

GILJOO NAM

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BIOGRAPHY

Giljoo Nam is an AI researcher working toward **Physical AI**: artificial intelligence that learns the structure and behavior of the 3D physical world. To that end, his research addresses core problems in **computer vision and graphics**, spanning generative AI, 3D reconstruction and understanding, motion tracking and animation, physically-based forward and inverse rendering, computational imaging, and human modeling for robotics. He has authored papers in top-tier journals and conferences, including SIGGRAPH, SIGGRAPH Asia, CVPR, ICCV, ECCV, and NeurIPS. His work has also resulted in multiple successful open-source projects, such as [multi-view geometry](#), [photorealistic avatars](#), [hair modeling](#), and [physically-based rendering](#).

EMPLOYMENT HISTORY

06/2020–Present **Research Scientist**, Meta Reality Labs, United States
09/2014–08/2015 **Research Scientist**, KAIST, Korea

EDUCATION

2019	Ph.D., Computer Science, KAIST Advisor: Prof. Min H. Kim Thesis: Image-based Modeling for High-Quality 3D Geometry and Reflectance
2014	M.S., Computer Science, KAIST
2012	B.Eng., Electrical Engineering, Korea University

INVITED TALKS

2026	Korea Computer Graphics Society (Conference Keynote Speech), Korea My Bitter Lesson with Computer Graphics
2025	Emory University , United States Toward Physical AI: Learning the Structure and Behavior of the 3D World
2025	Yale University , United States Data-driven Creation of Digital Humans
2024	POSTECH (CSE/GSAI Seminar), Korea Data-driven Creation of Digital Humans
2024	InterDigital , France Strand-based Solutions for Modeling and Rendering of Hair
2019	University of California San Diego , United States Inverse Rendering for Realistic Computer Graphics
2019	Stanford (SCIEN Seminar Series), United States Inverse Rendering for Realistic Computer Graphics

PUBLICATIONS

Top conferences (SIGGRAPH/SIGGRAPH Asia/CVPR/ICCV/ECCV/NeurIPS/ICRA): 25 papers

- [1] Hwanhee Jung, Seunggywan Lee, Jeongyoon Yoon, SeungHyeon Kim, **Giljoo Nam**, Qixing Huang, and Sangpil Kim, “Decoupled generative modeling for human-object interaction synthesis,” in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2026.
- [2] Junxuan Li et al., “Large-scale Codec Avatars: The unreasonable effectiveness of large-scale avatar pre-training,” in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2026.
- [3] Yuxuan Xue, Ruofan Liang, Egor Zakharov, Timur Bagautdinov, Chen Cao, **Giljoo Nam**, Shunsuke Saito, Gerard Pons-Moll, and Javier Romero, “GeoRelight: Learning joint geometrical reconstruction and re-lighting with flexible multi-modal diffusion transformers,” in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2026.
- [4] Chengyang Zhao, Uksang Yoo, Arkadeep Narayan Chaudhury, **Giljoo Nam**, Jonathan Francis, Jeffrey Ichnowski, and Jean Oh, “DYMO-Hair: Generalizable volumetric dynamics modeling for robot hair manipulation,” in *Proceedings of the IEEE International Conference on Robotics (ICRA)*, 2026.
- [5] Seokjun Choi, Hoon-Gyu Chung, Yujin Jeon, **Giljoo Nam**, and Seung-Hwan Baek, “A real-world display inverse rendering dataset,” in *Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV)*, 2025.
- [6] Byungjun Kim, Shunsuke Saito, **Giljoo Nam**, Tomas Simon, Jason Saragih, Hanbyul Joo, and Junxuan Li, “HairCUP: Hair compositional universal prior for 3D gaussian avatars,” in *Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV)*, **oral presentation**, 2025.
- [7] Chengan He, Junxuan Li, Tobias Kirschstein, Artem Sevastopolsky, Shunsuke Saito, Qingyang Tan, Javier Romero, Chen Cao, Holly Rushmeier, and **Giljoo Nam**, “3DGH: 3D head generation with composable hair and face,” *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2025)*, vol. 44, no. 4, pp. 1–12, 2025.
- [8] Di Liu, Teng Deng, **Giljoo Nam**, Yu Rong, Stanislav Pidhorskyi, Junxuan Li, Jason Saragih, Dimitris N. Metaxas, and Chen Cao, “LUCAS: Layered universal codec avatars,” in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2025.
- [9] Wonseok Roh, Hwanhee Jung, **Giljoo Nam**, Dong In Lee, Hyeongcheol Park, Sang Ho Yoon, Jungseock Joo, and Sangpil Kim, “Insightful instance features for 3D instance segmentation,” in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2025.
- [10] Yunlu Chen, Francisco Vicente Carrasco, Christian Häne, **Giljoo Nam**, Jean-Charles Bazin, and Fernando De la Torre, “Doubly hierarchical geometric representations for strand-based human hairstyle generation,” in *Proceedings of Advances in Neural Information Processing Systems (NeurIPS)*, 2024.
- [11] Hongbeen Park, Minjeong Park, **Giljoo Nam**, and Jinkyu Kim, “LRSLAM: Low-rank representation of signed distance fields in dense visual SLAM system,” in *Proceedings of the European Conference on Computer Vision (ECCV)*, Springer, 2024.
- [12] Egor Zakharov, Vanessa Sklyarova, Michael Black, **Giljoo Nam**, Justus Thies, and Otmar Hilliges, “Human hair reconstruction with strand-aligned 3D gaussians,” in *Proceedings of the European Conference on Computer Vision (ECCV)*, 2024.

