

(Danny) To Eun Kim

Information Retrieval | NLP | Dialogue Systems | Knowledge Graphs | Search and QA

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🎓 [Google Scholar](#)

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Education	University College London (UCL) M.Eng. Computer Science (4-year integrated master's degree) Minor: Modern Applications of Engineering Mathematics Thesis: Multi-Task Neural User Simulator for Task Oriented Dialogue System	Sep 2018 - Aug 2022 First-Class Honours
Ongoing Work	Response ranking with conversational look-ahead (Targeting SIGIR '23 - 1st author) Unified model for different schema in task-oriented dialogue systems (Targeting ACL '23 - 2nd author) User satisfaction estimation with Hawkes Transformer (Targeting ACL '23 - 2nd author) Interactive Grounded Language Understanding (IGLU) - NeurIPS 2022 challenge Automated Clustering of Smell Stories (Targeting CHI '23 - 1st author)	
Publications	A Multi-Task Based Neural Model to Simulate Users in Goal-Oriented Dialogue Systems T.E. Kim , A. Lipani [paper] [poster] [code] <i>45th ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR)</i> , 2022 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] <i>Alexa Prize TaskBot Challenge Proceedings</i> , 2022 Attention-based Ingredient Phrase Parser Z. Shi , P. Ni , M. Wang , T.E. Kim , A. Lipani [paper] [code] <i>European Symposium on Artificial Neural Networks, Computational Intelligence and Machine Learning (ESANN)</i> , 2022	
Workshops & Presentations	NLP Interest Group at The Alan Turing Institute, <i>Can Dialogue Systems Have a Theory-of-Mind?</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]	
Research Experience	UCL Web Intelligence Group - Research & Teaching Assistant Research with Prof. Emine Yilmaz and Dr. Aldo Lipani at UCL Centre for AI	May 2021 - Present
	<ul style="list-style-type: none">Highly contributed (first authored) to the <i>Alexa Prize TaskBot Challenge</i>, taking charge of engineering/DevOps challenges, such as AWS services integration, deployment of ranking/search/QA models, and making effective user feedback loops.Published three papers in top academic venues, and extending the research using novel ideas.Leading the <i>Viral Content Ranking and Generation</i> project. Aiming to construct a neural learning-to-rank model that ranks marketing articles in terms of future virality in social media.Participating in a NeurIPS 2022 challenge - Interactive Grounded Language Understanding in a Collaborative Environment (IGLU) with PhD students.Join in and present papers at regular reading group.	
	Amazon Alexa Prize TaskBot Challenge - Team Conditia Co-led the team to the Quarter-Final stage.	May 2021 - Mar 2022
	<ul style="list-style-type: none">Engineering a Task-oriented Dialogue System by using Alexa Skills Kit, Evi, DynamoDB, Lambda, CodePipeline, and SageMaker. Constructed and maintained CI/CD pipelines, deployed multiple micro-services with Flask and Docker, dealing with thousands of user conversations (details are addressed in the Master's thesis).Designed and implemented a novel state machine-like architecture for dialogue policy decision.Research were focused on Information Retrieval, Knowledge Graph, Question-Answering, Ranking, and Dialogue State Tracking.	

	UCL (Human-Computer) Interaction Centre - bachelor's group thesis Oct 2020 - Apr 2021 Project <i>Olfactory-NLP</i> with group members and Prof. Marianna Obrist . <ul style="list-style-type: none"> • Extracted smell-related phrases and clustered multiple passages into different olfactory groups. • Literature Review: <i>An NLP Approach to Classify Smell Experiences</i>. [paper] • <i>Exploring the potential of automating the process of clustering smell stories</i>. [paper] [code] • Final version will be submitted to HCI academic venue (CHI). 	
Teaching Experience	UCL Advanced Programming Mini-course, Course Organiser (March 2023) <ul style="list-style-type: none"> • Designed and led a new intensive programming course for MSc dissertations. UCL COMP0189 Applied Artificial Intelligence, <i>Teaching Assistant</i> (Spring 2023) UCL COMP0071 Software Engineering, <i>Teaching Assistant</i> (Spring 2023) UCL CEGE0004 Machine Learning for Data Science, <i>Teaching Assistant</i> (Spring 2023) UCL CEGE0096 Geospatial Programming, <i>Teaching Assistant</i> Fall 2022 UCL Artificial Intelligence Society , <i>Lecturer</i> 2020 - 2022 <ul style="list-style-type: none"> • Founder, maintainer, and lecturer of Machine Learning Tutorial Series • Season 20/21: [GitHub] [Lecture Recordings] Season 21/22: [GitHub] 	
Awards	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	
Community Involvement	The Alan Turing Institute NLP Interest Group, <i>member</i> Nov 2022 - Present The Alan Turing Institute Knowledge Graphs Interest Group, <i>member</i> Sep 2022 - Present Automated Knowledge Graph Construction (AKBC) Conference, <i>volunteer</i> Nov 2022 ICLR 2023, <i>Reviewer</i> Oct 2022 CIKM 2022, <i>Sub-reviewer</i> July 2022 UCL Artificial Intelligence Society , <i>Head of Tutorials Team</i> Sep 2019 - Jun 2022 <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> May 2021 - Nov 2022 <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> Sep 2020 - Jun 2022 UCL Korean Society, <i>IT Director - webmail automation</i> Jun 2020 - May 2021	
Industry Experience	Vector AI Jun 2022 - Jul 2022 Machine Learning Engineer Intern London, UK <ul style="list-style-type: none"> • Cross-functional intern in both Core-ML and Forward-deployed engineering teams. • Tabular information extraction from bill of ladings and business registration documents based on OCR results for freight forwarding automation. • Use of modern dev tools, e.g., Gitlab, Jira, Sentry, Docker, Kubernetes, GCP. KB Securities Jun 2020 - Aug 2020 Data Analyst Intern Seoul, South Korea <ul style="list-style-type: none"> • Rule-based Investment Funds Recommender System based on Network Analysis, Hierarchical Clustering and Association Rule Mining. • Stock Price Prediction System using LSTM Network and Natural Language News Data. [code] • Piloted a Social Media Monitoring System using KB's NLP Engine and Automation (RPA) software. Real-time sentiment monitoring in the comment sections. • Heavy use of SQL in the 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 <ul style="list-style-type: none"> • Built a tree-based task-oriented chatbot that assists in checking software compliance regimes of British healthcare organizations. 	

