Joo-Kyung Kim

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Professional Experience

Amazon Seattle, WA
Senior Applied Scientist *Aug 2017 – Present*

- Designing and building machine learning models and systems for improving Alexa's core AI components
- LLM-based mixed-initiative interactions
- multi-modal proactive recommendation
- Disambiguation and clarification for large-scale spoken language understanding
- Personalized domain classification
- Out-of-domain detection for large-scale domain classification
- Hypothesis ranking for large-scale natural language understanding

Microsoft Bellevue, WA
Research Intern *May 2016 – Aug 2016*

- Deep learning on Conversational Understanding (Mentor: Gokhan Tur, Asli Celikyilmaz)

NEC Laboratories Princeton, NJ
Research Associate *May 2015 – Aug 2015*

- Constituency parsing with deep & recursive neural networks (Mentor: Bing Bai)

Nuance Sunnyvale, CA
Research Intern *Jun 2014 – Aug 2014*

- Named entity recognition with neural networks for spoken dialog systems (Mentor: Adwait Ratnaparkhi)

Naver Seongnam, Korea
Manager *Sep 2008 – Jul 2010*

- Web search modeling for Naver Japan
- Developed integrated search services for Naver (C++, PHP, MySQL)

Zio Interactive Seoul, Korea
Software Engineer (Alternative military service) *Oct 2002 – Mar 2004*

- Developed game servers and P2P network frameworks for three online mobile games (C++)
- Developed three mobile game clients (Brew, JAVA ME)

IBK System Seoul, Korea
Software Enginer (Alternative military service) *Feb 2001 – Oct 2002*

- Developed a middleware, a TP-monitor, and a file transfer system for financial data transfer through dedicated access lines (C++, Delphi)
- Developed three financial risk management systems and a knowledge management system (C, Delphi, JAVA)

Education

The Ohio State University Columbus, OH
Ph.D., Department of Computer Science and Engineering *Aug. 2017*

- Dissertation: Linguistic Knowledge Transfer for Enriching Vector Representations
- Advisor: Eric Fosler-Lussier

Seoul National University Seoul, Korea
M.S., School of Computer Science and Engineering *Aug. 2008*

- Thesis: Evolutionary optimization of a collection of variable-length subpatterns for pattern classification
- Advisor: Byoung-Tak Zhang

Sogang University Seoul, Korea
B.E., Department of Computer Science *Aug. 2005*

- Thesis: Real-time news categorization system
- Advisor: Jihoon Yang

Selected Publications

Zae Myung Kim, Anand Ramachandran, Farideh Tavazoee, **Joo-Kyung Kim**, Oleg Rokhlenko, and Dongyeop Kang. *Align to Structure: Aligning Large Language Models with Structural Information*. 2025. arXiv: 2504.03622.

Chanwoo Park, Seungju Han, Xingzhi Guo, Asuman Ozdaglar, Kaiqing Zhang, and **Joo-Kyung Kim**. "MAPoRL: Multi-Agent Post-Co-Training for Collaborative Large Language Models with Reinforcement Learning". In: *ACL*. 2025.

Shirley Anugrah Hayati, Taehee Jung, Tristan Bodding-Long, Sudipta Kar, Abhinav Sethy, **Joo-Kyung Kim**, and Dongyeop Kang. "Chain-of-Instructions: Compositional Instruction Tuning on Large Language Models". In: *AAAI*. 2025.

Jinyoung Park, Minseok Joo, **Joo-Kyung Kim**, and Hyunwoo J. Kim. "Generative Subgraph Retrieval for Knowledge Graph–Grounded Dialog Generation". In: *EMNLP*. 2024.

Jihyung Kil, Farideh Tavazoee, Dongyeop Kang, and **Joo-Kyung Kim**. "II-MMR: Identifying and Improving Multi-modal Multi-hop Reasoning in Visual Question Answering". In: *ACL Findings*. 2024.

