

# Jeonghwan Kim

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

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## RESEARCH INTERESTS

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**Natural Language Processing, Machine Learning**

Question Answering, Knowledge + LLM, Semi-parametric Language Models, Model Interpretability and Robustness

## EDUCATION

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Aug 2023 ~  
Daejeon, Korea

**University of Illinois, Urbana-Champaign (UIUC)**, Daejeon, Korea

Ph.D. Student. in Computer Science

- Advisor: Heng Ji

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

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\* indicates equal contribution

- [1] **FinePrompt: Unveiling the Role of Finetuned Inductive Bias on Compositional Reasoning in GPT-4**  
**Jeonghwan Kim**, Giwon Hong, Sung-Hyon Myaeng, Joyce Jiyoung Whang  
*Findings of EMNLP, 2023*
- [2] **Graph-Induced Transformers for Efficient Multi-Hop Question Answering**  
Giwon Hong, **Jeonghwan Kim**, Junmo Kang, Sung-Hyon Myaeng  
*EMNLP, 2022*

- [3] **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*
- [4] **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*
- [5] **Leveraging Order-Free Tag Relations for Context-Aware Recommendation**  
Junmo Kang, **Jeonghwan Kim**, Suwon Shin, Sung-Hyon Myaeng [PDF]  
*EMNLP, 2021*
- [6] **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*
- [7] **Maximizing Efficiency of Language Model Pre-training for Learning Representation**  
Junmo Kang\*, Suwon Shin\*, **Jeonghwan Kim\***, Jaeyoung Jo\*, Sung-Hyon Myaeng [PDF]  
*Arxiv, 2020*
- [8] **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*
- [9] **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

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Aug 2023 - Present  
Daejeon, Korea

**BLENDER Lab**, University of Illinois, Urbana-Champaign (UIUC)

▪ **Research Assistant (RA)**

• Working on Vision-Language Models and Reasoning using Large Language Models (LLM) and external knowledge source

Mar 2022 - Jul 2023  
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

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- 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**
- Funded by Korean Government (Ministry of Science and ICT)
    - 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**
- 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
- Apr 2020 - Mar 2021
- Machine Learning for Context Association and Smart Interaction Suggestion**
- 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
- Apr 2021 - Dec 2021
- Development of AI-based National Online Petition System for Citizen Deliberation**
- Funded by Exploratory Research Program, KAIST
    - 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)**

- 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
  - 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**

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- 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**

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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

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**English** (Native)

- TOEFL : 116 (Out of 120)

**Korean** (Native)

**Chinese** (Limited Proficiency)

## SKILLS

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**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