

Hui-Cheol Yu

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EDUCATION

KAIST B.S. Department of Aerospace Engineering & School of Computing 2020 – Present

WORK EXPERIENCE

Perigee Aerospace Internship Dec 2022 - Feb 2023
Design and Testing of an Augmented Spark Igniter for Ignition of Liquid-Fuel Launch Vehicle Engines. I worked with Autodesk Inventor and CAD programs and created a framework for igniter design.

RESEARCH EXPERIENCE

KAIST Undergraduate Research Program in SAI Lab Jan 2026 - Jun 2026
Research on Walker-Delta Constellation Optimization for Orbital GPU Cluster Deployment by conducting multi-objective optimization problem using a genetic algorithm.

Laboratory for information and Control Systems (LiCS) Lab Intern Sep 2025 - Dec 2025
Studying Multi Agent Scheduling Optimization and Reinforcement Learning based on Game Theory

Strategic Aerospace Initiative (SAI) Lab Intern Jun 2023 - Aug 2023
LAFLAS (LAunch FLight Analysis Software) C++ Development Environment Setting and Testing.

Combustion Modeling Laboratory Lab Intern Mar 2023 - Jun 2023
Study on material properties and structure for the Thermal Protection System (TPS) for launch vehicles.

KNGPDL Lab Intern Jun 2022 - Aug 2022
Analysis of rarefied flow around a re-entry launch vehicle in the stratosphere using DSMC and SPARTA.

HONORS, AWARDS

2026 AI Winter Camp – Hackathon on Agent Development with n8n 1st Place	2026
2025 ROK Navy-Marine Corps Artificial Intelligence Competition 1st Place	2025
2024 ROK Navy-Marine Corps Artificial Intelligence Competition 4th Place	2024
2024 ROK Navy-Marine Corps Startup Competition Honorable Mention Award	2024
KAIST Q-Day Award Q Special Category	2023
2023 Boeing Scholarship in Aerospace Engineering	2023
2023 NURA Academic Conference 2023 1st Place	2023

PUBLICATIONS

Hui-Cheol Yu, Minchan Song, Jaemyung Ahn. *Orbital GPU Clusters: Concept of Operations and Constellation Optimization*. Korean Society for Aeronautical & Space Sciences Spring Conference, 2026, Submitted.

Soul Lee, Seong Ho Lee, **Hui-Cheol Yu**, et al. *Analyzing and Addressing Challenges of LLM Applications in Defense*. Journal of Defense and Security, Vol. 6, No. 1, 2024, pp. 302–328.

PERSONAL PROJECT

Vulkan-based AI Inference Framework and GPU Optimization Nov 2025 – Feb 2026

- Designed and implemented a lightweight AI inference framework using Vulkan API in C++
- Implemented shader-level optimizations for compute workloads
- Improved execution efficiency through parallel dispatch tuning and memory optimization

Hypersonic Glide Vehicle Trajectory Optimization Sep 2025 - Dec 2025

- Developed a trajectory optimization framework for hypersonic glide vehicles, implementing numerical optimization methods to compute optimal flight trajectories and simulate atmospheric flight dynamics under mission constraints.

RAG-Driven LLM Chatbot and Generative AI Application Dec 2023 – Feb 2024

- Designed a RAG pipeline integrating vector retrieval and LLM generation
- Built a Stable Diffusion application with ComfyUI workflow automation

Freelance Full-Stack Development Dec 2025 – Feb 2026

- Developed a production-ready website using React and Vite

EXTRACURRICULAR ACTIVITY

GOPAX Guardians — College Student Ambassador 2023 - 2023

KAIST Undergraduate Association — Head of Policy Department 2022 - 2022

KAIST Undergraduate Student Council Election Management Committee 2022 - 2022

KAIST Rocketry Club THRUST — Club President 2021 - 2023

KAIST Undergraduate Association 2020 - 2022

TECHNICAL SKILLS

Language C/C++, Python, Java, MATLAB, Typescript, Scala

Framework PyTorch, Tensorflow, Simulink

Tools, Platforms Git, Vs-code, Docker

LANGUAGE SKILLS

Korean: Native Speaker

English: Fluent

OTHERS

Military Service, Republic of Korea Navy Dec 2023 - Aug 2025