

Junmo Kang

Ph.D. Student at Georgia Tech

✉ junmo.kang@gatech.edu | 🌐 jm-kang.github.io

RESEARCH INTERESTS

NATURAL LANGUAGE PROCESSING (NLP)

EXPERT LARGE LANGUAGE MODELS, INSTRUCTION-DRIVEN LEARNING, RETRIEVAL-AUGMENTATION, EFFICIENT NLP, ROBUSTNESS

My research focuses on developing NLP models that are **efficient** and **robust**, with the goal of ensuring their practicality in real-world scenarios. In particular, I am interested in *i) how to induce NLP systems to be more scalable and cheaper in terms of data, compute, or parameters*, and *ii) how to design expert LLMs that are robust to unseen cases in the wild*.

EXPERIENCE

MIT-IBM WATSON AI LAB

Cambridge, MA, USA

Research Intern (Mentor: Leonid Karlinsky, Rogerio Feris)

May. 2024 - Aug. 2024

IBM Partner (Collaboration between IBM-Georgia Tech)

Sep. 2023 - Present

- Compositional Large Language Model of multiple self-specialized experts [1].
- Self-specialization of vision-language models.

MIT-IBM WATSON AI LAB

Cambridge, MA, USA

Research Intern (Mentor: Leonid Karlinsky, Rogerio Feris)

May. 2023 - Aug. 2023

- Self-alignment of large language models for specialization [3].

GEORGIA TECH

Atlanta, GA, USA

Graduate Research Assistant (Advisor: Alan Ritter, Wei Xu)

Aug. 2022 - Present

- Instructing LLMs with schema for efficient and robust table extraction [2].
- Cost-efficiency of annotation and distillation [5].

KAIST IR&NLP LAB

Daejeon, Republic of Korea

Research Associate (Host: Sung-Hyon Myaeng)

Mar. 2021 - Jul. 2022

- Instruction-based learning for robust retrieval-augmented LLMs [4].
- Efficient methods for multi-hop QA [6].

KAIST

Daejeon, Republic of Korea

Graduate Research Assistant (Advisor: Sung-Hyon Myaeng)

Feb. 2019 - Feb. 2021

- Question generation and unsupervised question answering for data-efficiency [12,13,14].
- Sample-efficient and robust representations for numerical reasoning [10,7].
- Generative model that leverages inter-dependency of tags while alleviating the order sensitivity [9].
- Sparse representations for passage retrieval that can take advantage of an efficient inverted index and symbolic IR techniques [8].

PUBLICATIONS

* indicates equal contribution

[1] Self-MoE: Towards Compositional Large Language Models with Self-Specialized Experts

Preprint

Junmo Kang, Leonid Karlinsky, Hongyin Luo, Zhen Wang, Jacob Hansen, James Glass,
David Cox, Rameswar Panda, Rogerio Feris, Alan Ritter [pdf]

