

Youngmin Ko

Seoul, South Korea | ymk5292@psu.edu

Work Experience

Research Engineer Intern

Jan 2026 – Feb 2026

Hanwha Aerospace

Pangyo R&D Center

- Developed a real-time AI monitoring pipeline for UGV communication logs, from feature extraction and anomaly scoring to dashboard-based visualization.
- Engineered communication-health features such as latency variation, jitter, packet loss, and parsing success rate, then evaluated Isolation Forest with domain-driven rules for anomaly detection.
- Analyzed jitter-based precursor signals and reduced anomaly detection delay by 50% by combining statistical monitoring, ML-based scoring, and rule-based validation.
- Packaged the system with 54 unit/integration tests, mypy/ruff checks, and 9 technical documents to support reproducibility, maintainability, and handoff.

Publications

When Point Metrics Mislead: Structure-Aware Evaluation Reveals Conditional Ranking Shifts in Time Series Anomaly Detection

Youngmin Ko

arXiv preprint, 2026

Selected Projects

Structure-Aware Evaluation Framework for Time Series Anomaly Detection

Feb 2026 – Present

- Identified conditional ranking reversals between AUC-ROC and Affiliation-F1 on industrial TSAD benchmarks.
- Developed a structure-aware reporting protocol and SAEScore reporting composite to analyze trade-offs between point-level and segment-level performance.
- Built an anomaly-duration taxonomy showing that dataset structure affects metric agreement and model ranking stability.
- Extended evaluation with bootstrap rank-stability and real-data boundary-offset analyses to explain why ranking shifts occur.
- Identified and locally patched a seed-propagation issue in the benchmark runner to improve experimental reproducibility.

Financial Advisor Chatbot | *Google Machine Learning Bootcamp*

Jun 2024 – Oct 2024

- Built an LLM-based financial advisor prototype using Gemma-2B, prompt templates, and an inference pipeline for personalized responses.
- Designed instruction-output examples based on user investment profiles and tested response quality across different user scenarios.
- Applied QLoRA and 4-bit NF4 quantization to run fine-tuning under limited GPU resources.

Industrial Demand Forecasting and Metric-Aware Modeling | *LG Aimers*

Jul 2025 – Aug 2025

- Analyzed zero-heavy demand patterns and SMAPE metric behavior to identify failure modes in baseline forecasting results.
- Designed feature engineering, a 3-group ensemble, and post-processing rules to improve prediction stability across sparse demand segments.
- Improved RMSE by 15% over the baseline and ranked in the top 4.2% among approximately 1,500 teams.

Cloud Deployment and CI/CD Automation Pipeline | *SoftBank Hackathon*

Nov 2025

- Built a deployment automation workflow using AWS ECS Fargate, Lambda, and GitHub Actions to support repeatable service releases.
- Applied a blue/green deployment strategy and integrated Slack notifications to monitor deployment status and operational signals.
- Gained experience connecting application development with cloud deployment, observability, and operational reliability.

Education

Pennsylvania State University

Expected Aug 2026

B.S. in Information Sciences and Technology

GPA: 3.70/4.00 — Major GPA: 3.89/4.00