SEONGKU KANG

Email: seongku@postech.ac.kr, Phone: +82 10-8559-7284, Google Scholar, Web Page

RESEARCH INTERESTS

A wide range of topics in data mining, applied machine learning, and artificial intelligence; specifically, **accurate, efficient, and unbiased information retrieval/filtering systems**.

EDUCATION

Ph.D., Computer Science and Engineering, POSTECH Mar 2018 - Aug 2023

- Dissertation: Knowledge Distillation Approaches for Accurate and Efficient Recommender System

B.S., Computer Science and Engineering, Hanyang University Mar 2012 - Feb 2018

- Cumulative GPA: 4.43/4.50 (ranked 1st in CSE Dept.).

SELECTED PUBLICATIONS

Retrieval/Filtering Accuracy

- [**WWW'24**] SeongKu Kang, Shivam Agarwal, Bowen Jin, Dongha Lee, Hwanjo Yu, Jiawei Han, Improving Retrieval in Theme-specific Applications using a Corpus Topical Taxonomy
- [**WWW'22**] SeongKu Kang, Dongha Lee, Wonbin Kweon, Junyoung Hwang, Hwanjo Yu, Consensus Learning from Heterogeneous Objectives for One-Class Collaborative Filtering
- [**CIKM'19**] SeongKu Kang, Junyoung Hwang, Dongha Lee, Hwanjo Yu, Semi-Supervised Learning for Cross-Domain Recommendation to Cold-start Users

Retrieval/Filtering Efficiency

- [**WWW'23**] SeongKu Kang, Wonbin Kweon, Dongha Lee, Jianxun Lian, Xing Xie, Hwanjo Yu, Distillation from Heterogeneous Models for Top-K Recommendation
- [**KDD'21**] SeongKu Kang, Junyoung Hwang, Wonbin Kweon, Hwanjo Yu, Topology Distillation for Recommender System
- [**CIKM'20**] SeongKu Kang, Junyoung Hwang, Wonbin Kweon, Hwanjo Yu, DE-RRD: A Knowledge Distillation Framework for Recommender System

Retrieval/Filtering Debiasing

- [**CIKM'23**] Youngjune Lee, K Park, Yeongjong Jeong, SeongKu Kang (corresponding author) MvFS: Multi-view Feature Selection for Recommender System (*to appear*)
- [**AAAI'22**] Wonbin Kweon, SeongKu Kang, Hwanjo Yu, Obtaining Calibrated Probabilities with Personalized Ranking Models

EXPERIENCE

Data Mining Group, UIUC Jun 2023 - Present

- Postdoctoral Researcher (advisor: Prof. Jiawei Han)

Microsoft Research, Beijing, China May 2022 - April 2023

- Research intern in Social Computing group (mentors: Dr. Xing Xie, Dr. Jianxun Lian)
  - Award of excellence (Stars of Tomorrow, top 10%)

AWARDS & FELLOWSHIPS

Awards

- Stars of Tomorrow Award for Outstanding Intern, Microsoft Research Asia, 2023

- POSTECH Research Award (4th place), National Research Foundation, Korea, 2022
- Music Playlist Recommendation Competition (3rd place), Kakao, 2020
- SIGIR Student Travel Award, ACM SIGIR, 2019-2020
- Dean's List, Hanyang University, 2018
- Best Paper Award (3rd place), Korean Database Conference (KDBC), 2017

Fellowships

- POSTECHIAN Fellowship, POSTECH, 2023
- NAVER Ph.D Fellowship, NAVER, 2021
- NAVER Academic Scholarship, NAVER, 2017
- National Science and Technology Scholarship, Ministry of Education, Korea, 2012-2017
- Hanyang Brain Scholarship, Hanyang University, 2012

PATENTS

Issued

- Method and Apparatus for Improving the Accuracy of Speech Recognition Technology Based on Text Data Analysis for Deaf Students (Registration Number: 10-1988165-0000 | 2019.06.04 | South Korea)

Pending

- Distillation from Heterogeneous Models for Top-K Recommendation (2023)
- Molecular Clustering Device And Method Based on Deep Learning Technology Using Molecular Topology Information (2023)
- Item Recommendation Method Based on One-Class Collaborative Filtering with Heterogeneous Objectives and Service Apparatus (2022)
- Method and Device for Creating Topic Taxonomy Using Text (2022)

TALKS

- CS/AI Seminar, Ulsan National Institute of Science and Technology (UNIST) — Nov 2023
- Invited Seminar, Electronic & Information Research Information Center (EIRIC) — Sep 2023
- Invited Seminar, Social Computing Group, Microsoft Research Asia (MSRA) — Jun 2023
- Technology Showcase, Korea AI summit — Dec 2022

