

Chanyoung Park

CONTACT INFORMATION

Assistant Professor

Data Science & Artificial Intelligence Lab (DSAIL)
Dept. of Industrial & Systems Engineering, KAIST
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[Google Scholar](#)

CURRENT RESEARCH

Multimodal Data Mining, Applied Machine Learning, Deep Learning

- Mining meaningful knowledge from multimodal data to develop artificial intelligence solutions for various real-world applications across different disciplines.
- **Application domains:** Recommendation system, AI for Science (Materials science, Chemistry, Bioinformatics), Social network analysis, Medical image analysis, Fraud/Anomaly detection, Knowledge graph, Sentiment analysis, Purchase/Click prediction, Time-series and spatio-temporal analysis, etc.

POSITIONS

KAIST, Daejeon, South Korea

Nov 2020 – Present

- Assistant Professor, Dept. of Industrial & Systems Engineering
- Assistant Professor, The Kim Jaechul Graduate School of AI
- Assistant Professor, Graduate School of Data Science

University of Illinois at Urbana-Champaign, Urbana, IL, USA

Jan 2019 – Oct 2020

- Visiting Scholar in Computer Science Department
 - Host: [Prof. Jiawei Han](#)
 - Topics: Multimodal data mining, Heterogeneous network representation learning

Microsoft Research, Beijing, China

Sep 2017 – Dec 2017

- Research Intern
 - Mentor: [Dr. Xing Xie](#)
 - Project: Collaborative Translational Metric Learning

NAVER, Seongnam, South Korea

Mar 2017 – Aug 2017

- Research Intern
 - Mentors: [Dr. Jung-Tae Lee](#), and [Dr. Min-Chul Yang](#)
 - Project: Click-aware Purchase Prediction with Push at the Top

EDUCATION

Pohang University of Science and Technology, Pohang, South Korea

Feb 2019

- Ph.D. in Computer Science and Engineering
 - Thesis: Recommendation Framework via Matrix Factorization and Translation
 - Advisor: [Prof. Hwanjo Yu](#)
 - Focus: Multimodal data mining, User behavior modeling, Recommender system

Sogang University, Seoul, South Korea

Feb 2014

- B.S. in Computer Science and Engineering

PUBLICATIONS

CONFERENCES

- [C38] Interpretable Prototype-based Graph Information Bottleneck
Sangwoo Seo, Sungwon Kim, **Chanyoung Park**
Thirty-seventh Conference on Neural Information Processing Systems (**NeurIPS 2023**)
- [C37] Density of States Prediction of Crystalline Materials via Prompt-guided Multi-Modal Transformer
Namkyeong Lee, Heewoong Noh, Sungwon Kim, Dongmin Hyun, Gyoung S. Na, **Chanyoung Park**
Thirty-seventh Conference on Neural Information Processing Systems (**NeurIPS 2023**)
- [C36] MUSE: Music Recommender System with Shuffle Play Recommendation Enhancement
Yunhak Oh, Sukwon Yun, Dongmin Hyun, Sein Kim, **Chanyoung Park**
ACM International Conference on Information and Knowledge Management (**CIKM 2023**)

