MOONTAE LEE [mu:nte li:]

Assistant Professor, University of Illinois Chicago
moontae@uic.edu · Personal Website · Google Scholar

RESEARCH SPECIALIZATION

My research develops **AI that learns from expert knowledge and experience**. I make domain problems measurable through human evaluation, model-based judges, and test-time scaling, then use these signals to improve reasoning and research agents. This work connects evaluation and alignment with retrieval, adaptive computation, and professional workflows, building on spectral inference, causal measurement, and information quality.

RESEARCH AGENDA

- **Elicit expertise and evaluation standards.** Recover community-specific rubrics and rewards from human judgments and preference traces, then test transfer across professional domains.
- **Connect evaluation to agent learning.** Build RL environments for professional workflows that turn expert feedback into training signals, with evidence verification and human oversight.
- **Scale reasoning and recursive improvement.** Study adaptive test-time computation and co-evolving evaluators and harnesses, independently validating gains from deployed experience.

RECENT AND AWARDED PAPERS

[C75] **MERIT: From Preference Traces to Evaluation Standards**
EACL 2027, accepted · Community-specific metrics, rubrics, and aggregation weights induced from preference traces.

[C68] **DEER: Evaluating Deep Research Agents on Expert Report Generation**
ICML 2026 · Expert-developed rubrics and verification of cited and uncited claims.

[C67] **Root-token Policy Optimization for Adaptive Thinking**
ACL 2026 · Adaptive reasoning through policy optimization of the initial think-or-answer decision.

[C58] **MLRC-Bench: Can Language Agents Solve Machine Learning Research Challenges?**
NeurIPS 2025 · Tests implemented research ideas through executable experiments and held-out performance.

[C45] **The BiGGen Bench**
NAACL 2025 · **Best Paper Award.** Instance-specific evaluation criteria across 77 tasks and nine capabilities.

ACADEMIC AND RESEARCH APPOINTMENTS

2018–present **University of Illinois Chicago** *Assistant Professor, Information and Decision Sciences*

2025–present **LG AI Research** *Vice President and Head of the Superintelligence Lab* (*concurrent*)

2023–2024 **LG AI Research** *Research Fellow and Head of the Advanced Machine Learning Lab*

2021–2022 **LG AI Research** *Head of the Fundamental Research Lab*

2019–2021 **Microsoft Research Redmond** *Visiting Scholar, then Research Scientist*

EDUCATION

2012–2018 **Cornell University** *PhD, Computer Science*
Advisors David Mimno and David Bindel.
Dissertation [T1] *Joint-Stochastic Spectral Inference for Robust Co-occurrence Modeling and Latent Topic Analysis* Cornell eCommons

2009–2012 **Stanford University** *MS, Computer Science* · Advisors Scott Klemmer and Daphne Koller.

2001–2006 **Sogang University** *BS, Computer Science* · *BS, Mathematics* · *BA, Psychology*

RESEARCH FUNDING

2025 **Retrieval-Augmented Generation for Industrial Product Search**
W.W. Grainger, Inc. · Principal investigator · **$150,000**

HONORS AND AWARDS

2025 **Best Paper Award** NAACL [C45]
2025 **SAC Highlights Award** EMNLP [C55]
2025 **Best Student Paper Award** ICORES [C48]
2024 **Social Impact Award** NAACL [C34]
2017 **Best Student Paper Award** INFORMS Data Mining and Decision Analytics [W2]
2017 **Graduate Research Symposium Award** Amazon
Selected as one of two student speakers at the 2017 symposium.

TEACHING EXPERIENCE

UIC **University of Illinois Chicago** *Primary instructor*
- IDS594 Machine Learning Applications with Python
- IDS576 Deep Learning and Modern Applications
- IDS575 Machine Learning and Statistical Methods
- IDS566 Advanced Text Analytics

CORNELL **Cornell University** *Teaching assistant*
- INFO5306 Crowdsourcing and Human Computation · INFO3300 Data-driven Web Applications
- CS4780 Machine Learning · CS4740 Natural Language Processing

STANFORD **Stanford University** *Teaching assistant*
- CS261 Optimization and Algorithmic Paradigms · CS161 Design and Analysis of Algorithms

PROFESSIONAL SERVICE

- **Funding review panelist.** National Science Foundation, ML-DM P242451 (2024).
- **Area Chair.** NeurIPS, ICML, ICLR, ACL, EMNLP, NAACL, COLM.
- **Senior Program Committee.** AAAI.

REFEREED PUBLICATIONS

Identifiers follow my research catalogue. Links open publication records; preprints open arXiv.

CONFERENCES

[C75] *MERIT: From Preference Traces to Evaluation Standards for Community-Aligned LLM Evaluation*
EACL 2027 · **Accepted, forthcoming**

[C74] *From Benchmark to Adoption: Coding Agent Evaluation Needs User-Level Harness*
Dasol Hong, Ji Yong Cho, Bumsoo Kang, **Moontae Lee**
NeurIPS 2026 (Position Paper Track) · **Accepted, forthcoming**

[C73] *Contrastive Thinking Decoding: Steering Answer Generation in Reasoning Models*
Taehyeon Kim, Hyunsoo Lee, Yu Jin Kim, Youngsoo Jang, **Moontae Lee**
NeurIPS 2026 · **Accepted, forthcoming**

[C72] *When Personas Become Harmful: Guiding LLM with Global Citizenship Values Alignment*
Siqi Shen, Lajanugen Logeswaran, **Moontae Lee**, Honglak Lee, Rada Mihalcea
EMNLP 2026

[C71] *Gaming the Judge: How Unfaithful Chain-of-Thought Can Undermine Agent Evaluation*
Muhammad Khalifa, Lajanugen Logeswaran, Jaekyeom Kim, Sungryull Sohn, Yunxiang Zhang, **Moontae Lee**, Hao Peng, Lu Wang, Honglak Lee
EMNLP 2026 Findings

[C70] *A Regret Minimization Framework on Preference Learning in Large Language Models*
Suhwan Kim, Taehyun Cho, Geon-Hyeong Kim, Yu Jin Kim, Youngsoo Jang, **Moontae Lee**, Jungwoo Lee
ICML 2026

[C69] *Early Decisions Matter: Proximity Bias and Initial Trajectory Shaping in Non-Autoregressive Diffusion Language Models*
Jiyeon Kim, Sungik Choi, Yongrae Jo, **Moontae Lee**, Minjoon Seo
ICML 2026

[C68] *DEER: A Benchmark for Evaluating Deep Research Agents on Expert Report Generation*
Janghoon Han, Heegyu Kim, Changho Lee, Dahm Lee, Min Hyung Park, Hosung Song, Stanley Jungkyu Choi, **Moontae Lee**, Honglak Lee
ICML 2026

[C67] *Efficiently Learning To Reason or Not to Reason: Root-token Policy Optimization for Adaptive Thinking*
Taehyeon Kim, Hyunsoo Lee, Youngsoo Jang, **Moontae Lee**
ACL 2026 · **Oral presentation. Co-corresponding author**

