Kwang Myung Yu

AI Engineer · Director, R&D Group, GenON

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PROFILE

Started in power plant automation and model predictive control, then developed anomaly detection, forecasting, and computer vision models for energy and manufacturing. Led RAG, agent, and Text-to-SQL services for enterprise clients, and now leads GenON's Physical AI humanoid product, GenP, from product definition to VLA training pipelines.

SKILLS

Programming	Python for ML and services, C/C++ for control and embedded code, plus SQL and TypeScript.
AI/ML	LLM agents and RAG with LangChain/LangGraph, LiteLLM, OpenRouter, FastMCP, and Braintrust; anomaly detection, time-series forecasting, and computer vision with PyTorch and scikit-learn.
Robotics	Humanoid development on Unitree G1 and AgiBot X2 SDKs, VLA training, simulation in Isaac Lab and MuJoCo, and SLAM-based navigation.
Serving & Infrastructure	Model and LLM serving with FastAPI, vLLM, and Ollama on Docker and AWS, with MLflow, PostgreSQL, and vector databases (pgvector, Qdrant).
Domains	Energy and utilities (thermal power, renewables, ESS), petrochemical and steel processes, manufacturing, healthcare, and industrial automation (PLC, DCS).

EXPERIENCE

2026 – Present — **GenON, R&D Group** — Director / AI Product Engineer

Lead the Physical AI humanoid product as Product Owner (PO), defining the product, technology tree, and commercialization roadmap, and manage client projects as Project Manager (PM). Design the integrated architecture for voice conversation, scenario execution, VLA, VLN, navigation, and motion, and build the robot control panel. Propose and run new Physical AI and agent-system projects and hire talent.

2024 – 2025 — **PwC Consulting, Digital & AI** — Director / Senior ML Engineer

Developed generative AI services (RAG and agents), ML-based equipment diagnostics, price and demand forecasting, and control optimization. Proposed new projects, ran AI training for firm-wide and division staff, and hired talent.

2023 – 2024 — **MakinaRocks, AI Project Team** — Part Leader / Senior ML Engineer / PO

Developed anomaly detection, control optimization, and guidance models as well as RAG-based services, and supported LLMOps and MLOps environment setup. Planned new projects, improved the traceability and reproducibility of project deliverables, researched ML technology trends, and hired talent.

2021 – 2022 — **Samsung Electro-Mechanics, Equipment Technology Research Institute** — Principal Researcher

Built a software platform for data-driven anomaly detection and predictive maintenance and for running deep learning models. Analyzed and visualized manufacturing equipment performance and logistics data, and taught data analysis to employees.

2010 – 2020 — **KEPCO (Korea Electric Power Corporation), Data Science Lab** — Senior Data Scientist

Researched anomaly detection algorithms, time-series forecasting, and deep learning, including sequence and generative models. Built the AI and data science roadmap, identified and planned new research projects, and planned research infrastructure and analytics environments.

2008 – 2010 — **POSCO E&C, Energy Business Division** — Automation Design Engineer

Designed electrical and automation systems for power and energy plants, designed and built data acquisition infrastructure, developed control algorithms, and supported commissioning.

EDUCATION

2006 – 2008 **M.S. in Electrical Engineering** KAIST

1999 – 2006 **B.S., School of Electrical Engineering** Pusan National University

SELECTED PROJECTS

2026 – Present

GenP Physical AI Humanoid Product

GenON

- Own the product as PO, writing the product definition and commercialization roadmap around a common core + domain profiles structure.
- Architect a single workflow that integrates voice conversation, VLA manipulation, SLAM navigation, and whole-body control, and design and build a control panel for robot registration, monitoring, logs, alarms, task execution, and emergency stop.
- Lead the data and model pipeline, from Teleop data collection to VLA training and evaluation and a simulation environment for validation.

