Seung Wook Kim

Senior Research Scientist, NVIDIA

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DEGREES

Doctor of Philosophy - Machine Learning　　　　　　　　　　June 2024
Department of Computer Science, University of Toronto
Thesis: Controllable Scene Generation with Neural Networks
Advisor: Prof. Sanja Fidler

Master of Science - Machine Learning　　　　　　　　　　January 2019
Department of Computer Science, University of Toronto
Thesis: Visual Reasoning by Progressive Module Networks
Advisor: Prof. Sanja Fidler

Honours Bachelor of Science with High Distinction　　　　　June 2016
Department of Computer Science, University of Toronto
Computer Science Specialist - Focus in Artificial Intelligence
Cumulative GPA 3.99/4.00

RESEARCH INTERESTS

Generative models, robot and physical AI, neural content creation, 3D reconstruction and perception, scene understanding, representation learning

EMPLOYMENT

Senior Research Scientist　　　　　　　　　　　　June 2023 - Present
NVIDIA, Spatial Intelligence Lab

Research Scientist　　　　　　　　　　　　January 2020 - May 2023
NVIDIA, Spatial Intelligence Lab

Research Intern　　　　　　　　　　January 2019 - December 2019
NVIDIA, Spatial Intelligence Lab

Research Intern　　　　　　　　　　　　May 2018 - August 2018
SKTelecom, T-brain

Research Scientist　　　　　　　　　　　　July 2016 - August 2017
Lunit Inc.

Part-Time Research Engineer　　　　　　September 2015 - April 2016
Auvenir

Software Developer Co-op, Full-Stack Rails developer　May 2014 - August 2015
IBM Canada

JOURNAL PUBLICATIONS

Self-supervised driven consistency training for annotation efficient histopathology image analysis
Medical Image Analysis
Srinidhi, C., **Kim, S.W.**, Chen, F., Martel, A.

CONFERENCE PUBLICATIONS

* denotes equal contribution

Random Conditioning with Distillation for Data-Efficient Diffusion Model Compression
Conference on Computer Vision and Pattern Recognition (CVPR) 2025.
Kim, D., Park, S., Han, G., **Kim, S.W.**, Seo, P.H.

L4GM: Large 4D Gaussian Reconstruction Model
Conference on Neural Information Processing Systems (NeurIPS) 2024.
Ren, J., Xie, K., Mizraei, A., Liang, H., Zeng, X., Kreis, K., Liu, Z., Torralba, A., Fidler, S., **Kim, S.W.**, Ling, H.

DistillNeRF: Perceiving 3D Scenes from Single-Glance Images by Distilling Neural Fields and Foundation Model Features
Conference on Neural Information Processing Systems (NeurIPS) 2024.
Wang, L., **Kim, S.W.**, Yang, J., Yu, C., Ivanovic, B., Waslander, S., Wang, Y., Fidler, S., Pavone, M., Karkus, P.

Diffusion Texture Painting
SIGGRAPH 2024.
Hu, A., Desai, N., Alhaija, H., **Kim, S.W.**, Shugrina, M.

Align Your Gaussians: Text-to-4D with Dynamic 3D Gaussians and Composed Diffusion Models (Highlight)
Conference on Computer Vision and Pattern Recognition (CVPR) 2024.
Ling, H.*, **Kim, S.W.***, Torralba, A., Fidler, S., Kreis, K.

EmerDiff: Emerging Pixel-level Semantic Knowledge in Diffusion Models
International Conference on Learning Representations (ICLR) 2024.
Namekata, K., Sabour, A., Fidler, S., **Kim, S.W.**

EmerNeRF: Emergent Spatial-Temporal Scene Decomposition via Self-Supervision
International Conference on Learning Representations (ICLR) 2024.
Yang, J., Ivanovic, B., Litany, O., Weng, X., **Kim, S.W.**, Li, B., Che, T., Xu, D., Fidler, S., Pavone, M., Wang, Y.

WildFusion: Learning 3D-Aware Latent Diffusion Models in View Space
International Conference on Learning Representations (ICLR) 2024.
Schwarz, K., **Kim, S.W.**, Gao, J., Fidler, S., Geiger, A., Kreis, K.

DreamTeacher: Pretraining Image Backbones with Deep Generative Models
International Conference on Computer Vision (ICCV) 2023.
Li, D., Ling, H., Kar, A., Acuna, D., **Kim, S.W.**, Kreis, K., Torralba, A., Fidler, S.