[C66] *Adaptive Retrieval for Reasoning*
Jongho Kim, Jaeyoung Kim, Seung-won Hwang, Jihyuk Kim, Yu Jin Kim, **Moontae Lee**
ACL 2026

[C65] *DuET: Dual Execution for Test Output Prediction with Generated Code and Pseudocode*
Hojae Han, Jaejin Kim, Seung-won Hwang, Yu Jin Kim, **Moontae Lee**
ACL 2026 Findings

[C64] *A Debiased Reconstruction-based Framework for Training-Free Detection of AI-Generated Images*
Sungik Choi, Hankook Lee, Jaehoon Lee, Robin Kim, Stanley Jungkyu Choi, **Moontae Lee**
CVPR 2026

[C63] *SafeDPO: A Simple Approach to Direct Preference Optimization with Enhanced Safety*
Geon-Hyeong Kim, Yu Jin Kim, Byoungjip Kim, Honglak Lee, Kyunghoon Bae, Youngsoo Jang, **Moontae Lee**
ICLR 2026

[C62] *SPRIG: Improving Large Language Model Performance by System Prompt Optimization*
Lechen Zhang, Tolga Ergen, Lajanugen Logeswaran, **Moontae Lee**, David Jurgens
ICLR 2026

[C61] *Hybrid Deep Searcher: Scalable Parallel and Sequential Search Reasoning*
Dayoon Ko, Jihyuk Kim, Haeju Park, Sohyeon Kim, Dahyun Lee, Yongrae Jo, Gunhee Kim, **Moontae Lee**, Kyungjae Lee
ICLR 2026

[C60] *The CoT Encyclopedia: Analyzing, Predicting, and Controlling how a Reasoning Model will Think*
Seongyun Lee, Seungone Kim, Minju Seo, Yongrae Jo, Dongyoung Go, Hyeonbin Hwang, Jinho Park, Xiang Yue, Sean Welleck, Graham Neubig, **Moontae Lee**, Minjoon Seo
ICLR 2026

[C59] *IRPO: Implicit Policy Regularized Preference Optimization*
Youngsoo Jang, Yu Jin Kim, Geon-Hyeong Kim, Honglak Lee, **Moontae Lee**
EACL 2026 Findings

[C58] *MLRC-Bench: Can Language Agents Solve Machine Learning Research Challenges?*
Yunxiang Zhang, Muhammad Khalifa, Shitanshu Bhushan, Grant D Murphy, Lajanugen Logeswaran, Jaekyeom Kim, **Moontae Lee**, Honglak Lee, Lu Wang
NeurIPS 2025 (Datasets and Benchmarks)

[C57] *PANORAMA: A Dataset and Benchmark Tasks Capturing the Evaluation Trails and Rationales in Patent Examination*
Hyunseung Lim, Sooyohn Nam, Sungmin Na, Ji Yong Cho, June Yong Yang, Hyungyu Shin, Yoonjoo Lee, Juho Kim, **Moontae Lee**, Hwajung Hong
NeurIPS 2025 (Datasets and Benchmarks)

[C56] *Training-free Detection of AI-generated images via Cropping Robustness*
Sungik Choi, Hankook Lee, **Moontae Lee**
NeurIPS 2025

[C55] *Mind the Blind Spots: A Focus-Level Evaluation Framework for LLM Reviews*
Hyungyu Shin, Jingyu Tang, Yoonjoo Lee, Nayoung Kim, Hyunseung Lim, Ji Yong Cho, Hwajung Hong, **Moontae Lee**, Juho Kim
EMNLP 2025 · **SAC Highlights Award**

[C54] *Revisiting LLM Value Probing Strategies: Are They Robust and Expressive?*
Siqi Shen, Mehar Singh, Lajanugen Logeswaran, **Moontae Lee**, Honglak Lee, Rada Mihalcea
EMNLP 2025

[C53] *Shifting from Ranking to Set Selection for Retrieval Augmented Generation*
Dahyun Lee, Yongrae Jo, Haeju Park, **Moontae Lee**
ACL 2025

[C52] *One Missing Piece for Open-Source Reasoning Models: A Dataset to Mitigate Cold-Starting Short CoT LLMs in RL*
Hyungjoo Chae, Dongjin Kang, Jihyuk Kim, Beong-woo Kwak, Sunghyun Park, Haeju Park, Jinyoung Yeo, **Moontae Lee**, Kyungjae Lee
ACL 2025

[C51] *Overlapping Context with Variable-Length Stride Increases Diversity when Training Large Language Model for Code*
Geonmo Gu, Jaeho Kwak, Haksoo Moon, Hyun Seung Shim, Yu Jin Kim, Byoungjip Kim, **Moontae Lee**, Hyejeong Jeon
ACL 2025

[C50] *Counterfactual Voting Adjustment for Quality Assessment and Fairer Voting in Online Platforms with Helpfulness Evaluation*
Chang Liu, Yixin Wang, **Moontae Lee**
ICML 2025

[C49] *From Popularity to Meritocracy: Evolution of Excellence and Information Monopoly in Online Communities*
Moontae Lee, Chang Liu, Ali Tafti
IC2S2 2025 · **Poster presentation**

[C48] *Hierarchical Decomposition Framework for Steiner Tree Packing Problem*
Hanbum Ko, Minu Kim, Han-Seul Jeong, Sunghoon Hong, Deunsol Yoon, Youngjoon Park, Woohyung Lim, Honglak Lee, **Moontae Lee**, Kanghoon Lee, Sungbin Lim, Sungryull Sohn
ICORES 2025 · **Best Student Paper Award**

[C47] *Towards Robust and Parameter-Efficient Knowledge Unlearning for Large Language Models*
Sungmin Cha, Sungjun Cho, Dasol Hwang, **Moontae Lee**
ICLR 2025

[C46] *Learning to Explore and Select for Coverage-Conditioned Retrieval-Augmented Generation*
Takyoung Kim, Kyungjae Lee, Young Rok Jang, Ji Yong Cho, Gangwoo Kim, Minseok Cho, **Moontae Lee**
NAACL 2025 Findings

[C45] *The BiGGen Bench: A Principled Benchmark for Fine-grained Evaluation of Language Models with Language Models*
Seungone Kim, Juyoung Suk, Ji Yong Cho, Shayne Longpre, Chaeeun Kim, Dongkeun Yoon, Guijin Son, Yejin Cho, Sheikh Shafayat, Jinheon Baek, Sue Hyun Park, Hyeonbin Hwang, Jinkyung Jo, Hyowon Cho, Haebin Shin, Seongyun Lee, Hanseok Oh, Noah Lee, Namgyu Ho, Se June Joo, Miyoung Ko, Yoonjoo Lee, Hyungjoo Chae, Jamin Shin, Joel Jang, Seonghyeon Ye, Bill Yuchen Lin, Sean Welleck, Graham Neubig, **Moontae Lee**, Kyungjae Lee, Minjoon Seo
NAACL 2025 · **Best Paper Award**

[C44] *3D Denoisers are Good 2D Teachers: Molecular Pretraining via Denoising and Cross-Modal Distillation*
Sungjun Cho, Dae-Woong Jeong, Sung Moon Ko, Jinwoo Kim, Sehui Han, Seunghoon Hong, Honglak Lee, **Moontae Lee**
AAAI 2025

