

Minhyuk Sung

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Research Interests

3D Machine Learning, Geometry Processing, Computer Graphics, Computer Vision.

Education

2013 - 2019	Ph.D. in Computer Science, Stanford University Stanford, CA, USA Dissertation: Learning and exploring the compositional structure of 3D data Advisor: Leonidas Guibas
2008 - 2010	Master of Science in Computer Science, Korea Advanced Institute of Science and Technology (KAIST) Daejeon, South Korea Thesis: A Spectral Approach to Shape Matching Using a Heat Kernel Function Advisor: Sung Yong Shin
2004 - 2008	Bachelor of Science in Computer Science, Korea Advanced Institute of Science and Technology (KAIST) Daejeon, South Korea <i>Top Rank</i> in Computer Science Department

Employment

Assistant Professor School of Computing, KAIST , Daejeon, Republic of Korea Affiliated with the Graduate School of AI and the Metaverse Program	Jan 2021 - Present
Research Scientist Adobe Research , San Jose, CA, USA	Oct 2019 - Dec 2020
Research Intern Autodesk Research , San Francisco, CA, USA	Jun 2017 - Sep 2017
Research Intern Adobe Research , Seattle, WA, USA	Jun 2016 - Sep 2016
Research Intern Google , Mountain View, CA, USA	Jun 2015 - Sep 2015
Research Intern Google , Mountain View, CA, USA	Jun 2014 - Sep 2014
Researcher Imaging Media Research Center (IMRC) Korea Institute of Science and Technology (KIST) , Seoul, South Korea	Mar 2010 - Jul 2013

Publications

1. **SyncTweedies: A General Generative Framework Based on Synchronized Diffusions**
Jaihoon Kim*, Juil Koo*, Kyeongmin Yeo*, Minhyuk Sung
(* Equal contributions)
NeurIPS 2024
2. **Neural Pose Representation Learning for Generating and Transferring Non-Rigid Object Poses**
Seungwoo Yoo, Juil Koo, Kyeongmin Yeo, Minhyuk Sung
NeurIPS 2024
3. **GrounDiT: Grounding Diffusion Transformers via Noisy Patch Transplantation**
Phillip Y. Lee*, Taehoon Yoon*, Minhyuk Sung
(* Equal contributions)
NeurIPS 2024
4. **MV2Cyl: Reconstructing 3D Extrusion Cylinders from Multi-View Images**
Eunji Hong, Nguyen Minh Hieu, Mikaela Angelina Uy, Minhyuk Sung
NeurIPS 2024
5. **Occupancy-Based Dual Contouring**
Jisung Hwang, Minhyuk Sung
SIGGRAPH Asia 2024 (Conference Track)
6. **ReGround: Improving Textual and Spatial Grounding at No Cost**
Yuseung Lee, Minhyuk Sung
ECCV 2024
7. **PartSTAD: 2D-to-3D Part Segmentation Task Adaptation**
Hyunjin Kim, Minhyuk Sung
ECCV 2024
8. **Posterior Distillation Sampling**
Juil Koo, Chanho Park, Minhyuk Sung
CVPR 2024
9. **As-Plausible-As-Possible: Semantic-Aware Shape Deformation using 2D Diffusion Priors**
Seungwoo Yoo, Kunho Kim, Vladimir G. Kim, Minhyuk Sung
CVPR 2024
10. **InterHandGen: Two-Hand Interaction Generation via Cascaded Reverse Diffusion**
Jihyun Lee, Shunsuke Saito, Giljoo Nam, Minhyuk Sung, Tae-Kyun Kim
CVPR 2024
11. **Split, Merge, and Refine: Fitting Tight Bounding Boxes via Learned Over-Segmentation and Iterative Search**
Chanhyeok Park, Minhyuk Sung
3DV 2024
12. **SyncDiffusion: Coherent Montage via Synchronized Joint Diffusions**
Yuseung Lee, Kunho Kim, Hyunjin Kim, Minhyuk Sung

