

To Eun Kim

Information Retrieval | LLM | Retrieval-Enhanced ML | Language Agents | Evaluation

✉ toeunkim@cmu.edu

🎓 [Google Scholar](#)

🐙 <https://kimdanny.github.io/>

Education

Carnegie Mellon University (CMU)

Aug 2023 - (2028)

Ph.D. Language and Information Technology at Language Technologies Institute (LTI).

Advisor: [Prof. Fernando Diaz](#)

Focus: Information Retrieval, Retrieval-Enhanced Machine Learning, Language Agents

University College London (UCL)

Sep 2018 - Sep 2022

M.Eng. Computer Science (4-year master's integrated undergrad. degree)

First-Class Honours

Minor: Engineering Mathematics

Thesis: [Multi-Task Neural User Simulator for Task Oriented Dialogue System](#)

Publications

MoR: Better Handling Diverse Queries with a Mixture of Sparse, Dense, and Human Retrievers

J.S Kalra*, X. Zhao*, [T.E. Kim](#), F. Cai, F. Diaz, T. Wu [\[paper\]](#) [\[code\]](#)
arXiv, 2025

LTRR: Learning To Rank Retrievers for LLMs

[T.E. Kim](#)*, F. Diaz [\[paper\]](#) [\[code\]](#)
(SIGIR 2025) LiveRAG Workshop Spotlight

Tip of the Tongue Query Elicitation for Simulated Evaluation

Y. He*, [T.E. Kim](#)*, F. Diaz, J. Arguello, B. Mitra [\[paper\]](#) [\[code1\]](#) [\[code2\]](#)
(SIGIR 2025) 48th ACM SIGIR Conference on Research and Development in Information Retrieval

Overview of the TREC 2024 Tip-of-the-Tongue Track

J. Arguello, S. Bhargav, F. Diaz, [T.E. Kim](#), Y. He, E. Kanoulas, B. Mitra [\[paper\]](#)
(TREC 2025) The 33rd Text Retrieval Conference

Towards Fair RAG: On the Impact of Fair Ranking in Retrieval-Augmented Generation

[T.E. Kim](#), F. Diaz [\[paper\]](#) [\[code\]](#)
(ICTIR 2025)(NeurIPS 2024 AFME Workshop)
AFME Top-3 Spotlight Presentation

Retrieval-Enhanced Machine Learning: Synthesis and Opportunities

[T.E. Kim](#), A. Salemi, A. Drozdov, F. Diaz, H. Zamani [\[paper\]](#)
(SIGIR 2025 Tutorial) (SIGIR-AP 2024 Tutorial)
Manuscript Under Review for Journal Publication

A Comprehensive Survey on Generative Diffusion Models for Structured Data

H. Koo, [T.E. Kim](#) [\[paper\]](#)
arXiv, 2023

A Multi-Task Based Neural Model to Simulate Users in Goal-Oriented Dialogue Systems

[T.E. Kim](#), A. Lipani [\[paper\]](#) [\[poster\]](#) [\[code\]](#)
(SIGIR 2022) 45th ACM SIGIR Conference on Research and Development in Information Retrieval

Conditia: A State Machine Like Architecture for Multi-Modal Task Bots

J. Ramos*, [T.E. Kim](#)*, Z. Shi, X. Fu, F. Ye, Y. Feng, A. Lipani [\[paper\]](#)
Alexa Prize TaskBot Challenge Proceedings, 2022

When and What to Ask Through World States and Text Instructions: IGLU NLP Challenge Solution

Z. Shi*, J. Ramos*, [T.E. Kim](#), X. Wang, H. Rahmani, A. Lipani [\[paper\]](#)
(NeurIPS 2022 Competition) Interactive Grounded Language Understanding in a Collaborative Environment

Research Prize Winner

Attention-based Ingredient Phrase Parser

Z. Shi, P. Ni, M. Wang, [T.E. Kim](#), A. Lipani [\[paper\]](#) [\[code\]](#)

(ESANN 2022) *European Symposium on Artificial Neural Networks, Computational Intelligence and Machine Learning*