[C43] *Prometheus 2: An Open Source Language Model Specialized in Evaluating Other Language Models*
Seungone Kim, Juyoung Suk, Shayne Longpre, Bill Yuchen Lin, Jamin Shin, Sean Welleck, Graham Neubig, **Moontae Lee**, Kyungjae Lee, Minjoon Seo
EMNLP 2024

[C42] *When "A Helpful Assistant" Is Not Really Helpful: Personas in System Prompts Do Not Improve Performances of Large Language Models*
Mingqian Zheng, Jiaxin Pei, Lajanugen Logeswaran, **Moontae Lee**, David Jurgens
EMNLP 2024 Findings

[C41] *Prospector: Improving LLM Agents with Self-Asking and Trajectory Ranking*
Byoungjip Kim, Youngsoo Jang, Lajanugen Logeswaran, Geon-Hyeong Kim, Yu Jin Kim, Honglak Lee, **Moontae Lee**
EMNLP 2024 Findings

[C40] *Semantic Skill Grounding for Embodied Instruction-Following in Cross-Domain Environments*
Sangwoo Shin, Seunghyun Kim, Youngsoo Jang, **Moontae Lee**, Honguk Woo
ACL 2024 Findings

[C39] *Small Language Models Need Strong Verifiers to Self-Correct Reasoning*
Yunxiang Zhang, Muhammad Khalifa, Lajanugen Logeswaran, Jaekyeom Kim, **Moontae Lee**, Honglak Lee, Lu Wang
ACL 2024 Findings

[C38] *Degeneration-free Policy Optimization: RL Fine-Tuning for Language Models without Degeneration*
Youngsoo Jang, Geon-Hyeong Kim, Byoungjip Kim, Yu Jin Kim, Honglak Lee, **Moontae Lee**
ICML 2024

[C37] *Towards More Diverse Evaluation of Class Incremental Learning: Representation Learning Perspective*
Sungmin Cha, Jihwan Kwak, Dongsub Shim, Hyunwoo Kim, **Moontae Lee**, Honglak Lee, Taesup Moon
CoLLA 2024

[C36] *Co-Creating Question-and-Answer Style Articles with Large Language Models for Research Promotion*
Hyunseung Lim, Ji Yong Cho, Taewan Kim, Jeongeon Park, Hyungyu Shin, Seulgi Choi, Sunghyun Park, Kyungjae Lee, Juho Kim, **Moontae Lee**, Hwajung Hong
DIS 2024

[C35] *You don't need a personality test to know these models are unreliable: Assessing the Reliability of Large Language Models on Psychometric Instruments*
Bangzhao Shu, Lechen Zhang, Minje Choi, Lavinia Dunagan, Lajanugen Logeswaran, **Moontae Lee**, Dallas Card, David Jurgens
NAACL 2024

[C34] *Understanding the Capabilities and Limitations of Large Language Models for Cultural Commonsense*
Siqi Shen, Lajanugen Logeswaran, **Moontae Lee**, Honglak Lee, Soujanya Poria, Rada Mihalcea
NAACL 2024 · **Social Impact Award**

[C33] *Code Models are Zero-shot Precondition Reasoners*
Lajanugen Logeswaran, Sungryull Sohn, Yiwei Lyu, Anthony Zhe Liu, Dong-Ki Kim, Dongsub Shim, **Moontae Lee**, Honglak Lee
NAACL 2024

[C32] *Learning to Unlearn: Instance-wise Unlearning for Pre-trained Classifiers*
Sungmin Cha, Sungjun Cho, Dasol Hwang, Honglak Lee, Taesup Moon, **Moontae Lee**
AAAI 2024

[C31] *YTCommentQA: Video Question Answerability in Instructional Video*
Saelyne Yang, Sunghyun Park, Yunseok Jang, **Moontae Lee**
AAAI 2024

[C30] *On Sample-Efficient Code Generation*
Hojae Han, Yu Jin Kim, Byoungjip Kim, Youngwon Lee, Kyungjae Lee, Kyungmin Lee, **Moontae Lee**, Kyunghoon Bae, Seung-won Hwang
EMNLP Industry Track 2023

[C29] *From Heuristic to Analytic: Cognitively Motivated Strategies for Coherent Physical Commonsense Reasoning*
Zheyuan Zhang, Shane Storks, Fengyuan Hu, Sungryull Sohn, **Moontae Lee**, Honglak Lee, Joyce Chai
EMNLP 2023

[C28] *Merging Generated and Retrieved Knowledge for Open-Domain QA*
Yunxiang Zhang, Muhammad Khalifa, Lajanugen Logeswaran, **Moontae Lee**, Honglak Lee, Lu Wang
EMNLP 2023

[C27] *GRACE: Discriminator-Guided Chain-of-Thought Reasoning*
Muhammad Khalifa, Lajanugen Logeswaran, **Moontae Lee**, Honglak Lee, Lu Wang
EMNLP 2023 Findings

[C26] *SafeDICE: Offline Safe Imitation Learning with Non-Preferred Demonstrations*
Youngsoo Jang, Geon-Hyeong Kim, Jongmin Lee, Sungryull Sohn, Byeongjip Kim, Honglak Lee, **Moontae Lee**
NeurIPS 2023

[C25] *Projection Regret: Reducing Background Bias for Novelty Detection via Diffusion Models*
Sungik Choi, Hankook Lee, Honglak Lee, **Moontae Lee**
NeurIPS 2023

[C24] *When to Read Documents or QA History: On Unified and Selective Open-domain QA*
Kyungjae Lee, Sang-eun Han, Seung-won Hwang, **Moontae Lee**
ACL 2023 Findings

[C23] *Few-shot Reranking for Multi-hop QA via Language Model Prompting*
Muhammad Khalifa, Lajanugen Logeswaran, **Moontae Lee**, Honglak Lee, Lu Wang
ACL 2023

[C22] *Unsupervised Task Graph Generation from Instructional Video Transcripts*
Lajanugen Logeswaran, Sungryull Sohn, Yunseok Jang, **Moontae Lee**, Honglak Lee
ACL 2023 Findings

[C21] *Knowledge Unlearning for Mitigating Privacy Risks in Language Models*
Joel Jang, Dongkeun Yoon, Sohee Yang, Sungmin Cha, **Moontae Lee**, Lajanugen Logeswaran, Minjoon Seo
ACL 2023

[C20] *QASA: Advanced Question Answering on Scientific Articles*
Yoonjoo Lee, Kyungjae Lee, Sunghyun Park, Dasol Hwang, Jaehyeon Kim, Hong-in Lee, **Moontae Lee**
ICML 2023

[C19] *Neural Stochastic Differential Games for Time-series Analysis*
Sungwoo Park, Byoung Woo Park, **Moontae Lee**, Changhee Lee
ICML 2023

[C18] *Exploring the Benefits of Training Expert Language Models over Instruction Tuning*
Joel Jang, Seungone Kim, Seonghyeon Ye, Doyoung Kim, Lajanugen Logeswaran, **Moontae Lee**, Kyungjae Lee, Minjoon Seo
ICML 2023

