

Seongmin Hong

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I am a Postdoctoral Researcher at Seoul National University, currently fulfilling my mandatory alternative military service. My research leverages large-scale first-order optimization in Computer Vision and Computational Imaging, specifically focusing on novel algorithms for Generative Model Inversion and differentiable formulations for discrete data.

Education

Ph.D. in Electrical and Computer Engineering – Seoul National University	03 2020 — 08 2025
<i>Dissertation:</i> Inversion of Deep Generative Models: Structural and Optimization-based Approaches	
Award: Distinguished Ph.D. Dissertation Award in Communications and Signal Processing	
Advisor: Se Young Chun, GPA: 4.08/4.3	
B.S. in Electrical and Computer Engineering – Seoul National University	03 2016 — 02 2020
GPA: 3.70/4.3	
Mathematics and Physics – Gyeonggi Science High School for the Gifted	03 2013 — 02 2016

Experience

Postdoctoral Researcher – Institute of New Media and Communications, SNU	09 2025 — 08 2026
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Publications (selected, sole first author)

[Gradient-free Decoder Inversion in Latent Diffusion Models](#)

Seongmin Hong, Suh Yoon Jeon, Kyeonghyun Lee, Ernest K. Ryu, Se Young Chun
Neural Information Processing Systems (**NeurIPS**), 2024.

[Adaptive Selection of Sampling-Reconstruction in Fourier Compressed Sensing](#)

Seongmin Hong, Jaehyeok Bae, Jongho Lee, Se Young Chun
European Conference on Computer Vision (**ECCV**), 2024.

[On Exact Inversion of DPM-Solvers](#)

Seongmin Hong, Kyeonghyun Lee, Suh Yoon Jeon, Hyewon Bae, Se Young Chun
Conference on Computer Vision and Pattern Recognition (**CVPR**), 2024.

[On the Robustness of Normalizing Flows for Inverse Problems in Imaging](#)

Seongmin Hong, Inbum Park, Se Young Chun
International Conference on Computer Vision (**ICCV**), 2023.

[Neural Diffeomorphic Non-uniform B-spline Flows](#)

Seongmin Hong, Se Young Chun
Thirty-Seventh AAAI Conference on Artificial Intelligence (**AAAI**, oral), 2023.

Advanced direction of arrival estimation using step-learnt iterative soft-thresholding for frequency-modulated continuous wave multiple-input multiple-output radar

Seongmin Hong, Seong-Cheol Kim, Seongwook Lee
IET Radar, Sonar & Navigation, 2023.

[Radar Signal Decomposition in Steering Vector Space for Multi-Target Classification](#)

Seongmin Hong, Seongwook Lee, Byeong-Ho Lee, Jinwook Kim, Yong-Hwa Kim, Seong-Cheol Kim
IEEE Sensors Journal, 2021.

Presentations

[Inversion of Deep Generative Models: Structural and Optimization-based Approaches](#)
At Chung-Ang University, Seoul, Korea, Oct 22, 2025

[Inversion of Deep Generative Models: Structural and Optimization-based Approaches](#)
At ETRI, Daejeon, Korea, Oct 21, 2025

[On the Robustness of Normalizing Flows for Inverse Problems in Imaging](#)

In 2024 SIAM Conference on Imaging Science (**SIAM IS24**), Atlanta, Georgia, U.S., May 28-31, 2024

Challenges

[AIM 2024 Depth Upsampling Challenge](#) - 3rd place
Woojae Han, Kyeonghyun Lee, **Seongmin Hong**, Se Young Chun

Teaching Experience

Head TA, Topics in Signal Processing (Generative Diffusion Model)	2025 Autumn
Head TA, Signals and Systems (English Lecture)	2022 Spring
Head TA, Seminar in Electrical and Computer Engineering 3	2020 Spring
TA, Advanced Electromagnetics 1	2020 Spring

Fellowship

Apple Scholars in AI/ML PhD fellowship program (Institutional Nominee)	2025
Qualcomm Innovation Fellowship Korea 2024 (won 4,000,000 KRW)	12 2024
Brain Korea 21 Four Program	03 2020 – Present

Services

Technical Research Personnel (Alternative military service)	03 2023 – 02 2025, 09 2025 – 08 2026
Paper reviewers: NeurIPS (2024, 2025), ICML (2025), ICLR (2025, 2026), CVPR (2025), ICCV (2025), AAAI (2026), AISTATS (2025, 2026), ACMMM (2025)	
IEEE Sensors Journal, ACM TOMM, IEEE TPAMI, IEEE TMM	since 2023

Patents

Audio Data Management Device and Method Using A Generative AI Model
Se Young Chun, **Seongmin Hong**, Kyungryeol Lee
Korea Patent Filed (Pending), 04 2025

Other Publications

[Fidelity-Preserving Zero-shot Diffusion Models for Highly Ill-posed Inverse Problems in Lensless Imaging](#)
Haechang Lee, Dong Ju Mun, Hyunwoo Lee, Kyung Chul Lee, **Seongmin Hong**, Gwanghyun Kim, Seung Ah Lee, Se Young Chun
Accepted at Image and Vision Computing, Volume 165, January 2026.

[Robust Watermarks for Audio Diffusion Models by Quadrature Amplitude Modulation](#)
Kyoungryeol Lee*, **Seongmin Hong***, Se Young Chun (*co-first authored)
Pattern Recognition Letters, Vol. 198, pp. 22-28, 2025.

[Uncertainty-Adaptive Selection of Sampling-Reconstruction for Fourier Compressed Sensing](#)
Seongmin Hong, Jaehyeok Bae, Jongho Lee, Se Young Chun
3rd Workshop on Uncertainty Quantification for Computer Vision in ECCV (extended abstract), 2024.

[Target classification based on point cloud data using automotive imaging radar](#)
Sohee Lim, Jaehoon Jung, **Seongmin Hong**, Byeong-ho Lee, Seong-Cheol Kim
KICS Winter Conference (in Korean), 2021.

[Measurement Data Release on 2.4 GHz ISM Band Usage](#)
Doyoung Ham, **Seongmin Hong**, Byonghyo Shim, Seong-Cheol Kim
KICS Winter Conference (in Korean), 2021.

[Analysis of CNN Classifier Performance for Segway Data with 77GHz Automotive Radar](#)
Byeong-ho Lee, **Seongmin Hong**, Jinwook Kim, Seongwook Lee, Byonghyo Sim, Seong-Cheol Kim
KICS Winter Conference (in Korean), 2021.

Optimization of 16-QAM Constellations with AWGN Channel

Seongmin Hong, Jeong-Hoon Park, Doyoung Ham, Seong-Cheol Kim
KICS Summer Conference (in Korean), 2020.