- [13] Zhongshi Jiang, Kishore Venkateshan, **Giljoo Nam**, Meixu Chen, Romain Bachy, Jean-Charles Bazin, and Alexandre Chapiro, “FaceMap: Distortion-driven perceptual facial saliency maps,” in *Proceedings of ACM SIGGRAPH Asia (Conference Papers)*, 2024.
- [14] Seokjun Choi, Seungwoo Yoon, **Giljoo Nam**, Seungyong Lee, and Seung-Hwan Baek, “Differentiable display photometric stereo,” in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2024.
- [15] Jihyun Lee, Shunsuke Saito, **Giljoo Nam**, Minhyuk Sung, and Tae-Kyun Kim, “InterHandGen: Two-hand interaction generation via cascaded reverse diffusion,” in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2024.
- [16] Wonseok Roh, Hwanhee Jung, **Giljoo Nam**, Jinseop Yeom, Hyunje Park, Sang Ho Yoon, and Sangpil Kim, “Edge-aware 3D instance segmentation network with intelligent semantic prior,” in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2024.
- [17] Shunsuke Saito, Gabriel Schwartz, Tomas Simon, Junxuan Li, and **Giljoo Nam**, “Relightable gaussian codec avatars,” in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, *oral presentation*, 2024.
- [18] Ziyang Wang, **Giljoo Nam**, Aljaz Bozic, Chen Cao, Jason Saragih, Michael Zollhöfer, and Jessica Hodgins, “A local appearance model for volumetric capture of diverse hairstyles,” in *Proceedings of the International Conference on 3D Vision (3DV)*, *oral presentation*, 2024.
- [19] Aakash KT, Adrian Jarabo, Carlos Aliaga, Matt Jen-Yuan Chiang, Olivier Maury, Christophe Hery, P. J. Narayanan, and **Giljoo Nam**, “Accelerating hair rendering by learning high-order scattered radiance,” *Computer Graphics Forum (CGF)*, vol. 42, no. 4, 2023.
- [20] Wonjeong Ryoo, **Giljoo Nam**, Jae-Sang Hyun, and Sangpil Kim, “Event fusion photometric stereo network,” *Neural Networks*, vol. 167, pp. 141–158, 2023.
- [21] Yuefan Shen, Shunsuke Saito, Ziyang Wang, Olivier Maury, Chenglei Wu, Jessica Hodgins, Youyi Zheng, and **Giljoo Nam**, “CT2Hair: High-fidelity 3D hair modeling using computed tomography,” *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2023)*, vol. 42, no. 4, 75:1–13, 2023.
- [22] Ziyang Wang, **Giljoo Nam**, Tuur Stuyck, Stephen Lombardi, Chen Cao, Jason Saragih, Michael Zollhöfer, Jessica Hodgins, and Christoph Lassner, “NeuWigs: A neural dynamic model for volumetric hair capture and animation,” in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2023.
- [23] Wonseok Roh, Gysam Chang, Seokha Moon, **Giljoo Nam**, Chanyoung Kim, Younghyun Kim, Sangpil Kim, and Jinkyu Kim, “ORA3D: Overlap region aware multi-view 3D object detection,” in *Proceedings of the British Machine Vision Conference (BMVC)*, 2022.
- [24] Radu Alexandru Rosu, Shunsuke Saito, Ziyang Wang, Chenglei Wu, Sven Behnke, and **Giljoo Nam**, “Neural Strands: Learning hair geometry and appearance from multi-view images,” in *Proceedings of the European Conference on Computer Vision (ECCV)*, 2022.
- [25] Ziyang Wang, **Giljoo Nam**, Tuur Stuyck, Stephen Lombardi, Michael Zollhöfer, Jessica Hodgins, and Christoph Lassner, “HVV: Learning a hybrid neural volumetric representation for dynamic hair performance capture,” in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022.

