Yekyung Kim

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RESEARCH INTERESTS

Natural Language Processing and Machine Learning

My research goal is to build an **efficient** and **trustworthy** system that connects humans and machines leveraging language as a bridge. From learning machine knowledge with limited resources to expanding machine knowledge to have human-like abilities, I am interested in the reliable communication with machines and how they can learn knowledge efficiently.

EXPERIENCE

Hyundai Motors Group Feb 2021 - Present
Senior Research Engineer Seoul, Korea

- Developed multi-lingual natural language understanding (NLU) and out-of-distribution (OOD) detection systems for in-car voice assistants and customer service chatbot.
- Applied data-centric approaches such as text generation and data re-weighting for improving robustness of systems.
- Collaborated in research projects to tackle various real-world problems, e.g., low-resource, robustness, using data augmentation [1], active learning [2], and OOD detection based on data informativeness [3]

Carnegie Mellon University Apr 2019 - Aug 2019
Visiting Scientist Pittsburgh, United States

- Advisor: Prof. Jaime Carbonell (Language Technology Institute)
- Researched hybrid method combining active learning and self-training to efficiently exploit information from unlabeled data to minimize the labeling cost

LG Electronics Dec 2014 - Feb 2021
Research Engineer Seoul, Korea

- Developed multi-action intent classifier and named entity recognition (NER) [5] in Korean, English based on deep learning for Incheon Airport Robot, customer service and home appliances control chatbot.
- Designed and developed algorithm to measure uncertainty for active learning to minimize the labeling cost in classification and sequence tagging tasks [4]
- Developed algorithm for detecting anomaly battery draining on devices and recommendation system for tip contents based on user segmentation using machine learning approach (equipped on LG Mobile)

EDUCATION

Seoul National University Mar 2013 - Feb 2015
M.S. in Convergence Science and Technology

- Advisor: Prof. Kyogu Lee (Music and Audio Research Group)
- Thesis: "Crowds vs. Broadcasters: Predicting Billboard Rank Using Characteristic of Music Listening Behavior in Twitter" ***(Outstanding Paper Award)***

University of California, Berkeley May 2011 - Aug 2011
Visiting Student, Summer Session *(Coursework: EECS and Mathematics)*

Chung-Ang University Mar 2008 - Feb 2013
B.S. in Computer Science and Engineering

PUBLICATIONS

[1] **Yekyung Kim**, Seohyeong Jeong, Kyunghyun Cho. "LINDA: Learning to Interpolate in Natural Language Processing" *Under Review at Journal of Transactions on Machine Learning Research (TMLR), 2022*

[2] Jaehyung Kim, **Yekyung Kim**, Dongyeop Kang. "infoVerse: Dataset Characterization with Multi-dimensional Meta-information" *To be appeared in arXiv, 2022*

[3] Ryan Koo, **Yekyung Kim**, Dongyeop Kang, Jaehyung Kim. "Meta-Crafting: Combining Different Meta-informations for Detecting Out-of-distribution" *Under Review at European Chapter of the Association for Computational Linguistics (EACL), 2022*

[4] **Yekyung Kim**. "Deep Active Learning for Sequence Labeling based on Diversity and Uncertainty in Gradient" *Workshop on Life-long Learning for Spoken Language Systems at AACL, 2021*

[5] Yejin Kim, **Yekyung Kim***. "Learning Sub-Character level representation for Korean Named Entity Recognition" *FLAIR, 2021* (*equal contributions)

[6] **Yekyung Kim**, Bongwon Suh, and Kyogu Lee. "#Nowplaying the Future Billboard: Mining Music Listening Behaviors of Twitter Users for Hit Song Prediction" *Workshop on Social Media Retrieval and Analysis, SoMeRA at SIGIR, 2014*

[7] Ramik Sadana, **Yekyung Kim**, Bongwon Suh, Eunyee Koh. "A Visual Analytics Approach to Summarizing Tweets" *Industrial Session at SIGIR, 2014*

HONORS AND AWARDS

AI Specialist (Selected one of the top 12 researchers), *LG Electronics* 2019
Outstanding Paper Award, *Seoul National University* 2015
The Grand Prize in Datathon, *Ministry of Science and ICT* 2014
Merit-based scholarship, *Seoul National University* 2014
BK21 Research Fellowship, *Brain Korea 21* 2014
The OSS Award, *North East Asia Open Source Software* 2013
The Gold Prize in Open Source Software World Challenge, *NIPA* 2012
Software Maestro Scholarship, *NIPA* 2012
Engineering Scholarship, *Chung-Ang University* 2012
Academic Excellence Scholarship, *Chung-Ang University* 2011, 2012

PATENTS

Yekyung Kim, Gyeonghoon Kim, Yejin Kim. Voice processing device and voice processing method. KR Patent 10-2306-3930000
Heungnam Kim, Inae Ha, **Yekyung Kim**. MOBILE TERMINAL AND CONTROL METHOD FOR THE MOBILE TERMINAL. KR Patent 10-2364-0870000

ACADEMIC SERVICE

Reviewer of Empirical Methods in Natural Language Processing (EMNLP): 2022
Reviewer of Neural Information Processing Systems (NeurIPS): 2022

INVITED TALKS

LINDA: Learning to Interpolate in Natural Language Processing Feb 2022
Cohere.ai (online)

Saliency based Text Augmentation Sep 2021
Minnesota NLP Group (online)

INTERNSHIP

Electronics and Telecommunications Research Institute Jan 2013 - Mar 2013
Research Intern Daejeon, Korea

- Collaborator: Ph.D Jeongdan Choe
- Collaborated in research projects of unmanned vehicle parking system

Seoul National University Jan 2012 - Feb 2012
Research Intern Suwon, Korea

- Collaborator: Prof. Kyogu Lee
- Developed movie genre prediction model based on scenario text with topic modeling algorithm

Chung-ang University Oct 2010 - Nov 2012
Research Intern Seoul, Korea

- Collaborator: Prof. Byungwoo Hong
- Participated in research projects of computer vision and medical imaging processing system

EXTRA-CIRRICULAR ACTIVITIES

Selected member of 10th Qualcomm IT Tour, *Qualcomm*	2012
Selected member of 3rd Software Maestro, *The Ministry of Knowledge Economy*	2012
Participated in mentoring system of Women in Science, Engineering and Technology	2011
Participated in mentoring system of Joogang news	2011

TECHNICAL STRENGTHS

Computer Languages	python, java, C/C++
Software Tools	PyTorch, Tensorflow, MATLAB, R