

# Woojeong Jin

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## RESEARCH INTERESTS

My research interest lies at the intersection of **multimodal learning**, **natural language processing**, and **machine learning**. I am particularly passionate about advancing *reasoning* and *generalization* abilities in *low-resource* settings across different modalities. By leveraging the power of these fields, I aim to develop innovative approaches that enhance the understanding and processing of multimodal data, ultimately contributing to the development of intelligent systems capable of reasoning and generalizing effectively in resource-constrained environments.

- **Research Keywords:** Multimodal Learning, Natural Language Processing, Machine Learning, Large Language Models, Vision-language Models, Few-shot Learning, Prompt Learning, Transfer Learning.

## EDUCATION

**University of Southern California**, Los Angeles, California Aug. 2018 – Present

- Ph.D. in Computer Science
- **Advisor:** [Xiang Ren](#)

**Seoul National University**, Seoul, Korea Feb. 2017

- B.S. in Electrical and Computer Engineering

## RESEARCH & WORK EXPERIENCE

**Research Assistant at University of Southern California**, Los Angeles, California Aug. 2018 – Present

- **Advisor:** [Xiang Ren](#)
- Few-shot Learning for Multimodal Understanding [C10, P2]
- Enhancing Language Models by Incorporating Visual Knowledge [C9, P1]
- Temporal and Forecasting Abilities of Language Models [C7, C12]
- Improving Knowledge Graph Reasoning
  - recommendation systems [C3], knowledge graph reasoning [C4], and temporal knowledge graph reasoning [C5, C6, W1, C12].

**Research Intern at Microsoft Research (MSR)**, Redmond, Washington Jan. 2022 – Apr. 2022

- **Mentors:** [Subho Mukherjee](#), [Yu Cheng](#), [Yelong Shen](#), and [Ahmed H. Awadallah](#)
- **Project:** Grounded Vision-language Pre-training via Aligning Text and Image Regions
  - Developed techniques for generalization to unseen tasks of few-shot VL learners.
- **Publication:** One preprint [P1] at arXiv.

**Research Intern at Microsoft Azure AI**, Redmond, Washington June 2021 – Jan. 2022

- **Mentors:** [Yu Cheng](#), [Yelong Shen](#), and [Weizhu Chen](#)
- **Project:** Low-resource Prompt-based Learning for Vision-Language Models
  - Proposed zero-/few-shot vision-language learning of smaller models using simple prompts.
- **Publication:** One paper [C10] published at *ACL 2022*.

**Research Intern at Meta AI**, Menlo Park, California May. 2020 – Aug. 2020

- **Mentors:** [Hamed Firooz](#) and [Maziar Sanjabi](#)
- **Project:** Knowledge Distillation for Multimodal Understanding
  - Investigated the importance and effects of each modality in knowledge distillation through saliency-aware techniques for multimodal understanding.
- **Publication:** One paper [C8] published at *EMNLP 2021 Findings* and One workshop paper [W2] published at *MAI@NAACL 2021*.

**Research Assistant at Seoul National University**, Seoul, Korea Jan. 2016 – Apr. 2018

- **Advisor:** [U Kang](#)
- **Project:** Improving Random Walk with Restart (personalized PageRank)
  - Worked on random walk with restart techniques applied to signed networks [C1, J1], dynamic networks [C2], and edge-labeled graphs [J3]. Proposed supervised random walk with restart [J2].
- **Publication:** One paper [C1] at *ICDM 2016*, one paper [C2] at *TheWebConf 2018*, and three journal papers [J1, J2, J3].

## PUBLICATIONS

## PREPRINTS

- [P1] [Woojeong Jin](#), Tejas Srinivasan, Jesse Thomason, and Xiang Ren. WinoViz: Probing Visual Properties of Objects Under Different States. *arXiv preprint*.
- [P2] [Woojeong Jin](#), Subhabrata Mukherjee, Yu Cheng, Yelong Shen, Weizhu Chen, Ahmed Hassan Awadallah, Damien Jose, and Xiang Ren. GRILL: Grounded Vision-language Pre-training via Aligning Text and Image Regions. *arXiv preprint*.

