Portfolio :
https://sungmin603.github.io/

Sung-min Lee

Phone: +82-10-6410-2463
E-mail: 603lsm@gmail.com

Summary

- **AI & Computer Vision:** Developed LLM-RAG pipelines, and computer vision solutions.
- **Data Science Workflow:** Managed end-to-end processes and analytics
- **Full-Stack Development:** Experience across AI projects, data pipelines, web, server, and databases.
- **Project Leadership:** Served as project lead and assistant
- **Adaptability & Responsibility:** Strong learning ability with accountability in technical tasks.

Experience

Samsung Electronics Co., Ltd.   Hwaseong-si, Republic of Korea
Staff Engineer, Evaluation & Analysis Process Development   2022.01 - Present
- Development of AI projects with LLMs, RAG, and AI-based image processing.
- Development of data analytics with data pipeline, root cause analysis, and dashboard.
- Development of full-stack server, web, and tooling infrastructure.

Samsung Electronics Co., Ltd.   Hwaseong-si, Republic of Korea
Engineer, Evaluation & Analysis Process Development   2018.11 - 2021.12
- Root cause analysis in DRAM(D1z, D1a, D1b, D1c) and developing auto analysis solution.
- Managed, tracked and predicted main lots' quality management.
- Anomaly detection with measurement and inspection.

Hyundai Mobis Co., Ltd.   Yongin-si, Republic of Korea
Research Engineer, Steering System Engineer Team   2017.07 - 2018.10
- Development/evaluation of car's steering system
- Gear System optimization

Main Projects

LLM-RAG search platform   2025.03 - Present
Developed a web platform enabling natural language search over SQL queries and Python scripts using LLM-RAG, to address the complexity of company's internal data pipeline and non-SQL experts. Built a modular RAG pipeline, optimized similarity search and integrated query metadata with internal systems, allowing sharing and discovery of previously inaccessible SQL/Python. Achieved 85/100 average user satisfaction and 80/100 search performance score.
Served as project lead and main developer, Led overall project management, architecture design, data pipeline development, LLM-RAG implementation, and performance evaluation.

Data Analysis System   2018.11 - Present
Developed root cause analysis (RCA) system to increase yield occurring during semiconductor development, addressing the traditional challenge of high manpower and time requirements, and expertise-dependent outcomes. Built a data pipeline and performed data preprocessing for all R&D center's products, and covering various data types and formats using statistical analysis techniques. Established as the official RCA tool for the R&D center, reducing 50% of working hours for specialized RCA experts. Supported approximately 300 monthly users.
Sole developer, responsible for end-to-end project development, including data pipeline, backend, frontend, and project management and ongoing operations.

AI-based image processing solution   2024.03 - Present
In semiconductor's non-standardized measurement and inspection, image processing is addressed hard-coded techniques by experts. By introducing and packaging AI-based image processing techniques, offer reduced man-hours and flexible image processing, and made accessible to non-experts through a web.
Served as a main developer, Implemented AI models, deployed GPU infrastructure.

Recipe Database and web platform   2023.03 - Present
Developed a recipe database to address the fragmentation and personalization issues of semiconductor's cleaning process data due to security limitations. Compiled and standardized individual recipe data from engineers to create a database, devised a way to infer recipes from equipment, and built a data pipeline to provide rich recipe data. Enabled recipe sharing, improving internal accessibility. Supported approximately 200 monthly users.
Served as a main developer, Designed end-to-end data pipelines and visualizations. Managed backend and database systems for the platform.

Lot quality management   2020.03 - 2021.12
Monitored process history of main lots during semiconductor development to predict outcomes and analyze defects, supporting process and measurement planning for future production. Ensured comprehensive lot quality management across D1a, D1b, and D1c product development phases, including schedule following, event tracking, and process monitoring. Identified critical process issues, contributing to accelerated development timelines and process improvement initiatives.

Education

Seoul National University   Seoul, Republic of Korea
M.Sc., Department of Naval Architecture and Ocean Engineering   2015.09 ~ 2017.06
- Majoring in the optimization algorithm
- Optimization of Ship Route Planning (M.Sc. thesis)

Seoul National University   Seoul, Republic of Korea
B.S., Department of Naval Architecture and Ocean Engineering   2009.03 ~ 2015.08

Additional

- Awards (Samsung Electronics internal)
  : 2025 AI BP festival / 2024 SRD e-Technology Journal / 2023 The Innovator
- Teaching (Samsung Electronics internal)
  : Practical ETL course / Fundamentals of Data Analysis / Spotfire Workshop
- Publication
  : 'Spotfire 간단히 그래프 그리기', ISBN:9788924098136, 2022.07

Technical Skills

- Python (Language), SQL (RDBMS/NoSQL/vectorDB/graphDB), FastAPI (Backend)
- PyTorch, langgraph, Sklearn (ML/Data), Docker, Git, Linux (DevOps), Spotfire (BI)