Jinyoung Park, Ameen Patel, Omar Zia Khan, Hyunwoo J. Kim, and **Joo-Kyung Kim**. *Graph Elicitation for Guiding Multi-Step Reasoning in Large Language Models*. 2023. arXiv: 2311.09762.

Taehee Jung, **Joo-Kyung Kim**, Sungjin Lee, and Dongyeop Kang. "Cluster-Guided Label Generation in Extreme Multi-Label Classification". In: *EACL*. 2023.

Joo-Kyung Kim, Guoyin Wang, Sungjin Lee, and Young-Bum Kim. "Deciding Whether to Ask Clarifying Questions in Large-Scale Spoken Language Understanding". In: *ASRU*. 2021.

Joo-Kyung Kim and Young-Bum Kim. "Pseudo Labeling and Negative Feedback Learning for Large-scale Multi-label Domain Classification". In: *ICASSP*. 2020.

Joo-Kyung Kim and Young-Bum Kim. "Supervised Domain Enablement Attention for Personalized Domain Classification". In: *EMNLP*. 2018.

Joo-Kyung Kim and Young-Bum Kim. "Joint Learning of Domain Classification and Out-of-Domain Detection with Dynamic Class Weighting for Satisficing False Acceptance Rates". In: *Interspeech*. 2018.

Young-Bum Kim, Dongchan Kim, **Joo-Kyung Kim**, and Ruhi Sarikaya. "A Scalable Neural Shortlisting-Reranking Approach for Large-Scale Domain Classification in Natural Language Understanding". In: *NAACL*. 2018.

Joo-Kyung Kim, Young-Bum Kim, Ruhi Sarikaya, and Eric Fosler-Lussier. "Cross-Lingual Transfer Learning for POS Tagging without Cross-Lingual Resources". In: *EMNLP*. 2017.

Joo-Kyung Kim, Gokhan Tur, Asli Celikyilmaz, Bin Cao, and Ye-Yi Wang. "Intent Detection using Semantically Enriched Word Embeddings". In: *SLT*. 2016.

Joo-Kyung Kim, Marie-Catherine de Marneffe, and Eric Fosler-Lussier. "Adjusting Word Embeddings with Semantic Intensity Orders". In: *ACL Workshop on Representation Learning for NLP (RepL4NLP)*. 2016.

Joo-Kyung Kim, Marie-Catherine de Marneffe, and Eric Fosler-Lussier. "Neural word embeddings with multiplicative feature interactions for tensor-based compositions". In: *NAACL Workshop on Vector Space Modeling for NP (VSM)*. 2015.

Joo-Kyung Kim and Marie-Catherine de Marneffe. "Deriving adjectival scales from continuous space word representations". In: *EMNLP*. 2013.

Joo-Kyung Kim and Byoung-Tak Zhang. "Evolving hypernetworks for pattern classification". In: *IEEE Congress on Evolutionary Computation (CEC)*. 2007.

Joo-Kyung Kim, Byung Soo Kim, Oh Kyuk Kwon, Seung Kon Hwang, Jung-Woo Ha, Chan-Hoon Park, Duck Jin Chung, Chong Ho Lee, Jaehyun Park, and Byoung-Tak Zhang. "A DNA computing-inspired silicon chip for pattern recognition". In: *International Meeting on DNA Computing (DNA)*. 2007.

Byoung-Tak Zhang and **Joo-Kyung Kim**. "DNA hypernetworks for information storage and retrieval". In: *International Meeting on DNA Computing (DNA)*. 2006.

Academic Services

Senior Area Chair

- ARR May 2025

Area Chair

- ARR Dec 2023 - Feb 2025

Reviewer

- ACL 2019-2023, EMNLP 2019-2023, NAACL 2019-2022, EACL 2021-2023, AACL 2023, AAAI 2020-2022, IEEE TASLP 2020-2021

Skills

Programming Languages

- Python, JAVA, C/C++, Lua, Objective C, Delphi, PHP

Machine Learning Frameworks

- PyTorch, Torch, DyNet, Matlab