NeuralField-LDM: Scene Generation with Hierarchical Latent Diffusion Models
Conference on Computer Vision and Pattern Recognition (CVPR) 2023.
Kim, S.W.*, Brown, B.*, Yin, K., Kreis, K., Schwarz, K., Li, D., Rombach, R., Torralba, A., Fidler, S.

Align your Latents: High-Resolution Video Synthesis with Latent Diffusion Models
Conference on Computer Vision and Pattern Recognition (CVPR) 2023.
Blattmann, A., Rombach, R., Ling, H., Dockhorn, T., **Kim, S.W.**, Fidler, S., Kreis, K.

PolymorphicGAN: Generating Aligned Samples Across Multiple Domains With Learned Morph Maps (Oral)
Conference on Computer Vision and Pattern Recognition (CVPR) 2022.
Kim, S.W., Kreis, K., Li, D., Torralba, A., Fidler, S.

BigDatasetGAN: Synthesizing ImageNet with Pixel-wise Annotations
Conference on Computer Vision and Pattern Recognition (CVPR) 2022.
Li, D., Ling, H., **Kim, S.W.**, Kreis, K., Barriuso, A., Fidler, S., Torralba, A.

EditGAN: High-Precision Semantic Image Editing
Conference on Neural Information Processing Systems (NeurIPS) 2021.
Ling, H., Kreis, K., Li, D., **Kim, S.W.**, Torralba, A., Fidler, S.

DriveGAN: Towards a Controllable High-Quality Neural Simulation (Oral)
Conference on Computer Vision and Pattern Recognition (CVPR) 2021.
Kim, S.W., Philion, J., Torralba, A., Fidler, S.

Variational Amodal Object Completion
Conference on Neural Information Processing Systems (NeurIPS) 2020.
Ling, H., Acuna, D., Kreis, K., **Kim, S.W.**, Fidler, S.

Learning to Simulate Dynamic Environments with GameGAN
Conference on Computer Vision and Pattern Recognition (CVPR) 2020.
Kim, S.W., Zhou, H., Philion, J., Torralba, A., Fidler, S.

Visual Reasoning by Progressive Module Networks
International Conference on Learning Representations (ICLR) 2019.
Kim, S.W., Tapaswi, M., Fidler, S.

Keep and Learn: Continual Learning by Constraining the Latent Space for Knowledge Preservation in Neural Networks
Medical Image Computing and Computer Assisted Intervention (MICCAI) 2018.
Kim, H.E., **Kim, S.W.**, Lee, J.

TECHNICAL REPORTS
Cosmos-Drive-Dreams: Scalable Synthetic Driving Data Generation with World Foundation Models
ArXiv Preprint, 2025.
Ren, X.*, Lu, Y*, Cao, T.*, Gao, R.*, Huang, S., Sabour, A., Shen, T., Pfaff, T., Wu, J., Chen, R., **Kim, S.W.**, Gao, J., Leal-Taixe, L., Chen, M., Fidler, S., Ling, H.

Cosmos World Foundation Model Platform for Physical AI
ArXiv Preprint, 2025.
NVIDIA.

WORKSHOP PUBLICATIONS
Cascaded Pyramid Network for 3D Human Pose Estimation Challenge
European Conference on Computer Vision (ECCV) 2018.
Hong, S., Jung, W., Woo, I., **Kim, S.W.**

Transferring Knowledge To Smaller Network With Class-Distance Loss
International Conference on Learning Representations (ICLR) workshop 2017.
Kim, S.W., Kim, H.E.

Combining word prediction and r-ary Huffman coding for text entry

InterSpeech Speech and Language Processing for Assistive Technologies (SLPAT) 2016.
Kim, S.W., Rudzicz, F.

AWARDS &
SCHOLARSHIPS

DiDi Graduate Student Award   2020
Awarded to graduate students based on their academic standing and research potential
,University of Toronto

Principal Janet Paterson Award   2016
Awarded to the student graduating with the highest grade point average from Innis
college, University of Toronto

Dean's List   2013-2016
Recognition of exceptional academic achievement

Samuel Beatty In-Course Award   2014
Awarded to students in the Departments of Mathematics, Physics, Statistics or Computer Science for outstanding academic performance

NSERC USRA   2013
Undergraduate Student Research Awards

University of Toronto In-Course Scholarship   2013
Awarded to students who demonstrate academic merit

Later Life Learning Scholarship   2013
Awarded to students in the Faculty of Arts and Science for outstanding academic performance

AUCC Bunge Canada Scholarship   2011-2013
Awarded for high academic achievement

Governor General's Bronze Medal   2009
Awarded to the student graduating with the highest grade point average from a Canadian high school