

SEUNGHYEON SEO

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EDUCATION

Seoul National University, Seoul, Korea
Ph.D. Candidate in Artificial Intelligence

Mar. 2021 ~ Feb. 2026 (expected)

Seoul National University, Seoul, Korea
B.A. in Agricultural Economics / Data Sciences

Mar. 2014 ~ Feb. 2021

Institut d'Études Politiques de Paris (Sciences Po), Paris, France
Exchange Student Program (Economics)

Jan. 2019 ~ Jun. 2019

RESEARCH INTERESTS

I am deeply engaged in developing efficient deep learning models for training and inference, aimed at practical real-world applications. Primarily, my research interest focuses on **improving the performance of NeRF and Gaussian Splatting given sparse input data** by various regularization methods, such as exploiting input data distribution, augmenting training rays, designing an effective ray parameterization, etc.

RESEARCH EXPERIENCE

@ Machine Intelligence and Pattern Analysis Laboratory (MIPAL), Seoul, Korea
Graduate Student Researcher

Mar. 2021 ~ Present

Donghoon Han*, **Seunghyeon Seo***, Eunhwan Park, SeongUk Nam, Nojun Kwak, [“Unleash the Potential of CLIP for Video Highlight Detection”](#), * indicates equal contribution, *CVPR 2024 Workshop*.

Seunghyeon Seo, Yeonjin Chang, Jayeon Yoo, Seungwoo Lee, Hojun Lee, Nojun Kwak, [“HourglassNeRF: Casting an Hourglass as a Bundle of Rays for Few-shot Neural Rendering”](#), Under Review.

Yeonjin Chang, Yearim Kim, **Seunghyeon Seo**, Jung Yi, Nojun Kwak, [“Fast Sun-aligned Outdoor Scene Relighting based on TensoRF”](#), *WACV 2024*.

Donghoon Han, **Seunghyeon Seo**, DongHyeon Jeon, Jiho Jang, Chaerin Kong, Nojun Kwak, [“ConcatPlexer: Additional Dim1 Batching for Faster ViTs”](#), *NeurIPS 2023 Workshop*. (Oral)

Seunghyeon Seo, Yeonjin Chang, Nojun Kwak, [“FlipNeRF: Flipped Reflection Rays for Few-shot Novel View Synthesis”](#), *ICCV 2023*.

Seunghyeon Seo, Jaeyoung Yoo, Jihye Hwang, Nojun Kwak, [“MDPose: Real-Time Multi-Person Pose Estimation via Mixture Density Model”](#), *UAI 2023*.

Jaeyoung Yoo*, Hojun Lee*, **Seunghyeon Seo**, Inseop Chung, Nojun Kwak, [“End-to-End Multi-Object Detection with a Regularized Mixture Model”](#), * indicates equal contribution, *ICML 2023*.

Seunghyeon Seo, Donghoon Han*, Yeonjin Chang*, Nojun Kwak, [“MixNeRF: Modeling a Ray with Mixture Density for Novel View Synthesis from Sparse Inputs”](#), * indicates equal contribution, *CVPR 2023*.
(Qualcomm Innovation Fellowship Korea 2023 Winner)

Jongmok Kim, Jooyoung Jang, **Seunghyeon Seo**, Jisoo Jeong, Jongkeun Na, Nojun Kwak, [“MUM: Mix Image Tiles and UnMix Feature Tiles for Semi-Supervised Object Detection”](#), *CVPR 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”, *ICCV 2021*.

WORK EXPERIENCE

Meta Reality Labs, Burlingame, CA | Research Scientist Intern

Jul. 2024 ~ Jan. 2025 (expected)

- XR People Team / Supervisor: *Dr. Tianyang Ma*

ThinkforBL Consulting Group, Seoul, Korea | Laboratory Assistant Researcher

Jun. 2020 ~ Nov. 2020

- Analysis on effect of behavior of non-pregnant sows on the swine productivity by detecting and classifying postures (lying, standing, and sitting), using Darkflow.
- Classification of hydroponic crops' weight change patterns into 7 categories, using CNN-LSTM model.
- Implementation of recommender system, using item-based collaborative filtering.
- Construction of REST API considering clients' needs, using Django REST framework.

Food and Agriculture Organization of the United Nations (FAO), Rome, Italy | Intern

Sep. 2019 ~ Feb. 2020

- Committee on World Food Security (CFS) / Supervisor: *Christopher Hegadorn*
- Research and report on datasets that are relevant to the proposed CFS workstream on <Data Collection and Analysis Tools>

AWARDS AND SCHOLARSHIPS

Qualcomm Innovation Fellowship Korea 2023 Winner

Nov. 2023

Qualcomm AI Research

Youlchon AI Star Scholarship

Aug. 2023

Youlchon Foundation & AI Institute-Seoul National University

AI Fellowship (Fully Funded)

Mar. 2022 ~ Feb. 2023

Seoul National University

Overseas Agriculture Sector Intern Scholarship

Sep. 2019 ~ Dec. 2019

Ministry of Agriculture, Food and Rural Affairs

Foundation Scholarship (Fully Funded)

Aug. 2019

Dongwon (Seoul National University Foundation)

Exchange Student Scholarship

Jan. 2019

Mirae Asset Park Hyeon Joo Foundation

3rd Place as a Team, Agdata Lab (Service Development Field)

Sep. 2018

Entrepreneurship Competition Utilizing Agricultural Data / EPIS

Merit-Based Scholarship

Sep. 2017 ~ Sep. 2018

Seoul National University

The Army Achievement Medal

Jan. 2017

Department of the Army, USA

PATENTS

Method and Apparatus based on NeRF using Flipped Reflected Ray, Korea Patent, 10-2024-0022118

PROJECTS

Research on Novel View Synthesis Using NeRF Trained with Sparse Viewpoint Data

Funded by Samsung Electronics | Main Researcher

Jul. 2023 ~ Jul. 2024

- Few-shot NeRF

Artificial Intelligence Research about Cross-Modal Dialogue Modeling for One-on-One Multi-Modal Interactions

Funded by Ministry of Science and ICT of Korea | Assistant Researcher

May 2022 ~ Jun. 2023

- Object Detection

Development of Real-Time Multi-Camera Object Tracking and Identification Technology

Funded by Electronics and Telecommunications Research Institute | Project Manager

Jun. 2021 ~ Dec. 2021

- Multi-Object Tracking

Development of Multimodal Sensor-Based Intelligent Systems for Outdoor Surveillance Robots

Funded by Ministry of Science and ICT of Korea | Assistant Researcher

Jan. 2021 ~ Aug. 2021

- Object Detection

OTHER EXPERIENCE

Academic Service

Reviewer for CVPR 2023, CVPR 2024, ECCV 2024, TCSVT

Jecheon International Music & Film Festival | Volunteer

Aug. 2017

- Interpreter / schedule manager of *Mr. Etienne Comar*, the director of film *Django* (2017)

KATUSA (Mandatory Military Service) | Administrative Specialist

Apr. 2015 ~ Jan. 2017

- Squad Leader / Operator in Combined Joint Provost Marshal (CJPM)

SKILLS

Language

Korean, English (Advanced), French (Intermediate)

Programming Languages

Python, R, C++ (basic)

Programming Frameworks

JAX, PyTorch, Tensorflow

REFERENCE

NOJUN KWAK, PH.D.

Professor,

Program in Intelligent Systems,

Department of Transdisciplinary Studies,

Seoul National University, Republic of Korea

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