[C17] *Rebalancing Batch Normalization for Exemplar-based Class-Incremental Learning*
Sungmin Cha, Sungjun Cho, Dasol Hwang, Sunwon Hong, **Moontae Lee**, Taesup Moon
CVPR 2023

[C16] *Grouping-matrix based Graph Pooling with Adaptive Number of Clusters*
Sung Moon Ko, Sungjun Cho, Dae-Woong Jeong, Sehui Han, **Moontae Lee**, Honglak Lee
AAAI 2023

[C15] *CEDe: A collection of expert-curated datasets with atom-level entity annotations for Optical Chemical Structure Recognition*
Rodrigo Hormazabal, Changyoung Park, Soonyoung Lee, Sehui Han, Yeonsik Jo, Jaewan Lee, Ahra Jo, Seung Hwan Kim, Jaegul Choo, **Moontae Lee**, Honglak Lee
NeurIPS Dataset & Benchmark 2022

[C14] *Pure Transformers are Powerful Graph Learners*
Jinwoo Kim, Tien Dat Nguyen, Seonwoo Min, Sungjun Cho, **Moontae Lee**, Honglak Lee, Seunghoon Hong
NeurIPS 2022

[C13] *Transformers meet Stochastic Block Models: Attention with Data-Adaptive Sparsity and Cost*
Sungjun Cho, Seonwoo Min, Jinwoo Kim, **Moontae Lee**, Honglak Lee, Seunghoon Hong
NeurIPS 2022

[C12] *Transferring Pre-trained Multimodal Representations with Cross-modal Similarity Matching*
Byoungjip Kim, Sungik Choi, Dasol Hwang, **Moontae Lee**, Honglak Lee
NeurIPS 2022

[C11] *Symbolic Music Loop Generation with Neural Discrete Representations*
Sangjun Han, Hyeongrae Ihm, **Moontae Lee**, Woohyung Lim
ISMIR 2022

[C10] *Path-aware and Structure-preserving Generation of Synthetically Accessible Molecules*
Juhwan Noh, Dae-Woong Jeong, Kiyoung Kim, Sehui Han, **Moontae Lee**, Honglak Lee, Yousung Jung
ICML 2022

[C9] *Few-shot Subgoal Planning with Language Models*
Lajanugen Logeswaran, Yao Fu, **Moontae Lee**, Honglak Lee
NAACL 2022

[C8] *On-the-Fly Rectification for Robust Large-Vocabulary Topic Inference*
Moontae Lee, Sungjun Cho, Kun Dong, David Mimno, David Bindel
ICML 2021

[C7] *Prior-aware Composition Inference for Spectral Topic Models*
Moontae Lee, David Bindel, David Mimno
AISTATS 2020

[C6] *Practical Correlated Topic Modeling and Analysis via the Rectified Anchor Word Algorithm*
Moontae Lee, Sungjun Cho, David Bindel, David Mimno
EMNLP 2019

[C5] *Beyond Exchangeability: The Chinese Voting Process*
Moontae Lee, Seok Hyun Jin, David Mimno
NeurIPS 2016

[C4] *Reasoning in Vector Space: An Exploratory Study of Question Answering*
Moontae Lee, Xiaodong He, Wen-tau Yih, Jianfeng Gao, Li Deng, Paul Smolensky
ICLR 2016

[C3] *Robust Spectral Inference for Joint Stochastic Matrix Factorization*
Moontae Lee, David Bindel, David Mimno
NeurIPS 2015

[C2] *Low-dimensional Embeddings for Interpretable Anchor-based Topic Inference*
Moontae Lee, David Mimno
EMNLP 2014

[C1] *When Classification Becomes a Problem: Using Branch-and-Bound to Improve Classification Efficiency*
Armand Prieditis and **Moontae Lee**
MLDM 2013

JOURNALS

[J3] *Process Reward Models That Think*
Muhammad Khalifa, Rishabh Agarwal, Lajanugen Logeswaran, Jaekyeom Kim, Hao Peng, **Moontae Lee**, Honglak Lee, Lu Wang
TMLR 2026

[J2] *Social Media Users' Perceptions of a Wearable Mixed Reality Headset During the COVID-19 Pandemic: Aspect-Based Sentiment Analysis*
Heejin Jeong, Allison Bayro, Sai Patipati Umesh, Kaushal Mamgain, **Moontae Lee**
JMIR Serious Games 2022

[J1] *TaskGenies: Providing Action Plans Helps People Complete Tasks*
Nicolas Kokkalis, Thomas Kohn, Johannes Huebner, **Moontae Lee**, Florian Schulze, Scott Klemmer
ACM TOCHI 2013

WORKSHOP PAPERS

[P11] *When Is Enough Not Enough? Illusory Completion in Search Agents*
Dayoon Ko, Jihyuk Kim, Haeju Park, Sohyeon Kim, Dahyun Lee, Gunhee Kim, **Moontae Lee**, Kyungjae Lee
COLM Workshop 2026 (Agent Behavior)

[W21] *LLM-PriorCB: Textual Contextual Bandits with LLM-Induced Priors*
Geon-Hyeong Kim, Yu Jin Kim, June Yong Yang, Woohyung Lim, Youngsoo Jang, **Moontae Lee**
ICML Workshop 2026 (Decision-Making from Offline Datasets to Online Adaptation)

[W20] *Layout and Fusion Trade-offs for Mixture-of-Experts Inference under Single-Node Tensor Parallelism*
June Yong Yang, Inhyuk Cho, Taehyeon Kim, Yu Jin Kim, **Moontae Lee**
ICML Workshop 2026 (AdaptFM)

[W19] *Lost in the Noise: How Test-Time Reasoning Fails with Contextual Distractors*
Seongyun Lee, Yongrae Jo, Minju Seo, **Moontae Lee**, Minjoon Seo
ICLR Workshop 2026

[W18] *Process Reward Models That Think*
Muhammad Khalifa, Rishabh Agarwal, Lajanugen Logeswaran, Jaekyeom Kim, Hao Peng, **Moontae Lee**, Honglak Lee, Lu Wang
COLM Workshop 2025 (SCALR)

[W17] *Towards Robust and Cost-Efficient Knowledge Unlearning for Large Language Models*
Sungmin Cha, Sungjun Cho, Dasol Hwang, **Moontae Lee**
NeurIPS Workshop 2024

[W16] *YTCommentQA: Video Question Answerability in Instructional Video*
Saelyne Yang, Sunghyun Park, Yunseok Jang, **Moontae Lee**
CVPR Workshop 2024

[W15] *LG AI Research & KAIST at EHRSQL 2024: Self-Training Large Language Models with Pseudo-Labeled Unanswerable Questions for a Reliable Text-to-SQL System on EHRs*
Yongrae Jo, Seongyun Lee, Minju Seo, Sung Ju Hwang, **Moontae Lee**
NAACL Workshop 2024

[W14] *Show Think and Tell: Thought-Augmented Fine-Tuning of Large Language Models for Video Captioning*
Byoungjip Kim, Dasol Hwang, Sungjun Cho, Youngsoo Jang, Honglak Lee, **Moontae Lee**
CVPR Workshop 2024 (MMFM)

