# Jeonghwan Kim

Ph.D. Student at BLENDER Lab | Computer Science | UIUC
✉ jk100@illinois.edu | 🌐 wjdghks950.github.io

## RESEARCH INTERESTS

**Natural Language Processing, Machine Learning**
Question Answering, Knowledge + Large Language Models (LLMs),
Vision-Language Models (VLMs), Model Interpretability and Robustness

## EDUCATION

Aug 2023 ~
Champaign, USA

**University of Illinois at Urbana-Champaign (UIUC)**, Champaign, USA
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

**\*** indicates equal contribution

[1] **Why So Gullible? Enhancing the Robustness of Retrieval-Augmented Models against Counterfactual Noise**
Giwon Hong*, **Jeonghwan Kim\***, Junmo Kang*, Sung-Hyon Myaeng, Joyce Jiyoung Whang
*NAACL 2024, Findings*

[2] **FinePrompt: Unveiling the Role of Finetuned Inductive Bias on Compositional Reasoning in GPT-4**
**Jeonghwan Kim\***, Giwon Hong\*, Sung-Hyon Myaeng, Joyce Jiyoung Whang
*EMNLP 2023, Findings*

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

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

[5] **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*

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

[7] **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*

[8] **Maximizing Efficiency of Language Model Pre-training for Learning Representation**
Junmo Kang\*, Suwon Shin\*, **Jeonghwan Kim\***, Jaeyoung Jo\*, Sung-Hyon Myaeng [PDF]
*Preprint, 2020*

[9] **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*

[10] **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

May 2024 - Aug 2024
Seattle, USA

**Amazon Science**
- ■ **Applied Scientist Intern**
  - • Working on Vision-Language Models and Reasoning using Large Language Models (LLM) and external knowledge sources

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

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

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