DONGMIN HYUN

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RESEARCH INTEREST

Recommender Systems & Information Retrieval
Large Language Models & Natural Language Processing
Graph Representation Learning & AI for Science

INDUSTRY EXPERIENCE

Yahoo Sep 2023 - Current
Research Scientist *Mountain View, CA, USA*

- **Personalized trending search terms** by modeling user preference from search history, resulting in a **14% increase in user clicks** through an **A/B test** on a display module of trending search terms.
- **Clustered news streams based on LLMs** for continuous clustering and description generation, **pioneering this approach** and **writing a patent** for the technique.

Microsoft Dec 2020 - Jun 2021
Research Intern (Advisor: Dr. Xing Xie) *Remote*

- Formulated **reinforcement learning rewards** for unsupervised summarization with **LLMs**, showing **the best accuracy among unsupervised baselines** and **comparable accuracy to ChatGPT-3.5**.

Naver Aug 2017 - Feb 2018
Research Collaboration *Seongnam, S.Korea*

- Designed a **deep learning**-based compression model for scalable review-based product recommendation, running up to **14.9 times faster** with **50% less GPU memory usage** than baseline methods.

ACADEMY EXPERIENCE

POSTECH Mar 2022 - Aug 2023
Postdoctoral Researcher (Advisor: Prof. Hwanjo Yu) *Pohang, S.Korea*

- Devised a **new training loss for recommender systems** by considering **users' consumption near the test time**, outperforming 10 general, sequential and temporal models across 11 real-world datasets.
- Addressed the **long-tail problem** in recommendation, and modeled the **shuffle effect** in music recommendation with graduate students, resulting in **top-tier conference** papers such as SIGIR and CIKM.
- Invented **self-supervised learning** algorithms for graph data, and applied **AI techniques to chemistry, biology and medical domains** through collaboration with graduate students.

EDUCATION

POSTECH
2015 - 2017, 2017 - 2022 (Prof. Hwanjo Yu) *M.S, Ph.D. in Computer Science and Engineering*

Kookmin University
2011 - 2015 (Summa Cum Laude, 1st of 112) *B.S. in Computer Engineering*

TECHNICAL SKILLS

Languages	Python, Java, C++, C#, SQL, LaTeX, MATLAB
Libraries	PyTorch, TensorFlow, Transformers, OpenAI API, Keras, NLTK, Scikit-learn
Systems	Linux/Unix, Windows, Hadoop

PUBLICATIONS

Density of States Prediction of Crystalline Materials via Prompt-guided Multi-... 2023

Namkyeong Lee, Heewoong Noh, Sungwon Kim, Dongmin Hyun, Gyoung S. Na, Chanyoung Park
The Conference on Information and Knowledge Management (NeurIPS, 26.3% accepted)

MUSE: Music Recommender System with Shuffle Play Recommendation Enhance... 2023

Yunhak Oh, Sukwon Yun, Dongmin Hyun, Sein Kim and Chanyoung Park
The Conference on Information and Knowledge Management (CIKM, 24.0% accepted)

Deep single-cell RNA-seq data clustering with graph prototypical contrastive ... 2023

Junseok Lee, Sungwon Kim, Dongmin Hyun, Namkyeong Lee, Yejin Kim, and Chanyoung Park
Bioinformatics (SCI) (IF. 6.913) and ICML workshop on Computational Biology

Conditional Graph Information Bottleneck for Molecular Relational Learning 2023

Namkyeong Lee, Dongmin Hyun, Gyoung S. Na, Sungwon Kim, Junseok Lee, and Chanyoung Park
The International Conference on Machine Learning (ICML, 27.9% accepted)

Mutual Enhancement of Long-Tailed User and Item for Sequential Recommendation 2023

Kibum Kim, Dongmin Hyun, Sukwon Yun, and Chanyoung Park
Special Interest Group on Information Retrieval (SIGIR, 20.1% accepted)

Predicting Density of States via Multi-modal Transformer 2023

Namkyeong Lee, Heewoong Noh, Sungwon Kim, Dongmin Hyun, Gyoung S. Na, and Chanyoung Park
International Conference on Learning Representations (ICLR) ML4Materials Workshop

Dynamic Multi-Behavior Sequence Modeling for Next Item Recommendation 2023

Junsu Cho, Dongmin Hyun, Dongwon Lim, Hyeonjae Chen, Hyoung-iel Park and Hwanjo Yu
AAAI Conference on Artificial Intelligence (AAAI)

Heterogeneous Graph Learning for Multi-modal Medical Data Analysis 2023

Sein Kim, Namkyeong Lee, Junseok Lee, Dongmin Hyun and Chanyoung Park
AAAI Conference on Artificial Intelligence (AAAI, oral presentation)

Generating Multiple-Length Summaries via Reinforcement Learning for Unsupervised Sentence Summarization 2022

Dongmin Hyun, Xiting Wang, Chanyoung Park, Xing Xie and Hwanjo Yu
The conference on Empirical Methods in Natural Language Processing (EMNLP Findings)

Beyond Learning From Next Item: Sequential Recommendation via Personalized Interest Sustainability 2022

Dongmin Hyun, Chanyoung Park, Junsu cho and Hwanjo Yu
The Conference on Information and Knowledge Management (CIKM, 23.3% accepted)