- [C35] Class Label-aware Graph Anomaly Detection
Junghoon Kim, Yeonjun In, Kanghoon Yoon, Junmo Lee, **Chanyoung Park**
ACM International Conference on Information and Knowledge Management (**CIKM 2023**) (Short Paper)
- [C34] Structural Mixup for Graph Neural Networks
Junghun Kim, Sukwon Yun, **Chanyoung Park**
ACM International Conference on Information and Knowledge Management (**CIKM 2023**) (Short Paper)
- [C33] Similarity Preserving Adversarial Graph Contrastive Learning
Yeonjun In, Kanghoon Yoon, **Chanyoung Park**
ACM SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD 2023**)
- [C32] Shift-Robust Molecular Relational Learning with Causal Substructure
Namkyeong Lee, Kanghoon Yoon, Gyoung S. Na, Sein Kim, **Chanyoung Park**
ACM SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD 2023**)
- [C31] Task-Equivariant Graph Few-shot Learning
Sungwon Kim, Junseok Lee, Namkyeong Lee, Wonjoong Kim, Seungyeon Choi, **Chanyoung Park**
ACM SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD 2023**)
- [C30] Task Relation-aware Continual User Representation Learning
Sein Kim, Namkyeong Lee, Donghyun Kim, Min-Chul Yang, **Chanyoung Park**
ACM SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD 2023**)
- [C29] Conditional Graph Information Bottleneck for Molecular Relational Learning
Namkyeong Lee, Dongmin Hyun, Gyoung S. Na, Sungwon Kim, Junseok Lee, **Chanyoung Park**
International Conference on Machine Learning (**ICML 2023**)
- [C28] MELT: Mutual Enhancement of Long-Tailed User and Item for Sequential Recommendation
Kibum Kim, Dongmin Hyun, Sukwon Yun, **Chanyoung Park**
ACM SIGIR Conference on Research and Development in Information Retrieval (**SIGIR 2023**)
- [C27] Unbiased Heterogeneous Scene Graph Generation with Relation-aware Message Passing Neural Network
Kanghoon Yoon, Kibum Kim, Jinyoung Moon, **Chanyoung Park**
Thirty-Seventh AAAI Conference on Artificial Intelligence (**AAAI 2023**)
- [C26] Heterogeneous Graph Learning for Multi-modal Medical Data Analysis
Sein Kim, Namkyeong Lee, Junseok Lee, Dongmin Hyun, **Chanyoung Park**
Thirty-Seventh AAAI Conference on Artificial Intelligence (**AAAI 2023 (Oral)**)
- [C25] Generating Multiple-Length Summaries via Reinforcement Learning for Unsupervised Sentence Summarization
Dongmin Hyun, Xiting Wang, **Chanyoung Park**, Xing Xie, Hwanjo Yu
Conference on Empirical Methods in Natural Language Processing (**EMNLP 2022 (Findings)**)
- [C24] Set2Box: Similarity Preserving Representation Learning for Sets
Geon Lee, **Chanyoung Park**, Kijung Shin
The IEEE International Conference on Data Mining (**ICDM 2022**)
- [C23] LTE4G: Long-Tail Experts for Graph Neural Networks
Sukwon Yun, Kibum Kim, Kanghoon Yoon, **Chanyoung Park**
ACM International Conference on Information and Knowledge (**CIKM 2022**)
- [C22] Relational Self-Supervised Learning on Graphs
Namkyeong Lee, Dongmin Hyun, Junseok Lee, **Chanyoung Park**
ACM International Conference on Information and Knowledge (**CIKM 2022**)
- [C21] Beyond Learning from Next Item: Sequential Recommendation via Personalized Interest Sustainability
Dongmin Hyun, **Chanyoung Park**, Junsu Cho, Hwanjo Yu
ACM International Conference on Information and Knowledge (**CIKM 2022**)
- [C20] Nonlinearity Encoding for Extrapolation of Neural Networks
Gyoung S. Na, **Chanyoung Park**
ACM SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD 2022**)