13. **FourierHandFlow: Neural 4D Hand Representation Using Fourier Query Flow**
Jihyun Lee, Junbong Jang, Donghwan Kim, **Minhyuk Sung**, Tae-Kyun Kim
NeurIPS 2023
14. **OptCtrlPoints: Optimizing Control Points for Biharmonic 3D Shape Deformation**
Kunho Kim, Mikaela Angelina Uy, Despoina Paschalidou, Alec Jacobson, Leonidas Guibas, **Minhyuk Sung**
Pacific Graphics 2023 (Full Paper)
15. **SALAD: Part-Level Latent Diffusion for 3D Shape Generation and Manipulation**
Juil Koo*, Seungwoo Yoo*, Minh Hieu Nguyen*, **Minhyuk Sung**
(* Equal contributions)
ICCV 2023
16. **Im2Hands: Learning Attentive Implicit Representation of Interacting Two-Hand Shapes**
Jihyun Lee, **Minhyuk Sung**, Honggyu Choi, Tae-Kyun Kim
CVPR 2023
17. **ShapeTalk: A Language Dataset and Framework for 3D Shape Edits and Deformations**
Panos Achlioptas, Ian Huang, **Minhyuk Sung**, Sergey Tulyakov, Leonidas Guibas
CVPR 2023
18. **Seg&Struct: The Interplay Between Part Segmentation and Structure Inference for 3D Shape Parsing**
Junghyun Kim, Kaichun Mo, **Minhyuk Sung***, Woontack Woo*
(* Co-Corresponding authors)
WACV 2023 (Algorithm Track)
19. **LADIS: Language Disentanglement for 3D Shape Editing**
Ian Huang, Panos Achlioptas, Tianyi Zhang, Sergey Tulyakov, **Minhyuk Sung**, Leonidas Guibas
Findings of EMNLP 2022
20. **The Shape Part Slot Machine: Contact-based Reasoning for Generating 3D Shapes from Parts**
Kai Wang, Paul Guerrero, Vladimir Kim, Siddhartha Chaudhuri, **Minhyuk Sung**, Daniel Ritchie
ECCV 2022
21. **PartGlot: Learning Shape Part Segmentation from Language Reference Games**
Juil Koo, Ian Huang, Panos Achlioptas, Leonidas Guibas, **Minhyuk Sung**
CVPR 2022
22. **Pop-Out Motion: 3D-Aware Image Deformation via Learning the Shape Laplacian**
Jihyun Lee*, **Minhyuk Sung***, Hyunjin Kim, Tae-Kyun Kim
(* Equal contributions)
CVPR 2022
23. **Point2Cyl: Reverse Engineering 3D Objects from Point Clouds to Extrusion Cylinders**
Mikaela Angelina Uy*, Yen-yu Chang*, **Minhyuk Sung**, Purvi Goel, Joseph Lambourne, Tolga Birdal, Leonidas Guibas
(* Equal contributions)

24. **Implicit LiDAR Network: LiDAR Super-Resolution via Interpolation Weight Prediction**
Youngsun Kwon, **Minhyuk Sung***, Sung-eui Yoon*
(* Co-Corresponding authors)
ICRA 2022
25. **CPFN: Cascaded Primitive Fitting Networks for High-Resolution Point Clouds**
Eric-Tuan Lê, **Minhyuk Sung**, Duygu Ceylan, Radomír Měch, Tamy Boubekeur, Niloy Mitra
ICCV 2021
26. **CTRL-C: Camera calibration TRansformer with Line-Classification**
Jinwoo Lee, Hyunsung Go, Hyunjoon Lee, Sunghyun Cho, **Minhyuk Sung**, Junho Kim
ICCV 2021
27. **DeepMetaHandles: Learning Deformation Meta-Handles of 3D Meshes with Biharmonic Coordinates**
Minghua Liu, **Minhyuk Sung**, Radomír Měch, Hao Su
CVPR 2021 (Oral)
28. **MultiBodySync: Multi-Body Segmentation and Motion Estimation via 3D Scan Synchronization**
Jiahui Huang, He Wang, Tolga Birdal, **Minhyuk Sung**, Federica Arrigoni, Shi-Min Hu, Leonidas Guibas
CVPR 2021 (Oral)
29. **Joint Learning of 3D Shape Retrieval and Deformation**
Mikaela Angelina Uy, Vladimir G. Kim, **Minhyuk Sung**, Noam Aigerman, Siddhartha Chaudhuri, Leonidas Guibas
CVPR 2021
30. **DeformSyncNet: Deformation Transfer via Synchronized Shape Deformation Spaces**
Minhyuk Sung*, Zhenyu Jiang*, Panos Achlioptas, Niloy J. Mitra, Leonidas J. Guibas
(* Equal contributions)
SIGGRAPH Asia 2020
31. **Deformation-Aware 3D Shape Embedding and Retrieval**
Mikaela Angelina Uy, Jingwei Huang, **Minhyuk Sung**, Tolga Birdal, Leonidas Guibas
ECCV 2020
32. **Neural Geometric Parser for Single Image Camera Calibration**
Jinwoo Lee, **Minhyuk Sung**, Hyunjoon Lee, Junho Kim
ECCV 2020
33. **Pix2Surf: Learning Parametric 3D Surface Models of Objects from Images**
Jiahui Lei, Srinath Sridhar, Paul Guerrero, **Minhyuk Sung**, Niloy Mitra, Leonidas Guibas
ECCV 2020
34. **Learning 3D Part Assembly from a Single Image**
Yichen Li*, Kaichun Mo*, Lin Shao, **Minhyuk Sung**, Leonidas Guibas
(* Equal contributions)
ECCV 2020

