

To Eun Kim

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

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 [Google Scholar](#)

 <https://kimdanny.github.io/>

Education	Carnegie Mellon University (CMU) Ph.D. Language and Information Technology at Language Technologies Institute (LTI). Advisor: Prof. Fernando Diaz Focus: Information Retrieval, Retrieval-Enhanced Machine Learning, Language Agents	Aug 2023 - (2028)
	University College London (UCL) M.Eng. Computer Science (equivalent to a US Bachelor's & Master's degree) First-Class Honours Minor: Engineering Mathematics Thesis: Multi-Task Neural User Simulator for Task Oriented Dialogue System	Sep 2018 - Sep 2022
Ongoing Research	Agent reasoning reuse for efficiency Large-scale simulated benchmarking of multiple agents Complex query information retrieval	
Publications	Towards Reducible Uncertainty Modeling for Reliable Large Language Model Agents C. Oh, S. Park, T.E. Kim , J. Li, W. Li, S. Yeh, X. Du, H. Hassani, P. Bogdan, D. Song, S. Li [paper] arXiv , 2026	
	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] (<i>EMNLP 2025 Main</i>) <i>Conference on Empirical Methods in Natural Language Processing</i>	
	TeamCMU at Touché: Adversarial Co-Evolution for Advertisement Integration and Detection in Conversational Search T.E. Kim , J Coelho, G Onilude, J Singh [paper] [code] (<i>CLEF 2025 Touché Lab</i>) <i>16th Conference and Labs of the Evaluation Forum Best Paper Award</i>	
	LTRR: Learning To Rank Retrievers for LLMs T.E. Kim , F. Diaz [paper] [code] (<i>SIGIR 2025 LiveRAG Workshop</i>) <i>Spotlight</i>	
	Tip of the Tongue Query Elicitation for Simulated Evaluation Y. He*, T.E. Kim *, F. Diaz, J. Arguello, B. Mitra [paper] [code1] [code2] (<i>SIGIR 2025</i>) <i>48th ACM SIGIR Conference on Research and Development in Information Retrieval</i>	
	Towards Fair RAG: On the Impact of Fair Ranking in Retrieval-Augmented Generation T.E. Kim , F. Diaz [paper] [code] (<i>ICTIR 2025</i>) <i>The 15th Int'l Conference on Innovative Concepts and Theories in Information Retrieval</i> (<i>NeurIPS 2024 AFME Workshop</i>) <i>Top-3 Spotlight</i>	
	Retrieval-Enhanced Machine Learning: Synthesis and Opportunities T.E. Kim , A. Salemi, A. Drozdov, F. Diaz, H. Zamani (<i>SIGIR 2025 Tutorial</i>) (<i>SIGIR-AP 2024 Tutorial</i>) [paper]	
	Overview of the TREC 2025 Tip-of-the-Tongue Track J. Arguello, F. Diaz, M. Fröebe, T.E. Kim , B. Mitra [paper] (<i>TREC 2025</i>) <i>The 34th Text Retrieval Conference</i>	
	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] (<i>TREC 2024</i>) <i>The 33rd Text Retrieval Conference</i>	

A Comprehensive Survey on Generative Diffusion Models for Structured DataH. 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***Condita: 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
Roles**CMU Language Technologies Institute (LTI)**

Aug 2023 - Present

Graduate Research & Teaching Assistant

Pittsburgh, USA

- 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); 11851 Talking to Robots (Prof. Yonatan Bisk)

UCL Web Intelligence Group

May 2021 - Jun 2023

Research & Teaching Assistant

UCL Centre for AI, London, UK

- Supervised by [Prof. Emine Yilmaz](#) and [Dr. Aldo Lipani](#)
- Leading the Alexa Prize TaskBot Challenge (May 2021 - Mar 2022). 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.
- Five TA roles and four research papers.

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.

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) Software Engineer - UCL Industrial Exchange Network	Oct 2019 - Mar 2020 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, <i>Towards Fair RAG: On the Impact of Fair Ranking in Retrieval-Augmented Generation</i> , 14th Dec., 2024.	
	NLP Interest Group at The Alan Turing Institute, <i>Can Dialogue Systems Have Theory-of-Mind Ability?</i> , 24th Nov., 2022. [recording] [slides]	
	Knowledge Graphs Interest Group at The Alan Turing Institute (5th meet-up), <i>Personal Knowledge Graphs: Towards Better Conversational Assistants</i> , 27th Oct., 2022. [recording] [slides]	
	Search-Oriented Conversational AI Workshop (SCAI '22), <i>A Multi-Task Based Neural Model to Simulate Users in Goal-Oriented Dialogue Systems</i> , 15th Jul., 2022. [recording] [slides]	
Awards	2025 CLEF Touché Lab Best Paper Award 2025 SIGIR NSF Student Travel Award – \$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	
Academic Service	Reviewings: <ul style="list-style-type: none">CIKM 2022 (subreviewer), ICLR 2023, EMNLP 2025 BlackboxNLP Workshop, TOIS 2025 Tutorials: <ul style="list-style-type: none">SIGIR-AP 2024, SIGIR 2025	
Teaching Experience	UCL Intense Python Programming course, <i>Course Co-Organiser and Lecturer</i> <ul style="list-style-type: none">Designed and led a new intensive programming course for MSc students. UCL COMP0189 Applied Artificial Intelligence, <i>Teaching Assistant</i> <ul style="list-style-type: none">Delivered 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>	March 2023 Spring 2023 Spring 2023 Spring 2023 Fall 2022 2020 - 2022
Community Involvement	NTCIR-19 Tip-of-the-Tongue (ToT) Track, <i>Organizer</i> ; NTCIR track website 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> UCL Artificial Intelligence Society , <i>Head of Tutorials Team, 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]Co-organised an international competition, Climate Hack.AI [GitHub] [media coverage]	Nov 2022 Sep 2022 Nov 2022 Sep 2019 - Jun 2022
	NLP paper reading group (Jiphyeonjeon) , Season 2,3 <i>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)	May 2021 - Nov 2022
	Google Developer Student Club, <i>UCL core team - event with Marc Cohen</i> UCL Korean Society, <i>IT Director - webmail automation</i>	Sep 2021 - Jun 2022 Jun 2020 - May 2021

Mentoring	CMU Paths to AI, Mentor CMU Graduate Application Support Program UCL CS Transition Mentor, (<i>helping 1st year CS students</i>)	Spring 2024, 2025 Fall 2023 Sep 2020 - Jun 2022
Software	Unified API of Apache Kafka & Google Pub/Sub for model serving • Serving ML models in an event-driven way. [code]	Nov 2021
	Propositional Semantic Tableau Validator • Propositional logic satisfiability checker based on semantic tableau (implemented in C) [code]	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, Slurm Human Language: English (professional), Korean (native)	
References	Available on request.	

last update: Feb 6th 2026