FULL PUBLICATIONS

Conferences

1. Improving Retrieval in Theme-specific Applications using a Corpus Topical Taxonomy (*to appear*)
   SeongKu Kang, Shivam Agarwal, Bowen Jin, Dongha Lee, Hwanjo Yu, Jiawei Han
   WWW'24 | ACM The Web Conference
2. Top-Personalized-K Recommendation (*to appear*)
   Wonbin Kweon, SeongKu Kang, Sanghwan Jang, Hwanjo Yu
   WWW'24 | ACM The Web Conference
3. Multi-Domain Recommendation to Attract Users via Domain Preference Modeling (*to appear*)
   Hyunjun Ju, SeongKu Kang, Dongha Lee, Junyoung Hwang, Sanghwan Jang, Hwanjo Yu
   AAAI'24 | AAAI Conference on Artificial Intelligence
4. MvFS: Multi-view Feature Selection for Recommender System
   Youngjune Lee, Keunchan Park, Yeongjong Jeong, SeongKu Kang (corresponding author),
   CIKM'23-short | ACM International Conference on Information and Knowledge Management

5. Distillation from Heterogeneous Models for Top-K Recommendation
   SeongKu Kang, Wonbin Kweon, Dongha Lee, Jianxun Lian, Xing Xie, Hwanjo Yu
   WWW'23 | ACM The Web Conference
6. Learning Topology-Specific Experts for Molecular Property Prediction
   Suyeon Kim, Dongha Lee, SeongKu Kang, Seonghyeon Lee, Hwanjo Yu
   AAAI'23 | AAAI Conference on Artificial Intelligence
7. Consensus Learning from Heterogeneous Objectives for One-Class Collaborative Filtering
   SeongKu Kang, Dongha Lee, Wonbin Kweon, Junyoung Hwang, Hwanjo Yu
   WWW'22 | ACM The Web Conference
8. TaxoCom: Topic Taxonomy Completion with Hierarchical Discovery of Novel Topic Clusters
   Dongha Lee, Jiaming Shen, SeongKu Kang, Susik Yoon, Jiawei Han, Hwanjo Yu
   WWW'22 | ACM The Web Conference
9. Obtaining Calibrated Probabilities with Personalized Ranking Models
   Wonbin Kweon, SeongKu Kang, Hwanjo Yu
   AAAI'22 | AAAI Conference on Artificial Intelligence
10. Topology Distillation for Recommender System
    SeongKu Kang, Junyoung Hwang, Wonbin Kweon, Hwanjo Yu
    KDD'21 | ACM SIGKDD Conference on Knowledge Discovery and Data Mining
11. Bootstrapping User and Item Representations for One-Class Collaborative Filtering
    Dongha Lee, SeongKu Kang, Hyunjun Ju, Chanyoung Park, Hwanjo Yu
    SIGIR'21 | ACM SIGIR Conference on Research and Development in Information Retrieval
12. Unsupervised Proxy Selection for Session-based Recommender Systems
    Junsu Cho, SeongKu Kang, Dongmin Hyun, Hwanjo Yu
    SIGIR'21 | ACM SIGIR Conference on Research and Development in Information Retrieval
13. Learning Heterogeneous Temporal Patterns of User Preference for Timely Recommendation
    Junsu Cho, Dongmin Hyun, SeongKu Kang, Hwanjo Yu
    WWW'21 | ACM International World-Wide Web Conference
14. Bidirectional Distillation for Top-K Recommender System
    Wonbin Kweon, SeongKu Kang, Hwanjo Yu
    WWW'21 | ACM International World-Wide Web Conference
15. DE-RRD: A Knowledge Distillation Framework for Recommender System
    SeongKu Kang, Junyoung Hwang, Wonbin Kweon, Hwanjo Yu
    CIKM'20 | ACM International Conference on Information and Knowledge Management
16. Deep Rating Elicitation for New Users in Collaborative Filtering
    Wonbin Kweon, SeongKu Kang, Junyoung Hwang, Hwanjo Yu
    WWW'20 | ACM International World-Wide Web Conference
17. Multi-Modal Component Embedding for Fake News Detection
    SeongKu Kang, Junyoung Hwang, Hwanjo Yu
    IMCOM'20 | IEEE International Conf. Ubiquitous Information Management and Communication
18. Semi-Supervised Learning for Cross-Domain Recommendation to Cold-start Users
    SeongKu Kang, Junyoung Hwang, Dongha Lee, Hwanjo Yu
    CIKM'19 | ACM International Conference on Information and Knowledge Management

19. Densifying a Trust Network for Effective Collaborative Filtering
SeongKu Kang, Jemin Wang, Yeon-Chang Lee, Sang-Wook Kim
KDBC'17 | Korean DataBase Conference

Journals

1. Mitigating Viewpoint Sensitivity of Self-Supervised One-Class Classifiers
Hyunjun Ju, Dongha Lee, SeongKu Kang, Hwanjo Yu
Information Sciences (SCI) (2022.09)
2. Personalized Knowledge Distillation for Recommender System
SeongKu Kang, Dongha Lee, Wonbin Kweon, Hwanjo Yu
Knowledge-Based Systems (SCI) (2022.03)
3. Item-side Ranking Regularized Distillation for Recommender System
SeongKu Kang, Junyoung Hwang, Wonbin Kweon, Hwanjo Yu
Information Sciences (SCI) (2021.11)

REFERENCES

Prof. Jiawei Han (PostDoc advisor), UIUC — hanj@illinois.edu
Prof. Hwanjo Yu (PhD advisor), POSTECH — hwanjoyupostech@gmail.com
Dr. Xing Xie (Internship mentor), MSRA — xingx@microsoft.com
Dr. Jianxun Lian (Internship mentor), MSRA — jianxun.lian@microsoft.com