Chung, In Seop

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BIO & RESEARCH INTERESTS

I'm a Staff Researcher at the AI Center of Samsung Electronics, working on computer vision, deep learning, and machine learning, with a primary focus on Vision-Language-Action (VLA) models for embodied AI and robotics. My research aims to develop AI systems that can robustly perceive, reason, and act in complex, real-world environments.

I received my Ph.D. from the Graduate School of Convergence Science and Technology at Seoul National University, where I was advised by Prof. Nojun Kwak and affiliated with the Machine Intelligence and Pattern Analysis Lab (MIPAL). My past and ongoing research spans domain adaptation, domain generalization, test-time adaptation (TTA/CTA), object detection, semantic segmentation, and knowledge distillation.

Currently, my main interest lies in building scalable and generalizable VLA models that integrate vision and language understanding with action generation. I have hands-on experience with open-source frameworks such as OpenVLA and Physical Intelligence (OpenPI) models, and actively extend these platforms for robotic manipulation and decision-making tasks. Ultimately, I aim to enable embodied agents that can learn continuously from diverse environments and follow natural language instructions to perform complex physical actions.

EDUCATION

Seoul National University (SNU) Seoul, Korea — Mar. 2019 - Feb. 2024
Graduate School of Convergence Science and Technology (GSCST)
Department of Intelligence and Information
Ph.D. in Engineering

Yonsei University, Seoul, Korea — Mar. 2012 - Feb. 2019
B.S., Creative Technology Management & Computer Science

Technical University of Munich, Germany — Oct. 2016 - Aug. 2017
Exchange Student Program, Informatics(Computer Science)

SCSC (Samsung Convergence Software Course), Yonsei, Korea — Sep. 2015 - Feb. 2019
Educational program designed to educate non-SW major students to become SW expert

WORK EXPERIENCE

AI center, Samsung Electronics, Staff Researcher — Dec. 2024 - Present

SAIT, Samsung Electronics, Staff Researcher — Mar. 2024 - Dec. 2024

Qualcomm AI Research Korea, Research Internship — Jan. 2022 - July. 2022

Naver Webtoons Corp., Research Internship — Jun. 2020 - Dec. 2020

Republic of Korea Army, Sergeant — Oct. 2013 - Jul. 2015

PUBLICATIONS

Inseop Chung, Kyomin Hwang, Jayeon Yoo, Nojun Kwak. "Mitigating the Bias in the Model for Continual Test-Time Adaptation", Mar. 2024

Inseop Chung, Kiyoon Yoo, Nojun Kwak. "Open Domain Generalization with a Single Network by Regularization Exploiting Pretrained Features", *Workshop on Data-centric Machine Learning Research (DMLR) at The Twelfth International Conference on Learning Representations (**ICLR 2024**)*, May. 2024

Jayeon Yoo, Dongkwan Lee, **Inseop Chung**, Donghyun Kim, Nojun Kwak, "What, How, and When Should Object Detectors Update in Continually Changing Test Domains?", *The IEEE/CVF Conference on Computer Vision and Pattern Recognition 2024 (**CVPR 2024**)*, Jun. 2024

Jayeon Yoo, Dongkwan Lee, **Inseop Chung**, Kyomin Hwang, Seungwoo Lee, Donghyun Kim, Nojun Kwak, "지속적으로 변하는 테스트 환경에서 객체 탐지를 위한 온라인 적응 방법", *36th Workshop on Image Processing and Image Understanding (**IPIU 2024**)*, Jan. 2024

Jaeyoung Yoo*, Hojun Lee*, Seunghyeon Seo, **Inseop Chung**, Nojun Kwak. "End-to-End Multi-Object Detection with a Regularized Mixture Model", *Fortieth International Conference on Machine Learning (**ICML 2023**)*, Jul. 2023

Inseop Chung, Jayeon Yoo, Nojun Kwak. "Exploiting Inter-pixel Correlations in Unsupervised Domain Adaptation for Semantic Segmentation", *3rd Workshop on Real-World Surveillance: Applications and Challenges at Winter Conference on Applications of Computer Vision 2023 (**The best paper award**)(**RWS @ WACV 2023**)* Jan. 2023

DongKi Noh, Chang Ki Sung, Taeyoung Uhm, Wooju Lee, Hyungtae Lim, Jaeseok Choi, Kyuewang Lee, Dasol Hong, Daeho Um, **Inseop Chung**, Hochul Shin, Min-Jung Kim, Hyoung-Rock Kim, Seung-Min Baek, Hyun Myung, "X-MAS: Extremely Large-Scale Multi-Modal Sensor Dataset for Outdoor Surveillance in Real Environments", IEEE Robotics and Automation Letters (RA-L), Jan. 2023

Jayeon Yoo, **Inseop Chung**, Nojun Kwak, "Unsupervised Domain Adaptation for One-Stage Object Detector Using Offsets to the Bounding Box", *European Conference on Computer Vision 2022 (**ECCV 2022**)*, Oct. 2022

Byeonggeun Kim, Seunghan Yang, **Inseop Chung**, Simyung Chang, "Dummy Prototypical Networks for Few-Shot Open-Set Keyword Spotting", ***23rd INTERSPEECH** Conference*, Sep. 2022.