- [2] **Schema-Driven Information Extraction from Heterogeneous Tables** Preprint
Fan Bai, **Junmo Kang**, Gabriel Stanovsky, Dayne Freitag, Mark Dredze, Alan Ritter [pdf]
- [3] **Self-Specialization: Uncovering Latent Expertise within Large Language Models** Findings of ACL 2024
Junmo Kang, Hongyin Luo, Yada Zhu, Jacob Hansen, James Glass, David Cox, Alan Ritter, Rogerio Feris, Leonid Karlinsky [pdf]
- [4] **Why So Gullible? Enhancing the Robustness of Retrieval-Augmented Models against Counterfactual Noise** Findings of NAACL 2024
Giwon Hong*, Jeonghwan Kim*, **Junmo Kang***, Sung-Hyon Myaeng, Joyce Jiyoung Whang [pdf]
- [5] **Distill or Annotate? Cost-Efficient Fine-Tuning of Compact Models** ACL 2023
Junmo Kang, Wei Xu, Alan Ritter [pdf]
- [6] **Graph-Induced Transformers for Efficient Multi-Hop Question Answering** EMNLP 2022
Giwon Hong, Jeonghwan Kim, **Junmo Kang**, Sung-Hyon Myaeng [pdf]
- [7] **Exploiting Numerical-Contextual Knowledge to Improve Numerical Reasoning in Question Answering** Findings of NAACL 2022
Jeonghwan Kim, **Junmo Kang**, Giwon Hong, Kyung-min Kim, Sung-Hyon Myaeng [pdf]
- [8] **Ultra-High Dimensional Sparse Representations with Binarization for Efficient Text Retrieval** EMNLP 2021
Kyoung-Rok Jang, **Junmo Kang**, Giwon Hong, Sung-Hyon Myaeng, Joohee Park, Taewon Yoon, Heecheol Seo [pdf]
- [9] **Leveraging Order-Free Tag Relations for Context-Aware Recommendation** EMNLP 2021
Junmo Kang, Jeonghwan Kim, Suwon Shin, Sung-Hyon Myaeng [pdf]
- [10] **Have You Seen That Number? Investigating Extrapolation in Question Answering Models** EMNLP 2021
Jeonghwan Kim, Giwon Hong, Kyung-min Kim, **Junmo Kang**, Sung-Hyon Myaeng [pdf]
- [11] **Can You Distinguish Truthful from Fake Reviews? User Analysis and Assistance Tool for Fake Review Detection** HCI+NLP@EACL 2021
Jeonghwan Kim*, **Junmo Kang***, Suwon Shin*, Sung-Hyon Myaeng [pdf]
- [12] **Regularization of Distinct Strategies for Unsupervised Question Generation** Findings of EMNLP 2020
Junmo Kang*, Giwon Hong*, Haritz Puerto San Roman*, Sung-Hyon Myaeng [pdf]
- [13] **Handling Anomalies of Synthetic Questions in Unsupervised Question Answering** COLING 2020
Giwon Hong*, **Junmo Kang***, Doyeon Lim*, Sung-Hyon Myaeng [pdf]
- [14] **Let Me Know What to Ask: Interrogative-Word-Aware Question Generation** MRQA@EMNLP 2019
Junmo Kang*, Haritz Puerto San Roman*, Sung-Hyon Myaeng [pdf]

EDUCATION

GEORGIA INSTITUTE OF TECHNOLOGY

PH.D. IN COMPUTER SCIENCE

Atlanta, GA, USA

Aug. 2022 - May. 2027 (Expected)

- Research Assistant at NLP Lab (Advisor: Alan Ritter, Wei Xu)
- GPA: 4.0 / 4.0

KOREA ADVANCED INSTITUTE OF SCIENCE AND TECHNOLOGY (KAIST)

M.S. IN COMPUTER SCIENCE

Daejeon, Republic of Korea

Feb. 2021

- Research Assistant at IR&NLP Lab (Advisor: Sung-Hyon Myaeng)
- Thesis committee: Sung-Hyong Myaeng, Hojin Choi, Alice Oh
- GPA: 4.03 / 4.30

CHUNGNAM NATIONAL UNIVERSITY

B.E. IN COMPUTER SCIENCE & ENGINEERING

Daejeon, Republic of Korea

Feb. 2019

- Summa Cum Laude
- GPA: 4.30 / 4.50 (Rank: 1/125 in CSE, Major GPA: 4.41)

HONORS & AWARDS

Microsoft Accelerate Foundation Models Research [link]	2023
Graduated with Highest Honor in CSE, Chungnam National University	2019
Grand Prize, Business ICT Competition	2018
Excellence Award, Startup Competition	2018
NAVER AI Hackathon Finalist	2018
Grand Prize, Daejeon Startup School	2017
Best Excellence Award, Startup Picnic	2016
Microsoft Imagine Cup Korea Finalist	2016

TEACHING

Teaching Assistant, CS 4650 - Natural Language Processing, Georgia Tech	Fall 2024
Teaching Assistant, CS 8803 - Large Language Models, Georgia Tech	Spring 2024
Invited Speaker, CS 4650 - Natural Language Processing, Georgia Tech	Oct. 2023