Shiwon Kim

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RESEARCH INTERESTS

Continual Learning, Few-Shot Learning, Medical AI, Medical Image Analysis, Digital Healthcare

EDUCATION

Yonsei University *Mar. 2023 - Aug. 2025*
M.Sc., Digital Analytics Seoul, Korea
- Advisor: Prof. Yu Rang Park
- Thesis: Debiasing Few-Shot Class-Incremental Learning via Dynamic Feature-Classifier Alignment

Yonsei University *Mar. 2017 - Feb. 2023*
B.B.A., Business Administration Seoul, Korea
- Major GPA: 3.73/4.3

University of Washington *Sep. 2018 - Jun. 2019*
Undergraduate Exchange Student, Foster School of Business Seattle, WA

PUBLICATIONS

(P: Preprint, J: Journal, C: Conference, W: Workshop, ∗: Equal contribution, †: Corresponding author)

[W1] Does Prior Data Matter? Exploring Joint Training in the Context of Few-Shot Class-Incremental Learning
Shiwon Kim∗, Dongjun Hwang∗†, Sungwon Woo∗, Rita Singh†
ICCV 2025 Workshop on Continual Learning in Computer Vision (CLVision)

[J1] Classification Models for Arthropathy Grades of Multiple Joints Based on Hierarchical Continual Learning
Bong Kyung Jang∗, **Shiwon Kim**∗, Jae Yong Yu, JaeSeong Hong, Hong Seon Lee, Jiwoo Park, Jeesoo Woo, Young Han Lee†, Yu Rang Park†
La Radiologia Medica (IF 2024: 9.7)

RESEARCH EXPERIENCE

Digital Healthcare Lab (DHLab) *Mar. 2023 - Jun. 2025*
Department of Biomedical Systems Informatics, College of Medicine, Yonsei University Seoul, Korea
Graduate Research Assistant (Advisor: Prof. Yu Rang Park)

- **Continual Classification of Arthropathy Grades in Multiple Joints** [Paper] [Code]
  Developed and validated a continual learning framework for arthropathy grade classification scalable across multiple joints, using hierarchically labeled radiographs of the knee, elbow, ankle, shoulder, and hip from three tertiary hospitals.
- **Robust Medical Image Classification Against Data Contamination and Poisoning** [Slides]
  Designed a deep mutual learning framework that jointly trains two networks to learn a shared representation space anchored by a fixed equiangular tight frame (ETF) classifier, improving model robustness and generalization.
  » 🎗 *2nd Place, Yonsei Digital Healthcare Cybersecurity Competition*
- **Statistical Feature-Based Machine Learning for Memory-Efficient Fake Image Detection** [Slides]
  Developed a machine learning-based fake image detection pipeline that leverages pixel-level statistics, texture patterns, and edge information, achieving higher accuracy with lower memory usage than CNN-based deep learning approaches.
  » 🎤 *Presented at Digital Healthcare Human Resources Development Program*

Carnegie Mellon University *Aug. 2024 - Feb. 2025*
Software and Societal Systems Department (S3D), School of Computer Science Pittsburgh, PA
Visiting Scholar, Intensive AI Education Program, fully funded by the Korean Government (IITP)

- **Exploring Joint Training in the Context of Few-Shot Class-Incremental Learning** [Paper] [Code]
  Challenged the assumption of limited access to prior data in few-shot class-incremental learning, and compared joint training with incremental learning to empirically assess the practical impact of full data access on model performance.

- **AI-Driven Automated Target Prioritization and Engagement** [Slides] [Video]
  Implemented a real-time nearest-target tracking algorithm and a shoot (and don't shoot) logic based on fine-tuned YOLOv11s. Deployed the system on Jetson Orin Nano and demonstrated engagement of both stationary and moving targets.
- **Image Quality and Abstract Perception Evaluation** [Report]
  Enhanced the interpretation of abstract image perceptions by combining CLIP-IQA and UIQA with a multi-branch backbone, demonstrating superior accuracy and faster convergence compared to existing image quality assessment (IQA) methods.

WORK EXPERIENCE

Medical Informatics Collaboration Unit (MCU) *Jul. 2025 - Present*
Department of Biomedical Systems Informatics, College of Medicine, Yonsei University Seoul, Korea
Research Assistant in AI and Data Analytics

HONORS AND AWARDS

Academic Excellence Award (2nd Place), Intensive AI Education Program, IITP *Feb. 2025*
Awarded to top 3 of 34 participants for academic excellence in selected courses at Carnegie Mellon University.
Selected courses:
- 11-785 Introduction to Deep Learning
- 11-775 Large Scale Multimedia Analysis
- 11-611 Natural Language Processing

2nd Place, Yonsei Digital Healthcare Cybersecurity Competition, Yonsei University *Aug. 2024*
Recognized for developing a robust medical image classification model against data poisoning.

1st Place, NAVER Shopping × ISSU IT Collaboration Project, Yonsei University *Jun. 2021*
Recognized for proposing user-centric product search and recommendation systems for e-commerce.

Quarterly Dean's List, University of Washington *Winter 2019*
Awarded to students with a quarterly GPA of 3.50 or higher in at least 12 graded credits.

GRANTS AND FELLOWSHIPS

Intensive AI Education Program @ Carnegie Mellon University *Aug. 2024*
Institute of Information & Communications Technology Planning & Evaluation (IITP)
Selected as one of 34 graduate students nationwide, full support of tuition and living expenses

SELECTED TALKS

Digital Healthcare Human Resources Development Program *Jan. 2024*
Korea Institute for Advancement of Technology (KIAT), Ministry of Trade, Industry and Energy (MOTIE) Seoul, Korea
Student Project Presentation on Medical AI and Cybersecurity

LEADERSHIP AND ACTIVITIES

Yonsei University Ski Team *Mar. 2017 - Present*
- Alumni Executive Member since 2023
- Team Captain in 2020-21
- Training Lead in 2019-20 and 2021-22

Information System SIG of Undergraduate (ISSU), Yonsei University *Mar. 2021 - Dec. 2021*
- Vice President in Fall 2021

University of Washington Husky Ski Team *Sep. 2018 - Jun. 2019*

Yonsei University × Claremont McKenna College (CMC) Summer Leadership Program *Jul. 2018 - Aug. 2018*
- Collaborated with 10 CMC students on a business project and Singapore networking trip.

REFERENCES

Yu Rang Park, Associate Professor at Yonsei University
Email: yurangpark@yuhs.ac

Jae Yong Yu, Assistant Professor at Hallym University
Email: icalust@hallym.ac.kr

Vijay Sai Vadlamudi, Adjunct Assistant Teaching Professor at Carnegie Mellon University
Email: vijaysai@cmu.edu

Rita Singh, Research Professor at Carnegie Mellon University
Email: rsingh@cs.cmu.edu