35. **Supervised Fitting of Geometric Primitives to 3D Point Clouds**
Lingxiao Li*, **Minhyuk Sung***, Anastasia Dubrovina, Li Yi, Leonidas Guibas
(* Equal contributions)
CVPR 2019 (Oral)
36. **GSPN: Generative Shape Proposal Network for 3D Instance Segmentation in Point Cloud**
Li Yi, Wang Zhao, He Wang, **Minhyuk Sung**, Leonidas Guibas
CVPR 2019
37. **Deep Functional Dictionaries: Learning Consistent Semantic Structures on 3D Models from Functions**
Minhyuk Sung, Hao Su, Ronald Yu, Leonidas Guibas
NeurIPS 2018
38. **Learning Fuzzy Set Representations of Partial Shapes on Dual Embedding Spaces**
Minhyuk Sung, Anastasia Dubrovina, Vladimir G. Kim, Leonidas Guibas
SGP 2018 (Symposium on Geometry Processing)
39. **ComplementMe: Weakly-Supervised Component Suggestions for 3D Modeling**
Minhyuk Sung, Hao Su, Vladimir G. Kim, Siddhartha Chaudhuri, Leonidas Guibas
SIGGRAPH Asia 2017
Featured in an ACM SIGGRAPH press release: [\[Link 1\]](#) [\[Link 2\]](#)
40. **Data-Driven Structural Priors for Shape Completion**
Minhyuk Sung, Vladimir G. Kim, Roland Angst, Leonidas Guibas
SIGGRAPH Asia 2015
41. **Level-of-detail AR: Managing points of interest for attentive augmented reality**
Min-Hyuk Sung, Yongmin Choi, Heedong Ko, Jae-In Hwang
IEEE International Conference on Consumer Electronics 2014
42. **Image Unprojection for 3D Surface Reconstruction: A Triangulation-based Approach**
Min-Hyuk Sung, Hwasup Lim, Hyoung-Gon Kim, Sang Chul Ahn
IEEE International Conference on Image Processing (ICIP) 2013
43. **Finding the M-best Consistent Correspondences between 3D Symmetric Objects**
Min-Hyuk Sung and Junho Kim
Computers & Graphics 2013
44. **Painting Alive: Handheld Augmented Reality System for Large Targets**
Jae-In Hwang, **Min-Hyuk Sung**, Ig-Jae Kim, Sang Chul Ahn, Hyoung-Gon Kim, Heedong Ko
Virtual Augmented and Mixed Reality 2013
45. **A Triangulation-Invariant Method for Anisotropic Geodesic Map Computation on Surface Meshes**
Sang Wook Yoo, Joon-Kyung Seong, **Min-Hyuk Sung**, Sung Yong Shin and Elaine Cohen
IEEE Transactions on Visualization and Computer Graphics (TVCG) 2012
46. **Putting Real-World Objects into Virtual World: Fast Automatic Creation of Animatable 3D models with a Consumer Depth Camera** (The Best Paper Award)
Hwasup Lim, Seong-Oh Lee, Jong-Ho Lee, **Min-Hyuk Sung**, Young-Woon Cha, Hyoung-Gon Kim, Sang Chul Ahn

International Symposium on Ubiquitous Virtual Reality (ISUVR) 2012

47. **Plane-dominant Object Reconstruction for Robotic Spatial Augmented Reality**
Changwoo Nam, **Min-Hyuk Sung**, Joo-Haeng Lee, Junho Kim
Ubiquitous Robots and Ambient Intelligence (URAI) 2011

Honors and Scholarships

2024	Young Researcher Award Asiagraphics
2019	Doctoral Consortium ICCV 2019
2019	Doctoral Consortium SIGGRAPH 2019
2013	Doctoral Study Abroad Scholarship Recipient Honors Korea Foundation for Advanced Studies (KFAS)
2008-2010	National Science and Engineering Graduate Research Scholarship (S2-2008-000-00006-2) Korea Student Aid Foundation (KOSAF)
2004-2008	National Science and Engineering Scholarship Korea Student Aid Foundation (KOSAF)
2005-2008	Merit-based Scholarship Korea Advanced Institute of Science and Technology (KAIST)

