

# HOIN JUNG

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## EDUCATION

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### Purdue University

*Ph.D in Electrical & Computer Engineering*

West Lafayette, IN, USA

Jan. 2023 – Present

### Seoul National University

*M.S in Computational Science & Technology*

Seoul, Korea

Sept. 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

· Vice President, Students Government (2013)

## RESEARCH INTERESTS

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### Machine Learning Under Limited Data

· Self-Supervised Learning, Positive-Unlabeled Learning, and Novel Category Discovery

### Trustworthy AI

· Fairness and Debiasing in Machine Learning

· Multi-Modal Fairness in Foundational Models

## PUBLICATIONS

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

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

## ONGOING RESEARCH: SELECTED PAPERS UNDER REVIEW

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**H.Jung** and X.Wang, “Fairness-Aware Online Positive-Unlabeled Learning in Text Classification,” In *Conference on Empirical Methods in Natural Language Processing (Industry Track)*, 2024.

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

**H.Jung**, T.Jang and X.Wang, “A Unified Debiasing for Vision-Language Model across Modalities and Tasks ,” In *the Thirty-eighth Annual Conference on Neural Information Processing Systems*, 2024.

**H.Jung**, J.Chai and X.Wang, “Adversarial Latent Feature Augmentation for Fairness,” In *the Thirty-eighth Annual Conference on Neural Information Processing Systems*, 2024.

T.Jang, **H.Jung** and X.Wang, “Target Bias Is All You Need: Zero-Shot Debiasing of Vision-Language Models with Bias Corpus,” In *European Conference on Computer Vision*, 2024.

## 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 Electronics Corporation

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 division.

## PRESENTATIONS

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“Explainable Planar Multiband Antenna Designer with Wasserstein Generative Adversarial Network” Jul. 2024  
*Oral, 2024 IEEE International Symposium on Antennas and Propagation and ITNC-USNC-URSI Radio Science Meeting*

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

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

## ACADEMIC SERVICE

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### Program Committee

- 2025 AAAI Conference on Artificial Intelligence Program Committee

### Reviewer

- European Conference on Computer Vision 2024
- 2024 ACM SIGKDD International Conference on Knowledge Discovery and Data Mining - Research Track
- IEEE Transactions on Geoscience and Remote Sensing
- 2024 AAAI Conference on Artificial Intelligence

## PROJECTS EXPERIENCE

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### Deep Learning based Video Content Analysis and Narrative Analysis

Jun. 2022 – Dec. 2022

*National Research Foundation of Korea*

- Implemented YouTube data crawler, Video Captioning, BERT-based Sentimental Analysis, and Face Recognizing & Emotion Detection for comprehensive narrative analysis on YouTube.

### Superpixel-based Graph Convolutional Network for Semantic Segmentation

Sep. 2021 – Dec. 2021

- 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 (mmdetection, mmdetection)

### 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.

## SCHOLARSHIPS

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Hyundai Motor Chung Mong-Koo Global Scholarship	Fall 2021 – Spring 2022
<i>National S&amp;T (Science &amp; Technology) Scholarship</i> , Korea Student Aid Foundation	Fall 2010

## TEACHING EXPERIENCE

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ECE 570 Artificial Intelligence   Teaching Assistant <i>Electrical &amp; Computer Engineering, Purdue University</i>	Fall 2024
Computer Literacy & Programming (Python)   Instructor <i>Language Education Institute, Seoul National University</i>	Mar. 2021 – Jul. 2022
L0444: Basic Computing (Python)   Teaching Assistant <i>Faculty of Liberal Education, Seoul National University</i>	Spring 2022
L0444: Basic Computing (Python)   Teaching Assistant <i>Faculty of Liberal Education, Seoul National University</i>	Spring 2021