Minhyuk Sung

Assistant Professor, School of Computing, KAIST

N1, Room 607
291 Daehak-ro, Yuseong-gu
Daejeon, 34141, Republic of Korea

Phone: +82-42-350-3587
Email: mhsung@kaist.ac.kr
Website: https://mhsung.github.io

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
Top Rank in Computer Science Department

Employment

Assistant Professor — Jan 2021 - Present
School of Computing, **KAIST**, Daejeon, Republic of Korea

Research Scientist — Oct 2019 - Dec 2020
Adobe Research, San Jose, CA, USA

Research Intern — Jun 2017 - Sep 2017
Autodesk Research, San Francisco, CA, USA

Research Intern — Jun 2016 - Sep 2016
Adobe Research, Seattle, WA, USA

Research Intern — Jun 2015 - Sep 2015
Google, Mountain View, CA, USA

Research Intern — Jun 2014 - Sep 2014
Google, Mountain View, CA, USA

Researcher — Mar 2010 - Jul 2013
Imaging Media Research Center (IMRC)
Korea Institute of Science and Technology (KIST), Seoul, South Korea

Publications

1. **Im2Hands: Learning Attentive Implicit Representation of Interacting Two-Hand Shapes**
   Jihyun Lee, **Minhyuk Sung**, Honggyu Choi, Tae-Kyun Kim
   CVPR 2023

2. **ShapeTalk: A Language Dataset and Framework for 3D Shape Edits and Deformations**
   Panos Achlioptas, Ian Huang, M**Minhyuk Sung**, Sergey Tulyakov, Leonidas Guibas
   CVPR 2023

3. **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)

4. **LADIS: Language Disentanglement for 3D Shape Editing**
   Ian Huang, Panos Achlioptas, Tianyi Zhang, Sergei Tulyakov, **Minhyuk Sung**, Leonidas Guibas
   Findings of EMNLP 2022

5. **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

6. **PartGlot: Learning Shape Part Segmentation from Language Reference Games**
   Juil Koo, Ian Huang, Panos Achlioptas, Leonidas Guibas, **Minhyuk Sung**
   CVPR 2022

7. **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

8. **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)
   CVPR 2022

9. **Implicit LiDAR Network: LiDAR Super-Resolution via Interpolation Weight Prediction**
   Youngsun Kwon, **Minhyuk Sung***, Sung-eui Yoon*
   (* Co-Corresponding authors)
   ICRA 2022

10. **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

11. **CTRL-C: Camera calibration TRansformer with Line-Classification**
    Jinwoo Lee, Hyunsung Go, Hyunjoon Lee, Sunghyun Cho, **Minhyuk Sung**, Junho Kim
    ICCV 2021

12. **DeepMetaHandles: Learning Deformation Meta-Handles of 3D Meshes with Biharmonic Coordinates**
Minghua Liu, **Minhyuk Sung**, Radomír Měch, Hao Su
CVPR 2021 (Oral)

13. **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)

14. **Joint Learning of 3D Shape Retrieval and Deformation**
Mikaela Angelina Uy, Vladimir G. Kim, **Minhyuk Sung**, Noam Aigerman, Siddhartha Chaudhuri, Leonidas Guibas
CVPR 2021

15. **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

16. **Deformation-Aware 3D Shape Embedding and Retrieval**
Mikaela Angelina Uy, Jingwei Huang, **Minhyuk Sung**, Tolga Birdal, Leonidas Guibas
ECCV 2020

17. **Neural Geometric Parser for Single Image Camera Calibration**
Jinwoo Lee, **Minhyuk Sung**, Hyunjoon Lee, Junho Kim
ECCV 2020

18. **Pix2Surf: Learning Parametric 3D Surface Models of Objects from Images**
Jiahui Lei, Srinath Sridhar, Paul Guerrero, **Minhyuk Sung**, Niloy Mitra, Leonidas Guibas
ECCV 2020

19. **Learning 3D Part Assembly from a Single Image**
Yichen Li*, Kaichun Mo*, Lin Shao, **Minhyuk Sung**, Leonidas Guibas
(* Equal contributions)
ECCV 2020

20. **Supervised Fitting of Geometric Primitives to 3D Point Clouds**
Lingxiao Li*, **Minhyuk Sung***, Anastasia Dubrovina, Li Yi, Leonidas Guibas
(* Equal contributions)
CVPR 2019 (Oral)

21. **GSPN: Generative Shape Proposal Network for 3D Instance Segmentation in Point Cloud**
Li Yi, Wang Zhao, He Wang, **Minhyuk Sung**, Leonidas Guibas
CVPR 2019

22. **Deep Functional Dictionaries: Learning Consistent Semantic Structures on 3D Models from Functions**
Minhyuk Sung, Hao Su, Ronald Yu, Leonidas Guibas
NeurIPS 2018

23. **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)

24. **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]

25. **Data-Driven Structural Priors for Shape Completion**
Minhyuk Sung, Vladimir G. Kim, Roland Angst, Leonidas Guibas
SIGGRAPH Asia 2015

26. **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

27. **Finding the M-best Consistent Correspondences between 3D Symmetric Objects**
Min-Hyuk Sung and Junho Kim
Computers & Graphics, Feb.-Apr. 2013.

28. **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), Oct. 2012.

Honors and Scholarships

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 Experience

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	SIGGRAPH Asia 2022, Eurographics 2022, AAAI 2023 (Senior Committee Member).
Associated Editor	Graphical Models
Reviewer	SIGGRAPH, SIGGRAPH Asia, Eurographics, CVPR, ICCV, ECCV, 3DV, WACV, NeurIPS, ICML, ICLR, ACM TOG, IEEE TVCG, CGF, TVC, C&G, IEEE TPAMI, IEEE RA-L.
Co-Organizer	Structural and Compositional Learning on 3D Data, Workshops at ICCV 2021 and CVPR 2023.

Talks

Dec 2022	KAIST Geometric and Visual Computing Workshop. Host.
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 Lecturer.
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.
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.