

YUNSOO KIM | University College London

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EDUCATION

University College London, London, UK

PhD in Health Informatics

Sep. 2023 - Present

Thesis: "Multimodal Transformer in Biomedicine"

Supervisors: Professor Honghan Wu, Dr Adam Levine, Professor Robert Stewart, Dr Nikolas Pontikos

Imperial College London, London, UK

M.Sc. in Bioinformatics and Theoretical Systems Biology

Oct. 2015 - Sep. 2016

Thesis: "A Clustering-based Short Time Series Analysis Methodology in Omics"

Supervisors: Professor Tim Ebbels, Dr John Pinney, Dr Virginia Fairclough

- [Developed methodology to analyze omics time-series data](#)
- [Developed a novel methodology](#) to infer OTU (Operational Taxonomic Unit) co-occurrence and differential networks
- [Outperformed 8 other inference methods for co-occurrence networks \(the best precision\)](#)

Case Western Reserve University, Cleveland, OH

B.S. with Honors in Systems Biology (Concentration in Bioinformatics, Pre-Health Plan)

Sep. 2012 - May. 2015

Honors Thesis: "Assembly of Marama chloroplast from Next-gen sequencing reads"

Supervisor: Professor Christopher Cullis

RESEARCH INTEREST

Deep Learning in computational biology and health informatics, specifically in applications of multimodal models for neurodegenerative diseases such as dementia and multiple sclerosis.

EMPLOYMENT

LG CHEM, Seoul, South Korea

CTO Platform Technology Artificial Intelligence PJT

Apr. 2020 – Sep. 2023

Specialist. NLP Group Leader. Work Description: Leading natural language processing (NLP) group

Apr. 2020 – Feb. 2022

Professional. NLP Group Leader. Work Description: Leading NLP group

Mar. 2022 – Sep. 2023

- [Developed an artificial reading system using language model \(BERT variants\) to recommend research candidates for researchers](#)
 - Successful cases on different research topics (battery, petrochemical, biopolymer, etc).

LG AI Master Program Pilot at LG AI Research

Sep. 2019 – Jan. 2020

LG Chem representative researcher. Program Description: Solving the challenges using AI and becoming a leader in AI project

- Improved BERT model in biotechnology, especially in Agricultural Biology – Reached SOTA in 7 BioNLP benchmark datasets

CTO Green Bio GBT1 PJT at LG Chem

Mar. 2019 – Mar. 2020

Specialist. Work Description: Developing deep learning models to accelerate biotechnology research

- Developed plant disease recognition and plant disease severity diagnosis with ResNext, EfficientNet ensemble models

CTO Corporate R&D Future Technology GBT PJT at LG Chem

Jul. 2017 – Feb. 2019

Associate. Work Description: Analyzing -omics data to accelerate biotechnology research

- Developed an early allergen and toxin assessment system for the candidate gene
 - [Developed a neural network model for the prediction of protein allergenicity and toxicity with improved performance](#)

Alternative military service, South Korea

Alternative military service at LG Chem, Military Manpower Administration

Aug. 2017 – Aug. 2020

Technical Research Personnel. Description: Alternative military service for the Korean compulsory military service

- Worked both a full-time employee and technical research personnel at LG Chem for the advancement of science in Korea

Torrey Pines Co., Ltd., Cheonan, Korea

Co-Founder and CEO. Work Description: Planning a New Brand with microbiome science cosmetics

Oct. 2016 – Jul. 2017

- [Bota nouveau Microbiome science hair care cosmetics brand](#)
 - One of the pioneers in hair care cosmetics that introduced microbiome science for hair loss care shampoo

PUBLICATIONS

[Enhancing Human-Computer Interaction in Chest X-ray Analysis using Vision and Language Model with Eye Gaze Patterns](#)
First Author Conference: Submitted to MICCAI 2024

[Exploring Multimodal Large Language Models for Radiology Report Error-checking](#)
Co-first Author Journal: Submitted to Journal of the American Medical Informatics Association

[Hallucination Benchmark in Medical Visual Question Answering](#)
Co-first Author Conference: ICLR 2024 Tiny Paper (Notable Accept) 2024

[Chemical Language Understanding Benchmark](#)
First Author Conference: ACL2023 Industry Track 2023

