HOIN JUNG

Purdue University, West Lafayette, IN, USA
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EDUCATION

Purdue University — **West Lafayette, IN, USA**
Ph.D. in Electrical and Computer Engineering — Jan. 2023 – Present
· Expected Graduation: May 2027

Seoul National University — **Seoul, Korea**
M.S. in Computational Science and Technology — Sept. 2020 – Aug. 2022
· Thesis: "Local-Ensemble Graph Collaborative Filtering with Spectral Co-Clustering"

Korea Aerospace University — **Goyang, Korea**
B.E. in Aerospace & Mechanical Engineering — Mar. 2010 – Feb. 2014
· Major of Aircraft System Engineering
· *Vice President*, Students Government (2013)

RESEARCH INTERESTS

Weakly Supervised Learning
· Developing Self-Supervised Learning
· Exploring Positive-Unlabeled Learning and Novel Category Discovery in online environments

Trustworthy AI
· Mitigating bias and enhancing reliability in multimodal, foundational, and generative models
· Improving factuality and interpretability across diverse modalities and tasks

PUBLICATIONS

T.Jang, **H.Jung**, and X.Wang, "Target Bias Is All You Need: Zero-Shot Debiasing of Vision-Language Models with Bias Corpus", *International Conference on Computer Vision* (ICCV), 2025.

H.Jung, J.Chai, and X.Wang, "Adversarial Latent Feature Augmentation for Fairness", *International Conference on Learning Representations* (ICLR), 2025.

H.Lee, **H.Jung**, and S.Bae, "Framing Korea: the role of international student YouTubers in shaping destination perceptions", *Current Issues in Tourism*, 2025.

H.Jung and X.Wang, "Towards On-the-Fly Novel Category Discovery in Dynamic Long-Tailed Distributions", *Winter Conference on Applications of Computer Vision* (WACV), 2025.

H.Jung and X.Wang, "Fairness-Aware Online Positive-Unlabeled Learning", *Empirical Methods in Natural Language Processing* (EMNLP), Industry Track, 2024.

H.Jung, T.Jang, and X.Wang, "A Unified Debiasing for Vision-Language Model across Modalities and Tasks", *Neural Information Processing Systems* (NeurIPS), 2024. **(Spotlight)**

H.Jung, V.Nascimento, H.Liu, X.Wang, C.K.Koh, and D.Jiao, "Explainable Planar Multiband Antenna Designer with Wasserstein Generative Adversarial Network", *IEEE International Symposium on Antennas and Propagation*, 2024. **(Oral Presentation)**

H.Jung, H.S.Choi, and M.Kang, "Boundary Enhancement Semantic Segmentation for Building Extraction From Remote Sensed Image", *IEEE Transactions on Geoscience and Remote Sensing*, 2021.

PAPERS UNDER REVIEW

H.Jung, and X.Wang, "Beyond Chunking: Efficient Global Pooling for Holistic Long-Document Representation", *International Conference on Learning Representations* (ICLR), 2026.

H.Jung, J.Chai, and X.Wang, "Adaptive Logit Adjustment for Debiasing Multimodal Language Models", *International Conference on Learning Representations* (ICLR), 2026.

S.Lu, **H.Jung**, Z.Fang, and X.Wang, "Inside Out: Harnessing Biased Models for Fair Diffusion Sampling without Demographics," *International Conference on Learning Representations* (ICLR), 2026.

H.Jung, J.Liu, A.Rao, H.Kim, X.Zhao, A.Chandra, and M.Sarkis, "TVAgent: A lightweight Vision-Language-Model for TV GUI Agent", *Innovative Applications of Artificial Intelligence* (IAAI), 2026.

C.Han, Y.Sim, **H.Jung**, J.Lee, H.Lee, YS.Kang, S.Woo, G.Kim, HW.Park, and M.Jun, "IMPACT: Industrial Machine Perception via Acoustic Cognitive Transformer", *Neural Information Processing Systems* (NeurIPS), Datasets and Benchmarks Track, 2025.

H.Jung, S.Lu, D.Wang, and X.Wang, "Reliable Image Quality Evaluation and Mitigation of Quality Bias in Generative Models", *Neural Information Processing Systems* (NeurIPS), 2025.

H.Jung, V.Nascimento, H.Liu, X.Wang, C.K.Koh, and D.Jiao, "Explainable and Automated Antenna Designer with Generative AI", *IEEE Transactions on Antennas and Propagation*, 2025.