- [26] Tiancheng Sun, **Giljoo Nam**, Carlos Aliaga, Christophe Hery, and Ravi Ramamoorthi, “Human hair inverse rendering using multi-view photometric data,” in *Proceedings of the Eurographics Symposium on Rendering (EGSR)*, 2021.
- [27] Hyunho Ha, Seung-Hwan Baek, **Giljoo Nam**, and Min H. Kim, “Progressive acquisition of SVBRDF and shape in motion,” *Computer Graphics Forum (CGF)*, vol. 39, no. 6, pp. 480–495, 2020.
- [28] **Giljoo Nam**, Chenglei Wu, Min H. Kim, and Yaser Sheikh, “Strand-accurate multi-view hair capture,” in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, **oral presentation**, 2019.
- [29] **Giljoo Nam**, Joo Ho Lee, Diego Gutierrez, and Min H. Kim, “Practical SVBRDF acquisition of 3D objects with unstructured flash photography,” *ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia 2018)*, vol. 36, no. 6, 267:1–12, 2018.
- [30] Inchang Choi, Daniel S. Jeon, **Giljoo Nam**, Diego Gutierrez, and Min H. Kim, “High-quality hyperspectral reconstruction using a spectral prior,” *ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia 2017)*, vol. 36, no. 6, 218:1–13, 2017.
- [31] **Giljoo Nam**, Haebom Lee, Sungsoo Oh, and Min H. Kim, “Measuring color defects in flat panel displays using HDR imaging and appearance modeling,” *IEEE Transactions on Instrumentation and Measurement*, vol. 65, no. 2, pp. 297–304, 2016.
- [32] **Giljoo Nam**, Joo Ho Lee, Hongzhi Wu, Diego Gutierrez, and Min H. Kim, “Simultaneous acquisition of microscale reflectance and normals,” *ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia 2016)*, vol. 35, no. 6, 185:1–11, 2016.
- [33] **Giljoo Nam** and Min H. Kim, “Multispectral photometric stereo for acquiring high-fidelity surface normals,” *IEEE Computer Graphics and Applications*, vol. 34, no. 6, pp. 57–68, 2014.