	<ul style="list-style-type: none"> • Built a RESTful API for user intents and entities detection using Dialogflow and React, Express Node, and MongoDB. • Python scripts for chatbot integration testing. [code] 	
Selected Coursework & Projects	<p>COMP0087 Statistical Natural Language Processing Spring 2022 Taught by Prof. Sebastian Riedel, received high mark (76.62%).</p> <ul style="list-style-type: none"> • <i>Fake reviews generations via large language models.</i> [paper] [Presentation Recording] <p>Unified API of Apache Kafka & Google Pub/Sub Nov 2021</p> <ul style="list-style-type: none"> • Simple ML model is served and does inferences in an event-driven way. [code] <p>COMP0022 Database and Information Management Systems Spring 2021 Best group coursework nominated - Movie Analytics Web App.</p> <ul style="list-style-type: none"> • Microservice architecture consisting of a NestJS REST API, PostgreSQL DB, and Redis cache. Designed a normalized ERD for DB and optimized queries, seeing more than 10% speed increase. APIs can pre-cache anticipated requests, enabling extremely low latency infinite scrolling. [code] <p>BENG0095 Data Mining and Analysis Winter 2020 Best group coursework nominated, received high mark (79.88%).</p> <ul style="list-style-type: none"> • Data visualization, model training and selection, hyperparameter tuning, and evaluation. [paper] [code] <p>Building Conversational AI for Messenger Hackathon Dec 2019 Hackathon at Facebook London</p> <ul style="list-style-type: none"> • Built a Facebook's messenger-bot that checks if user's reply to one's lover is okay to send or not by fine-tuning a BERT model for sentiment analysis. [code] <p>Propositional Semantic Tableau Validator Dec 2019</p> <ul style="list-style-type: none"> • Parse propositional logic, build a semantic tableau, and check its logical satisfiability (implemented in C) [code] 	
Professional Training	<p>Turing Commons: AI Ethics and Governance (at The Alan Turing Institute) [website] Nov 2022</p> <p>Google Developers Korea Machine Learning Bootcamp Oct 2020 - Jan 2021</p> <p>Deep Learning Specialization (Prof. Andrew Ng on Coursera) Dec 2020</p> <p>UCLQ Summer School in Quantum Technology Sep 2020</p> <p>Introduction to AI in the Data Center (NVIDIA) Mar 2020</p> <p>KAIST Artificial Intelligence Bootcamp [Project 1] [Project 2] Jun 2019 - Aug 2019</p>	
Major Skills	<p>Programming: Python, Java, C, \LaTeX</p> <p>ML/DL: PyTorch, TensorFlow/Keras, Scikit-Learn, OpenCV</p> <p>Data skill: SQL, Hadoop, Numpy/Pandas/Matplotlib</p> <p>SW Dev: Apache Kafka, Node, Express, React, Flask, MongoDB, PostgreSQL</p> <p>Platforms: Linux, Git, Docker, AWS, Alexa Skills Kit, GCP</p>	
References	<p>Prof. Emine Yilmaz Professor and Turing Fellow of Computer Science in UCL, Email: emine.yilmaz@ucl.ac.uk</p> <p>Dr. Aldo Lipani Assistant Professor of Machine Learning in UCL, Email: aldo.lipani@ucl.ac.uk</p> <p>Prof. Marianna Obrist Professor of Multisensory Interfaces and Computer Science in UCL, Email: m.obrist@ucl.ac.uk</p>	