YOUNGWOO KIM

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Google Scholar

CURRENT AFFILIATION

I am a postdoctoral research associate in the School of Data Science at the University of Virginia.

RESEARCH INTERESTS

I specialize in information retrieval (IR) and natural language processing (NLP), with a focus on large language models (LLMs). My research aims to enhance LLM transparency through explainable AI, ensuring fairness and accountability in their applications.

EDUCATION

University of Massachusetts Amherst, USA *Sep 2017 - May 2024*
Ph.D. in Computer Science M.S. in Computer Science

Pohang University of Science and Technology (POSTECH), Korea *March 2010 - June 2017*
B.S. in Computer Science & Engineering
Graduated with **Summa Cum Laude**

RESEARCH PROJECTS

Explaining neural textual matching models

- **Natural Language Inference (NLI)**
  - Extracted rationales for NLI tasks by predicting tokens that are either contradictory or entailed by the other in a given text pair. (TOIS 2020)
  - Proposed a model with limited attention to explain potentially contradictory claims from biomedical articles, providing logical rationales for claim pairs. (Findings of ACL: EMNLP 2023)
- **Document Ranking (Query-Document Relevance)**
  - Developed a method to identify the most relevant segments in a document for adhoc retrieval tasks when only document-level labels are available, demonstrating that training with selected relevant segments can improve performance. (CIKM 2021)
  - Investigated the mechanism behind query-document relevance scoring functions, focusing on identifying alignment rationales on tokens from queries and documents. (SIGIR 2022)
  - Constructed a global explanation for query-document relevance by building a relevance thesaurus containing relevant query-term and document-term pairs.

Controversy detection

- I proposed an unsupervised method to detect and explain the controversial topics and articles with controversial topics. (ECIR 2019 - **Best Short Paper**)

PUBLICATION

Youngwoo Kim, Razieh Rahimi, and James Allan. "Conditional Natural Language Inference.", Findings of the Association for Computational Linguistics: EMNLP 2023

Youngwoo Kim, Razieh Rahimi, and James Allan. "Alignment Rationale for Query-Document Relevance.", In Proceedings of the 45th International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR '22)

Youngwoo Kim, Razieh Rahimi, Hamed Bonab, and James Allan. "Query-driven Segment Selection for Ranking Long Documents.", In Proceedings of the 30th ACM International Conference on Information and Knowledge Management 2021

Youngwoo Kim, Myungha Jang and James Allan. "Explaining Text Matching on Neural Natural Language Inference.", ACM Transactions on Information Systems (TOIS) 38.4 (2020): 1-23.

Youngwoo Kim, and James Allan. "FEVER breaker's run of team NbAuzDrLqg." Proceedings of the Second Workshop on Fact Extraction and VERification (FEVER). 2019

Youngwoo Kim, and James Allan. "Unsupervised Explainable Controversy Detection from Online News." European Conference on Information Retrieval (ECIR). Springer, Cham, 2019. **Best Application Short Paper**

Youngwoo Kim, Jinha Kim, and Hwanjo Yu. "Geotree: using spatial information for georeferenced video search." Knowledge-based systems 61 (2014): 1-12.

Youngwoo Kim, Jinha Kim, and Hwanjo Yu. "GeoSearch: georeferenced video retrieval system." Proceedings of the 18th ACM SIGKDD international conference on Knowledge discovery and data mining. ACM, 2012.

Lee, Won Yeol, Se Yun Kim, **Young Woo Kim**, Jae Young Lim, and Dong Hoon Lim. "Edge detection using morphological amoebas in noisy images." In 2009 16th IEEE International Conference on Image Processing (ICIP), pp. 2169-2172. IEEE, 2009.

Lee, Won Yeol, **Young Woo Kim**, Se Yun Kim, Jae Young Lim, and Dong Hoon Lim. "Edge detection based on morphological amoebas." The Imaging Science Journal 60, no. 3 (2012): 172-183.

ACADEMIC CONTRIBUTIONS

Conference Reviewer 2019 - 2023

NAACL 2019, ICTIR 2021, SIGIR 2022, ACL 2023, EMNLP 2023

INDUSTRY EXPERIENCE

Facebook June 2021 - Sept 2021
Machine Learning research intern *Seattle, WA, USA (*remote)*

- Addressed Signal Loss in Privacy-Preserving Machine Learning.
- Implemented budget allocations for ML training to mitigate signal loss. Utilized reinforcement learning and blackbox optimization techniques to enhance data privacy and training efficiency

CodaMetrix May 2020 - Aug 2020
Machine Learning research intern *Boston, MA, USA (*remote)*

- Automatic classification of diagnosis codes (ICD) for medical records
- Training and evaluation with noisy data

Mirageworks April 2012 - May 2015
Software Engineer *Seoul, Korea*

· Developed security solutions aimed at businesses to prevent data leakage.