Kyung Hyun Lee

Clinical AI Researcher

lkh256@gmail.com Suwon, Gyeonggi-do, Republic of Korea Jovinus kyunghyun-lee-7963a3184

0000-0002-7010-5284

Summary

PhD student in Digital Health at SAIHST, Sungkyunkwan University. AI researcher working on clinical time-series deep learning, medical AI regulatory pathways, and respiratory digital health. Co-founder & CEO of BreathYou Co., Ltd.

Education

PhD Student — **Sungkyunkwan University (SAIHST)**, Digital Health — Seoul, South Korea — 2026 – present

- Advisor: Prof. Byung-Jae Lee
- Research on Transformer-based trajectory models of respiratory health

Master of Science — **Sungkyunkwan University (SAIHST)**, Digital Health — Seoul, South Korea — 2019 – 2021

- Advisor: Prof. Mira Kang
- M Lab. — Statistical analysis and predictive model development using medical big data

Bachelor of Science — **Incheon National University**, Electronic Engineering & Computational Neuroscience — Incheon, South Korea — 2014 – 2019

- Advisor: Prof. Sangwon Byun
- Bioelectronics Lab. — Biosignal (ECG, EMG) data collection, signal analysis, and real-time prediction model development

Experience

BreathYou Co., Ltd., Co-founder & CEO — South Korea — 2025 – present — 1 year

Digital health startup focused on allergy and respiratory AI, developing DeepBreath CDSS and MediPipe.

- Selected for 2025 Pre-startup Package
- Incorporated on 5 August 2026
- DeepBreath CDSS: Clinical decision support for predicting pulmonary function decline trajectories
- MediPipe: OCR/NLP pipeline for medical record processing

AITRICS, Researcher (2024 – present) · Industrial Technical Personnel — Alternative Military Service (2022 – 2024) — Seoul, South Korea — 2022 – present — 4 years

Medical data (RWD) cleaning, analysis pipeline construction, predictive model development, and external validation. Contributed to the cardiac arrest early-warning model that obtained MFDS (Korean FDA) approval as an AI medical device, and currently leading product development of a self-developed AKI prediction model toward MFDS approval.

- Research design for clinical data analysis projects
- Data extraction and cleaning from multi-center hospitals
- Automated data analysis pipelines using Airflow
- Deep learning-based clinical time-series prediction models
- Clinical simulation-based model evaluation and survival analysis
- Cardiac arrest prediction model — supported MFDS approval as an AI medical device
- AKI prediction model — developed the model and currently leading productization toward MFDS approval

Exosystems, Biosignal AI Research Engineer — South Korea
Deep learning-based EMG modeling for Muscle Quality monitoring. — May 2022 – Aug 2022
- RNN, CRNN-based Muscle Quality time-series prediction model development — 4 months
- Clinical validation-oriented AI model evaluation

Incheon National University, Research Fellow — Incheon, South Korea
- EMG-based real-time hand gesture recognition algorithm R&D — Sept 2021 – May 2022
- Deep learning-based ECG modeling for autonomic nervous system monitoring — 9 months

Samsung Medical Center & SAIHST, Research Fellow — Seoul, South Korea
EHR data extraction and analysis from CDW; development of ML-based CDSS. — Dec 2018 – Aug 2021
- Data cleaning and health checkup database construction — 2 years 9 months
- Text mining of unstructured medical records
- Statistical analysis and predictive/diagnostic model development

Teaching

University of Seoul, Department of Sport Science: Lecturer · Exercise and Digital Healthcare, fourth-year undergraduate elective (Fall 2026)

Awards

Human Understanding AI Paper Competition — Top 7 & ETRI Director's Award — 2022
ETRI, Ministry of Science and ICT
- Multimodal Attention-based Korean emotion recognition model combining RoBERTa (Text) and Wav2vec 2.0 (Audio)

OCR AI Training Data Hackathon — Excellence Award — 2021
Ministry of Science and ICT, NIA
- AI-Assisted OCR Annotation System for pharmaceutical products (CRAFT-based)

Medical Information Analysis Expert Advanced Course — Grand Prize — 2021
Ministry of Health and Welfare, Asan Medical Center
- Real-time BIS prediction model using intraoperative EEG data (25-second lookahead)

Medical AI Expert Training Course — Excellence Award — 2020
Korea Human Resource Development Institute for Health & Welfare
- 30-day mortality and ICU admission prediction model using preoperative and intraoperative vital signs

STAR Program Paper Presentation — Grand Prize — 2018
DSP-IN-U Smart Device Talent Development Program
- EMG-based real-time hand gesture prediction model development

Academic Service

Computers in Biology and Medicine: Peer reviewer · 4 manuscripts (2026)

Information Processing & Management: Peer reviewer · 1 manuscript (2026)

Certificates

Medical Information Analysis Expert Advanced Course — Aug 2021
Korea Human Resource Development Institute for Health & Welfare, Asan Medical Center

Google Developer Machine Learning Boot Camp — Jan 2021
Google Developers

Medical AI Expert Training Course — Dec 2020
Korea Human Resource Development Institute for Health & Welfare

Skills

Programming & ML: Python, PyTorch, TensorFlow, Scikit-learn

Data & Database: SQL (PostgreSQL), Airflow, Data Pipeline

Statistics & Analysis: R, Survival Analysis, Clinical Statistics

Web Development: FastAPI, Flask, JavaScript, HTML/CSS, AWS

Languages

Korean
Native speaker

English
Professional working proficiency

References

Prof. Sangwon Byun
Incheon National University, Department of Electronic Engineering; Bachelor's advisor
(Bioelectronics Lab. · Scholar)

Prof. Mira Kang
Samsung Medical Center; Master's advisor at SAIHST, Sungkyunkwan University

Prof. Jin-Young Lee
Samsung Medical Center, Health Promotion Center

Prof. Byung-Jae Lee
Samsung Medical Center, Department of Allergy and Clinical Immunology; Doctoral advisor at SAIHST, Sungkyunkwan University

Prof. Sae Young Jae
University of Seoul, Department of Sport Science; research collaborator