Jeonghwan Kim

Ph.D. Student at BLENDER Lab | Computer Science | UIUC
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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] **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

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