YUNSUNG LEE

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SUMMARY

I'm an AI/ML research engineer with strong research foundations (10+ publications in top-tier conferences and 1.7K+ citations) and practical experience deploying commercial AI products (over 5M MAUs, Python back-end engineering, ML model deployment, etc.). Currently leading research initiatives at Maum.ai's WoRV (World Model for Robotics and Vehicle Control) team, specializing in embodied AI, autonomous agents, and robotics foundation models. My expertise spans multimodal AI, autonomous systems, and translating cutting-edge research into real-world applications with significant industry impact.

WORK EXPERIENCE

Note: Positions at Wrtn Technologies and Riiid serve as Alternative Military Service (Technical Research Personnel, 전문연구요원) until April 14, 2025, combining mandatory service with R&D in strategic industries.

MaumAI, Seongnam, South Korea May 2025 - Present
Head of Research, WoRV Team

· Leading research initiatives for WoRV (World Model for Robotics and Vehicle Control), Maum.ai's flagship embodied AI research organization.
· Overseeing development of foundation models that integrate language, vision, and action for robotics and autonomous driving applications.
· Driving projects including SketchDrive navigation agents, autonomous agricultural machinery, and open-world agent research.

Wrtn Technologies, Seoul, South Korea Oct. 2023 - Apr. 2025
AI Engineer

· Specialized in memory and personalization for autonomous agents and multimodal capabilities for wrtn. Led core development efforts spanning ML technology research and implementation to backend engineering, driving key project functionalities.

Riiid, Seoul, South Korea Apr. 2022 - Oct. 2023
Research Scientist

· Computer vision research scientist focused on math problem image retrieval for AI:R Math.
· Developed English vocabulary visualizations using text-to-image diffusion models (Santa).

Scatter Lab, Seoul, South Korea Jul. 2021 - Mar. 2022
ML Research Scientist

· Researched a vision-and-language multimodal dialogue system for the chatbot "Luda Lee". (Ref: Make Luda See, Naver Deview 2023.)

CLOVA, NAVER Corp, Seongnam, South Korea Sep. 2020 - Mar. 2021
OCR Team Intern

· Researched self-supervised representation learning, domain generalization, and data augmentations for document images.

HYPERCONNECT, Seoul, South Korea Jul. 2020 - Aug. 2020
ML Team Intern

· Researched adversarially robust semi-supervised learning.

Algorithm Labs, Seoul, South Korea Dec. 2016 - Feb. 2017
Intern, Web Developer

· Completed an on-site internship, writing competitive programming problems and developing web front-end features.

EDUCATION

Korea University, Seoul, South Korea *Mar. 2019 - Feb. 2022*
M.Sc. Computer Science
Advisor: Seungryong Kim, Jaegul Choo

Carnegie Mellon University, PA, USA *Jan. 2020 - Jul. 2020*
Visiting Scholar, Artificial Intelligence, Language Technologies Institute
Sponsored by IITP under the South Korean government

Hanyang University, Seoul, South Korea *Mar. 2014 - Feb. 2019*
B.Sc. Computer Science

PUBLICATIONS

‡ My publications have accumulated over **1,700 citations** on Google Scholar, demonstrating significant influence in machine learning and computer vision research.

* denotes equal contribution (co-first authors). † denotes co-corresponding authorship.

Sungwan Choi*, Jaeyoon Jung*, Haebin Seong*, Minchan Kim, Minyeong Kim, Yongjun Cho, Yoonshik Kim, Yubeen Park, Youngjae Yu†, **Yunsung Lee**†, "D2E: Scaling Vision-Action Pretraining on Desktop Data for Transfer to Embodied AI," arXiv preprint arXiv:2510.05684, 2025. Project page

Yohan Lee*, Sungho Park*, Sangwoo Han*, **Yunsung Lee***†, Yongwoo Song, Adam Lee, Jiwung Hyun, Jaemin Kim, Seungtaek Choi, HyeJin Gong† "SAFARI: Sample-specific Assessment Framework for AI in Real-world Interactions," Findings of the Annual Conference of the North American Chapter of the Association for Computational Linguistics (**Findings of NAACL'25**), 2025 (Accepted, but withdrawn due to corporate policy)

Jin-Young Kim*, Soonwoo Kwon*, Hyojun Go*, **Yunsung Lee**, and Seungtaek Choi, "ScoreCL: Augmentation-Adaptive Contrastive Learning via Score-Matching Function," Machine Learning (Springer Journal), 2025

Yunsung Lee*, Jin-Young Kim*, Hyojun Go*, Myeongho Jeong, Shinhyeok Oh, and Seungtaek Choi "Multi-Architecture Multi-Expert Diffusion Models," Annual AAAI Conference on Artificial Intelligence (**AAAI'24**), 2024

Hyojun Go*, Jinyoung Kim*, **Yunsung Lee***, Seunghyun Lee, Shinhyeok Oh, Hyeongdon Moon, and Seungtaek Choi "Addressing Negative Transfer in Diffusion Models," Conference on Neural Information Processing Systems (**NeurIPS'23**), 2023

Shinhyeok Oh*, Hyojun Go*, Hyeongdon Moon, **Yunsung Lee**, Myeongho Jeong, Hyun Seung Lee, and Seungtaek Choi, "Evaluation of Question Generation Needs More References," Findings of the Annual Meeting of the Association for Computational Linguistics (**Findings of ACL'23**), 2023

Hyun Seung Lee*, Seungtaek Choi*, **Yunsung Lee**, Hyeongdon Moon, Shinhyeok Oh, Myeongho Jeong, Hyojun Go, and Christian Wallraven "Cross Encoding as Augmentation: Towards Effective Educational Text Classification," Findings of the Annual Meeting of the Association for Computational Linguistics (**Findings of ACL'23**), 2023