Unitree G1 · Unitree SDK · LeRobot (VLA) · Isaac Lab · MuJoCo · FAST-LIO2 · FastAPI · React · Next.js

2026 – 2027

Docent Humanoid Robot for a Brand Experience Center In progress

GenON · Global F&B company

- Managing the project as PM, defining scope, WBS, and acceptance criteria and running kickoff and interim reviews.
- Designing the architecture for voice conversation (STT/TTS), tour scenarios, SLAM-based autonomous navigation, and a LiDAR/depth collision-avoidance safety system.
- Building a control dashboard for robot status and alarms, scenario execution, language settings, and E-Stop.

AgiBot X2 Ultra · AgiBot SDK · SLAM · FastAPI · React · Next.js · External STT/TTS APIs

2025

SCM Data Analysis and Work Support Service

PwC Consulting · Samsung Electronics

- Led the project end to end and designed the service architecture and agent workflows built on Text-to-SQL.
- Deployed the service and managed its operation.

Qwen 8B (fine-tuned) · Llama 3.1 70B · LangChain · LangGraph · Hugging Face · vLLM · Milvus · LiteLLM · Braintrust

2024 – 2025

Online Consultation and Product Recommendation Assistant

PwC Consulting · Samsung Electronics

- Led the project end to end, designed the service architecture and agent/RAG workflows, and deployed and operated the service on Azure.
- Established an evaluation framework for the RAG service and built a program to automate evaluation.

Microsoft Azure · Azure AI Search · Python · LangChain · Ragas

2024

Raw-Material Price Forecasting and Market Analysis Dashboard

PwC Consulting · LOTTE Fine Chemical

- Framed price forecasting as supervised regression over about 150 candidate attributes and compared Linear Regression, Random Forest, XGBoost, and LSTM against a rule-based benchmark.
- Cut forecast error (MAPE) from 5.9% with the rule-based method to 1.3%, with multi-horizon forecasts 1–4 weeks and 1–3 months ahead.
- Built a four-page dashboard (Upload, EDA, Training, Dashboard) with SHAP-based driver analysis, letting business users upload data and retrain models themselves.

XGBoost · scikit-learn · SHAP · Streamlit

2024 – 2025

Green-Material Inventory Blend Optimization

PwC Consulting · LOTTE Fine Chemical

- Delivered one of three PoCs selected under the company-wide AI master plan, alongside raw-material price forecasting and an LLM-based service platform.
- Developed an optimization approach for choosing blend combinations from green-material inventory.

OTHER PROJECTS

2026	Agentic RAG Search Service for National Legal Information
2025	Conversational Service for Power Plant Maintenance History PwC Consulting · Power generation company
2024 – 2025	AI Master Plan and LLM Service PoC PwC Consulting · LOTTE Fine Chemical
2023 – 2024	ML and Control Optimization for a Sinter Plant MakinaRocks · Steel maker
2023	Q&A Chatbot for a Manufacturing Equipment Diagnosis System MakinaRocks
2023	ML Models for Petrochemical Equipment Lifetime Prediction and Condition Diagnosis MakinaRocks · Petrochemical company
2022	Lifestyle Guide Service Application GIVita
2021 – 2022	Visual Inspection Automation Software and ML Platform Samsung Electro-Mechanics
2019 – 2020	Anomaly Detection from Transformer Oil DGA Data KEPCO
2019 – 2020	Object Detection for Distribution Equipment Diagnosis KEPCO
2018 – 2019	Power Usage Pattern Analysis of EV Charging Stations in Jeju KEPCO
2016 – 2019	Solar Power Forecasting for Distribution Lines KEPCO
2015 – 2018	Commissioning and Performance Evaluation System for Frequency Regulation ESS KEPCO
2013 – 2014	Optimal Control for Power Plant Boiler Systems KEPCO

PATENTS

7 registered · 8 filed

2026	Method and system for automatically generating P&ID work reports and verifying them against the original drawings using a vision-language model Filing in progress
2020	Main steam temperature control apparatus and method Registered
2020	Apparatus and method for diagnosing power equipment Filed
2019	Traffic analysis apparatus for network-based control systems and operating method thereof Registered
2018	Control system for a hybrid energy storage system Filed
2018	Power plant simulator Registered
2017	Superheater temperature control method Registered
2017	Frequency control system Filed
2015	Steam turbine dynamics simulator, gas turbine dynamics simulator, and turbine generator control apparatus and method using the same Filed
2015	Model-based predictive control apparatus and method Filed
2014	Operation control method for an oxy-fuel combustion boiler Registered
2014	Air supply apparatus and air supply method for combustion equipment Registered
2014	Integrated control apparatus for a supercritical Brayton cycle with a variable heat source Filed
2014	Interface apparatus for a process control system Registered
2013	Lubricant supply apparatus Filed

