

Jeonghwan Kim

Research Associate at IR & NLP Lab | School of Computing | KAIST

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RESEARCH INTERESTS

Natural Language Processing, Machine Learning

Question Answering, Model Robustness, Neuro-symbolic Reasoning, Semi-parametric Language Models, Efficiency, Model Interpretability

EDUCATION

Feb 2022
Daejeon, Korea

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

M.S. in School of Computing

- Research Associate at IR & NLP Lab | Advisor: Sung-Hyon Myaeng
- Thesis committee: : Sung-Hyon Myaeng, Alice Oh, Junho Lim
- GPA: 4.13/4.30

Feb 2020
Pohang, Korea

Handong Global University, Pohang, Korea

B.S. in Computer Science & Electrical Engineering

- Research Intern at MILab | Advisor: Heeyoul Henry Choi
- Total GPA : 4.11/4.5 | Major GPA : 4.21/4.5 | Magna Cum Laude

PUBLICATIONS

* indicates equal contribution

- [1] **Graph-Induced Transformers for Efficient Multi-Hop Question Answering**
Giwon Hong, **Jeonghwan Kim**, Junmo Kang, Sung-Hyon Myaeng
EMNLP, 2022
- [2] **Exploiting Numerical-Contextual Knowledge to Improve Numerical Reasoning in Question Answering**
Jeonghwan Kim, Junmo Kang, Kyung-min Kim, Giwon Hong, Sung-Hyon Myaeng [PDF]
Findings of NAACL, 2022
- [3] **Have You Seen That Number? Investigating Extrapolation in Question Answering Models**
Jeonghwan Kim, Giwon Hong, Kyung-min Kim, Junmo Kang, Sung-Hyon Myaeng [PDF]
EMNLP, 2021

- [4] **Leveraging Order-Free Tag Relations for Context-Aware Recommendation**
Junmo Kang, **Jeonghwan Kim**, Suwon Shin, Sung-Hyon Myaeng [PDF]
EMNLP, 2021
- [5] **Can You Distinguish Truthful from Fake Reviews? User Analysis and Assistance Tool for Fake Review Detection**
Jeonghwan Kim*, Junmo Kang*, Suwon Shin*, Sung-Hyon Myaeng [PDF]
HCI+NLP@EACL, 2021
- [6] **Maximizing Efficiency of Language Model Pre-training for Learning Representation**
Junmo Kang*, Suwon Shin*, **Jeonghwan Kim***, Jaeyoung Jo*, Sung-Hyon Myaeng [PDF]
Arxiv, 2020
- [7] **Object Classification on raw radar data using convolutional neural networks**
Heejae Han, **Jeonghwan Kim**, Junyoung Park, YuJin Lee, Hyunwoo Jo, Yonghyeon Park, Eric T Matson, Seongha Park [PDF]
IEEE SAS, 2019
- [8] **Towards the development and realization of an undetectable stealth UAV**
Jiyeon Oh, Daeun Choe, Chanhui Yun, **Jeonghwan Kim**, Michael Hopmeier [PDF]
IEEE IRC, 2019

EXPERIENCES

- Mar 2022 - Present
Daejeon, Korea
- KAIST IR & NLP Lab**, Korea Advanced Institute of Science & Technology (KAIST)
- **Research Associate**
 - Working on Question Answering using Graphs and Semi-parametric Language Modeling
- Mar 2015 - Dec 2016
Pohang, Korea
- Republic of Korea Marine Corps**
- **Sergeant (Honorably Discharged)**
 - Served as a rifleman for the 31st Battalion
 - Served as an interpreter for the ROK-US Combined Marine Command

PROJECTS

- Apr 2022 - Present
- Development of AI Technology to Support Expert Decision-making that can Explain the Reasons/Grounds for Judgement Results Based on Expert Knowledge**
- Funded by Korean Government (Ministry of Science and ICT)
 - Developing an efficient open-domain question answering system based on neural sparse representations

Jul 2021 - Dec 2021	Development of Context/Number Embedding Based Numerical Reasoning <ul style="list-style-type: none"> ▪ Funded by Korean Government (Ministry of Science and ICT) <ul style="list-style-type: none"> • Led the development of a numerical reasoning model for question answering (QA) that leverages the nonparametric knowledge of the given context by reducing the over-reliance on parametric knowledge
Apr 2020 - Present	ExoBrain: Development of Knowledge Evolutionary WiseQA Platform Technology for Human Knowledge Augmented Services <ul style="list-style-type: none"> ▪ Funded by Korean Government (Ministry of Science and ICT) <ul style="list-style-type: none"> • 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
Apr 2020 - Mar 2021	Machine Learning for Context Association and Smart Interaction Suggestion <ul style="list-style-type: none"> ▪ Funded by Korean Government (Ministry of Science and ICT) <ul style="list-style-type: none"> • 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
Apr 2021 - Dec 2021	Development of AI-based National Online Petition System for Citizen Deliberation <ul style="list-style-type: none"> ▪ Funded by Exploratory Research Program, KAIST <ul style="list-style-type: none"> • Proposed a pre-trained language model-based online petition system that promotes deliberative writing among the citizens
Aug 2018 - Dec 2018	Purdue University - Software Square Fall 2018 Capstone (Advisor: Eric Matson) <ul style="list-style-type: none"> ▪ Funded by Korean Government (Ministry of Science and ICT) <ul style="list-style-type: none"> • Collected raw radar data on object detection and proposed a CNN-based model for the classification of objects based on raw radar data input • Devised a stealth UAV (Unmanned Aerial Vehicle) with reduced propeller noise via active noise cancellation and the capability to navigate autonomously via path planning

AWARDS & HONORS

2020	Graduated with Honors in CSE, Magna Cum Laude (Handong Global University)
2020	Finalist (Top 3), COMEUP2020 AI CHAMPIONSHIP (K-Startup)
2019	Grand Prize, Capstone Graduation Project Festival (Handong Global University, CSEE)
2018	Certificate of Merit, IITP Capstone 9 Program (Purdue University)
2018	Finalist (Top 15), NAVER AI Hackathon (NAVER AI RUSH)
2017	National Science and Technology Scholarship, Korea Student Aid Foundation (KOSAF)

TEACHINGS

Aug 2020 - Jun 2021

Samsung SDS

Teaching Assistant

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

Jun. 2021 - Jul 2021

SKKU Global Business School

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.

Mar 2021 - Dec 2021

Korea Advanced Institute of Science and Technology

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

Mar 2019 - Jun 2019

Handong Global University

Teaching Assistant

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

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