- [C19] GraFN: Semi-Supervised Node Classification on Graph with Few Labels via Non-Parametric Distribution Assignment
Junseok Lee, Yunhak Oh, Yeonjun In, Namkyeong Lee, Dongmin Hyun, **Chanyoung Park**
ACM SIGIR Conference on Research and Development in Information Retrieval (**SIGIR 2022**) (Short Paper)
- [C18] AHP: Learning to Negative Sample for Hyperedge Prediction
Hyunjin Hwang, Seungwoo Lee, **Chanyoung Park**, Kijung Shin
ACM SIGIR Conference on Research and Development in Information Retrieval (**SIGIR 2022**) (Short Paper)
- [C17] Augmentation-Free Self-Supervised Learning on Graphs
Namkyeong Lee, Junseok Lee, **Chanyoung Park**
Thirty-Sixth AAAI Conference on Artificial Intelligence (**AAAI 2022**)
- [C16] Learnable Structural Semantic Readout for Graph Classification
Dongha Lee, Su Kim, Seonghyeon Lee, **Chanyoung Park**, Hwanjo Yu
IEEE International Conference on Data Mining (**ICDM 2021**) (Short Paper)
- [C15] Bootstrapping User and Item Representations for One-Class Collaborative Filtering
Dongha Lee, Seongku Kang, Hyunjun Ju, **Chanyoung Park**, Hwanjo Yu
ACM SIGIR Conference on Research and Development in Information Retrieval (**SIGIR 2021**)
- [C14] HDMI: High-order Deep Multiplex Infomax
Baoyu Jing, **Chanyoung Park**, Hanghang Tong
The Web Conference (**WWW 2021**)
- [C13] Interest Sustainability-Aware Recommender System
Dongmin Hyun, Junsu Cho, **Chanyoung Park**, Hwanjo Yu
IEEE International Conference on Data Mining (**ICDM 2020**)
- [C12] Unsupervised Differentiable Multi-aspect Network Embedding
Chanyoung Park, Carl Yang, Qi Zhu, Donghyun Kim, Hwanjo Yu and Jiawei Han
ACM SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD 2020**)
- [C11] Unsupervised Attributed Multiplex Network Embedding
Chanyoung Park, Donghyun Kim, Jiawei Han, Hwanjo Yu
Thirty-Fourth AAAI Conference on Artificial Intelligence (**AAAI 2020**)
- [C10] Task-Guided Pair Embedding in Heterogeneous Network
Chanyoung Park, Donghyun Kim, Qi Zhu, Jiawei Han, Hwanjo Yu
ACM International Conference on Information and Knowledge (**CIKM 2019**)
- [C9] BHIN2vec: Balancing the Type of Relation in Heterogeneous Information Network
Seonghyun Lee, **Chanyoung Park**, Hwanjo Yu
ACM International Conference on Information and Knowledge (**CIKM 2019**)
- [C8] Action Space Learning for Heterogeneous User Behavior Prediction
Dongha Lee, **Chanyoung Park**, Hyunjun Ju, Junyoung Hwang, Hwanjo Yu
International Joint Conference on Artificial Intelligence (**IJCAI 2019**)
- [C7] Sequential and Diverse Recommendation with Long Tail
Yejin Kim, Kwangseob Kim, **Chanyoung Park**, Hwanjo Yu
International Joint Conference on Artificial Intelligence (**IJCAI 2019**)
- [C6] Collaborative Translational Metric Learning
Chanyoung Park, Donghyun Kim, Xing Xie, Hwanjo Yu
IEEE International Conference on Data Mining (**ICDM 2018**)
- [C5] Review Sentiment-Guided Scalable Deep Recommender System
Dongmin Hyun, **Chanyoung Park**, Min-Chul Yang, Ilhyeon Song, Jung-Tae Lee, Hwanjo Yu
ACM SIGIR conference on Research and Development in Information Retrieval (**SIGIR 2018**) (Short Paper)
- [C4] Do “Also-Viewed” Products Help User Rating Prediction?
Chanyoung Park, Donghyun Kim, Jinoh Oh, Hwanjo Yu
International World-Wide Web Conference (**WWW 2017**)

- [C3] Convolutional Matrix Factorization for Document Context-Aware Recommendation
Donghyun Kim, **Chanyoung Park**, Jinoh Oh, Hwanjo Yu
ACM international conference on Recommender System (**RecSys 2016**)
- [C2] TRecSo: Enhancing Top-k Recommendation With Social Information
Chanyoung Park, Donghyun Kim, Jinoh Oh, Hwanjo Yu
International World-Wide Web Conference (**WWW 2016**) (Poster)
- [C1] Predicting User Purchase in E-commerce by Comprehensive Feature Engineering and Decision Boundary Focused Under-Sampling
Chanyoung Park, Donghyun Kim, Jinoh Oh, Hwanjo Yu
ACM international conference on Recommender System Challenge (**ACM RecSysChallenge 2015**, 10th place, top 1.1%)