## REFEREED CONFERENCE PAPERS

- [C12] Dong-Ho Lee, Kian Ahrabian, [Woojeong Jin](#), Fred Morstatter, and Jay Pujara. Temporal Knowledge Graph Forecasting Without Knowledge Using In-Context Learning. *EMNLP 2023*.
- [C11] Jihyung Moon\*, Dong-Ho Lee\*, Hyundong J. Cho, [Woojeong Jin](#), Chan Young Park, Minwoo Kim, Jay Pujara and Sungjoon Park. Analyzing Norm Violations in Real-Time Live-Streaming Chat. *EMNLP 2023*.
- [C10] [Woojeong Jin](#), Yu Cheng, Yelong Shen, Weizhu Chen, and Xiang Ren. A Good Prompt Is Worth Millions of Parameters: Low-resource Prompt-based Learning for Vision-Language Models. *ACL 2022 (long)*.
- [C9] [Woojeong Jin](#)\*, Dong-Ho Lee\*, Chenguang Zhu, Jay Pujara, and Xiang Ren. Leveraging Visual Knowledge in Language Tasks: An Empirical Study on Intermediate Pre-training for Cross-Modal Knowledge Transfer. *ACL 2022 (long)*.
- [C8] [Woojeong Jin](#), Maziar Sanjabi, Shaoliang Nie, Liang Tan, Xiang Ren, and Hamed Firooz. MSD: Saliency-aware Knowledge Distillation for Multimodal Understanding. *EMNLP 2021 Findings (long)*.
- [C7] [Woojeong Jin](#), Rahul Khanna, Suji Kim, Dong-Ho Lee, Fred Morstatter, Aram Galstyan, and Xiang Ren. ForecastQA: A Question Answering Challenge for Event Forecasting with Temporal Text Data. *ACL 2021 (long)*.
- [C6] [Woojeong Jin](#), Meng Qu, Xisen Jin, and Xiang Ren. Recurrent Event Network: Autoregressive Structure Inference over Temporal Knowledge Graphs. *EMNLP 2020 (long)*.
- [C5] Sankalp Garg\*, Navodita Sharma\*, [Woojeong Jin](#), and Xiang Ren. Temporal Attribute Prediction via Joint Modeling of Multi-Relational Structure Evolution. *IJCAI 2020*.
- [C4] Cong Fu, Tong Chen, Meng Qu, [Woojeong Jin](#), and Xiang Ren. Collaborative Policy Learning for Open Knowledge Graph Reasoning. *EMNLP 2019 (long)*.
- [C3] Weizhi Ma, Min Zhang, Yue Cao, [Woojeong Jin](#), Chenyang Wang, Yiqun Liu, Shaoping Ma, and Xiang Ren. Jointly Learning Explainable Rules for Recommendation with Knowledge Graph. *TheWebConf 2019*.
- [C2] Minji Yoon, [Woojeong Jin](#), and U Kang. Fast and Accurate Random Walk with Restart on Dynamic Graphs with Guarantees. *TheWebConf 2018*.
- [C1] Jinhong Jung, [Woojeong Jin](#), Lee Sael, and U Kang. Personalized Ranking in Signed Networks using Signed Random Walk with Restart. *ICDM 2016*.

## REFEREED JOURNAL PAPERS

- [J4] Daniel M Benjamin, Fred Morstatter, Ali E Abbas, Andres Abeliuk, Pavel Atanasov, Stephen Bennett, Andreas Beger, Saurabh Birari, David V Budesu, Michele Catasta, Emilio Ferrara, Lucas Haravitch, Mark Himmelstein, KSM Tozammel Hossain, Yuzhong Huang, [Woojeong Jin](#), Regina Joseph, Jure Leskovec, Akira Matsui, Mehrnoosh Mirtaheri, Xiang Ren, Gleb Satyukov, Rajiv Sethi, Amandeep Singh, Rok Sasic, Mark Steyvers, Pedro A Szekely, Michael D Ward, Aram Galstyan. Hybrid forecasting of geopolitical events. *AI Magazine*, 2023.
- [J3] Jinhong Jung, [Woojeong Jin](#), Ha-myung Park, and U Kang. Accurate Relational Reasoning in Edge-labeled Graphs by Multi-labeled Random Walk with Restart. *World Wide Web Journal*, 2020.
- [J2] [Woojeong Jin](#), Jinhong Jung, and U Kang. Supervised and Extended Restart in Random Walks for Ranking and Link Prediction in Networks. *PLOS ONE*, 2019.
- [J1] Jinhong Jung, [Woojeong Jin](#), and U Kang. Random Walk Based Ranking in Signed Social Networks: Model and Algorithms. *KAIS*, 2019.

## WORKSHOPS

- [W4] Jihyung Moon\*, Dong-Ho Lee\*, Hyundong J. Cho, Woojeong Jin, Chan Young Park, Minwoo Kim, Jay Pujara and Sungjoon Park. Analyzing Norm Violations in Real-Time Live-Streaming Chat. *NLP+CSS@EMNLP 2022*.
- [W3] Woojeong Jin, Yu Cheng, Yelong Shen, Weizhu Chen, and Xiang Ren. A Good Prompt Is Worth Millions of Parameters: Low-resource Prompt-based Learning for Vision-Language Models. *MML@ACL 2022*.
- [W2] Woojeong Jin, Maziar Sanjabi, Shaoliang Nie, Liang Tan, Xiang Ren, and Hamed Firooz. Modality-specific Distillation. *MAI@NAACL 2021*.
- [W1] Woojeong Jin, Changlin Zhang, and Xiang Ren. Recurrent Event Network for Reasoning over Temporal Knowledge Graphs. *ICLR-RLGM 2019*.

## PATENTS

## KOREA

- **Method and Apparatus for Providing Supervised and Extended Restart in Random Walks for Ranking and Link Prediction in Networks** with Jinhong Jung and U Kang. Application number: 10-2017-0131543 (filed on Nov. 10, 2017). Registration number: 10-2048442 (registered on Nov. 19, 2019).
- **Method for Personalized Ranking in Signed Networks, Recording Medium And Device for Performing the Method.** with Jinhong Jung and U Kang. Application number: 10-2017-0005485 (filed on Jan. 12, 2017). Registration number: 10-1866866 (registered on June 05, 2018).

## AWARDS & HONORS

- Kwanjeong Educational Foundation Scholarship Aug. 2018 – 2023
- USC Annenberg Graduate Fellowship Aug. 2018 – 2023
- Merit-based Scholarship, SNU 2014, 2015, 2016
- National Scholarship for Science and Engineering, Korea Student Aid Foundation 2010

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