[W13] *Towards an Evaluation of LLM-Generated Inspiration by Developing and Validating Inspiration Scale*
Hyungyu Shin, Seulgi Choi, Ji Yong Cho, Sahar Admoni, Hyunseung Lim, Taewan Kim, Hwajung Hong, **Moontae Lee**, Juho Kim
CHI Workshop 2024

[W12] *Degeneration-free Policy Optimization: RL Fine-Tuning for Language Models without Degeneration*
Youngsoo Jang, Geon-Hyeong Kim, Byoungjip Kim, Yu Jin Kim, Honglak Lee, **Moontae Lee**
ICLR Workshop 2024

[W11] *Prospector: Improving LLM Agents with Self-Asking and Trajectory Ranking*
Byoungjip Kim, Youngsoo Jang, Lajanugen Logeswaran, Geon-Hyeong Kim, Yujin Kim, Honglak Lee, **Moontae Lee**
NeurIPS Workshop 2023

[W10] *Reasoning about Action Preconditions with Programs*
Lajanugen Logeswaran, Sungryull Sohn, Yiwei Lyu, Anthony Zhe Liu, Dong-Ki Kim, Dongsub Shim, **Moontae Lee**, Honglak Lee
NeurIPS Workshop 2023

[W9] *Hierarchical Decomposition Framework for Feasibility-hard Combinatorial Optimization*
Hanbum Ko, Minu Kim, Han-Seul Jeong, Sunghoon Hong, Deunsol Yoon, Youngjoon Park, Woohyung Lim, Honglak Lee, **Moontae Lee**, et al.
ICML Workshop 2023 (SODS)

[W8] *Mixed-Curvature Transformers for Graph Representation Learning*
Sungjun Cho, Seunghyuk Cho, Sungwoo Park, Hankook Lee, Honglak Lee, **Moontae Lee**
ICML Workshop 2023

[W7] *Exploring Demonstration Ensembling for In-context Learning*
Muhammad Khalifa, Lajanugen Logeswaran, **Moontae Lee**, Honglak Lee, Lu Wang
ICLR Workshop 2023

[W6] *ReSPack: A Large-Scale Rectilinear Steiner Tree Packing Data Generator and Benchmark*
Kanghoon Lee, Youngjoon Park, Han-Seul Jeong, Sunghoon Hong, Deunsol Yoon, Sungryull Sohn, Minu Kim, Hanbum Ko, **Moontae Lee**, Honglak Lee, Kyunghoon Kim, Euihyuk Kim, Seonggeon Cho, Jaesang Min, Woohyung Lim
NeurIPS Workshop 2022

[W5] *Few-shot Subgoal Planning with Language Models*
Lajanugen Logeswaran, Yao Fu, **Moontae Lee**, Honglak Lee
ACL Workshop 2022

[W4] *Task-Balanced Batch Normalization for Exemplar-based Class-Incremental Learning*
Sungmin Cha, Soonwon Hong, **Moontae Lee**, Taesup Moon
CVPR Workshop 2022 (CLVISION)

[W3] *The Chinese Voting Process: The Evolution of Online Helpfulness Evaluations*
Moontae Lee, Seok Hyun Jin, David Mimno
INFORMS Workshop 2017 (DMDA) · **Workshop presentation**

[W2] *From Correlation to Hierarchy: Practical Spectral Topic Modeling*
Moontae Lee, David Bindel, David Mimno
INFORMS Workshop 2017 (DMDA)

[W1] *Automatically Providing Action Plans Helps People Complete Tasks*
Nicolas Kokkalis, Johannes Huebner, Steven Diamond, Dominic Becker, Michael Chang, **Moontae Lee**, Florian Schulze, Thomas Koehn, Scott R Klemmer
AAAI Workshop 2012

PREPRINTS AND TECHNICAL REPORTS

[P18] *The Culture Within: Towards Mechanistic Understanding of Cultural Reasoning in LLMs*
Samee Arif, Furkan Danisman, Angana Borah, Honglak Lee, Dehan Kong, Lajanugen Logeswaran, **Moontae Lee**, Zhijing Jin, Rada Mihalcea
arXiv 2610.27202

[P17] *CompLit: Scientific Literature Search Benchmarks Must Cover Implicit, Cumulative, and Unmet Needs*
Dayoon Ko, Jihyuk Kim, Soyeong Jeong, Young-jun Lee, Dahyun Lee, Juyeon Kim, Gunhee Kim, **Moontae Lee**, Kyungjae Lee
arXiv 2610.28658

[P16] *Continually Post-training Small Models via Synthetic Self-distillation*
Woosung Koh, Hyunsoo Lee, Kyungjae Lee, Haeju Park, Dahyun Lee, Dasol Hwang, **Moontae Lee**
arXiv 2610.13113

[P15] *HARISSA: Inference-Time Self-Checks for Efficient and Safe Local Language Model Deployment*
Kenan Alkiek, **Moontae Lee**, David Jurgens, V. G. Vinod Vydiswaran
arXiv 2609.38006

[P14] *Program-Verified Self-Evolution for Vision-Language Models*
Ahmed Heakl, Sungik Choi, **Moontae Lee**, Salman Khan
arXiv 2609.33855

[P13] *Co-Evolving Actor-Conditioned Critics for Non-Verifiable Generation*
Jinyoung Kim, Muhammad Khalifa, Lajanugen Logeswaran, Jaekyeom Kim, **Moontae Lee**, Honglak Lee, Lu Wang
arXiv 2608.30397

[P12] *Financial Numerical Prediction and Allocation as Token Generation*
Xu Ouyang, **Moontae Lee**
arXiv 2608.09880

[P10] *Cross-Lingual Prompt Steerability: Towards Accurate and Robust LLM Behavior across Languages*
Lechen Zhang, Yusheng Zhou, Tolga Ergen, Lajanugen Logeswaran, **Moontae Lee**, David Jurgens
arXiv 2512.02841

[P9] *HFI: A unified framework for training-free detection and implicit watermarking of latent diffusion model generated images*
Sungik Choi, Hankook Lee, Jaehoon Lee, Seunghyun Kim, Stanley Jungkyu Choi, **Moontae Lee**
arXiv 2412.20704

[P8] *Partial-Multivariate Model for Forecasting*
Jaehoon Lee, Hankook Lee, Sungik Choi, Sungjun Cho, **Moontae Lee**
arXiv 2408.09703

[P7] *EXAONE 3.0 7.8B Instruction Tuned Language Model*
Soyoung An, Kyunghoon Bae, Eunbi Choi, Stanley Jungkyu Choi, Yemuk Choi, Seokhee Hong, Yeonjung Hong, Junwon Hwang, Hyojin Jeon, Gerrard Jeongwon Jo, Hyunjik Jo, Jiyeon Jung, Yountae Jung, Euisoon Kim, Hyosang Kim, Joonkee Kim, Seonghwan Kim, Soyeon Kim, Sunkyoung Kim, Yireun Kim, Youchul Kim, Edward Hwayoung Lee, Haeju Lee, Honglak Lee, Jinsik Lee, Kyungmin Lee, **Moontae Lee**, Seungjun Lee, Woohyung Lim, Sangha Park, Sooyoun Park, Yongmin Park, Boseong Seo, Sihoon Yang, Heuiyeen Yeen, Kyungjae Yoo, Hyeongu Yun
arXiv 2408.03541