JOURNALS

- [J11] Deep Single-cell RNA-seq Data Clustering with Graph Prototypical Contrastive Learning
Junseok Lee, Sungwon Kim, Dongmin Hyun, Namkyeong Lee, Yejin Kim, **Chanyoung Park**
Bioinformatics (2023) (SCI)
- [J10] Self-Supervised Graph Representation Learning via Positive Mining
Namkyeong Lee, Junseok Lee, **Chanyoung Park**
Information Sciences (2022.9) (SCI)
- [J9] Learning to Utilize Auxiliary Reviews for Recommendation
Dongmin Hyun, **Chanyoung Park**, Junsu Cho, Hwanjo Yu
Information Sciences (2021.2) (SCI)
- [J8] Deep Multiplex Graph Infomax: Attentive Multiplex Network Embedding using Global Information
Chanyoung Park, Jiawei Han, Hwanjo Yu
Knowledge-Based Systems (2020.6) (SCI)
- [J7] Improved prediction of miRNA–disease associations based on matrix completion with network regularization
Jihwan Ha, Chihyun Park, **Chanyoung Park**, Sanghyun Park
Cells (2020.4) (SCIE)
- [J6] Click-aware Purchase Prediction with Push at the Top
Chanyoung Park, Donghyun Kim, Min-Chul Yang, Jung-Tae Lee, Hwanjo Yu
Information Sciences (2020.6) (SCI)
- [J5] Inferring miRNA-disease Interactions using Probabilistic Matrix Factorization
Jihwan Ha, Chihyun Park, **Chanyoung Park**, Sanghyun Park
Journal of Biomedical Informatics (2020.2) (SCI)
- [J4] An Encoder-Decoder Switch Network for Purchase Prediction
Chanyoung Park, Donghyun Kim, Hwanjo Yu
Knowledge-Based Systems (2019.12) (SCI)
- [J3] Target-aware Convolutional Neural Network for Target-level Sentiment Analysis
Dongmin Hyun, **Chanyoung Park**, Min-Chul Yang, Ilhyeon Song, Jung-Tae Lee, Hwanjo Yu
Information Sciences (2019.7) (SCI)
- [J2] Deep Hybrid Recommender Systems via Exploiting Document Context and Statistics of Items
Donghyun Kim, **Chanyoung Park**, Jinoh Oh, Hwanjo Yu
Information Sciences (2017.11) (SCI)
- [J1] Improving top-K recommendation with truster and trustee relationship in user trust network
Chanyoung Park, Donghyun Kim, Jinoh Oh, Hwanjo Yu
Information Sciences (2016.12) (SCI)

WORKSHOPS

- [W6] Stoichiometry Representation Learning with Polymorphic Crystal Structures
Namkyeong Lee, Heewoong Noh, Gyoung S. Na, Tianfan Fu, Jimeng Sun, **Chanyoung Park**
NeurIPS 2023 Workshop on AI for Scientific Discovery: From Theory to Practice (AI4Science)
- [W5] Electron-Derived Molecular Representation Learning for Real-World Molecular Physics
Gyoung S. Na, **Chanyoung Park**
NeurIPS 2023 Workshop on AI for Scientific Discovery: From Theory to Practice (AI4Science)

- [W4] Deep single-cell RNA-seq data clustering with graph prototypical contrastive learning
Junseok Lee, Sungwon Kim, Dongmin Hyun, Namkyeong Lee, Yejin Kim, **Chanyoung Park**
ICML 2023 Workshop on Computational Biology
- [W3] Denoising single-cell RNA-seq data using Feature Propagation
Sukwon Yun, Junseok Lee, **Chanyoung Park**
ICML 2023 Workshop on Computational Biology
- [W2] Predicting Density of States via Multi-modal Transformer
Namkyeong Lee, Heewoong Noh, Sungwon Kim, Dongmin Hyun, Gyoung S. Na, **Chanyoung Park**
ICLR 2023 Workshop on Machine Learning for Materials (ML4Materials)
- [W1] Shift-Robust Node Classification via Graph Adversarial Clustering
Qi Zhu, Chao Zhang, **Chanyoung Park**, Carl Yang, Jiawei Han
NeurIPS 2022 GLFrontiers Workshop

PATENT

- [P1] Method for context-aware recommendation by considering contextual information of document and apparatus for the same
Donghyun Kim, **Chanyoung Park**, Jinoh Oh, Hwanjo Yu
No. 10-18771610000, issued July 2018.

AWARDS & SCHOLARSHIPS

- Best Paper Award** 2023
▪ ICML 2023 Workshop on Computational Biology, Hawaii, USA
- KAIST Excellence in Teaching Award of Year 2022** 2023
- Best Teaching Award** 2023
▪ Dept. of Industrial and Systems Engineering, KAIST
- ICDM Travel Award** 2018
▪ International Conference on Data Mining, Singapore
- Award of excellence** 2017
▪ Microsoft Research Asia Internship Program, Beijing, China
▪ Awarded to the best intern
- Naver Ph.D Fellowship** 2016
▪ Awarded to outstanding Ph.D students majoring in computer science in Korea
- RecSys Challenge 2015** 2015
▪ Ranked 10 out of 850 teams from 49 countries (Top 1.1%)
▪ Task: Click/Purchase Prediction
- Dean's List** Fall 2013
▪ Sogang University

TEACHING

- Instructor**
- IE343: Statistical Machine Learning, KAIST 2021S, 2022S, 2023S
 - DS535 (KSE801): Recommender System and Machine Learning on Graphs, KAIST 2021F, 2022F, 2023F
 - CoE202: Basics of Artificial Intelligence, KAIST 2021F
 - DS527: Deep Learning, KAIST 2022S, 2023S
- Teaching Assistant**
- CSED352: Data Communications, POSTECH 2014F
 - CSED312: Operating System, POSTECH 2016F

