

DANIEL RITCHIE

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EDUCATION

Stanford University

PhD, Computer Science

Dissertation: *Probabilistic Programming for Procedural Modeling and Design*

Advisors: Pat Hanrahan, Noah Goodman

Conferred September 2016

Stanford University

MS, Computer Science

Conferred April 2013

University of California Berkeley

BA, Computer Science

Conferred May 2010

EMPLOYMENT

Associate Professor

Brown University Computer Science Department

Providence, RI

2024 – Present

Eliot Horowitz Assistant Professor

Brown University Computer Science Department

Providence, RI

2021 – 2024

Assistant Professor

Brown University Computer Science Department

Providence, RI

2017 – 2021

Postdoctoral Researcher

Stanford University Computer Science Department

Stanford, CA

2016 – 2017

Research Intern

Adobe Creative Technologies Lab

San Francisco, CA

Summer 2011

Graduate Research Assistant

Stanford University Computer Science Department

Stanford, CA

2010 – 2016

Technical Director Intern

Pixar Animation Studios

Emeryville, CA

Summer 2009

Software Intern

Hewlett-Packard

Roseville, CA

Summer 2008

REFEREED

PUBLICATIONS

All publications listed below follow the author order conventions for visual computing (e.g. graphics, vision, machine learning): the first author is the primary implementer (typically a PhD student), and the last author is typically the direct supervisor of the first author and the principal investigator on the project. Middle authors vary in role, with students and interns typically listed before faculty and senior research scientists.

Annotation scheme for publications started while employed at Brown University (July 2017 onwards):

- **Blue bold text:** PhD student at Brown.
- **Purple bold text:** undergraduate or masters student at Brown.

- **Green bold text**: external PhD student whom Daniel mentored.
- **Orange bold text**: external undergraduate or masters student whom Daniel mentored.

PoissonNet: A Local-Global Approach for Learning on Surfaces. **Arman Maesumi**, **Tanish Makadia**, Thibault Grouiex, Vladimir Kim, Daniel Ritchie, Noam Aigerman. *SIGGRAPH Asia 2025*.

MiGumi: Making Tightly Coupled Integral Joints Millable. **Aditya Ganeshan**, Kurt Fleischer, Wenzel Jakob, Ariel Shamir, Daniel Ritchie, Takeo Igarashi, Maria Larsson. *SIGGRAPH Asia 2025*.

Procedural Scene Programs for Open-Universe Scene Generation: LLM-Free Error Correction via Program Search. **Maxim Gumin**, **Do Heon Han**, **Seung Jean Yoo**, **Aditya Ganeshan**, **R. Kenny Jones**, **Kailiang Fu**, **Rio Aguina-Kang**, **Stewart Morris**, Daniel Ritchie. *SIGGRAPH Asia 2025*.

PartComposer: Learning and Composing Part-Level Concepts from Single-Image Examples. **Junyu Liu**, R. Kenny Jones, Daniel Ritchie. *SIGGRAPH Asia 2025*.

Diorama: Unleashing Zero-shot Single-view 3D Scene Modeling. **Qirui Wu**, **Denys Iliash**, Daniel Ritchie, Manolis Savva, Angel X. Chang. *ICCV 2025*. HIGHLIGHT.

Pattern Analogies: Learning to Perform Programmatic Image Edits by Analogy. **Aditya Ganeshan**, Thibault Groueix, Paul Guerrero, Radomír Měch, Matthew Fisher, Daniel Ritchie. *CVPR 2025*.

GigaHands: A Massive Annotated Dataset of Bimanual Hand Activities. **Rao Fu**, **Dingxi Zhang**, **Alex Jiang**, **Wanjia Fu**, **Austin Funk**, Daniel Ritchie, Srinath Sridhar. *CVPR 2025*. HIGHLIGHT.

Learning to Edit Visual Programs with Self-Supervision. **R. Kenny Jones**, **Renhao Zhang**, **Aditya Ganeshan**, Daniel Ritchie. *NeurIPS 2024*.

ParSEL: Parameterized Shape Editing with Language. **Aditya Ganeshan**, **Ryan Y. Huang**, **Xianghao Xu**, **R. Kenny Jones**, Daniel Ritchie. *SIGGRAPH Asia 2024*.

R3DS: Reality-linked 3D Scenes for Panoramic Scene Understanding. **Qirui Wu**, **Sonia Raychaudhuri**, Daniel Ritchie, Manolis Savva, Angel X. Chang. *ECCV 2024*.