[P6] *Practical Reconstruction of Structural Embeddings for Symbolic Music Generation with Large Language Models*
Seungyeon Rhyu, Kichang Yang, Sungjun Cho, Jaehyeon Kim, Kyogu Lee, **Moontae Lee**
arXiv 2407.19900

[P5] *Reinforcement Learning from Reflective Feedback (RLRF): Aligning and Improving LLMs via Fine-Grained Self-Reflection*
Kyungjae Lee, Dasol Hwang, Sunghyun Park, Youngsoo Jang, **Moontae Lee**
arXiv 2403.14238

[P4] *Curve Your Attention: Mixed-Curvature Transformers for Graph Representation Learning*
Sungjun Cho, Seunghyuk Cho, Sungwoo Park, Hankook Lee, Honglak Lee, **Moontae Lee**
arXiv 2309.04082

[P3] *Multimodal Subtask Graph Generation from Instructional Videos*
Yunseok Jang, Sungryull Sohn, Lajanugen Logeswaran, Tiange Luo, **Moontae Lee**, Honglak Lee
arXiv 2302.08672

[P2] *Prior-aware Dual Decomposition: Document-specific Topic Inference for Spectral Topic Models*
Moontae Lee, David Bindel, David Mimno
arXiv 1711.07065

[P1] *Basic Reasoning with Tensor Product Representations*
Paul Smolensky, **Moontae Lee**, Xiaodong He, Wen-tau Yih, Jianfeng Gao, Li Deng
arXiv 1601.02745

INVITED TALKS, SEMINARS, AND PANELS

12/2026 *Agentic AI Connect 2026*
Scheduled invited talk at AAIA (Seoul, South Korea)

11/2026 *Self-Improving AI Agents and Domain Scaling*
Seminar at Seoul National University (Seoul, South Korea)

11/2026 *Advanced Industry Talent Development Bootcamp*
Invited seminar at the Korea Institute for Advancement of Technology (Buyeo, South Korea)

11/2026 *AI Scientist and Moonshot Projects*
Panel at the Korean Artificial Intelligence Association (Seoul, South Korea)

11/2026 *Enterprise AI Transformation through Agentic AI and Domain Intelligence*
Invited seminar at Songhyun Group (Seongnam, South Korea)

11/2026 *Self-Improving AI Agents and Domain Scaling*
Invited talk at the 38th POSCO Tech Forum (Gwangyang, South Korea)

11/2026 *Self-Improving AI Agents: The Future of AI Agents and Work*
Invited seminar in the Interdisciplinary Program in Artificial Intelligence at Seoul National University (Seoul, South Korea)

10/2026 *Self-Improving AI Agents*
Invited seminar in Computer Science at Seoul National University (Seoul, South Korea)

09/2026 *Self-Improving AI Agents*
Colloquium at the KAIST School of Computing (Daejeon, South Korea)

09/2026 *AGI: The Ultimate Form of Co-Intelligence*
Moderator at the World Knowledge Forum (Seoul, South Korea)

09/2026 *AI, Art, and the Future of Creativity*
Panel at the World Knowledge Forum (Seoul, South Korea)

08/2026 *Self-Improving AI Agents*
Keynote at AI Summit Seoul & Expo 2026 (Seoul, South Korea)

08/2026 *The Age of AI Building AI: A Look at the Frontier of Self-Evolving Intelligence*
Panel with Andrew Dai and Jeff Clune at AI Summit Seoul & Expo (Seoul, South Korea)

08/2026 *Self-Improving AI Agents*
Applied Data Science invited talk at KDD 2026 (Jeju, South Korea)

07/2026 *Benchmarking Breakthroughs in AI Scientist: Definitions and Trustworthiness*
Panel at the ICML 2026 AI for Science workshop (Seoul, South Korea)

06/2026 *Closing the Loop: Self-Improving AI Agents*
Invited talk at Korean Computer Congress 2026 (Jeju, South Korea)

06/2026 *Self-Improving AI Agents and Future of Work*
Keynote at Deloitte ConnecT Korea (Seoul, South Korea)

06/2026 *Close the Loop: Self-Improving AI Agents & Future of Work*
Invited Seminar at the University of Colorado Boulder (Boulder, CO)

06/2026 *The Art of AI: The Future of AI and the Future of Work*
Invited Seminar at Sogang University (Seoul, South Korea)

06/2026 *The Engineering School That Thinks: Augmentation, Agency, and the Future of Work in the Age of AGI*
Invited Seminar at Soongsil University (Seoul, South Korea)

04/2026 *Closing the Loop: From Generation to Self-Improving AI and New Frontiers for Collaborations*
Invited Seminar at the University of Illinois Chicago (Chicago, IL)

04/2026 *Close the Loop: Self-Improving AI Agents*
Invited Seminar at the LG Tech Conference 2026 (Seoul, South Korea)

03/2026 *From Generative to Agentic & Ecosystemic AI: Scaling Strategic and Reliable Thinking*
Invited Seminar at the Graduate School of LG AI (Seoul, South Korea)

12/2025 *Large Generative Model for Physical AI*
Panel Discussion with National IT Industry Promotion Agency (Seoul, South Korea)

12/2025 *Paradigm Shift: AI Transformation and Productivity Innovation in the age of Agentic AI*
CEO Academy by The Chosun Daily (Seoul, South Korea)

11/2025 *The Dawn of the Vertical AI Era: The Future of Reasoning AI and AI Agents*
Innovation & Entrepreneurship for the 21st Century AI-driven Digital Economy at Tsinghua University (Beijing, China)

11/2025 *The Next Frontier of AI: From Large Generative Models to Intelligent Agents*
Keynote panel discussion at AI Summit Seoul & Expo (Seoul, South Korea)

11/2025 *The Dawn of the Vertical AI Era: The Future of Reasoning AI and AI Agents*
Invited talk at AI Summit Seoul & Expo (Seoul, South Korea)

11/2025 *From Generative to Agentic and Ecosystemic AI: Scaling Strategic and Reliable Thinking*
Invited Seminar at Yonsei University (Seoul, South Korea)

10/2025 *Computation, Intuition, and the Edges of the Possible: From Madonna to Egyptian Sculpture*
Invited talk and panel at Unsettling Intelligences, Stony Brook University and the Guggenheim (Stony Brook, NY)

10/2025 *From Data to Agents: Scaling the GenAI Ecosystem*
Keynote at Korea University AI Tech Day (Seoul, South Korea)

10/2025 *AI Digital Transformation: Future Strategies*
Invited seminar at the Federation of Korean Industries (Seoul, South Korea)

09/2025 *Reasoning, Alignment, and Creativity: The Triptych of Superintelligence*
Invited keynote at 2025 QMOD-ICQSS (Seoul, South Korea)

08/2025 *Bridging General and Superintelligence: Towards Causal, Biological, and Physical Generative AI*
Invited keynote at 2025 KAIST AI Transformation Workshop (Daegeon, South Korea)

