Jinyoung Park

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Research Interests

My research focuses on developing efficient Multimodal AI systems for complex real-world scenarios. I'm especially interested in multimodal representation learning, from integrating diverse sensing modalities to visual-linguistic information. I also work on contextual scene understanding, Video understanding, and generation. Recently, I've been exploring state space models (SSMs) for video-related tasks.

- Multimodal Representation Learning
- Contextual Scene Understanding
- Video understanding and generation
- Ongoing Projects: Efficient Large Vision-Language learning, Efficient State Space Models

Education

Ph.D. in Electrical Engineering 2020.09 - Current
Korea Advanced Institute of Science and Technology (KAIST)
Advisor: Prof. Changick Kim

B.S. In Architectural Engineering 2016.03 - 2020.02
Hanyang University (HYU)

Publications

In progress

[I1] Sparse Mamba: Efficient Selective State Space Model
- Selecting and reorganizing visual tokens to improve object classification within Mamba.

[I2] SInAR-Net: Integrating Semantic Knowledge for Enhanced Weakly-Supervised Group Activity Recognition (Submitted to AAAI 2025)

[I3] Difficulty-aware Balancing Margin Loss for Long-tailed Recognition (Submitted to AAAI 2025)

[I4] Anchoring Vision and Language Knowledge for Weakly Supervised Group Activity Recognition (Submitted to VCIP 2024)

Conference

[C1] VideoMamba: Spatio-Temporal Selective State Space Model
Jinyoung Park, Hee-Seon Kim, Kangwook Ko, Minbeom Kim and Changick Kim
European Conference on Computer Vision (ECCV), 2024

[C2] Flow-Assisted Motion Learning Network for Weakly-Supervised Group Activity Recognition
M. Adi Nugroho, Sangmin Woo, Sumin Lee, **Jinyoung Park**, Yooseung Wang,
Donguk Kim and Changick Kim
European Conference on Computer Vision (ECCV), 2024

[C3] Sketch-based Video Object Localization
Sangmin Woo, So-Yeong Jeon, **Jinyoung Park**, Minji Son, Sumin Lee, and Changick Kim
IEEE/CVF Winter Conference on Applications of Computer Vision (WACV), 2024

[C4] Multi-Modal Social Group Activity Recognition in Panoramic Scene
Donguk Kim, Sumin Lee, Sangmin Woo, **Jinyoung Park**, M. Adi Nugroho, and Changick Kim
IEEE International Conference on Visual Communications and Image Processing (VCIP), 2023

[C5] RainUNet for Super-Resolution Rain Movie Prediction under Spatio-temporal Shifts
Jinyoung Park, Inyoung Lee, Minseok Son, Seungju Cho, and Changick Kim
Weather4Cast, 36th Conference on Neural Information Processing Systems Challenge (NeurIPS), 2022

[C6] Nowformer: A locally enhanced temporal learner for precipitation nowcasting
Jinyoung Park, Inyoung Lee, Minseok Son, Seungju Cho, and Changick Kim
Tackling Climate Change with Machine Learning, 36th Conference on Neural Information Processing Systems Workshop (NeurIPS), 2022

[C7] DAT: Domain Adaptive Transformer For Domain Adaptive Semantic Segmentation
Jinyoung Park, Minseok Son, Sumin Lee, and Changick Kim
IEEE International Conference on Image Processing (ICIP), 2022

INDUSTRIAL PROJECTS

Center for Anthropocence Studies(CRC), South Korea 2022.03-2022.12
- Developed Nowcasting models utilizing multi-sensor data

Electronics and Telecommunications Research Institute (ETRI), South Korea 2020.09-2021.09
- Precise content identification technology for maritime vessel/structure
- Developed domain adaptive segmentation model using synthetic data

AWARDS

Finalist of 29th HumanTech Paper Award, Samsung Electronics Co., Ltd. 2022

Top Award of LG Electronics Robot Contest, LG Electronics Co., Ltd. 2021

Winner of Design Thinking Hackathon, SK Telecom Group 2019

Hanyang Brain Scholarship, Hanyang University 2019

Kumsaem scholarship, Kumsaem Foundation 2017