TEACHING AND MENTORING EXPERIENCE

Mentoring PhD Interns at Meta:

2025	Zhiyi Kuang, Zhejiang University, China	
2024	Chengan He, Yale University, United States	now at Meta
2023	Anka He Chen, University of Utah, United States	now at NVIDIA
2022	Yuefan Shen, Zhejiang University, China	now at Tencent
2022	Aakash KT, IIIT Hyderabad, India	now at Qualcomm
2021	Radu Alexandru Rosu, University of Bonn, Germany	now at Meshcapade

Teaching Assistant at KAIST:

2018 Spring	Introduction to Computer Graphics (CS380, KAIST)
2017 Fall	Computational Colorimetry (CS681, KAIST)
2017 Spring	Computer Graphics (CS580, KAIST)
2016 Fall	Interactive Computer Graphics (CS482, KAIST)
2013 Fall	Intermediate Computer Graphics (CS492B, KAIST)
	– Received Outstanding Teaching Assistant Award
2013 Spring	Introduction to Computer Systems and Applications (CS510, KAIST)

THESIS COMMITTEE

2024	Anka He Chen, University of Utah, United States PhD Thesis: Towards Realistic Real-time Physics-Based Simulation
2024	Glenn Kerbiriou, Université de Rennes, France PhD Thesis: Data-driven Eye Region Reconstruction, Modeling and Animation

TECHNICAL PAPER COMMITTEE/REVIEWER

International Program Committee

- Pacific Graphics, 2025
- Pacific Graphics, 2024

Reviewer

- IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)
- IEEE/CVF International Conference on Computer Vision (ICCV)
- European Conference on Computer Vision (ECCV)
- ACM SIGGRAPH Conference on Computer Graphics and Interactive Techniques (SIGGRAPH)
- ACM SIGGRAPH Conference on Computer Graphics and Interactive Techniques in Asia (SIGGRAPH Asia)
- ACM Transactions on Graphics
- ACM Symposium on Virtual Reality Software and Technology
- Annual Conference of the European Association for Computer Graphics (Eurographics)
- Pacific Conference on Computer Graphics and Applications (Pacific Graphics)
- IEEE Transactions on Image Processing
- IEEE Transactions on Computational Imaging
- IEEE Transactions on Instrumentation and Measurement
- IEEE Transactions on Electron Devices
- Elsevier Computers & Graphics
- Elsevier Optics and Lasers in Engineering
- Optics Express
- Journal of Computational Design and Engineering

PATENTS

- [1] Min Hyuk Kim, **Giljoo Nam**, “METHOD FOR ACQUIRING THREE-DIMENSIONAL OBJECT BY USING ARTIFICIAL LIGHTING PHOTOGRAPH AND DEVICE THEREOF”, EU Patent App.: 19813220.1, published in Dec. 11, 2019, **EU Patent: 3664039**, published in Jul. 12, 2023.
- [2] Min Hyuk Kim, **Giljoo Nam**, “Acquisition Method for 3D Objects Using Unstructured Flash Photography and Apparatus Therefor”, US Patent App.: 16/622,234, published in Dec. 12, 2019, **US Patent: 11,380,056**, published in Jul. 05, 2022.
- [3] Min Hyuk Kim, **Giljoo Nam**, Joo Ho Lee, “Method and system for simultaneous measuring surface normal vector and surface reflectance function in microscale”, US Patent App.: 15/427,821, published in Feb. 8, 2017, **US Patent: US 10,281,396 B2**, registered in May 7, 2019.

AWARDS/FELLOWSHIPS/PRESS RELEASE

- 2019 **SIGGRAPH Doctoral Consortium**, ACM SIGGRAPH 2019
Selected as one of eight awardees of the year
- 2019 **Young Researcher Award**, Korea Computer Graphics Society
Received an award for outstanding Ph.D. Dissertation
- 2018 **Technical Papers Press Release**, ACM SIGGRAPH Asia 2018
Title: To replicate physical objects for virtual reality, just turn on your smartphone
[Digital Journal](#), [ScienceDaily](#), [LabRoots](#), [E&T Magazine](#), [TD News](#), [VR Soldier](#), [Spar3D](#), and [3DPI](#)
- 2017 **NAVER Ph.D. Fellowship**, NAVER Corporation
Received a fellowship with a grant for outstanding doctoral research