Young-Ju Lee Young-Ju Lee

A data & AI engineer who turns complex geoscience data into answers with deep learning and analysis

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1 SCIE First-author paper (SPE Journal) | **2× Calgary** Research stays · international collaboration | **SSAFY 16th** Samsung SW & AI Academy (in progress) | **3 · 6** Papers · conference talks

PROJECTS

M.S. — Separating gravity & magnetic signals with wavenumber correlation to resolve subsurface structure (SPE Journal, first author) 2024.03 – 2026.08

Jeonbuk National University · Geophysical Computing Lab · Graduate researcher · 6-month stay at University of Calgary · Signal processing (wavenumber domain), Correlation analysis, Index design, Gravity & magnetic data

- Designed wavenumber-correlation indices (SLFI · DLFI) splitting overlapping gravity/magnetic signals; r ≥ 0.94 vs. 3 independent models · code released
- 6-month stay at Univ. of Calgary, collaboration with Khalifa Univ. (UAE) → first-author SPE Journal paper (SCIE, 2026)
- Best Student Paper (poster), KSEG 2024 · 3 talks · 10+ lab research-meeting talks · 2025 Basic Research Lab workshop talk

Undergraduate — Seismic interpretation of overseas CO2 storage with plate-tectonic history (first author) · spatiotemporal deep learning capstone 2022 – 2024.02

Jeonbuk National University · IAB convergence major · Geophysical Computing Lab · Undergraduate researcher · capstone model design & training · Seismic interpretation, GPlates, CCS, Python

- First-author paper: GPlates plate-tectonic reconstruction + seismic interpretation of 8 large CO2 storage sites in 4 regions (2024)
- 4D seismic and CCS case studies, Calgary short stay (Utah FORGE gravity) → 1 second-author paper · 3 talks
- Capstone: designed a U-LSTM predicting wildfire fronts — Accuracy 0.90 · F1 0.85 on an unseen fire

Bootcamps — SSAFY 16th cohort · POSCO Youth AI & Big Data Academy 30th cohort 2025.06 – present

Samsung SSAFY · POSCO HRD Center · POSTECH · LLM fine-tuning · data pipelines · backend · Python, LLM fine-tuning, QLoRA, RAG

- SSAFY AI Challenge (VQA): Qwen/Gemma QLoRA, OCR, multi-view probability ensemble → public 0.96961
- ThRead: crawling → LLM judgments verified in code → pandas pipeline, Django backend · 86 tests
- Heritage RAG guide (solo): public-API & Wikipedia collection → LangGraph RAG that shows only citations verified in code · 50 offline tests
- POSPEAK: correction datasets, FLAN-T5 LoRA strategy comparison (BERTScore F1 0.32 → 0.74) + RAG · award

EDUCATION

Samsung SW & AI Academy (SSAFY) 16th cohort Training program — 2026.07 – present

Jeonbuk National Univ. (Graduate) Environment and Energy M.S. — 2024.03 – 2026.08

POSCO Youth AI & Big Data Academy 30th cohort Completed — 2025.06 – 2025.08

Jeonbuk National Univ. Mineral Resources and Energy Engineering B.S. — ~ 2024.02

SKILLS

Languages & frameworks Python, TensorFlow, PyTorch, Hugging Face Transformers, Pandas, Django, Selenium, SQL

AI & data analysis Spatiotemporal DL (U-LSTM), LLM fine-tuning (LoRA/QLoRA), Model ensembles, RAG (LangGraph · ChromaDB · FAISS), F1 · BERTScore

Spatial & geophysical data ArcGIS, Rasters, Gravity & magnetics, Wavenumber correlation, Seismic interpretation, GPlates

Domain CCS, Energy & resources, Wildfire prediction

PUBLICATIONS

Wavenumber Correlation of Gravity and Magnetic Anomalies for Constraining Salt/Basement Structure in Offshore Abu Dhabi — SPE Journal (SCIE) · first author — 2026

Analysis on Seismic Interpretation for Overseas Large-scale CO2 Storage Considering Geological History Related to Plate Tectonics — Geophysics and Geophysical Exploration 27(1), 1–22 · first author (in Korean) — 2024

Geological Analysis of the CarbonNet CCS Project in the Gippsland Basin, Australia — Geophysics and Geophysical Exploration · second author (in Korean) — 2023

+ 6 conference talks (full list on the portfolio site)

AWARDS · CERTIFICATIONS

Project Excellence Award, POSCO Youth AI & Big Data Academy (30th) — 2025.08

Best Student Paper (poster), KSEG Fall Conference 2024 — 2024.11

ADsP (Advanced Data Analytics Semi-Professional) — 2022.09