07/2025 *Learning to Unlearn: Robust and Efficient Machine Unlearning for Large Foundation Models*
Invited talk at UBC CAIDA and TrustML (Vancouver, Canada)

06/2025 *Counterfactual Voting Adjustment for Quality Assessment at Information Monopoly*
Invited keynote in Data Intelligence Workshop (Jeju, South Korea)

05/2025 *From Text to Reality: Frontiers of Generative AI*
Keynote at the Korea Atomic Industrial Forum's 220th Morning Lecture (Seoul, South Korea)

05/2025 *From Text to Reality: Frontiers of Generative AI and Financial Application*
Invited lecture at National Tax Service (Seoul, South Korea)

04/2025 *Finding Information Quality: Counterfactual Voting Adjustment for Quality Assessment and Voting Fairness in Online Platforms with Helpfulness Evaluation*
Invited seminar at KAIST College of Business (Seoul, South Korea)

04/2025 *AI in Action: Optimize Your AI Infrastructure*
Panel at Google Cloud Next '25 (Las Vegas, NV)

03/2025 *Computing Infrastructure and AI Models*
Panel discussion in AI Global Conference by the Ministry of Science and ICT (Seoul, South Korea)

03/2025 *Atlas of Intelligence: How Generative AI Reshapes Knowledge, Creativity, and Society*
Invited Seminar at Cornell Tech (New York, NY)

03/2025 *Atlas of Intelligence: How Generative AI Reshapes Knowledge and Creativity*
Invited Talk at Stony Brook University (Stony Brook, NY)

03/2025 *The Art of AI: Past Present, Present Past, and Future*
Invited Talk at Guggenheim (Manhattan, NY)

12/2024 *Leading Talent for the AI Era*
Panel discussion in Future Society Education Conference at Chosun Ilbo (Seoul, South Korea)

11/2024 *Learning to Unlearn: Robust and Efficient Machine Unlearning for Large Foundation Models*
Invited talk in Computer Science Department at Sungkyunkwan University (Suwon, South Korea)

11/2024 *Frontiers of Generative AI: From Text to Reality*
1st Future Economic Forum at Yonhapnews (Seoul, South Korea)

11/2024 *AI Models, Training Data, and the Next Frontier*
Presentation at the Global Future Tech Forum (Seoul, South Korea)

11/2024 *Learning to Unlearn: Robust and Efficient Machine Unlearning for Large Foundation Models*
Invited talk in AI Fairness Research Center at KAIST (Daejeon, South Korea)

10/2024 *Generative AI: Power, Perils, and Possibilities*
Keynote talk in Future of Data & AI Research Summit 2024 at Foundry/IDG (Seoul, South Korea)

10/2024 *From Text to Reality: Frontiers of Generative AI*
Keynote and panel at AICON Gwangju 2024 (Gwangju, South Korea)

09/2024 *AI Special Session: From Text to Reality*
AI special-session keynote at webOS Summit 2024 (Incheon, South Korea)

09/2024 *From Text to Reality: Frontiers of Large Language Models and Generative AI*
Keynote talk in Data & Artificial Intelligence Symposium (DAISY) 2024 Workshop (Jacksonville, FL)

08/2024 *Probing and Proving the Complexities of LLMs: From Personal Inconsistencies to Cultural Biases*
Invited talk in ACL 2024 C3NLP Workshop (Bangkok, Thailand)

06/2024 *AI Impact and New Revolution*
Panel at the Munhwa Industry Forum (Seoul, South Korea)

06/2024 *The Art of Generative AI and Downstream Impacts*
Invited talk in Business School at Sogang University (Seoul, South Korea)

05/2024 *The Rise of Super-Intelligent Agents*
Panel at MIT Technology Review Korea's EmTech AI (Seoul, South Korea)

05/2024 *The Dilemma of Innovation: AI Safety and Ethics*
Invited talk and panel discussion in Asian Leadership Conference 2024 (Seoul, South Korea)

05/2024 *Technology, Business, and Ethics in Generative AI*
Invited talk and industry panel at Frontiers of AI: Business and Society 2024 (Chicago, IL)

04/2024 *The Art of Generative AI: Technology, Safety, and Ethics*
UIC Computational Research Symposium (Chicago, IL)

04/2024 *The Art of Generative AI: Technology, Ethics, and Morality*
Invited talk in Law School at the University of Illinois Chicago (Chicago, IL)

04/2024 *Recent Advances in Large Language Models and Generative AI*
Invited talk in Kellogg Business School at Northwestern University (Evanston, IL)

04/2024 *Recent Advances in Large Language Models and Generative AI*
Invited talk in Discovery Partners Institute (Chicago, IL)

02/2024 *The Art of Generative AI*
Invited talk in Math, Stat, & Comp Sci at the University of Illinois Chicago (Chicago, IL)

02/2024 *The Art of Generative AI*
Invited talk in Information and Decision Sciences in UIC Business School (Chicago, IL)

02/2024 *The Art of Generative AI*
UIC Chancellor's SparkTalks (Chicago, IL)

12/2023 *Large Language Models for Artificial Expert Intelligence*
Invited talk in Expo Talk Panel at NeurIPS 2023 (New Orleans, LA)

12/2023 *Disruption of Generative AI*
Invited talk in Dongwon Corporation (Seoul, South Korea)

11/2023 *The Art of Generative AI: Tomorrow Is Now*
Super Panel 1 at the KBS and Asia-Pacific Broadcasting Union General Assembly (Seoul, South Korea)

11/2023 *The Art of Generative AI*
Invited talk in Young Engineers Honor Society (Seoul, South Korea)

10/2023 *The Art of Generative AI: Text, Code, and Beyond*
Invited talk in Graduate School of Data Science at Seoul National University (Seoul, South Korea)

10/2023 *AI Revolution*
Invited Speaker in 30th Conference at Korea Veterans Hospital (Seoul, South Korea)

10/2023 *Welcome to the Wonderland of Generative AI*
Invited Speaker in Gwacheon National Science Museum (Gwacheon, South Korea)

09/2023 *Large Language Models, Generative AI, and Their Integration with Industry*
Keynote talk/Panelist in AI Summit Seoul 2023 (Seoul, South Korea)

08/2023 *Generative AI: Current Trends and Future Directions*
Invited Speaker in LG Open Forum (Seoul, South Korea)

07/2023 *EXAONE 2.0 and EXAONE Universe*
Presentation and demonstration at LG AI Talk Concert (Seoul, South Korea)

07/2023 *Welcome to the Wonderland of Generative AI*
Invited talk in Summer 2023 at Korea Foundation for Advanced Studies (Pyungchang, South Korea)

06/2023 *Large-scale Generative AI and Our Future*
Guest Speaker in 11th Anniversary Forum of Maeil Business (Seoul, South Korea)

05/2023 *Welcome to the Wonderland of AI*
Invited talk at Korea University (Seoul, South Korea)

04/2023 *Unlocking Your Creativity with Generative AI*
Invited talk/Panelist in Digital Marketing Summit 2023 (Seoul, South Korea)

