

# Heejo Kong

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## CONTACT INFORMATION

**Korea University**  
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## RESEARCH INTERESTS

My research aims to develop reliable world models for real-world systems under imperfect supervision (e.g., action-less videos). I study how to learn from incomplete and noisy data [J1, J2, J4, C1, C2, C3], and how to incorporate structured inductive biases such as physical dynamics into neural networks [J3, J5, C5, C6]. Building on this, I focus on scalable generative and autoregressive models for spatiotemporal prediction [J5, C4], with the goal of enabling data-driven simulation and decision-making in robotics.

## EDUCATIONS

**Korea University** Seoul, South Korea  
Ph.D. in Brain & Cognitive Engineering Sep. 2020 - Present  
Advisor: [Seong-Whan Lee](#)  
Laboratory: [Pattern Recognition & Machine Learning Lab.](#)

**Seoul National University of Science and Technology** Seoul, South Korea  
B.S. in Manufacturing Systems & Design Engineering Mar. 2012 - Feb. 2019

**Northumbria University** Newcastle, England  
B.S. in Manufacturing Systems & Design Engineering Mar. 2013 - Feb. 2019  
Dual degree program

## EXPERIENCES

**Samsung Electronics** Hwaseong, South Korea  
Semiconductor Engineer Feb. 2019 - July 2020  
– Worked as part of the Diffusion technology team in Foundry Division

## PUBLICATIONS

### Journal Proceedings

- [J1] **H. Kong**, S.-J. Kim, G. Jung, and S.-W. Lee, "Diversify and Conquer: Open-Set Disagreement for Robust Semi-Supervised Learning With Outliers", In *IEEE Transactions on Neural Networks and Learning Systems (TNNLS)*, 2025.
- [J2] G. Jung, **H. Kong**, and S.-W. Lee, "Text-Guided Weakly Supervised Framework for Dynamic Facial Expression Recognition", In *Pattern Recognition (PR)*, 2025.
- [J3] B. Park, M. Koh, **H. Kong**, and S.-W. Lee, "Compositional Meta-Learning for Mitigating Task Heterogeneity in Physics-Informed Neural Networks", In *Pattern Recognition (PR)*, 2026.
- [J4] [Under Review] S.-J. Kim, **H. Kong**, D.-H. Lee, H.-G. Kwak, and S.-W. Lee, "A Novel Adversarial Approach for EEG Dataset Refinement: Enhancing Generalization through Proximity-to-Boundary Scoring", In *IEEE Transactions on Cybernetics (TCYB)*, TBD.
- [J5] [Under Review] **H. Kong**, B. Park, and S.-W. Lee, "Directional Consistency Matters: Debiased Rollouts for Neural PDE Operators", In *IEEE Transactions on Neural Networks and Learning Systems (TNNLS)*, TBD.
- [J6] [Under Review] D.-H. Lee, S.-J. Kim, **H. Kong**, and S.-W. Lee, "Unified Training for Time-series Decoding under Heterogeneous Channel Montages without Structural Modifications", In *Pattern Recognition (PR)*, TBD.

## Conference Proceedings

- [C1] **H. Kong**, G.-H. Lee, S. Kim, and S.-W. Lee, "Pruning-Guided Curriculum Learning for Semi-Supervised Semantic Segmentation", In *Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*, 2023.
- [C2] **H. Kong**, S. Kim, H.-J. Kim, and S.-W. Lee, "Unknown-Aware Graph Regularization for Robust Semi-Supervised Learning from Uncurated Data", In *Proceedings of the AAAI conference on artificial intelligence (AAAI)*, 2024.
- [C3] D. Shrewsbury, S. Kim, Y.-E. Kim, **H. Kong**, and S.-W. Lee, "Instance-Ambiguity Weighting for Multi-Label Recognition with Limited Annotations", In *Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD)*, 2024.
- [C4] H.-J. Kim, J.-H. Hong, **H. Kong**, and S.-W. Lee, "TE-TAD: Towards Fully End-to-End Temporal Action Detection via Time-Aligned Coordinate Expression", In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2024.
- [C5] M. Koh, B. Park, **H. Kong**, and S.-W. Lee, "Integrating Locality-Aware Attention with Transformers for General Geometry PDEs", In *Proceedings of the International Joint Conference on Neural Networks (IJCNN)*, 2025.
- [C6] **H. Kong**, B. Park, S.-J. Kim, and S.-W. Lee, "Modularity-free Conflict-averse Training for Generalized PINNs", In *Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2026.

## Patents

- [P1] **H. Kong**, S. Kim, Y. Kim, G. Bak, S.-W. Lee, and Y. Lee, "Electronic Device, Method, and Non-transitory Computer-readable Storage Medium for Facial Attribute Recognition based on Language-centric Model", WO/2025/216339.

## RESEARCH PROJECTS

### Development of a Battery Remaining Useful Life (RUL) Evaluation System

Funded by [Korea Testing & Research Institute \(KTR\)](#)

- Government R&D Project Apr. 2025 - Present
- Machine learning researcher – Physics-aware temporal dynamics learning

### Development of Active Conversational AI Solution

Funded by [NCSOFT Corporation](#)

- Industry-Academia Collaboration Project Nov. 2022 - Dec. 2023
- Machine learning researcher – VLM models for facial expression recognition

### Development of Untact Video Conferencing Solution

Funded by [Saehacomms](#)

- Industry-Academia Collaboration Project Sep. 2020 - Aug. 2021
- Machine learning researcher – Segmentation models for background matting

## GRANTS AND AWARDS

### Dream AI Open Challenge 2020

Funded by [Gwangju Institute of Science and Technology \(GIST\)](#)

- 3rd prize in Energy division Dec. 2020