One Noise to Rule Them All: Learning a Unified Model of Spatially-Varying Noise Patterns. **Arman Maesumi**, **Dylan Hu**, **Krishi Saripalli**, Vladimir Kim, Matthew Fisher, Sören Pirk, Daniel Ritchie. *SIGGRAPH 2024*.

Learning to Infer Generative Template Programs for Visual Concepts. **R. Kenny Jones**, Siddhartha Chaudhuri, Daniel Ritchie. *ICML 2024*.

CharacterMixer: Rig-Aware Interpolation of 3D Characters. **Xiao Zhan**, **Rao Fu**, Daniel Ritchie. *Eurographics 2024*.

PossibleImpossibles: Exploratory Procedural Design of Impossible Structures. Yuanbo Li, Tianyi Ma, Zaineb Aljumayyat, Daniel Ritchie. *Eurographics 2024*.

Generalizing Single-View 3D Shape Retrieval to Occlusions and Unseen Objects. Qirui Wu, Daniel Ritchie, Manolis Savva, Angel X. Chang. *International Conference on 3D Vision (3DV) 2024*.

Editing Motion Graphics Videos via Motion Vectorization & Transformation. Sharon Zhang, Jiaju Ma, Daniel Ritchie, Jiajun Wu, Maneesh Agrawala. *ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia) 2023*.

Explorable Mesh Deformation Subspaces from Unstructured 3D Generative Models. Arman Maesumi, Paul Guerrero, Vladimir Kim, Matthew Fisher, Siddhartha Chaudhuri, Noam Aigerman, Daniel Ritchie. *SIGGRAPH Asia 2023*.

Improving Unsupervised Visual Program Inference with Code Rewriting Families. Aditya Ganeshan, R. Kenny Jones, Daniel Ritchie. *ICCV 2023*. ORAL PRESENTATION.

ShapeCoder: Discovering Abstractions for Visual Programs from Unstructured Primitives. R. Kenny Jones, Paul Guerrero, Niloy Mitra, Daniel Ritchie. *ACM Transactions on Graphics (Proceedings of SIGGRAPH) 2023*.

Neurosymbolic Models for Computer Graphics Daniel Ritchie, Paul Guerrero, R. Kenny Jones, Niloy Mitra, Adriana Schulz, Karl D. D. Willis, Jiajun Wu *Eurographics 2023 State-of-the-Art Report*.

CLIP-Sculptor: Zero-Shot Generation of High-Fidelity and Diverse Shapes from Natural Language Aditya Sanghi, Rao Fu, Vivian Liu, Karl D.D. Willis, Hooman Shayani, Amir Hosein Khasahmadi, Srinath Sridhar, Daniel Ritchie *CVPR 2023*.

Unsupervised 3D Shape Reconstruction by Part Retrieval and Assembly. Xianghao Xu, Paul Guerrero, Matthew Fisher, Siddhartha Chaudhuri, Daniel Ritchie. *CVPR 2023*.

ShapeCrafter: A Recursive Text-Conditioned 3D Shape Generation Model Rao Fu, Xiao Zhan, Yiwon Chen, Daniel Ritchie, Srinath Sridhar *NeurIPS 2022*.

SHRED: 3D Shape Region Decomposition with Learned Local Operations. R. Kenny Jones, Aalia Habib, Daniel Ritchie. *SIGGRAPH Asia 2022*.

The Shape Part Slot Machine: Contact-based Reasoning for Generating 3D Shapes from Parts. Kai Wang, Srinath Sridhar, Paul Guerrero, Vladimir Kim, Siddhartha Chaudhuri, Minhyuk Sung, Daniel Ritchie. *ECCV 2022*.

Unsupervised Kinematic Motion Detection for Part-segmented 3D Shape Collections. Xianghao Xu, Yifan Ruan, Srinath Sridhar, Daniel Ritchie. *SIGGRAPH 2022*.

The Neurally-Guided Shape Parser: Grammar-based Labeling of 3D Shape Regions with Approximate Inference. R. Kenny Jones, Aalia Habib, Rana Hanocka, Daniel Ritchie. *CVPR 2022*.

PLAD: Learning to Infer Shape Programs with Pseudo-Labels and Approximate Distributions. R. Kenny Jones, Homer Walke, Daniel Ritchie. *CVPR 2022*.

Learning to Infer Kinematic Hierarchies for Novel Object Instances. Hameed Abdul-Rashid, Miles Freeman, Ben Abbatematteo, George Konidaris, Daniel Ritchie. *ICRA 2022*.

