

Euiyoung Kim

EDUCATION

Purdue University (United States) <i>Doctor of Philosophy, Mechanical Engineering</i>	Aug. 2026 – Present Ph.D. Student
Korea Aerospace University (South Korea) <i>Master of Science, Aerospace & Mechanical Engineering (GPA 4.0/4.0)</i>	Mar. 2024 – Aug. 2025 Combined B.S./M.S. Program
Korea Aerospace University (South Korea) <i>Bachelor of Engineering, Aerospace & Mechanical Engineering (GPA 3.75/4.0)</i>	Mar. 2018 – Feb. 2024 Magna Cum Laude

* Includes mandatory military service (2019–2021)

RESEARCH INTERESTS AND TECHNOLOGY SPECIALTIES

Scientific machine learning for computational fluid dynamics and complex physical systems
Reduced-order modeling, surrogate modeling, and operator learning for high-dimensional dynamical systems
Data assimilation, ensemble Kalman filtering, and uncertainty quantification for robust prediction and simulation
Machine-learning-assisted modeling of turbulent flows, shock-dominated flows, and nonlinear transport phenomena

EXPERIENCES

Graduate Researcher <i>Dept. of Aerospace and Mechanical Engineering, Korea Aerospace University</i>	Mar. 2024 – Aug. 2025 <i>South Korea</i>
- Developed an ANN-GA inverse-design optimization framework for solid rocket motor grain geometries, deployed as operational software and validated on design cases. - Served as primary liaison between Agency for Defense Development (ADD), a User Interface (UI) development company, and advisor, with responsibility for coordinating functionality, milestones, and deployment strategy. - Explored a hybrid AI-physics-based optimization approach integrating DeepONet to address computational cost and data-dependency challenges in early-stage design studies.	
Undergraduate Researcher <i>Dept. of Aerospace and Mechanical Engineering, Korea Aerospace University</i>	Feb. 2022 – Feb. 2024 <i>South Korea</i>
- Led ADD-funded projects from dataset preprocessing to algorithm development, independently executing the majority of technical tasks; outcomes resulted in a first-author publication in <i>Acta Astronautica</i>. - Performed CFD-based flow analysis of a Blended-Wing-Body aircraft with propellers using Ansys Fluent, evaluating aerodynamic performance and propulsion–airframe interactions. - Contributed to a parametric study of Savonius vertical-axis wind turbines by varying deflector geometries and operating conditions, analyzing aerodynamic performance using CFD simulations.	

RESEARCH PROJECTS

Propellant Grain Shape Optimization Considering Cross-Sectional Geometry (Hanwha Aerospace-funded)
Developed an optimization algorithm considering cross-sectional grain geometry; independently led the project execution and served as the primary contact point between institutions (Mar. 2024 – Nov. 2025).

Solid Rocket Propellant Shape Optimization Design Concept Study (ADD-funded, Republic of Korea)
Performed debugging of existing analysis code and developed an optimization program for solid rocket propellant grain design; contributed as a core technical member (Aug. 2022 – Nov. 2023).

Flow Analysis and Performance Prediction of Flying Cars (National Research Foundation of Korea-funded, Korea Aerospace University)
Conducted research on flow analysis and performance prediction of a Blended Wing Body (BWB) aircraft; carried out aerodynamic simulations and performance assessment (Feb. 2022 – Jul. 2022).

PUBLICATIONS

Kim, E., Joo, S., Oh, S. (2025). *Inverse design framework for optimizing solid propellant grains toward target performance profiles.* *Acta Astronautica*. (IF = 3.1, SJR Q1) (First Author) DOI: <https://doi.org/10.1016/j.actaastro.2025.09.039>

Han, Y., **Kim, E.**, Oh, S. (2025). *Numerical investigations on double Savonius vertical axis wind turbines with a deflector: Effects of turbine and deflector-related parameters.* *Energy Reports*. (IF = 5.1, SJR Q1) (Second Author) DOI: <https://doi.org/10.1016/j.egy.2025.11.095>

CONFERENCES

Kim, E., Oh, S., Joo, S., Oh, S.J. “Shape optimization of solid propellants based on artificial neural networks.” *Korean Society of Propulsion Engineers 2024 Fall Conference (KSPE 2024)*.

Kim, Y.O., Han, Y., **Kim, E.**, Oh, S. “Flow analysis of double Savonius vertical axis wind turbines with a deflector.” *Korean Society of Computational Fluids Engineering 2024 Fall Conference (KSCFE 2024)*.

Oh, S., **Kim, E.**, Oh, S.J., Heo, J., Joo, S. “Grain geometry optimization with consideration of performance constraints.” *Korean Society of Propulsion Engineers 2025 Spring Conference (KSPE 2025)*.

HONORS AND AWARDS

Full Tuition Scholarship for Highest Academic Achievement — Spring 2024

Boeing-KAU Award — 4th Place, Fall 2021 (Boeing-KAU co-hosted competition on Mars habitation design ideas)

Academic Excellence Scholarships (Merit-based), multiple semesters (2018, 2019, 2023)

Undergraduate Research Assistant Scholarship — Spring 2023 to Fall 2023

Teaching Assistant Scholarship — Spring 2025

TECHNICAL STRENGTHS

Programming: Proficient in Python, MATLAB, and Fortran, with experience integrating cross-language workflows for numerical modeling, data processing, and optimization automation.

Simulation Tools: Experienced with ANSYS Fluent for CFD and performance prediction.

Documentation: Proficient in L^AT_EX for technical writing and academic publishing.