Yeon-Ji Song

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Education

Seoul National University (SNU) 2021.09 – 2027.12 (expected)
Integrated MS-PhD in Interdisciplinary Program in Neuroscience *Seoul, South Korea*
- Advisor: Prof. Byoung-Tak Zhang (Founding Director of AI Institute of SNU)

Hong Kong University of Science and Technology (HKUST) 2017.09 – 2021.05
B.Eng. in Electronic and Computer Engineering *Clear Water Bay, Hong Kong*

Research Interests

Visual generation via physical concept grounding, including moving objects and camera dynamics, in a neurosymbolic way.

Scene understanding for view synthesis and reconstruction of dynamic objects from blurry videos via 3DGS.

Object-centric learning in the physical world with time-static object appearance and time-varying object motion.

Robotics and embodied AI leveraging learned object and scene representations for robotics tasks in real-world settings.

Publications

⋆ corresponding author, † equal contribution

Motion-Decoupled Dynamic Scene Reconstruction via Deformable 3D Gaussian Splatting
Yeon-Ji Song, Byoung-Tak Zhang⋆
TBU

Few-shot 3D Affordance Learning for Open-vocabulary Robotic Manipulation
Hyunseo Kim, Yeon-Ji Song, Minsu Lee⋆, Byoung-Tak Zhang⋆
TBU

OCK: Unsupervised Dynamic Video Prediction with Object-Centric Kinematics
Yeon-Ji Song, Jaein Kim†, Suhyung Choi†, Jin-Hwa Kim⋆, Byoung-Tak Zhang⋆
Under review

DBMovi-GS: Dynamic View Synthesis from Blurry Monocular Video via Sparse-Controlled Gaussian Splatting
Yeon-Ji Song, Jaein Kim, Byoungju Kim, Byoung-Tak Zhang⋆
in Proceedings of CVPR 2025 Workshop on Neural Fields Beyond Conventional Cameras

Continuous SO(3) Equivariant Convolution for 3D Point Cloud Analysis
Jaein Kim, Heebin Yoo, Dong-Sig Han, Yeon-Ji Song, Byoung-Tak Zhang⋆
in Proceedings of ECCV 2024

Unsupervised Visual Dynamics Learning with Multi-Object Kinematics
Yeon-Ji Song, Byoung-Tak Zhang⋆
in Proceedings of KCC 2024 (Best Presentation Paper Award)

Learning Object Appearance and Motion Dynamics with Object-Centric Representations
Yeon-Ji Song, Hyunseo Kim, Suhyung Choi, Jin-Hwa Kim⋆, Byoung-Tak Zhang⋆
in Proceedings of NeurIPS 2023 Workshop on Causal Representation Learning

On Discovery of Local Independence over Continuous Variables via Neural Contextual Decomposition
Inwoo Hwang, Yunhyeok Kwak, Yeon-Ji Song, Byoung-Tak Zhang⋆, Sanghack Lee⋆
in Proceedings of CLeaR 2023

Awards and Certificates

Samsung Industrial-Academic Scholarship 2025 – 2027
KCC 2024 Best Presentation Paper 2024
RoboCup@Home DSPL 2nd Place 2022
HKUST Admission Scholarship 2017

Teaching Experience

Multimodal Deep Learning Theories and Applications (SNU)	2024.09 – 2024.12
Project XR: AI Chatbot (LognCoding)	2024.01 – 2024.05
Artificial Intelligence (SNU)	2022.03 – 2022.06
New Computer Technology (SNU x HKUST)	2022.03 – 2022.06

Professional Services

Program Committee Member (Reviewer)

- WACV 2024, ICCV 2025

Technical Mentoring

- Machine Learning and Computer Vision (Hyundai NGV) 2025
- AI Youth Challenge (POSCO DX) 2023 – 2025

Projects

SNU-NAVER Hyperscale AI Center 2023.06 – 2024.05
Student Researcher *SNU*

- Advisor: Jin-Hwa Kim
- Developed video generative models focused on 3D object and motion dynamics.
- Published at NeurIPS 2023 workshop on Causal Representation Learning.

Robot Navigation based on Reinforcement Learning 2020.05 – 2021.05
Final Year Project *HKUST*

- Advisor: Ming Liu (Robotics and Multi-Perception Lab, Robotics Institute)
- Title: Map-based Robot Navigation and Path planning with Deep Reinforcement Learning
- Proposed ML and RL based algorithm for autonomous navigation in a cluttered environment.

Bundleport 2018.05 – 2020.05
CTO & Logistics Manager *HKUST*

- Created a full-stack web application using Node.js, MySQL, HTML5/CSS3, and JavaScript.
- Developed on cloud server using AWS S3, EC2, Elastic Beanstalk and Cloudfront.

HKUST ROV Community Project 2019.02 – 2019.05
Activity Assistant *HKUST*

- HKUST course code: ENGG2900D

HKUST Robotics Team 2018.09 – 2018.12
Robotics Software Engineer *HKUST*

- Designed and implemented algorithms for processing data from Camera and LiDAR sensors.

Work Experience

Biointelligence Lab 2020.12 – 2021.04
Undergraduate Research Intern *SNU*

- Designed and conducted research on Robotics and Reinforcement Learning.

Surromind (SNU) 2020.07 – 2020.10
Artificial Intelligence Research Engineer *Seoul, South Korea*

- Designed and implemented a Deep Learning model for Pose Estimation based on Detectron2.

Robocore AI 2020.06 – 2020.07
Robotics Software Engineer *Science Park, HongKong*

- Created new solutions for temi robots, combining IOT products and the mobility of temi.
- Performed GUI design, system design and solved real-life customer request with AI solution.

Codecrain Inc. 2019.06 – 2019.09
Full-stack Web Developer *Seoul, South Korea*

- Developed frontend web application along with a senior developer using React.js.
- Implemented React.js and Node.js to enhance functionality and user experience.