

SEUNGHYEON SEO

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EDUCATION

Seoul National University, Seoul, Korea Ph.D. Candidate in Artificial Intelligence	Mar. 2021 ~ Aug. 2025 (expected)
Seoul National University, Seoul, Korea B.A. in Agricultural Economics	Mar. 2014 ~ Feb. 2021
Institut d'Études Politiques de Paris (Sciences Po), Paris, France Exchange Student Program (Economics)	Jan. 2019 ~ Jun. 2019
Myungduk Foreign Language High School, Seoul, Korea French Major	Mar. 2010 ~ Feb. 2013

RESEARCH INTERESTS

Deep Learning, Computer Vision, Neural Rendering, NeRF, Efficient Training Framework

RESEARCH EXPERIENCE

@ **Machine Intelligence and Pattern Analysis Laboratory (MIPAL), Seoul, Korea** Mar. 2021 ~ Present
Graduate Student Researcher

Seunghyeon Seo, Yeonjin Chang, Jayeon Yoo, Seungwoo Lee, Hojun Lee, Nojun Kwak, "HG-NeRF: 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 TensorRF", **WACV 2024**, Jan. 2024.

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

Seunghyeon Seo, Yeonjin Chang, Nojun Kwak, "FlipNeRF: Flipped Reflection Rays for Few-shot Novel View Synthesis", **ICCV 2023**, Oct. 2023.

Seunghyeon Seo, Jaeyoung Yoo, Jihye Hwang, Nojun Kwak, "MDPose: Real-Time Multi-Person Pose Estimation via Mixture Density Model", **UAI 2023**, Jul. 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**, Jul. 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**, Jun. 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**, Jun. 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”, **ICCAS 2021**, Oct. 2021.

WORK EXPERIENCE

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.
- Visualization of behavior and footsteps of cows by drawing trace and heatmap, using Darkflow and SORT algorithm.
- 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.

Committee on World Food Security (CFS) in Headquarters of Food and Agriculture Organization of the United Nations (FAO), Rome, Italy | Intern Sep. 2019 ~ Feb. 2020

Research and report on datasets that are relevant to the proposed CFS workstream on <Data Collection and Analysis Tools> including:

- identifying the barriers impeding quality data collection, analysis, and use in decision-making.
- identifying specific high priority gaps in data production and analysis not covered by ongoing initiatives.
- highlighting the benefits of using data and the opportunity costs of not using data for decisions.
- illustrating initiatives that have encouraged evidence-based decisions in agriculture and food security across the public, private, and academic sectors as well as approaches that have not worked.
- providing insights into how to ensure data collection and its utilization give voice to the people most affected by policies stemming from that data, including farmers and other food producers.

Agricultural Information System Laboratory, Seoul National University | Intern Jul. 2018 ~ Sep. 2018

Provided support for research including:

- contributing to crawling work for unstructured data (e.g. news articles about agricultural issues), using Python.
- Analyzing auctioning price data of carrot wholesale markets, using R.
- Studying research papers in the field of agriculture.

PROJECTS

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

Jecheon International Music & Film Festival | Volunteer

Aug. 2017

Accompanied *Mr. Etienne Comar*, the director of film *Django* (2017), as an interpreter and schedule manager during the festival

KATUSA (Mandatory Military Service) | Administrative Specialist

Apr. 2015 ~ Jan. 2017

- Worked as a mediator between the ROK Army and the US Army
- Wrote reports on suspicious activities, civil gatherings, and accidents involving military personnel all around the peninsula, using MS Word, Excel, and Access
- Participated in several meetings with officers from ROK and US Army, as an interpreter

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
Department of the Army, USA

Jan. 2017

SKILLS

Language

Korean, English (Advanced), French (Intermediate)

Programming Languages

Python, R, C++ (basic)

Programming Frameworks

JAX, PyTorch, Tensorflow

REFERENCE

NOJUN KWAK, PH.D.

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Department of Transdisciplinary Studies,
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