng Wang, Teng Wang, Haotian Liu, Chaozu Zhang, Zhiyuan Zhou, Qiaomu Shen, and Bo Tang. **"CheetahVIS: a visual analytical system for large urban bus data."** In PVLDB (**CCF-A**), 2020.

Scholarships and Awards

- Postgraduate Scholarship 2020–2024
- Outstanding Graduate in Department of Computer Science and Engineering 2020
- Outstanding Graduate in Shuli College 2020
- Outstanding UG Teaching Assistant 2019
- Outstanding Student Scholarship 2017–2019
- Outstanding Freshmen Scholarship 2016

Teaching

- **Teaching Assistant** at The University of Hong Kong Spring 2021
  The Age of Big Data (CCST9047)
- **Teaching Assistant** at Southern University of Science and technology Spring 2020, Fall 2019, Fall 2018
  Operating System (CS302)
  Object Oriented Analysis and Design (CS309)
  Data Structure and Algorithm Analysis (B) (CS203B)

Skills

- **Programming:** Python, Java, C++, SQL
- **Tools:** Pytorch, Numpy, Jupyter

Languages

- **Mandarin:** Native, **Cantonese:** Proficient
- **English:** Fluent