Jeonghwan **Kim**

Research Associate at KAIST IR&NLP Lab

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RESEARCH INTERESTS

Natural Language Processing

Question Answering, Model Robustness, Neuro-symbolic Reasoning, Semi-Parametric Language Models

EDUCATION

Korea Advanced Institute of Science and Technology (KAIST)   Daejeon, Korea

M.S. in School of Computing   Feb. 2020 - Feb. 2022

- Research Associate at IR&NLP Lab (Advisor: Sung-Hyon Myaeng)
- Thesis committee: Sung-Hyong Myaeng, Alice Oh, Junho Lim
- GPA: 4.12 / 4.30

Handong Global University   Pohang, Korea

B.S. in Computer Science & Electrical Engineering   Mar. 2014 - Feb. 2020

- Magna Cum Laude
- GPA: 4.11 / 4.50
- Research Intern at MILab (Advisor: Heeyoul Henry Choi)

PUBLICATIONS

* indicates equal contribution.

[1] **Graph-Induced Transformers for Efficient Multi-Hop Question Answering**   EMNLP, 2022
Giwon Hong, **Jeonghwan Kim**, Junmo Kang, Sung-Hyon Myaeng [pdf]

[2] **Exploiting Numerical-Contextual Knowledge to Improve Numerical Reasoning in Question Answering**
Findings of NAACL, 2022
Jeonghwan Kim, Junmo Kang, Kyung-min Kim, Giwon Hong, Sung-Hyon Myaeng [pdf]

[3] **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]

[4] **Leveraging Order-Free Tag Relations for Context-Aware Recommendation**   EMNLP, 2021
Junmo Kang, **Jeonghwan Kim**, Suwon Shin, Sung-Hyon Myaeng [pdf]

[5] **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]

[6] **Maximizing Efficiency of Language Model Pre-training for Learning Representation**   Arxiv, 2020
Junmo Kang*, Suwon Shin*, **Jeonghwan Kim***, Jaeyoung Jo*, Sung-Hyon Myaeng [pdf]

[7] **Object Classification on raw radar data using convolutional neural networks**   IEEE SAS, 2019
Heejae Han, **Jeonghwan Kim**, Junyoung Park, YuJin Lee, Hyunwoo Jo, Yonghyeon Park, Eric T Matson, Seongha Park [pdf]

[8] **Towards the development and realization of an undetectable stealth UAV**   IEEE IRC, 2019
Jiyeon Oh, Daeun Choe, Chanhui Yun, **Jeonghwan Kim**, Michael Hopmeier [pdf]

EXPERIENCES

KAIST IR&NLP Lab   Mar. 2022 - Present

Research Associate
- Working on Question Answering using Graphs and Semi-parametric Language Modeling.

Republic of Korea Marine Corps   Mar. 2015 - Dec. 2016

Sergeant (Honorably Discharged)
- Served as a rifleman for the 31st Battalion.
- Served as an interpreter for the ROK-US Combined Marine Command.

TEACHINGS

Samsung SDS   Aug. 2020 - June. 2021

Teaching Assistant
- Taught the Senior DS course at Samsung SDS about SVM, Decision Trees and Advanced NLP models.

SKKU Global Business School   June. 2021 - Jul. 2021

Teaching Assistant
- Served as a TA for the Text Mining course at Sungkyunkwan University (SKKU) about Topic Modeling, Industry-level NLP tools and Advanced NLP models.

KAIST   Mar. 2021 - Dec. 2021

Teaching Assistant
- Served as a TA for the Text Mining course at KAIST about probabilistic approaches in TM (e.g., HMM, CRF) and advanced NLP models.

Handong Global University   Mar. 2019 - Jun. 2019

Teaching Assistant
- Served as a TA for the Data Structures course at Handong Global University (HGU).

PROJECTS

Development of AI Technology to Support Expert Decision-making that can Explain the Reasons/Grounds for Judgement Results Based on Expert Knowledge   Apr. 2022 - Present

Funded by Korean Government (Ministry of Science and ICT)
- Developing an efficient open-domain question answering system based on neural sparse representations.

Development of Context/Number Embedding Based Numerical Reasoning   Jul. 2021 - Dec. 2021

Funded by Korean Government (Ministry of Science and ICT)
- Led the development of a numerical reasoning model for question answering (QA) that leverages the non-parametric knowledge of the given context by reducing the over-reliance on parametric knowledge[2].

ExoBrain   Apr. 2020 - Present

Funded by Korean Government (Ministry of Science and ICT)
- Developed a graph-based QA model that leverages the connectivity information of graphs in performing multi-hop reasoning over multiple documents.
- Presented sample-efficient and robust number representations for question answering [3].

Machine Learning for Context Association and Smart Interaction Suggestion   Apr. 2020 - Mar. 2021

Funded by Korean Government (Ministry of Science and ICT)
- Developed a contextualized tag recommendation considering multi-modal contexts (image, location, time, text) in multiple domains (e.g., Instagram, StackOverflow)
- Proposed a novel generation model that takes into account the inter-dependency of tags while alleviating the order sensitivity [4].

Development of AI-based National Online Petition System for Citizen Deliberation   Apr. 2021 - Dec. 2021
Funded by KAIST
- Proposed a pre-trained language model-based online petition system that promotes deliberative writing among the citizens.

Purdue University - Software Square Fall 2018 Capstone (Advisor: Eric Matson)   Aug. 2018 - Dec. 2018
Funded by Korean Government (Ministry of Science and ICT)
- Collected raw radar data on object detection and proposed a CNN-based model for the classification of objects based on raw radar data input [7].
- Devised a stealth UAV (Unmanned Aerial Vehicle) with reduced propeller noise via active noise cancellation module and the capability to navigate autonomously via path planning [8].

HONORS & AWARDS & GRANTS

Graduated with Honors in CSE, Handong Global University	2020
Finalist (Top 3), COMEUP2020 AI CHAMPIONSHIP (K-Startup)	2020
Finalist (Top 15), NAVER AI Hackathon (NAVER AI RUSH)	2018
Grand Prize, Capstone Graduation Project Festival (Handong Global University, CSEE)	2017
National Science and Technology Scholarship, Korea Student Aid Foundation (KOSAF)	2017

LANGUAGE PROFICIENCY

English (Native)
- TOEFL : 116 (Out of 120).

Korean (Native)

Chinese (Limited Proficiency)

SKILLS

Programming Languages
- Python, Pytorch, C/C++, Java, Dart

Frameworks
- Pytorch, Tensorflow, Theano(Deprecated), Docker, Huggingface, Visualization tools (seaborn, matplotlib), DGL (Deep Graph Library), Natural Language Processing tools (SpaCy, NLTK), OpenCV, Flutter, Firebase