Research &
Industry
Experience

CMU LTI - Graduate Research and Teaching Assistant

Aug 2023 - Present

- Courses taken: 11642 Search Engines (Prof. Jamie Callan); 10701 Intro to ML (Dr. Henry Chai); 11711 Advanced NLP (Prof. Graham Neubig); 11801 Quantitative Evaluation of Language Technologies (Prof. Fernando Diaz); 11797 Question Answering (Prof. Eric Nyberg, Prof. Teruko Mitamura); 11830 Ethics, Safety, and Social Impact in NLP and LLMs (Prof. Maarten Sap)

UCL Web Intelligence Group

May 2021 - Jun 2023

Research & Teaching Assistant

[UCL Centre for AI](#)

- Supervised by [Prof. Emine Yilmaz](#) and [Dr. Aldo Lipani](#)
- Alexa Prize TaskBot Challenge - Quarter-finals.
- Four research papers.
- Four TAships and lecturer for Python programming course.

Raft AI

Jun 2022 - Jul 2022

Machine Learning Engineer Intern

London, UK

- Tabular information extraction from OCR for freight forwarding automation.
- Use of modern dev tools, e.g., Gitlab, Jira, Sentry, Docker, Kubernetes, GCP.

Amazon Alexa Prize TaskBot Challenge

May 2021 - Mar 2022

Team Conditia

- Engineered a Task-oriented Dialogue System by using Alexa Skills Kit, Evi, DynamoDB, Lambda, and CodePipeline. Constructed and maintained CI/CD pipelines, deployed multiple micro-services with Flask and Docker, dealing with thousands of user conversations with feedback loop (more details in Master's thesis).

UCL (Human-Computer) Interaction Centre - bachelor's group thesis

Oct 2020 - Apr 2021

Project *Olfactory-NLP* with group members and [Prof. Marianna Obrist](#).

- Extracted smell-related phrases and clustered multiple passages into different olfactory groups.
- Literature Review: *An NLP Approach to Classify Smell Experiences*. [\[paper\]](#)
- *Exploring the potential of automating the process of clustering smell stories*. [\[paper\]](#) [\[code\]](#)

KB Securities

Jun 2020 - Aug 2020

Data Analyst Intern

Seoul, South Korea

- Built a mutual funds recommender system based on Network Analysis, Hierarchical Clustering and Association Rule Mining.
- Built a stock price prediction system using LSTM and news articles. [\[code\]](#)
- Social media sentiment monitoring system using KB's NLP Engine and Automation software.
- Use of Hadoop ecosystem (Map-reduce, Hive, and Hue).

Royal College of General Practitioners (RCGP)

Oct 2019 - Mar 2020

Software Engineer - UCL Industrial Exchange Network

London, UK

- Implemented a tree-based task-oriented chatbot that assists in checking software compliance regimes of British healthcare organizations based on Dialogflow.

Presentations &
Invited Talks

Algorithmic Fairness through the Lens of Metrics and Evaluation @ NeurIPS 2024, ***Towards Fair RAG: On the Impact of Fair Ranking in Retrieval-Augmented Generation***, 14th Dec., 2024.

NLP Interest Group at The Alan Turing Institute, ***Can Dialogue Systems Have Theory-of-Mind Ability?***, 24th Nov., 2022. [\[recording\]](#)[\[slides\]](#)

Knowledge Graphs Interest Group at The Alan Turing Institute (5th meet-up), *Personal Knowledge Graphs: Towards Better Conversational Assistants*, 27th Oct., 2022. [\[recording\]](#) [\[slides\]](#)

Search-Oriented Conversational AI Workshop (SCAI '22), *A Multi-Task Based Neural Model to Simulate Users in Goal-Oriented Dialogue Systems*, 15th Jul., 2022. [\[recording\]](#) [\[slides\]](#)