PROFESSIONAL SERVICES

- AREA CHAIR**
- NeurIPS Workshop (AI for Science: from Theory to Practice) [2023-present]
- PROGRAM COMMITTEE/REVIEWER**
- ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) [2022-present]
 - The Web Conference (WWW) [2020-present]
 - AAAI Conference on Artificial Intelligence (AAAI), [2021-present]
 - Conference on Neural Information Processing Systems (NeurIPS) [2022-present]
 - International Conference on Machine Learning (ICML) [2023-present]
 - The International Conference on Learning Representations (ICLR), [2022-present]
 - ACM International Conference on Research and Development in Information Retrieval (SIGIR) [2023-present]
 - ACM International Web Search and Data Mining Conference (WSDM) [2023-present]
 - International Joint Conference on Artificial Intelligence (IJCAI) [2023-present]

- ACM International Conference on Information and Knowledge Management (CIKM) [2023-present]
- SIAM International Conference on Data Mining (SDM) [2023-present]
- Learning on Graphs Conference (LoG) [2022-present]
- International ACM SIGIR Conference on Information Retrieval in the Asia Pacific (SIGIR-AP) [2023-present]
- The Web Conference (WWW) Poster Track, 2020
- ACM International Conference on Information and Knowledge Management (CIKM) Short Paper Track, [2020-present]
- IEEE International Conference on Big Data (BigData) [2020-2023]
- ECML-PKDD Research Track [2023-present]
- ECML-PKDD Applied Data Science Track and Demo Track [2020-2021]
- International Conference on Database Systems for Advanced Applications (DASFAA), 2021
- International Conference on Big Data and Smart Computing (BigComp) 2023
- International Conference on Internet and Web Applications and Services (ICIW) [2017-2018]
- Graph Learning @ TheWebConf, 2022
- International Joint Conference on Artificial Intelligence (IJCAI) - Special Track on AI for Good, 2022
- NeurIPS Workshop (New Frontiers of AI for Drug Discovery and Development) [2023-present]

JOURNAL REVIEWS

- Artificial Intelligence In Medicine, Elsevier
- IEEE Transactions on Image Processing (TIP)
- Briefings in Bioinformatics, Oxford University Press
- ACM Transactions on Knowledge Discovery from Data (TKDD)
- IEEE Transactions on Neural Networks and Learning Systems (TNNLS)
- ACM Transactions on Knowledge and Data Engineering (TKDE)
- ACM Transactions on Information Systems (TOIS)
- ACM Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)
- ACM Transactions on Intelligent Systems and Technology (TIST)
- Journal of Computational Science, Elsevier
- Physica A: Statistical Mechanics and its Applications, Elsevier
- ISA Transactions, Elsevier
- Journal of King Saud University, Elsevier
- Reliability Engineering & System Safety, Elsevier
- Applied Soft Computing, Elsevier
- Data & Knowledge Engineering, Elsevier
- Pattern Recognition, Elsevier
- Information Sciences, Elsevier
- Knowledge-Based Systems, Elsevier
- Expert Systems with Applications, Elsevier
- ISA Transactions, Elsevier
- Computational and Structural Biotechnology Journal, Elsevier
- Heliyon, Elsevier
- Data Mining and Knowledge Discovery, Springer
- Frontiers of Computer Science, Springer
- Transactions on Asian and Low-Resource Language Information Processing, ACM
- Applied Intelligence (APIN), Springer
- An International Journal on Advances of Computer Science for Geographic Information Systems (GeoInformatica), Springer
- PLOS ONE, Public Library of Science
- IEEE Access
- Concurrency and Computation: Practice and Experience, John Wiley and Sons Ltd
- Applied Computational Intelligence and Soft Computing, Hindawi
- Mathematical Problems in Engineering, Hindawi
- Wireless Communications and Mobile Computing, Hindawi
- Mathematics, MDPI
- Electronics, MDPI
- Applied Sciences, MDPI
- Information, MDPI

- Entropy, MDPI

EVENT ORGANIZATIONS

- Proceedings Chair, The ACM International Conference on Information and Knowledge Management (CIKM) [2023]

JOURNAL EDITORSHIP

- Frontiers in Artificial Intelligence ([Graph representation learning: Methods and Applications](#))
- Frontiers in Big Data ([Reviews in Big Data Networks: 2022](#))