

# HOIN JUNG

Purdue University, West Lafayette, IN, USA

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## EDUCATION

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### 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

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### 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

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### 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 19<sup>th</sup> Fighter Wings*

Jun. 2014 – May. 2017

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

## PUBLICATIONS

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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.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

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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 Debaised 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

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Outstanding Reviewers (Top 5%), CVPR 2025  
Purdue Graduate Student Government Travel Grant

Jun. 2025  
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

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### 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

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**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

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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

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**ECE 570 Artificial Intelligence** Purdue University, West Lafayette, IN  
*Teaching Assistant, Electrical & Computer Engineering* 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)** 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)**

*Teaching Assistant, Faculty of Liberal Education*

- Led weekly lab sessions for 50+ students each semester

Seoul National University, Seoul, Korea  
Spring 2021, Spring 2022