Roominoes: Generating Novel 3D Floor Plans From Existing 3D Rooms. Kai Wang, Xianghao Xu, Leon Lei, Natalie Lindsay, Selena Ling, Angel X. Chang, Manolis Savva, Daniel Ritchie. *Symposium on Geometry Processing (SGP) 2021*.

ShapeMOD: Macro Operation Discovery for 3D Shape Programs. R. Kenny Jones, David Charatan, Paul Guerrero, Niloy Mitra, Daniel Ritchie. *ACM Transactions on Graphics (Proceedings of SIGGRAPH) 2021*.

Inferring CAD Modeling Sequences using Zone Graphs. Xianghao Xu, Wenzhe Peng, Chin-Yi Cheng, Karl D. D. Willis, Daniel Ritchie. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2021*.

Motion Annotation Programs: A Scalable Approach to Annotating Kinematic Articulations in Large 3D Shape Collections. Xianghao Xu, David Charatan, Sonia Raychaudhuri, Hanxiao Jiang, Mae Heitmann, Vladimir Kim, Siddhartha Chaudhuri, Manolis Savva, Angel X. Chang, Daniel Ritchie. *International Conference on 3D Vision (3DV) 2020*.

Shape from Tracing: Towards Reconstructing 3D Object Geometry and SVBRDF Material from Images via Differentiable Path Tracing. Purvi Goel, Loudon Cohen, James Guesman, Vikas Thamizharasan, James Tompkin, Daniel Ritchie. *International Conference on 3D Vision (3DV) 2020*.

ShapeAssembly: Learning to Generate Programs for 3D Shape Structure Synthesis. R. Kenny Jones, Theresa Barton, Xianghao Xu, Kai Wang, Ellen Jiang, Paul Guerrero, Niloy Mitra, Daniel Ritchie. *ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia) 2020*.

GANHopper: Multi-Hop GAN for Unsupervised Image-to-Image Translation. Wallace Lira, Johannes Merz, Daniel Ritchie, Daniel Cohen-Or, Hao Zhang. *European Conference on Computer Vision (ECCV) 2020*.

Learning Generative Models of 3D Structures. Siddhartha Chaudhuri, Daniel Ritchie, Jiajun Wu, Kai Xu, Hao Zhang. *Eurographics 2020 State-of-the-Art Report*.

Learning Style Compatibility Between Objects in a Real-World 3D Asset Database. Yifan Liu, Ruolan Tang, Daniel Ritchie. *Pacific Graphics 2019*.

PlanIT: Planning and Instantiating Indoor Scenes with Relation Graph and Spatial Prior Networks. Kai Wang, Yu-an Lin, Ben Weissmann, Manolis Savva, Angel X. Chang, Daniel Ritchie. *ACM Transactions on Graphics (Proceedings of SIGGRAPH) 2019*.

Fast and Flexible Indoor Scene Synthesis via Deep Convolutional Generative Models. Daniel Ritchie, Kai Wang, Yu-an Lin. *IEEE Conference on Computer*

Vision and Pattern Recognition (CVPR) 2019.

Learning to Describe Scenes with Programs. Yunchao Liu, Zheng Wu, Daniel Ritchie, William T. Freeman, Joshua B. Tenenbaum, Jiajun Wu. *International Conference on Learning Representations (ICLR) 2019.*

Learning to Infer Graphics Programs from Hand-Drawn Images. Kevin Ellis, Daniel Ritchie, Armando Solar-Lezama, Joshua B. Tenenbaum. *Conference on Neural Information Processing Systems (NeurIPS) 2018.* SPOTLIGHT PRESENTATION.

Improving Shape Deformation in Unsupervised Image-to-Image Translation Aaron Gokaslan, Vivek Ramanujan, Daniel Ritchie, Kwang In Kim, James Tompkin. *European Conference on Computer Vision (ECCV) 2018.*

Deep Convolutional Priors for Indoor Scene Synthesis Kai Wang, Manolis Savva, Angel X. Chang, Daniel Ritchie. *ACM Transactions on Graphics (Proceedings of SIGGRAPH) 2018.*

ScanComplete: Large-Scale Scene Completion and Semantic Segmentation for 3D Scans Angela Dai, Daniel Ritchie, Martin Bokeloh, Scott Reed, Jürgen Sturm, Matthias Nießner. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2018.*

