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 − 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, Hallucination, Bias & Recorruption

Research Methodology

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

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

2. **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.

3. 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.

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

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

6. **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.

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

8. **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)**

9. **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)**

10. **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

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

2. 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 Machine Learning* (ICLR), 2026.

3. **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.

4. S.Lu, **H.Jung**, Z.Fang, and X.Wang, "Fair Diffusion Sampling without Demographics," *Conference on Computer Vision and Pattern Recognition* (CVPR), 2026.

5. 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.

6. **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

Bilsland Dissertation Fellowship, Purdue University   Spring 2027

  • Awarded to outstanding Ph.D. candidates to support final dissertation completion.

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 *Hyundai Motor Chung Mong-Koo Foundation*	Fall 2021 − Spring 2022
National S&T (Science & Technology) Scholarship *Korea Student Aid Foundation*	Fall 2010

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), SafeMM-AI Workshop (ICCV 2025), ECCV (2024), KDD (2024)

Journal Reviewing
· 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, Fall 2025
· 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