Relational Self-Supervised Representation Learning on Graphs 2022

Namkyeong Lee, Dongmin Hyun, Junseok Lee and Chanyoung Park
The Conference on Information and Knowledge Management (CIKM, 23.3% accepted)

GraFN: Semi-Supervised Node Classification on Graph with Few Labels via Non-Parametric Distribution Assignment 2022

Junseok Lee, Yunhak Oh, Yeonjun In, Namkyeong Lee, Dongmin Hyun, Chanyoung Park
Special Interest Group on Information Retrieval (SIGIR short, 24.7% accepted)

Learning to Utilize Auxiliary Reviews for Recommendation 2021

Dongmin Hyun, Chanyoung Park, Junsu Cho and Hwanjo Yu
Information Sciences (SCI) (IF. 5.910)

Out-of-Category Document Identification Using Target-Category Names as Weak Supervision 2021

Dongha Lee, Dongmin Hyun, Jiawei Han and Hwanjo Yu
IEEE International Conference on Data Mining (ICDM short, 20% accepted)

Learning Heterogeneous Temporal Patterns for Timely Recommendation 2021

Junsu Cho, Dongmin Hyun, Seongku Kang and Hwanjo Yu
International Conference on World Wide Web (TheWebConf, 20.6% accepted)

Unsupervised Proxy Selection for Session-based Recommender Systems 2021

Junsu Cho, Seongku Kang, Dongmin Hyun and Hwanjo Yu
Special Interest Group on Information Retrieval (SIGIR, 21% accepted)

Interest Sustainability-Aware Recommender System 2020

Dongmin Hyun, Junsu Cho, Chanyoung Park and Hwanjo Yu
IEEE International Conference on Data Mining (ICDM, 9.8% accepted)

Building Large-Scale Datasets for Aspect-Level Sentiment Analysis 2020

Dongmin Hyun, Junsu Cho and Hwanjo Yu
International Conference on Computational Linguistics (COLING short, 26.2% accepted)

Target-Aware Convolutional Neural Network for Target-Level Sentiment Analysis 2019

Dongmin Hyun, Chanyoung Park, Min-Chul Yang, Ilhyeon Song, Jung-Tae Lee and Hwanjo Yu
Information Sciences (SCI) (IF. 5.910)

Review Sentiment-Guided Scalable Deep Recommender System 2018

Dongmin Hyun, Chanyoung Park, Min-Chul Yang, Ilhyeon Song, Jung-Tae Lee and Hwanjo Yu
ACM SIGIR conference on Research and Development in Information Retrieval (SIGIR short)

Influence Maximization Based on Reachability Sketches in Dynamic Graphs 2017

Dongeun Kim, Dongmin Hyun, Jinoh Oh, Wook-Shin Han and Hwanjo Yu
Information Sciences (SCI) (IF. 5.910)

AWARD

Award at Global Top Talent Fostering Program 2021

Awarded to outstanding participants in S. Korea (*6th of 330 participants*)

NAVER Ph.D. Fellowship 2020

Awarded to outstanding Ph.D. students majoring in computer science in S. Korea.

Prime Minister's Award at Engineering Education Festival 2014

Awarded to the best team in Capstone design project *(1st of 90 universities in S.Korea)*

TEACHING EXPERIENCES

Teaching Assistant

CSED101 Programming & Problem solving, Spring 2016, POSTECH
CSED233 Data Structure, Spring 2019, POSTECH
CSED342 Big data, Fall 2018, POSTECH

INVITED TALKS

User Preference via Artificial Intelligence
Pohang University of Science and Technology (POSTECH), Korea, Feb 2023.

Modeling User Preference and Natural Language for Information Retrieval
Gwangju Institute of Science and Technology (GIST), Korea, Mar 2023.

Keyword-based Summarization and Data Collection from papers with Language Models
Korea Research Institute of Chemical Technology (KRICT), Korea, Mar 2023.

ACADEMIC SERVICE

Program Committee

The Association for Computational Linguistics (ACL, 2023-2024)
ACM Special Interest Group in Information Retrieval (SIGIR, 2023-2024)
The Conference on Information and Knowledge Management (CIKM, 2024)
Empirical Methods in Natural Language Processing (EMNLP, 2022-2024)
ACM SIGIR Conference on Information Retrieval in Asia Pacific (SIGIR-AP, 2023-2024)
Association for the Advancement of Artificial Intelligence Conference (AAAI, 2022)
International Conference on Computer Science and Application Engineering (CSAI, 2023)
International Conference on Networks, Communication and Information Technology (NCIT, 2022)

Journal Reviewer

Neurocomputing
Scientific Reports
Journal of Big Data
Pattern Recognition
Information Sciences
Digital Signal Processing
Knowledge-Based Systems
Geo-spatial Information Science
Advanced Engineering Informatics
Engineering Applications of Artificial Intelligence (EAAI)
International Journal of Data Science and Analytics (JDSA)
ACM Transactions on Intelligent Systems and Technology (TIST)

REFERENCE

References available upon request.

DECLARATION

I hereby declare that the above mentioned information is correct up to my knowledge and I bear the responsibility for the correctness of the above mentioned. August, 2024