Example-based Authoring of Procedural Modeling Programs with Structural and Continuous Variability Daniel Ritchie, Sarah Jobalia, Anna Thomas *Proceedings of Eurographics 2018.*

An Improved Training Procedure for Neural Autoregressive Data Completion. Maxime Voisin, Daniel Ritchie. *NIPS 2017 Bayesian Deep Learning Workshop.*

Neurally-Guided Procedural Models: Amortized Inference for Procedural Graphics Programs using Neural Networks. Daniel Ritchie, Anna Thomas, Pat Hanrahan, Noah D. Goodman. *Conference on Neural Information Processing Systems (NIPS) 2016.*

C3: Lightweight Incrementalized MCMC for Probabilistic Programs using Continuations and Callsite Caching. Daniel Ritchie, Andreas Stuhlmüller, Noah D. Goodman. *International Conference on Artificial Intelligence and Statistics (AISTATS) 2016.*

Controlling Procedural Modeling Programs with Stochastically-Ordered Sequential Monte Carlo. Daniel Ritchie, Ben Mildenhall, Noah D. Goodman, and Pat Hanrahan. *ACM Transactions on Graphics (Proceedings of SIGGRAPH) 2015.*

Generating Design Suggestions under Tight Constraints with Gradient-based Probabilistic Programming. Daniel Ritchie, Sharon Lin, Noah D. Goodman, and Pat Hanrahan. *Proceedings of Eurographics 2015.* BEST PAPER HONORABLE MENTION.

Quicksand: A Lightweight Embedding of Probabilistic Programming for Procedural Modeling and Design. Daniel Ritchie. *The 3rd NIPS Workshop on Probabilistic Programming, 2014.*

First-class Runtime Generation of High-performance Types using Exotypes. Zach Devito, Daniel Ritchie, Matthew Fisher, Alex Aiken, and Pat Hanrahan. *Programming Language Design and Implementation (PLDI) 2014*.

Probabilistic Color-by-Numbers: Suggesting Pattern Colorizations Using Factor Graphs. Sharon Lin, Daniel Ritchie, Matthew Fisher, and Pat Hanrahan. *ACM Transactions on Graphics (Proceedings of SIGGRAPH) 2013*.

Example-based Synthesis of 3D Object Arrangements. Matthew Fisher, Daniel Ritchie, Manolis Savva, Thomas Funkhouser, and Pat Hanrahan. *ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia) 2012*.

d.tour: Style-based Exploration of Design Example Galleries. Daniel Ritchie, Ankita Arvind Kejriwal, and Scott R. Klemmer. *ACM Symposium on User Interface Software and Technology (UIST) 2011*.

Dynamic Local Remeshing for Elastoplastic Simulation. Martin Wicke, Daniel Ritchie, Bryan M. Klingner, Sebastian Burke, Jonathan R. Shewchuk, and James F. O'Brien. *ACM Transactions on Graphics (Proceedings of SIGGRAPH) 2010*.

Interactive Simulation of Surgical Needle Insertion and Steering. Nuttapong Chentanez, Ron Alterovitz, Daniel Ritchie, Lita Cho, Kris K. Hauser, Ken Goldberg, Jonathan R. Shewchuk, and James F. O'Brien. *ACM Transactions on Graphics (Proceedings of SIGGRAPH) 2009*.

TECHNICAL REPORTS

CLIPtortionist: Zero-shot Text-driven Deformation for Manufactured 3D Shapes. [Xianghao Xu](#), Srinath Sridhar, Daniel Ritchie. *arXiv:2410.15199, 2024*.

Creating Language-driven Spatial Variations of Icon Images. [Xianghao Xu](#), [Aditya Ganeshan](#), Karl D. D. Willis, Yewen Pu, Daniel Ritchie. *arXiv:2405.19636, 2024*.

Open-Universe Indoor Scene Generation using LLM Program Synthesis and Uncurated Object Databases. [Rio Aguina-Kang](#), [Maxim Gumin](#), [Do Heon Han](#), [Stewart Morris](#), [Seung Jean Yoo](#), [Aditya Ganeshan](#), [R. Kenny Jones](#), [Qihong Anna Wei](#), Kailiang Fu, Daniel Ritchie. *arXiv:2403.09675, 2024*.

Learning Body-Aware 3D Shape Generative Models. [Bryce Blinn](#), [Alexander Ding](#), [R. Kenny Jones](#), Manolis Savva, Srinath Sridhar, Daniel Ritchie. *arXiv:2112.07022, 2021*.

