HOIN JUNG

Purdue University, West Lafayette, IN, USA
jung414@purdue.edu | 765)532-2263 | linkedin.com/in/hoinjung

EDUCATION

Purdue University — **West Lafayette, IN, USA**
Ph.D. in Electrical and Computer Engineering — Jan. 2023 – Expected May. 2027
· Dissertation: Efficient Surgical Interventions for Trustworthy Multimodal Machine Learning Systems

Seoul National University — **Seoul, Korea**
M.S. in Computational Science and Technology — Sep. 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

RESEARCH INTERESTS

Trustworthy & Efficient Multimodal Systems

Research Context

. Primary Domain: Trustworthy AI, Multimodal Systems, Retrieval-Augmented Generation (RAG)
. Key Problems: Factual Grounding, Fairness & Debiasing, Uncertainty Quantification (UQ), Hallucination

Research Methodology

. Core Philosophy: Efficient Post-Hoc Methods without Costly Retraining
. Key Techniques: Causal Inference, Latent Feature & Logit Adjustment, Multimodal Explainability

WORK EXPERIENCE

Los Alamos National Lab (LANL) — **Los Alamos, NM, USA**
Advancing Machine Learning for Scientific Discovery Fellowship (Graduate Internship) — May 2026 - July 2026
· Awarded a competitive fellowship to conduct research within the CAI-2 / Computational Physics and Methods Group during the AML Summer School.
· Build a temporal-shift reliability benchmark to systematically compare causal neural networks against standard predictive models under tunable rates of distributional drift.
· Measure model calibration, coverage, and predictive uncertainty degradation using Uncertainty Quantification (UQ) tools while evaluating feature-importance stability.

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
· Conducted research on AI-driven Smart TV solutions in collaboration with senior engineers
· Developed an automatic keyboard navigation system using vision-language models (VLMs), specifically optimized for commercial deployment

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

PUBLICATIONS

1. **H.Jung**, S.Lu, D.Wang, and X.Wang, "Assessing the Reliability of Image Quality Metrics and Mitigating Quality Bias in Generative Models", *Conference on Computer Vision and Pattern Recognition* (CVPR), Findings, 2026.
2. **H.Jung**, V.Nascimento, H.Liu, X.Wang, C.K.Koh, and D.Jiao, "Generative Antenna Design with Accuracy, Diversity, and Explainability via Dynamic Pseudo-Labeling", *IEEE Journal on Multiscale and Multiphysics Computational Techniques* (JMMCT), 2026.
3. **H.Jung**, J.Chai, and X.Wang, "Adaptive Logit Adjustment for Debiasing Multimodal Language Models", *International Conference on Learning Representations* (ICLR), 2026.
4. **H.Jung**, J.Liu, A.Rao, X.Zhao, A.Chandra, and M.Sarkis, "TVAgent: A lightweight Vision-Language-Model for TV GUI Agent", *AAAI Workshop on Deployable AI (DAI)*, 2026.
5. 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.
6. **H.Jung**, J.Chai, and X.Wang, "Adversarial Latent Feature Augmentation for Fairness", *International Conference on Learning Representations* (ICLR), 2025.
7. H.Lee, **H.Jung**, and S.Bae, "Framing Korea: the role of international student YouTubers in shaping destination perceptions", *Current Issues in Tourism*, 2025.
8. **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.
9. **H.Jung** and X.Wang, "Fairness-Aware Online Positive-Unlabeled Learning", *Empirical Methods in Natural Language Processing* (EMNLP), Industry Track, 2024.
10. **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)**
11. **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* (AP-S), 2024. **(Oral Presentation)**
12. **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* (TGRS), 2021.

PAPERS UNDER REVIEW

1. **H.Jung**, and X.Wang, "Uncertainty-Aware Hybrid Retrieval for Long-Document RAG", *Empirical Methods in Natural Language Processing* (EMNLP), 2026.
2. **H.Jung**, and X.Wang, "Beyond Chunking: Efficient Global Pooling for Holistic Long-Document Representation", *Empirical Methods in Natural Language Processing* (EMNLP), 2026.
3. X.Liu, R.Zhang, W.Yu, S.Xiong, H.Liu, F.Wu, **H.Jung**, M.Fredrikson, X.Wang, and J.Gao, "The Vision Wormhole: Latent-space Communication in Heterogeneous Multi-Agent System", *Empirical Methods in Natural Language*

Processing (EMNLP), 2026.

