HOIN JUNG

Purdue University, West Lafayette, IN, USA
jung414@purdue.edu

PERSONAL PROFILE

I am deeply passionate about exploring and advancing the field of machine learning. My focus lies in tackling challenging problems that encompass fairness issues, operating under limited information of data, and ensuring trustworthiness in diverse domains such as computer vision, natural language processing, and recommendation systems. My objective is to contribute effectively to these fields through rigorous research and practical application.

EDUCATION

Purdue University — **West Lafayette, IN, USA**
Ph.D in Electrical & Computer Engineering — Jan. 2023 – Present

Seoul National University — **Seoul, Korea**
M.S in Computational Science & Technology — Sept. 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
· *Vice President*, Students Government (2013)

RESEARCH INTERESTS

I'm interested in machine learning with chanllenging problems such as fairness issue, under limited supervision, and trustworthy, for broad area such as computer vision, natural language processing, and recommendation system.

Machine Learning Techniques
· Self-supervised Learning, Weakly Supervised Learning

Trustworthy AI
· Fairness and Debiasing in Machine Learning
· Multi-Modal Fairness in Foundational Model

PUBLICATIONS

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. (submitted)

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. (submitted)

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. (submitted)

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. (submitted)

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.

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 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 19th Fighter Wings Jun. 2014 – May. 2017

· Managed aircraft line maintenance and administered ground safety department for the division.

PRESENTATIONS

"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

Reviewing for
· 2025 AAAI Conference on Artificial Intelligence Program Committee
· 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

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, mmclassification)

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

Hyundai Motor Chung Mong-Koo Global Scholarship — Fall 2021 – Spring 2022

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

TEACHING EXPERIENCE

Computer Literacy & Programming (Python) | Instructor — Mar. 2021 – Jul. 2022
Language Education Institute, Seoul National University
· Basic Computing with Python
· Advanced Data Analytics
· Fundamentals of Deep Learning

L0444.000400: Basic Computing (Python) | Teaching Assistant — Spring 2022
Faculty of Liberal Education, Seoul National University

L0444.000400: Basic Computing (Python) | Teaching Assistant — Spring 2021
Faculty of Liberal Education, Seoul National University