# Jeonghwan **Kim**

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## RESEARCH INTERESTS

**Natural Language Processing**

Question Answering, 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] **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]

[2] **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]

[3] **Leveraging Order-Free Tag Relations for Context-Aware Recommendation** EMNLP, 2021

Junmo Kang, **Jeonghwan Kim**, Suwon Shin, Sung-Hyon Myaeng [pdf]

[4] **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]

[5] **Maximizing Efficiency of Language Model Pre-training for Learning Representation** Arxiv, 2020

Junmo Kang*, Suwon Shin*, **Jeonghwan Kim***, Jaeyoung Jo*, Sung-Hyon Myaeng [pdf]

[6] **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]

[7] **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 both a rifleman and an interpreter for the 31st Battalion.

## 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)*

- Developed 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[1].

**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 [2].

**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 [3].

**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 [6].
- 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 [7].

## 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 Festival (Handong Global University, CSEE)** 2017

**National Science and Technology Scholarship, Korea Student Aid Foundation (KOSAF)** 2017