4. **H.Jung**, and X.Wang, "The Cost of Context: Mitigating Textual Bias in Multimodal Retrieval-Augmented Generation", *Neural Information Processing Systems* (NeurIPS), 2026.
5. S.Lu, **H.Jung**, Z.Fang, and X.Wang, "Open-World Diversity Guidance for Fair Image Generation," *Neural Information Processing Systems* (NeurIPS), 2026.
6. **H.Jung**, H.Liu, K.Chao, X.Wang, C.K.Koh, and D.Jiao, "Uncertainty-Aware S-Parameter Estimation of Chiplet Interconnects via Conformalized Quantile Regression", *International Conference on Computer-Aided Design* (ICCAD), 2026.

AWARDS AND SCHOLARSHIP

Advancing Machine Learning for Scientific Discovery Fellowship Summer 2026
Los Alamos National Laboratory
- Awarded to select graduate researchers to develop trustworthy and transparent machine learning methodologies for critical scientific applications.

Bilsland Dissertation Fellowship Spring 2027
Purdue University
- Awarded to outstanding Ph.D. candidates to support final dissertation completion.

CVPR 2025 Outstanding Reviewers (Top 5%) Jun. 2025

Purdue Graduate Student Government Travel Grant Nov. 2024

NeurIPS 2024 Scholar Award Oct. 2024

NeurIPS 2024 Spotlight Paper (Top 2.5%) Oct. 2024

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

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

ACADEMIC SERVICE

Conference Reviewing & Program Committees
· Area Chair: IEEE ICASSP (2026)
· Program Committee: AAAI (2024, 2025, 2026), IEEE BigData (2025)
· Reviewer: ICLR (2026), CVPR (2025, 2026), WACV (2026), NeurIPS (2025, 2026), SafeMM-AI Workshop (ICCV 2025), ECCV (2024), KDD (2024, 2026)

Journal Reviewing
· IEEE Journal on Multiscale and Multiphysics Computational Techniques (JMMCT)
· Transactions on Machine Learning Research (TMLR)
· IEEE Transactions on Geoscience and Remote Sensing (TGRS)

University Service
· Grant Review and Allocation Committee, Purdue Graduate Student Government

LEADERSHIP

Mentor, Purdue ECE G-LaMP (Graduate Leadership and Mentorship Program) (2025-2026)

Co-Chair, ICON Student Research Conference, Purdue University (2026)

Vice President, Students Government, Korea Aerospace University (2013)

PRESENTATIONS

1. "Adaptive Logit Adjustment for Debiasing Multimodal Language Models" Mar. 2025
   Poster, Purdue ECE Open House Symposium
2. "A Unified Debiasing Approach for Vision-Language Models across Modalities and Tasks" Dec. 2024
   Spotlight Poster, Neural Information Processing Systems (NeurIPS 2024)
3. "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
4. "Explainable Planar Multiband Antenna Designer with Wasserstein Generative Adversarial Network" Jul. 2024
   Oral, 2024 IEEE International Symposium on Antennas and Propagation
5. "Boundary Improvement Module for Binary Semantic Segmentation in Remote Sensing" Jun. 2021
   Oral, Korean Society for Industrial and Applied Mathematics (KSIAM)
6. "Segmentation model for tracking building in satellite imagery" Nov. 2020
   Poster, Korean Society for Industrial and Applied Mathematics (KSIAM)

TEACHING EXPERIENCE

ECE 695 Machine Learning in Bioinformatics and Healthcare Purdue University, West Lafayette, IN
Guest Lecture Fall 2025

· Designed and delivered a lecture on "Post-Training and Inference-Time Approaches for ML in Healthcare," introducing advanced efficiency techniques to graduate students.

ECE 570 Artificial Intelligence Purdue University, West Lafayette, IN
Teaching Assistant, Electrical & Computer Engineering Fall 2024, Spring 2025, Spring 2026

· Held office hours and led student projects across three course sections, serving a total of 804 students

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

· Designed and delivered a Python programming course for beginner-level students for three semesters

L0444: Basic Computing (Python) Seoul National University, Seoul, Korea
Teaching Assistant, Faculty of Liberal Education Spring 2021, Spring 2022

· Led weekly lab sessions for 50+ students each semester