SOFTWARE

–	Automated data preprocessing program for training anomaly detection machine learning models (Python 3.6) Pending
–	Image data preprocessing program for equipment recognition (deep learning object detection) (Python 3.6) Pending
2018	ESS control algorithm simulation program (MATLAB Simulink) Registered
2018	Simulator model for verifying gas turbine combined-cycle plant operation Registered
2015	Dynamic matrix-based predictive controller and simulator (C, C++) Registered
2015	Automatic PID controller tuning parameter calculation program for power generation control systems Registered
2015	Frequency analysis program for proportional-integral-derivative control loops (MATLAB) Registered
2015	Process identification program for proportional-integral-derivative controller design (MATLAB) Registered

	2014	Matrix computation program for multiple-input multiple-output (MIMO) control (C, C++) Registered
	2014	PID controller tuning parameter calculation program (MATLAB GUI) Registered
PAPERS	2026	A Novel Diagnostic Method on the Industrial Boilers Using Machine Learning: t-SNE, Auto-Encoder and LGBM D. J. Jang, M. J. Jeon, K. M. Yu, and M. C. Lee. *Energies, vol. 19, no. 4, art. 874* doi.org/10.3390/en19040874
	2018	Lessons Learned from Energy Storage System Demonstrations for Primary Frequency Control K. Yu, I. Choi, and J. Woo. *KEPCO Journal on Electric Power and Energy, vol. 4, no. 2, pp. 107–114* doi.org/10.18770/KEPCO.2018.04.02.107
	2015	Development of a DMC Block for Use with an RCP System and its Application Y.-S. Lee and K.-M. Yu. *Journal of Institute of Control, Robotics and Systems, vol. 21, no. 9, pp. 827–835* doi.org/10.5302/J.ICROS.2015.15.0086
SELECTED REPORTS	2026	Physical AI humanoid product (GenP) definition: common core and domain profiles GenON
	2025	Core generative AI technologies and the ecosystem for building services PwC Consulting
	2023	A survey of Transformer-based long-term time-series forecasting (LTSF) methods MakinaRocks
	2022	Case study of a personalized diet management service using CGM data GIVita
	2020	Deep learning for anomaly detection: unsupervised approach KEPCO Data Science Lab
	2018	The need for frequency regulation ESS as renewable generation grows Korean Institute of Electrical Engineers (KIEE), The Proceedings of the KIEE, vol. 67, no. 3
	+13 more reports at sguys99.github.io	
TEACHING & ADVISORY	2026	Lectures on LLMs, agents, and Harness Engineering for undergraduate and master's researchers Engineering Education Center, Incheon National University
	2020 – 2026	Visiting Researcher / Technical Advisor Department of Safety Engineering, Incheon National University
	2025	AI training curriculum for consultants (design and lectures) PwC Consulting
	2023, 2024	Advisory Committee Member, Future Education Incheon National University
	2023	Software version control with Git and GitHub (parts 1 and 2) Koscom
	2023	Big data analyst training program SK planet Tacademy
	2014 – 2023	Hands-on course on control systems and data analysis Korea Measurement & Control Technology Education Center
	2019 – 2020	Data science lectures for new ICT employees KEPCO Human Resources Development Institute
BOOKS	2022	Learning Git & GitHub with Python Code Youngjin.com
	2021	Git for Visual Studio Users WikiDocs
AWARDS	2025	Best People Awards PwC Consulting
	2020	President's Award (Excellence Prize), Big Data & AI Competition Korea East-West Power (EWP)
	2018	Merit Award (R&D) KEPCO
	2000, 2003 – 2006	Honors graduate; academic excellence scholarship Pusan National University