Teaching

Fall 2024	Instructor CS492(D): Diffusion Models and Their Applications , KAIST
Spring 2024	Instructor CS580: Computer Graphics , KAIST
Fall 2023	Instructor CS479: Machine Learning for 3D Data , KAIST
Spring 2023	Instructor CS380: Introduction to Computer Graphics , KAIST
Fall 2022	Instructor CS492(H): Geometric Modeling and Processing , KAIST
Spring 2022	Instructor CS492(A) Machine Learning for 3D Data , KAIST
Fall 2021	Instructor CS492(D): Geometric Modeling and Processing , KAIST
Spring 2021	Instructor CS492(H) Machine Learning for 3D Data , KAIST
Spring 2018	Guest Lecturer CS233 Geometric and Topological Data Analysis , Stanford
Fall 2016	Course Assistance CS268 Geometric Algorithms , Stanford
Fall 2015	Course Assistance CS348A Computer Graphics: Geometric Modeling , Stanford
Spring 2009	Teaching Assistance CS202 Problem Solving , KAIST

Academic Activities

Program Committee Member	ICCV 2025 ICLR 2025 Eurographics 2025 SIGGRAPH Asia 2024 Eurographics 2024 AAAI 2024 (Senior Committee Member) Pacific Graphics 2023 SIGGRAPH Asia 2023 AAAI 2023 (Senior Committee Member) SIGGRAPH Asia 2022 Eurographics 2022
Associated Editor	Graphical Models
Workshop Co-Organizer	Structural and Compositional Learning on 3D Data Workshop at CVPR 2023 KAIST Geometric and Visual Computing Workshop Structural and Compositional Learning on 3D Data Workshop at ICCV 2021

Talks

Dec 2024	The University of Tokyo. Invited Speaker.
Dec 2024	SIGGRAPH Asia 2024. K-BOF Speaker.
Dec 2024	SIGGRAPH Asia 2024. Pre-Conference Workshop Speaker.
Jul 2024	SIGGRAPH 2024. Tutorial Speaker.
Jul 2024	Adobe Research. Invited Speaker.
Jul 2024	Stanford University. Invited Speaker.
Jun 2024	2nd Workshop on Compositional 3D Vision (C3DV) at CVPR 2024. Invited Speaker.
Apr 2024	École Polytechnique. Invited Speaker.
Apr 2024	ETH Zürich. Invited Speaker.
Apr 2024	Technical University of Munich. Invited Speaker.
Apr 2024	Eurographics 2024. Tutorial Speaker.
Jan 2024	KAIST. AI-X Workshop. Invited Speaker.
Jan 2024	POSTECH. Invited Speaker.
Dec 2023	NVIDIA Toronto AI Lab. Invited Speaker.
Oct 2023	Pacific Graphics 2023. Tutorial Speaker.
Oct 2023	Adobe Research Paris. Invited Speaker.
Sep 2023	University College London. Invited Speaker.
Sep 2023	KAIST. Metaverse Program. Colloquium Speaker.
Jul 2023	Samsung Advanced Institute of Technology. Invited Speaker.
Jul 2023	Korea AI Association Conference. Tutorial Speaker.
Jul 2023	Ontact Health. Invited Speaker.
Jun 2023	Osstem Implant. Invited Speaker.
Jun 2023	POSTECH CSE/GSAI. Seminar Speaker.
Nov 2022	KIST. Invited Speaker.
Nov 2022	KAIST. Kim Jaechul Graduate School of Artificial Intelligence. Colloquium Speaker.
Aug 2022	SFU. GrUVi Group. Invited Speaker.
Jul 2022	KAUST. Mohamed Elhoseiny's Group. Virtual Invited Speaker.
Jul 2022	KCGS 2022. Summer School Speaker.
May 2022	KCC 2022. New Researcher Session Speaker.
Jun 2022	Stanford University. Invited Speaker.
Apr 2022	Samsung Display. Seminar Speaker.
Mar 2022	KAIST. The First Wednesday Multidisciplinary Forum. Speaker.
Feb 2022	Asiagraphics. Webinar Speaker.
Dec 2021	Daewoo Shipbuilding & Marine Engineering. Mini Course Lecturer.
Oct 2021	Samsung Electronics. Manufacturing Technology Center. Seminar Speaker.
Oct 2021	Korea University. School of Biomedical Engineering. Colloquium Speaker.
Sep 2021	GIST. School of Integrated Technology. Seminar Speaker.
Jul 2021	Korea Computer Graphics Society 2021. Invited Speaker.
May 2021	KAIST. School of Computing. Colloquium Speaker.
Apr 2021	KAIST. Software Graduate Program. Colloquium Speaker.
Feb 2021	Korean Computer Vision Society. Computer Vision Researcher Forum Speaker.
Feb 2021	KAIST. Graduate School of Culture Technology. Invited Speaker.
Jan 2021	Kakao Brain. Invited Speaker.

Consulting

Sep 2022 - Present	ReconLabs
Aug 2021 - July 2022	Devunlimit