Deep Amortized Inference for Probabilistic Programs. Daniel Ritchie, Paul Horsfall, Noah D. Goodman. *arXiv:1610.05735, 2016*.

INVITED TALKS

Programmatic Generative Visual Concepts
CVPR, *Second Workshop on Visual Concepts* June 2025

Neurosymbolic Modeling Paradigms for Computer Graphics
INRIA, *GraphDeco Retreat* October 2024

Deep Learning for 3D Geometry
Symposium on Geometry Processing, *Graduate School* June 2024

Neurosymbolic Models for 3D Content Creation ICCV, <i>AI for 3D Content Creation Workshop</i>	October 2023
Inferring Programs for 3D Shapes without Supervision ICCV, <i>SHARP Workshop - Solving CAD History and pArameters Recovery from Point clouds and 3D scans</i>	October 2023
Neurosymbolic Models for 3D Generative AI ICML, <i>The Role of Generative AI in Shaping the Next Generation of the Metaverse</i>	July 2023
Learning to Represent Shapes as Programs Symposium on Geometry Processing, <i>Graduate School</i>	July 2022
Programs as Representations for Inferring and Generating 3D Structures Cornell University, <i>Graphics/Vision Seminar</i>	March 2022
Conversations with Research Pioneers: Daniel Ritchie Unity Technologies, <i>Conversations with Research Pioneers</i>	December 2021
AI-assisted 3D Content Creation: Successes, Challenges, & Opportunities Roblox, <i>Research Colloquium</i>	December 2021
Learning to Infer and Generate Programs for 3D Shapes and Scenes ICCV, <i>Holistic Structures for 3D Vision Workshop</i>	October 2021
ICCV, <i>Structural and Compositional Learning on 3D Data Workshop</i>	October 2021
Neurosymbolic Generative Models for Structured 3D Content 3DGV, <i>3D Geometry and Vision Seminar</i>	February 2021
Learning Neurosymbolic 3D Models PROBPROG, <i>International Conference on Probabilistic Programming</i>	March 2020
Everything You Need to Know About Deep Fakes Full Stack at Brown, <i>Hack@Home</i>	October 2020
Neurosymbolic 3D Models: Learning to Generate 3D Shape Programs GAMES, <i>Graphics and Mixed Environment Seminar</i>	August 2020
Toward Synthesizing Training Data for 3D Scene Understanding CVPR, <i>3D Scene Understanding Workshop</i>	June 2020
From Neural to Neurosymbolic 3D Modeling CVPR, <i>Neurosymbolic Visual Learning & Program Induction Workshop</i>	June 2020
Neurosymbolic 3D Models MIT, <i>Vision Seminar</i>	March 2020
Learning to Generate 3D Structures Brown Department of Biostatistics, <i>Deep Learning Seminar</i>	February 2020
Deep Learning for Graph(ic)s Simon Fraser University, <i>Visual Computing Group</i>	December 2019

Learning to Generate Visual Structures Carney Institute for Brain Science, <i>Lunch Seminar</i>	October 2019
Indoor Scene Synthesis: Past, Present, and Future Shenzhen University, <i>Visual Computing Summer School</i>	July 2019
Probabilistic Programming Brown ICERM, <i>Computer Vision Semester Program</i>	February 2019
Virtual Indoor Scene Synthesis: Past, Present, and Future MIT, <i>Graphics Lunch</i>	December 2018
Toward Style-Aware Generative Models of Virtual Indoor Scenes Wayfair LLC, <i>Computer Vision / Data Science Team</i>	December 2018
Visual Program Induction Brown Applied Math, <i>Pattern Theory Seminar</i>	November 2018
Probabilistic Programming for Computer Graphics MIT, <i>PROBPROG 2018</i>	October 2018
Learning Procedural Modeling Programs from Examples MIT, <i>New England Symposium on Graphics</i>	April 2018
Microsoft Research Cambridge, <i>New England Machine Learning Day</i>	May 2018
Learning from Large-Scale Synthetic 3D Scene Data Brown University Data Science Initiative, <i>Datathon</i>	March 2018
Inferring Graphics Programs University of Washington, <i>ML+PL Workshop</i>	February 2018
Learning and Inferring Graphics Programs MIT, <i>Vision Seminar</i>	September 2017
Creative AI for Computer Graphics (It's More Than Just Style Transfer) Google Brain, <i>Magenta Group</i>	January 2017
Probabilistic Programming for Procedural Modeling and Design Adobe Systems, <i>Creative Technologies Lab</i>	March 2016
Brown University, <i>Computer Science Department</i>	February 2016
Harvey Mudd College, <i>Computer Science Department</i>	February 2016
Yale University, <i>Computer Science Department</i>	February 2016

PANELIST Seminar #3: Visual Reasoning. *COGGRAPH 2024*.