Hyojun Go*, **Yunsung Lee***, Jin-Young Kim*, Seunghyun Lee, Myeongho Jeong, Hyun Seung Lee, and Seungtaek Choi "Towards Practical Plug-and-Play Diffusion Models," The IEEE/CVF Conference on Computer Vision and Pattern Recognition 2023 (**CVPR'23**), 2023

Yunsung Lee*, Gyuseong Lee*, Kwangrok Ryoo*, Hyojun Go*, Jihye Park*, Seungryong Kim "Towards Flexible Inductive Bias via Progressive Reparameterization Scheduling," ECCV 2022 Visual Inductive Priors for Data-Efficient Deep Learning Workshop (**ECCVW'22**), 2022

Seokju Cho*, Sunghwan Hong*, Sangryul Jeon, **Yunsung Lee**, Kwanghoon Sohn, and Seungryong Kim "CATs: Cost Aggregation Transformers for Visual Correspondence," Conference on Neural Information Processing Systems (**NeurIPS'21**), 2021

Junbum Cha, Hancheol Cho, Kyungjae Lee, Seunghyun Park, **Yunsung Lee**, and Sungrae Park. "SWAD: Domain Generalization by Seeking Flat Minima," Conference on Neural Information Processing Systems (**NeurIPS'21**), 2021

Yunsung Lee, Teakgyu Hong, Han-Cheol Cho, Junbum Cha, and Seungryong Kim. "HoughCL: Finding Better Positive Pairs in Dense Self-supervised Learning," ICML 2021 Workshop: Self-Supervised Learning for Reasoning and Perception (**ICMLW'21**), 2021

Yunsung Lee, Teakgyu Hong, and Seungryong Kim. "Data Augmentations for Document Images," The AAAI-21 Workshop on Scientific Document Understanding (**AAAIW'21**), 2021

Seokeon Choi, Junhyun Lee, **Yunsung Lee**, and Alexander Hauptmann. "Robust Long-Term Object Tracking via Improved Discriminative Model Prediction," The ECCV-20 Workshop on Visual Object Tracking Challenge (**ECCVW'20**), 2020

Junsoo Lee*, Eungyeup Kim*, **Yunsung Lee**, Dongjun Kim, Jaehyuk Chang, and Jaegul Choo "Reference-Based Sketch Image Colorization using Augmented-Self Reference and Dense Semantic Correspondence," IEEE Conference on Computer Vision and Pattern Recognition (**CVPR'20**), 2020

Sookyung Kim,* Sunghyun Park,* Sunghyo Chung,* Joonseok Lee, **Yunsung Lee**, Hyojin Kim, Mr Prabhat, and Jaegul Choo "Learning to Focus and Track Extreme Climate Events," British Machine Vision Conference (**BMVC'19**), 2019. Accepted as Spotlight Presentation (6.9% acceptance rate for spotlight papers), 2019.

TECHNICAL STRENGTHS

ML Research	Vision-language multimodality, Diffusion Models, Autonomous Agents
Tools	Python, PyTorch, Git, Docker, FastAPI, Elasticsearch

HONORS & AWARDS

5th place, RLT-DiMP team, VOT-Long-Term, ECCVW Visual Object Tracking Challenge, 2020

4th place, HYU Programming Contest (Advanced Division), Seoul, Korea, 2015

Dean's citation for ACM-ICPC Daejeon Regional, Hanyang University, Seoul, Korea, 2014

OTHER ACTIVITIES

Judge Nov. 2025
Hack@thon

· Served as a Judge for the Hack@thon sponsored by Lovable at Sogang University. [link]

Conference Reviewer

· The IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**) (2023 -)

· The IEEE/CVF International Conference on Computer Vision (**ICCV**) (2023 -)
· Advances in Neural Information Processing Systems (**NeurIPS**) (2024 -)
· European Conference on Computer Vision (**ECCV**) (2024 -)
· The International Conference on Learning Representations (**ICLR**) (2024 -)
· ACL Rolling Review for **ACL, EMNLP** (2024 -)

Selected Open-source Contribution

· Core contributing member of open-world-agents org, open-world-agents, desktop-env, an open-source organization that builds tools for open-world agent R&D, including a real-time, high-frequency, real-world desktop environment suitable for desktop-based ML development (agents, world models, etc.).
· Contributor of mem0, the Memory layer for your AI apps.
· Creator of awesome-visual-representation-learning-with-transformers, an awesome repository (with 200+ stars) from 2021, when Vision Transformer research was in its early renaissance.

PR12, TensorFlow Korea, South Korea Jun. 2020 - Present
Member

· Active member of TensorFlow Korea, the country's largest machine learning research community, participating in an advanced study group focused on cutting-edge ML research.

TEDxHanyangU Sep. 2017 - Jun. 2018
Organizer

· Experience Catalyst, 2018
· Web Engineer, 2017

SW Maestro, Ministry of Science and ICT, Seoul, South Korea Aug. 2017 - Jan. 2018
Trainee

· Talent training program by the Ministry of Science and ICT Korea (under the South Korean government).
· Completed a CPA document automation project, learned basic computer vision and machine learning, and became motivated to pursue graduate school.

ALOHA (Algorithm research team of Hanyang University) Nov. 2015 - Oct. 2016
Team Leader

· Taught algorithms to team members. Hosted several programming contests.
· Test writer & presenter, The First KSH (Korea, Sookmyung W, Hanyang Univ.) Algorithm Camp.
· Chief test writer, HYU Programming Contest.

Home Bartender
Licensed Craftsman Bartender

· Licensed Craftsman Bartender certified by the South Korean government, combining precision and creativity in both professional and recreational pursuits.