Awards	2025 SIGIR Student Travel Grant – \$2000 2022 NeurIPS Interactive Grounded Language Understanding (IGLU) – Research Prize – \$650 2022 Automated Knowledge Graph Construction (AKBC) Conference – Registration fee waiver 2022 SIGIR Student Travel Grant – Registration fee waiver 2021 UCL Student Union best societies award – <i>Centenary Award (UCL AI Society)</i> 2021 UCL CS Undergraduate Summer Research Internship Fund – £3,200	
Teaching Experience	UCL Intense Python Programming course, Course Co-Organiser and Lecturer <ul style="list-style-type: none">Designing and will lead a new intensive programming course for MSc dissertations. UCL COMP0189 Applied Artificial Intelligence, <i>Teaching Assistant</i> <ul style="list-style-type: none">Making weekly practical contents and coursework [GitHub] UCL COMP0071 Software Engineering, <i>Teaching Assistant</i> UCL CEGE0004 Machine Learning for Data Science, <i>Teaching Assistant</i> UCL CEGE0096 Geospatial Programming, <i>Teaching Assistant</i> UCL Artificial Intelligence Society , <i>Lecturer</i> <ul style="list-style-type: none">Founder, maintainer, and lecturer of Machine Learning Tutorial SeriesSeason 20/21: [GitHub] [Lecture Recordings] Season 21/22: [GitHub]	March 2023 Spring 2023 Spring 2023 Spring 2023 Fall 2022 2020 - 2022
Mentoring	CMU Paths to AI, <i>Mentor</i> CMU Paths to AI, <i>Mentor</i> CMU Graduate Application Support Program	Spring 2025 Spring 2024 Fall 2023
Community Involvement	TREC 2025 Tip-of-the-Tongue (ToT) Track, <i>Organizer</i> ; TREC track website The Alan Turing Institute NLP & KG Interest Group, <i>member</i> The Alan Turing Institute Knowledge Graphs Interest Group, <i>member</i> Automated Knowledge Graph Construction (AKBC) Conference, <i>volunteer</i> ICLR 2023 (<i>Reviewer</i>), CIKM 2022 (<i>Sub-reviewer</i>) UCL Artificial Intelligence Society , <i>Head of Tutorials Team</i> <ul style="list-style-type: none">Co-organised an international competition, <i>Climate Hack.AI</i> [GitHub] [media coverage] NLP paper reading group (Jiphyeonjeon) , <i>Season 2,3 Organizer</i> <ul style="list-style-type: none">Season 2: Survey on Task-Oriented Dialog System and Knowledge Graph construction. [slides] [recording] (spoken in Korean)Season 3: Recent Advances and Challenges in Task-oriented Dialogue Systems. [slides] [recording] (spoken in Korean) UCL CS Transition Mentor, <i>Mentor - helping 1st year CS students</i> Google Developer Student Club, <i>UCL core team - event with Marc Cohen</i> UCL Korean Society, <i>IT Director - webmail automation</i>	Nov 2022 Sep 2022 Nov 2022 July, Oct 2022 Sep 2019 - Jun 2022 May 2021 - Nov 2022 Sep 2020 - Jun 2022 Sep 2021 - Jun 2022 Jun 2020 - May 2021
Software	Unified API of Apache Kafka & Google Pub/Sub for model serving <ul style="list-style-type: none">Serving ML models in an event-driven way. [code] Propositional Semantic Tableau Validator <ul style="list-style-type: none">Propositional logic satisfiability checker based on semantic tableau (implemented in C) [code]	Nov 2021 Dec 2019
Professional Training	Google Developers Korea Machine Learning Bootcamp Deep Learning Specialization (Prof. Andrew Ng on Coursera) UCLQ Summer School in Quantum Technology Introduction to AI in the Data Center (NVIDIA) KAIST Artificial Intelligence Bootcamp [Project 1] [Project 2]	Oct 2020 - Jan 2021 Dec 2020 Sep 2020 Mar 2020 Jun 2019 - Aug 2019

Major Skills	Computer Language: Python, Java, C, Matlab, R, \LaTeX Research: PyTorch, TensorFlow2, HuggingFace, Scikit-Learn SW Dev: Docker, SQL, Kafka, Node, Express, React, Flask Platform: Unix, Git, AWS, Alexa Skills Kit, GCP Natural Language: English (professional), Korean (native)
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References	Available on request.
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