03/2023 *The Era of AI: How AI Will Change Our Lives*
Guest Speaker in MBC Economy Concert Radio/TV Show (Seoul, South Korea)

12/2022 *Beyond the Limits: Be careful but not fearful*
Invited talk in the 5th Global Ethics Forum at Sogang University (Seoul, South Korea)

09/2022 *Large Models Are Coming: Deep Dive into the New AI Paradigm*
Invited talk in Changbal Conference 2022 (Seattle, WA)

08/2022 *Co-evolutionary AI Business Ecosystem*
Invited talk in LG Academy (Seoul, South Korea)

06/2022 *Beyond the Limits: Be careful but not fearful*
Invited talk/Panelist in Fairness, Accountability, and Transparency FAccT 2022 (Seoul, South Korea)

04/2022 *Can You Measure Quality of Information?*
Invited talk in Graduate School of Data Science at Seoul National University (Seoul, South Korea)

12/2021 *Large-scale AI: Present, Visions, and Future*
Invited talk/Panelist in AI Summit Seoul 2021 (Seoul, South Korea)

12/2021 *Spectral Inference and Beyond*
Invited talk in Graduate School of AI at KAIST (Seoul, South Korea)

11/2021 *The Future of AI Healthcare by Materials Informatics*
Healthcare keynote at the MBC Global AI Summit (Goyang, South Korea)

09/2021 *Co-evolutionary AI Business Ecosystem*
Invited talk in LG's CEO Workshop 2021 (Seoul, South Korea)

08/2021 *Co-evolutionary AI Business Ecosystem*
Invited talk in LG Biz Informal 2021 (Seoul, South Korea)

06/2021 *Veils of Distortion: A Bird's Eye View of my Research*
Invited talk in LG AI Research (Seoul, South Korea)

06/2021 *Artificial Intelligence and our Future*
Invited talk in Business School at Sogang University (Seoul, South Korea)

05/2021 *Representation Learning and Beyond*
Invited talk in Computer Science Department at Sogang University (Seoul, South Korea)

01/2021 *Life with Artificial Intelligence*
Invited talk at Dongwon Corporation (Seoul, South Korea)

07/2020 *Artificial Intelligence: Past, Present, and Future*
Invited talk in the National Assembly of the Republic of Korea (Seoul, South Korea)

07/2020 *AI Startup Hackathon*
Guest Speaker in Jayang Life Academy (Seoul, South Korea)

07/2020 *Well-Tempered Artificial Intelligence in the Information Age*
Invited talk in Jayang Life Academy (Seoul, South Korea)

11/2019 *Modeling the World×Modeling the Bias: The Chinese Voting Process and Beyond*
Invited talk in Rennes School of Business (Rennes, France)

05/2019 *Modeling the World×Modeling the Bias: The Chinese Voting Process and Beyond*
Invited talk at the Korea Advanced Institute of Science and Technology (Daejeon, South Korea)

05/2018 *Toward Interpretable Machine Learning*
Invited talk in Microsoft Research (Redmond, WA)

02/2018 *Toward Transdisciplinary Machine Learning: Scalable Text Mining and Social Influence Modeling*
Colloquium at the University of Oregon (Eugene, OR)

02/2018 *Toward Transdisciplinary Machine Learning – Scalable Text Mining and Social Influence Modeling*
Invited talk at the University of Illinois Chicago (Chicago, IL)

09/2017 *Spectral Topic Modeling and the Chinese Voting Process*
Invited talk at Chungnam National University (Daejeon, South Korea)

01/2017 *The Chinese Voting Process: The Evolution of Helpfulness in Product Reviews and Question Answers*
Invited Best Paper Talk in Amazon Research Symposium (Seattle, WA)

11/2016 *Beyond Exchangeability: The Chinese Voting Process*
Cornell AI Seminar (Ithaca, NY)

04/2016 *Robust Spectral Inference for Joint Stochastic Matrix Factorization*
Scientific Computing and Numerics seminar at Cornell University (Ithaca, NY)

11/2015 *Robust Spectral Inference for Joint Stochastic Matrix Factorization and Topic Modeling*
Invited talk at Microsoft Research (Redmond, WA)

PATENTS

Dates indicate earliest priority. Bold record numbers indicate grants or registrations.

05/2025 **Stepwise reasoning for answer generation**
LG Management Development Institute
KR20260164494A

05/2025 **Attention across time and features**
LG Management Development Institute
KR20260163332A

04/2025 **Language model evaluation by instance**
LG Management Development Institute
KR20260160126A · WO2026230668A1

12/2024 **Irregularly sampled sequence prediction**
LG Management Development Institute
KR20260090532A

11/2024 **Multi-model inference agent**
LG Management Development Institute
KR103045644B1 · WO2026111306A1 · KR20260077555A

11/2024 **AI-generated image detection**
LG Management Development Institute
KR103007796B1 · WO2026111400A1 · KR20260077581A · KR20260129925A

08/2024 **Large language model unlearning**
LG Management Development Institute
US20260186688A1 · US20260187416A1 · WO2026049244A1 · KR20260032215A · KR20260032223A

08/2024 **Language model safety optimization**
LG Management Development Institute
KR103050221 · WO2026049400A1 · KR20260119295A · KR20260032265A

06/2024 **Retrieval-based answer generation**
LG Management Development Institute
US20260310696A1 · WO2026005454A1 · KR20260000527A · KR20260000561A

05/2024 **Question answering with selective knowledge**
LG Management Development Institute and Seoul National University R&DB Foundation
KR20250168914A

05/2024 **Language model training without degeneration**
LG Management Development Institute
KR102934483B1 · US20260195547A1 · WO2025234866A1 · KR20260037080A · KR20250161395A

03/2024 **Learning 3D molecular geometry**
LG Management Development Institute
US20260088139A1 · WO2025198104A1 · KR20250142747A

03/2024 **Language model alignment**
LG Management Development Institute
KR102917689B1 · US20260154501A1 · WO2025193032A1 · KR20260015970A · KR20250139753A

02/2024 **Time-series forecasting**
LG Management Development Institute
KR102818098B1 · US20260187497A1 · WO2025174096A1

11/2023 **Specialized document sharing**
LG Management Development Institute
US20250148506A1 · CN119963373A · EP4553750A1 · JP2025078102A · KR20250066862A

06/2023 **Game-theoretic continuous-time prediction**
LG Management Development Institute and Chung-Ang University Industry–Academic Cooperation Foundation
KR20240174395A

05/2023 **Evidence-grounded response agent**
LG Management Development Institute
US20260056983A1 · US20260064726A1 · EP4679287A1 · JP2026517783A · WO2024228577A1 · KR20250142262A · KR20240161920A

05/2022 **Synthesizable molecule generation**
LG Management Development Institute and KAIST
US20250077867A1 · EP4506950A1 · WO2023224277A1 · KR20230161867A

05/2022 **Hierarchical graph pooling**
LG Management Development Institute
US20250077621A1 · WO2023224307A1 · CN119234229A · KR20250133266A · KR20230162896A

03/2016 **Multiple subject representations**
Microsoft Technology Licensing
US10592519B2 · US20170286494A1