Seunghan Yang, Byeonggeun Kim, **Inseop Chung**, Simyung Chang, "Personalized Keyword Spotting through Multi-task Learning", ***23rd INTERSPEECH** Conference*, Sep. 2022.

Inseop Chung, Daesik Kim, Nojun Kwak. "Maximizing Cosine Similarity Between Spatial Features for Unsupervised Domain Adaptation in Semantic Segmentation", *Winter Conference on Applications of Computer Vision 2022 (**WACV 2022**)*, Jan. 2022

Kyuewang Lee*, **Inseop Chung***, Daeho Um, Jaeseok Choi, Yeji Song, Seunghyeon Seo, Nojun Kwak, Jin Young Choi "Multi-modal Object Detection, Tracking, and Action Classification for Unmanned Outdoor Surveillance Robots", *The 21st International Conference on Control, Automation and Systems (**ICCAS 2021**)*, Oct. 2021

Jaeyoung Yoo, Hojun Lee*, **Inseop Chung***, Geonseok Seo, Nojun Kwak. "Training Multi-Object Detector by Estimating Bounding Box Distribution for Input Image", *International Conference on Computer Vision 2021 (**ICCV 2021**)*, Oct. 2021

Hojun Lee, **Inseop Chung**, Nojun Kwak, "Multi-modal sensor based framework for object detection", *The 16th Korea Robotics Society Annual Conference (**KRoC 2021**)*, May. 2021

Jangho Kim, Minsugn Hyun, **Inseop Chung**, Nojun Kwak. "Feature Fusion for Online Mutual Knowledge Distillation",*25th International Conference on Pattern Recognition (**ICPR 2020**)*, Jan. 2021

Inseop Chung, SeongUk Park, Jangho Kim, Nojun Kwak. "Feature-map-level Online Adversarial Knowledge Distillation", *Thirty-seventh International Conference on Machine Learning (**ICML 2020**)*, Jul. 2020

* indicates equal contribution.

PATENTS

Domestic Patents

Device for Unsupervised Domain Adaptation in Semantic Segmentation Exploiting Inter-pixel Correlations and Driving Method Thereof
patent application number : 1020220035170
patent application date : 2022.03.22

Device for Regression Scale-aware Cross-domain Object Detection and Driving Method Thereof
patent application number : 1020220035183
patent application date : 2022.03.22

International Patents

Method and Apparatus with Online Task Planning
patent application date : 2024.12.09

Method and Apparatus with Micro-Action Determination
patent application number : US19/208393
patent application date : 2025.05.14

Multi-Task Learning For Personalized Keyword Spotting
International Application No. : PCT/US2023/060959
International Filing Date : 2023.01.20

Dummy Prototypical Networks For Few-Shot Open-Set Keyword Spotting
International Application No. : PCT/US2023/060938
International Filing Date : 2023.01.19.07

PEER REVIEW EXPERIENCE

The 18th European Conference on Computer Vision (ECCV 2024) 1 paper. Oct. 2024

The Forty-first International Conference on Machine Learning (ICML 2024) 6 papers. Jul. 2024

37th Conference on Neural Information Processing Systems (NeurIPS 2023) 3 papers. Dec. 2023

International Conference on Computer Vision 2023 (ICCV 2023) 5 papers. Oct. 2023

The 16th Asian Conference on Computer Vision (ACCV 2022) 2 papers. Aug. 2022

The IEEE Transactions on Circuits and Systems for Video Technology. Nov. 2021

INDUSTRY PROJECT

Development of multimodal sensor-based intelligent systems for outdoor surveillance robots
Mar. 2019 - Jun. 2020, Jan. 2021 - Dec. 2021
LG electronics, ETRI, KIRO, **Seoul National University** and Ministry of Science and ICT
Developer

- **Description** : Developing object detection algorithm for outdoor surveillance robots using multi-modal sensors.

FUNDING

Samsung Electronics Ph.D. Student Sponsorship Program Sep. 2021 - Feb. 2024

HONOUR & AWARDS

The best paper award in the 3rd Workshop on Real-World Surveillance: Applications and Challenges at WACV2023, 1,000 USD Jan. 2023

BK21 Graduate School Innovation Project Colloquium Outstanding Graduate Student Award
500,000 Won (About 420 USD) Jul. 2021

Qualcomm Innovation Fellowship Korea 2020 Final Session, Finalist — Dec. 2020

Samsung Electronics - Seoul National University, Industry-Academic Cooperation Research Award
1,500,000 Won (About 1,300 USD) — Jul. 2020

Special Award, Yonsei Programming Contest 2018 — Spring Semester 2018

Honours, 1/3 tuition support scholarship, Yonsei University — Spring Semester 2016

LANGUAGE PROFICIENCY AND CERTIFICATE

OPIc(Oral Proficiency Interview – Computer) **Advanced Low (The highest grade)** — Mar. 2024
TOEFL(Test of English as a Foreign Language) **102 points** — Mar. 2020
Craftsman Computer Graphics Operation certificate — Oct. 2013
issued by Human Resources Development Service of Korea

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