[A novel inversion in the chloroplast genome of marama \(*Tylosema esculentum*\)](#)
First Author Journal: Journal of Experimental Botany 2016

PATENTS

Chemical entity name recognition system and method using artificial intelligence
Main Inventor Patents Priority : KR 10-2023-007009 2023

Method and system for recognizing chemical entities through sentence length adjustment of the training data
Main Inventor Patents Priority : KR 10-2023-0070096 2023

Document classification method and system using named entity recognition score
Main Inventor Patents Priority : KR 10-2023-006571 2022

[Method to build chemical language model and NLP document analysis system and method applying it](#)
Main Inventor Patents: KR20230037335A 2021

[Chemical Named Entity Recognition Method and System through Data Preprocessing](#)
Main Inventor Patents: KR20230030337A 2021

[Crop protection products virtual library construction and browsing system](#)
Co-Inventor Patents: KR20230029084A 2021

[Protein Toxicity Prediction System and Method Using Artificial Neural Network](#)
Main Inventor Patents: KR20200126715A 2019

HONORS AND AWARDS

LG Chem On-Spot Incentive 2022
LG Chem DX Good Practice 2021
LG Chem AIT Organization Manager Discretionary Award 2020 - 2021
LG AI IDEAthon Digital Transformation Frontier (Applications 1st place; Overall 2nd place) 2021
LG Chem CTO Digital Transformation Best Practice 2021
LG Chem Seoul National University AI Hackathon 1st place 2021
LG Chem DX Best Practice 2020
LG AI Advanced problem solving Best Practice mentor 2020
LG Chem CEO Excellent R&D Project Award 2020
LG Chem Platform Technology On-Spot Incentive 2020
LG Chem Platform Technology Best Memorandum (Research Report) 2020
LG AWARDS (Best Award given by LG Group Chairman) 2020
LG AI Master Best Practice 2019
LG Chem Green Biology Best Memorandum (Research Report) 2019
LG Chem Green Biology On-Spot Incentive 2019
Case Western Reserve University Scholarship 2012 – 2015
Ogelbay Summer Research Grant 2014
Case Western Reserve University Dean's Honor List, 3 semesters 2012 – 2014
Case Western Reserve University Dean's High Honor List, 1 semester 2013
Victor Ridder Scholarship 2012

OTHER EXPERIENCE

Teaching Experience, Workshops, Seminars

MICCAI2024 Tutorial Main Organizer and Speaker	2024
HealTac2024 Tutorial Main Organizer and Speaker	2024
UCL MSc student co-supervisor for research project	2023 - Present
LG Chem Community of Practice for ChatGPT lead organizer	2023
LG Chem graph neural network model study group lead organizer	2022 – 2023
LG Chem transformer model (NLP) study group lead organizer	2021 – 2023
LG Chem Community of Practice for Systems Metabolic Engineering AI lead organizer	2022
LG AI Advanced problem solving grader, mentor	2020
LG Chem Platform Technology Python Instructor	2020
LG AI weekly study group member, organizer	2019 – 2022
LG Chem Bio Big Data and AI Community of Technology member, organizer	2017 – 2019
Case Western Reserve University Volunteer Peer Tutoring in Biology	2013 – 2014

- Taught two students for biology classes at university-level

Invited Talks, Presentation

ICLR Tiny Paper Poster Presentation	2024
University College London Institute of Health Informatics Talk on Large Language Model Research in Medicine	2024
University of Edinburgh Clinical NLP Group Talk on Large Language Model Research in Medicine	2023
ACL2023 Industry Track Poster Presentation	2023
LG Chem CTO Digital Transformer talks	2022
LG Chem Platform Technology Workshop talks	2022
LG Chem Platform Technology Artificial Intelligence annual meeting speaker	2021
LG Chem Tech Fair talks	2021
LG DX Fair 2021 speaker	2021
LG Chem Digital Transformation talks	2021
LG Chem CTO Digital Transformer talks speaker	2021
LG Chem Platform Technology Workshop talks speaker	2021
LG Chem Digital Transformation Best Practice talks	2020
LG Academy Digital Transformation talks panelist	2020
LG Housys AI Master talks speaker	2019
LG AI Master talks speaker	2019
LG Chem Green Biology quarterly meeting speaker	2019

Journal Reviewing

BMC Medical Informatics and Decision Making