Yu-Eop Kang

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EDUCATION

Seoul National University — Seoul, Republic of Korea
Bachelor of Science in Aerospace Engineering — August 29, 2018
Seoul National University — Seoul, Republic of Korea
Integrated Ph.D. in Aerospace Engineering — February 28, 2025/Expected

Research Interest

Data-driven reduced order modeling

- Development of accurate and reliable surrogate model for predicting high-dimensional data.

ML/AI applications for aerodynamic shape design

- Using state-of-the-art ML/AI model for solving design challenges in aerodynamic shape optimization
- Rapid aerodynamic performance analysis and optimization of rotor blade

Uncertainty quantification

- Identification and quantification of uncertainties in numerical simulations and wind tunnel experiments

Publications

Y.E. Kang, D. Lee, K. Yee, Compact and intuitive airfoil parameterization method through physics-aware variational autoencoder, *under review*.
Y.E. Kang*, S. Yang*, K. Yee, Physics-aware reduced-order modeling of transonic flow via β-variational autoencoder, *Physics of Fluids 34(7)*, 2022. * Co-1st author
Y.E. Kang, S. Shon, K. Yee, Local non-intrusive reduced-order modeling based on soft clustering and classification algorithm, *Int. J. Num. Methods Eng. 123(10)*, 2022.
Y.E. Kang, S. Min, T. Kim, K. Yee, Initial bead growth and distribution under low-speed icing condition, *Int. J. Heat and Mass Trans. 149*, 2020.
S. Shon, W.G. Ji, B. Kim, **Y.E. Kang**, K. Yee, Evaluation of snow accumulation simulation on a train using experimental results, J. Wind Eng. Indus. Aero. 232, 2023.
D. Lee, **Y.E. Kang**, D.H. Kim, K. Yee, Aeroelastic design and comprehensive analysis of composite rotor blades through cluster-based Kriging, *AIAA J. 60(10)*, 2022.
Y. Yoon, **Y.E. Kang**, S.W. Kim, Y. Park, K. Yee, C.D. Carter, S.D. Hammack, H. Do, Proper orthogonal decomposition of continuum-dominated emission spectra for simultaneous multi-property measurements, *Energy 254*, 2022.
S. Shon, **Y.E. Kang**, Y. Hong, K. Yee, R.S. Myong, Design of hybrid airfoils for icing tunnel tests based on reduced-order modeling methods, *J. Aircr. 59(4)*, 2022.

Oral Presentation

Y.E. Kang, D. Lee, K. Yee, Leveraging Deep Neural Networks for Efficient Prediction of Aerodynamic Performance Tables, *AIAA AVIATION 2024 Forum*, 2024.
Y.E. Kang, D. Lee, K. Yee, Physically interpretable airfoil parameterization using variational autoencoder-based generative modeling, *AIAA SCITECH 2024 Forum*, 2024.
Y.E. Kang, K. Yee, Reduced-order modeling of icing CFD data for uncertainty quantification of icing wind tunnel experiments, *SAE Technical Paper*, 2023.
Y.E. Kang, S. Min, T. Kim, K. Yee, Experimental investigation on bead growth and dispersion under low-speed icing condition, *Int. Workshop on Atmos. Icing Struct.*, 2019.

SKILLS and Techniques

Advanced proficiency in Python, and MATLAB, specialized in developing ML/AI models.
Proficient in collaborative research, especially inter-disciplinary research efforts.

HONORS AND AWARDS

Industry-sponsored scholarship in the Device Solutions (DS) Division, Samsung Electronics** — September 2022 – Present

** Highly competitive Ph.D. scholarship with guaranteed post-graduate employment at Samsung Electronics. Received a grant of approximately $1,500 per month.