

HOIN JUNG

Purdue University, West Lafayette, IN, USA

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EDUCATION

Purdue University

Ph.D. in Electrical and Computer Engineering

West Lafayette, IN, USA

Jan. 2023 – Expected May. 2027

- Dissertation: Efficient Surgical Interventions for Trustworthy Multimodal Machine Learning Systems

Seoul National University

M.S. in Computational Science and Technology

Seoul, Korea

Sep. 2020 – Aug. 2022

- Thesis: Local-Ensemble Graph Collaborative Filtering with Spectral Co-Clustering

Korea Aerospace University

B.E. in Aerospace & Mechanical Engineering

Goyang, Korea

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, Hallucination, Bias & Recorruption

Research Methodology

- Core Philosophy: Efficient Post-Hoc Methods without Costly Retraining
- Key Techniques: Internal Feature & Logit Adjustment, Context-aware Pooling, Fair-Factual Reranking

WORK EXPERIENCE

Heterogeneous Integration Design Institute

Research Assistant, Elmore ECE Emerging Frontiers Center

West Lafayette, IN, USA

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

Research Scientist Intern

Irvine, CA, USA

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

Engineer, R&D Team, Department of Digital Appliance

Suwon, Korea

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

Lieutenant, Aircraft Maintenance Officer, The 19th Fighter Wings

Chungju, Korea

Jun. 2014 – May. 2017

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

PUBLICATIONS

1. **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.
2. 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.
3. **H.Jung**, J.Chai, and X.Wang, “Adversarial Latent Feature Augmentation for Fairness”, *International Conference on Learning Representations (ICLR)*, 2025.
4. H.Lee, **H.Jung**, and S.Bae, “Framing Korea: the role of international student YouTubers in shaping destination perceptions”, *Current Issues in Tourism*, 2025.
5. **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.
6. **H.Jung** and X.Wang, “Fairness-Aware Online Positive-Unlabeled Learning”, *Empirical Methods in Natural Language Processing (EMNLP)*, Industry Track, 2024.
7. **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)**
8. **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)**
9. **H.Jung**, H.S.Chi, 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

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)*, 2026.
2. J.Chai, **H.Jung**, and X.Wang, “Enhancing Semantic Consistency in Debiased Text-to-Image Generations: A Prompt Engineering Approach”, *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2026.
3. **H.Jung**, and X.Wang, “Beyond Chunking: Efficient Global Pooling for Holistic Long-Document Representation”, *International Conference on Learning Representations (ICLR)*, 2026.
4. **H.Jung**, J.Chai, and X.Wang, “Adaptive Logit Adjustment for Debiasing Multimodal Language Models”, *International Conference on Learning Representations (ICLR)*, 2026.
5. S.Lu, **H.Jung**, Z.Fang, and X.Wang, “Fair Diffusion Sampling without Demographics,” *International Conference on Learning Representations (ICLR)*, 2026.
6. 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”, *International Conference on Learning Representations (ICLR)*, 2026.
7. **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*, 2026.

AWARDS AND SCHOLARSHIP

Outstanding Reviewers (Top 5%), CVPR 2025	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 <i>Hyundai Motor Chung Mong-Koo Foundation</i>	Fall 2021 – Spring 2022
National S&T (Science & Technology) Scholarship <i>Korea Student Aid Foundation</i>	Fall 2010

ACADEMIC SERVICE

Conference Reviewing & Program Committees

- Program Committee: AAAI (2025, 2026), IEEE BigData (2025)
- Reviewer: ICLR (2026), CVPR (2025, 2026), 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

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

TEACHING EXPERIENCE

ECE 570 Artificial Intelligence

Teaching Assistant, Electrical & Computer Engineering

Purdue University, West Lafayette, IN

Fall 2024, Spring 2025

- Held office hours and led student projects across three course sections, serving a total of 545 students

Computer Literacy & Programming (Python)

Instructor, Language Education Institute

Seoul National University, Seoul, Korea

Mar. 2021 – Jul. 2022

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

L0444: Basic Computing (Python)

Teaching Assistant, Faculty of Liberal Education

- Led weekly lab sessions for 50+ students each semester

Seoul National University, Seoul, Korea

Spring 2021, Spring 2022