AWARDS AND SCHOLARSHIP

Outstanding Reviewers for CVPR 2025 (top 5% reviewers) — Jun. 2025

Purdue Graduate Student Government - Travel Grants — Nov. 2024

NeurIPS 2024 Scholar Award - Full Financial Aid — Oct. 2024

NeurIPS 2024 Spotlight Paper — Oct. 2024

Future Industry Talent Graduate Scholarship,
Hyundai Motor Chung Mong-Koo Foundation — Fall 2021 – Spring 2022

National S&T (Science & Technology) Scholarship,
Korea Student Aid Foundation — Fall 2010

WORK EXPERIENCE

Heterogeneous Integration Design Institute — **West Lafayette, IN, USA**
Research Assistant, Elmore ECE Emerging Frontiers Center — Jan. 2023 – Present

- Designed an automatic generative designer for multi-band planar antenna.
- Engineered an explainable model for the ML-based EM simulation via SHAP values.

Samsung Research America — **Irvine, CA, USA**
Research Scientist Intern — May. 2025 – Aug. 2025

- Collaborated with engineers as a research scientist intern on AI-driven Smart TV solutions.
- Designed an automatic keyboard navigation system powered by a vision-language model, designed for real-world deployment across Smart TV applications.

Samsung Electronics — **Suwon, Korea**
Engineer, R&D Team, Department of Digital Appliance — Aug. 2017 – Aug. 2020

- Developed the thermo-fluid performance of freezing system for brand-new refrigerator.
- Analyzed and optimized refrigeration cycle control system to reduce the power usage.

ROK Air Force — **Chungju, Korea**
Lieutenant, Aircraft Maintenance Officer, The 19th Fighter Wings — Jun. 2014 – May. 2017

- Managed aircraft line maintenance and administered ground safety department for the military base.

PRESENTATIONS

"An Efficient and Unified Debiasing Approach for Vision-Language Models across Modalities and Tasks" Jul. 2024
Lightning Talk, Fast Machine Learning for Science Conference 2024

"Explainable Planar Multiband Antenna Designer with Wasserstein Generative Adversarial Network" Jul. 2024
Oral, 2024 IEEE International Symposium on Antennas and Propagation

"Boundary Improvement Module for Binary Semantic Segmentation in Remote Sensing" Jun. 2021
Oral, Korean Society for Industrial and Applied Mathematics (KSIAM)

"Segmentation model for tracking building in satellite imagery" Nov. 2020
Poster, Korean Society for Industrial and Applied Mathematics (KSIAM)

ACADEMIC SERVICE

Conference Reviewing & Program Committees

· **Outstanding Reviewer**, CVPR 2025
· Program Committee: AAAI (2025, 2026)
· Reviewer: WACV (2026), NeurIPS (2025), SafeMM-AI Workshop (ICCV 2025), ECCV (2024), AAAI (2024), KDD (2024)

Journal Reviewing

· IEEE Transactions on Geoscience and Remote Sensing

University Service

· Grant Review and Allocation Committee, Purdue Graduate Student Government

PROJECTS EXPERIENCE

Deep Learning based Video Content Analysis and Narrative Analysis Jun. 2022 – Dec. 2022
National Research Foundation of Korea
· Implemented YouTube data crawler and text classification for comprehensive narrative analysis.

Superpixel-based Graph Convolutional Network for Semantic Segmentation Fall 2021
Course: Machine Learning for Visual Understanding, Seoul National University, Korea
· Designed superpixel-based graph convolution network semantic segmentation framework.
· Utilized SuperpixelGCN for remote sensed images.

Risk Detector via Object Detection Jun. 2021 – Dec. 2021
KCC Co.
· Designed multi object detection and risk degree estimation model for construction site safety.
· Modified open source framework using Open-MMLab library.

Place Classifier for Emergency Management System Jan. 2021 – Dec. 2021
Yonsei Severance Hospital
· Designed Res2Net-based classifier framework using Pytorch.
· Collected datasets for place classifier for emergency management system.

TEACHING EXPERIENCE

ECE 570 Artificial Intelligence | Teaching Assistant Spring 2025
Electrical & Computer Engineering, Purdue University

ECE 570 Artificial Intelligence | Teaching Assistant Fall 2024
Electrical & Computer Engineering, Purdue University

Computer Literacy & Programming (Python) | Instructor — Mar. 2021 – Jul. 2022
Language Education Institute, Seoul National University

L0444: Basic Computing (Python) | Teaching Assistant — Spring 2022
Faculty of Liberal Education, Seoul National University

L0444: Basic Computing (Python) | Teaching Assistant — Spring 2021
Faculty of Liberal Education, Seoul National University