GYEONGTAE IM

Machine Learning Application Engineer | CFD / Simulation | Python / ML | Hydrogen & Fire Safety

Seoul, Republic of Korea | +82-10-8523-9715 | xhflcpffl@gmail.com | LinkedIn: gyeongtae-im-467a8792

PROFESSIONAL SUMMARY

Mechanical engineer and simulation-driven AI practitioner with 6+ years of experience across CFD/LES, fire and fluid dynamics, hydrogen process risk assessment, digital-twin safety workflows, and Python-based engineering automation. Experienced in translating simulation and process-risk findings into engineering controls, technical reports, and stakeholder-facing recommendations. Strong fit for customer-facing ML application engineering at the intersection of CAE/simulation data, Python/ML, and industrial AI adoption.

ROLE FIT FOR NEURAL CONCEPT

- Mechanical Engineering M.S. with hands-on CFD/LES, FDS, hydrogen-process simulation, and simulation-driven risk assessment experience.
- Engineering-data workflows: What-if simulation, parameter sweep, drift/anomaly review, and predictive-maintenance concepts.
- Customer/stakeholder-facing technical documentation and presentation experience through government/international projects, technical reports, conferences, and papers.
- Actively strengthening PyTorch implementation, surrogate-modeling workflows, and Coderbyte-style Python problem solving for the hiring process.

CORE SKILLS

- **Python / ML:** Python, PyTorch implementation foundations, NumPy/Pandas-style data analysis, model evaluation, regression metrics, anomaly/drift detection concepts, surrogate-modeling preparation
- **Simulation / CAE:** CFD/LES, FDS, ANSYS Fluent exposure, SpaceClaim exposure, CAD/CAE workflow understanding, simulation data post-processing, MATLAB/Simulink/App Designer/Compiler
- **Engineering Domain:** Hydrogen refueling stations, hydrogen-process risk assessment, LH2 storage self-pressurization, fire/smoke/evacuation simulation, thermal-fluid analysis, renewable-energy surface R&D;
- **Application Engineering:** PoC support, technical reporting, stakeholder communication, customer training/adoption mindset, ROI framing, Korean/English technical communication

PROFESSIONAL EXPERIENCE

Mirae Kijun Research Institute (MERI) — Process Analysis / Hydrogen Digital Safety | Korea | Sep 2023 – Present

- Performed HRS digital-solution work across remote monitoring, diagnosis, and safety-management functions.
- Analyzed HRS refueling protocols under varying operating conditions such as temperature and pressure, interpreting outputs including final temperature, pressure, and refueling time.
- Implemented or supported parameter-sweep / What-if simulation workflows to compare operating conditions and identify performance or risk-sensitive scenarios.
- Reviewed time-series drift/anomaly detection and predictive-maintenance concepts for sensor-based safety diagnosis and digital-twin workflows.
- Conducted HRS economic evaluation and sensitivity analysis using process-simulator outputs.
- Developed modeling/calculation work for LH2 storage-tank self-pressurization and PRV-system analysis.
- Prepared technical documents and decision-ready materials for hydrogen safety, process analysis, and digital-solution stakeholders.

BK Energy — Senior / Responsible Researcher, Solar & Surface Engineering | Korea | May 2023 – Sep 2023

- Reviewed hydrophilic / super-hydrophilic nano-coating technologies for solar/energy equipment contexts.
- Analyzed equipment conditions from fluid-behavior, contamination, cleaning, and surface-wetting perspectives.

Hanbit Safety Technology — Research Engineer / Professional Research Personnel, Fire Dynamics & CFD/LES | Korea | Sep 2018 – Feb 2022

- Conducted FDS-based fire simulations and interpreted smoke spread, thermal behavior, visibility, and evacuation-related outputs.
- Supported fire and evacuation simulation risk assessments and translated simulation results into safety-design or operational recommendations.
- Executed and automated simulation workflows in Linux environments, including data post-processing and technical reporting.
- Participated in national R&D; related to IIoT / Digital Twin-based fire-protection systems and fire-risk analysis platforms.

KITECH — Contract Researcher, Surface Engineering | Korea | Mar 2016 – Sep 2016

- Supported R&D; on superhydrophobic surface fabrication, mechanism analysis, and high-viscosity rheology.

SELECTED PROJECTS

- BAM Digital Twin Project for HRS: HRS simulator + measured-data workflow, What-if simulation, drift/anomaly and fault-detection concepts, predictive-maintenance review.
- International collaborative R&D;: Digital solution demonstration for remote monitoring, diagnosis, and safety management of HRS.
- HRS design/operation safety pre-diagnosis program: refueling protocol simulation and parameter-sweep functionality.
- Integrated fire-risk analysis web-service platform: fire monitoring and risk-analysis R&D; using simulation outputs.

EDUCATION

- M.S., Mechanical Engineering, Soongsil University — GPA 4.33 / 4.50, Aug 2018
- B.S., Mechanical Engineering, Soongsil University — GPA 3.76 / 4.50, Feb 2016

SELECTED PUBLICATIONS & PRESENTATIONS

- Digital Twins – A Virtual Safety Management Solution for HRS. Germany-Korea Hydrogen Conference, Oct 2024.
- An Analysis of the Impact of Design Factors Using a Simulator of LH2 Storage Tank PRV System. Journal of The Korean Institute of Gas, May 2024.
- Analysis of Risky Supply Conditions during Fueling of Hydrogen Road Vehicle Using What-if Simulation. Journal of The Korean Institute of Gas, May 2024.
- Implementation of simulation according to various refueling protocols to predict hydrogen refueling capacity. Korean Institute of Gas, Nov 2023.
- Risk assessment through fire and evacuation simulation in the main control room of a domestic thermal power plant. Fire Science and Engineering, Dec 2021.
- Research profile: h-index 4, 41 citations.

SELECTED TRAINING & CERTIFICATIONS

- MathWorks KR/US Training — MATLAB, Simulink, App Designer, Compiler, Mar 2025.
- Astronomer Certification — Apache Airflow 3 Fundamentals, Jun 2025.
- KDT AI Master 2 — anomaly detection, cybersecurity, LLM pipeline, real-time speech processing, Jul 2025.
- edX / online coursework in statistics, time series, data analysis, and machine learning with Python.

LANGUAGES

- Korean: Native
- English: Professional technical reading/writing; technical-document review and English documentation experience. TOEIC Speaking IM2.