Advances in Software for Approximate Bayesian Inference. *NIPS 2016 Workshop on Advances in Approximate Bayesian Inference*.

TUTORIALS & WORKSHOPS **AI for 3D Content Creation** October 2025
 Hezhen Hu, Georgios Pavlakos, Despoina Paschalidou, Nikos Kolotouros, Davis Rempe, Angel Xuan Chang, Kai Wang, Amlan Kar, Kaichun Mo, Daniel Ritchie, Leonidas Guibas
 ICCV 2025 Workshop

LLMs in the Technical Papers Review Process

August 2025

Daniel Ritchie, Rana Hanocka
SIGGRAPH 2025 Birds of a Feather

Countering Racial Bias in Computer Graphics Research

August 2025

Theodore Kim, Daniel Aliaga, Curtis Andrus, Ana Dodik, Daniel Ritchie, Oded Stein,
Chenxi Liu, Victor Araujo
SIGGRAPH 2025 Birds of a Feather

AI for 3D Content Creation

September 2024

Despoina Paschalidou, Georgios Pavlakos, Davis Rempe, Angel Xuan Chang, Kai
Wang, Amlan Kar, Daniel Ritchie, Kaichun Mo, Manolis Savva, Paul Guerrero, Siyu
Tang, Leonidas Guibas
ECCV 2024 Workshop

Mentoring PhD Students in Computer Graphics

July 2024

Daniel Ritchie
SIGGRAPH 2024 Birds of a Feather

AI for 3D Generation

June 2024

Despoina Paschalidou, Georgios Pavlakos, Davis Rempe, Angel Xuan Chang, Kai
Wang, Amlan Kar, Daniel Ritchie, Kaichun Mo, Manolis Savva, Paul Guerrero, Siyu
Tang, Leonidas Guibas
CVPR 2024 Workshop

3D Vision and Modeling Challenges in eCommerce

October 2023

Angel Chang, Jasmine Collins, Huan Fu, Francesca Gil-Ureta, Erhan Gundogdu, Yim-
ing Qian, Daniel Ritchie, Javier Romero, Jian Wang, Fenggen Yu, Xu Zhang
ICCV 2023 Workshop

Learning to Generate 3D Shapes and Scenes

October 2022

Kai Wang, Akshay Gadi Patil, Angel X. Chang, Paul Guerrero, Daniel Ritchie, Manolis
Savva
ECCV 2022 Workshop

Machine Learning in Computational Design

September 2022

Andrew Spielberg, Caitlin Mueller, Lydian Chilton, Rafael Gomez-Bombarelli, Vladimir
Kim, Daniel Ritchie
ICML 2022 Workshop

Learning to Generate 3D Shapes and Scenes

June 2021

Manyi Li, Zhenpei Yang, Angel X. Chang, Siddhartha Chaudhuri, Daniel Ritchie,
Manolis Savva
CVPR 2021 Workshop

Synthetic 3D Scene Datasets: Needs & Opportunities

August 2020

Daniel Ritchie, Angel Chang, Manolis Savva
SIGGRAPH 2020 Birds of a Feather

Learning 3D Generative Models

June 2020

Daniel Ritchie, Florian Golemo, Angel Chang, Siddhartha Chaudhuri, Aaron Courville,
Qixing Huang, Derek Nowrouzezahrai, Pedro O. Pinheiro, Sai Rajeswar, Manolis Savva,
David Vasquez, Kai Xu, Hao Zhang
CVPR 2020 Workshop

	3D Scene Generation	June 2019
	Angel Chang, Qixing Huang, Daniel Ritchie, Manolis Savva CVPR 2019 Workshop	
	Learning Generative Models of 3D Structures	May 2019
	Siddhartha Chaudhuri, Daniel Ritchie, Kai Xu, Hao Zhang Eurographics 2019 Tutorial	
TEACHING	Instructor	Fall 2021 – 2025
	Brown CSCI 1230: Introduction to Computer Graphics	
	Instructor	Fall 2018 – 2020
	Brown CSCI 1470/2470: Deep Learning	
	Instructor	Spring 2018 – 2025
	Brown CSCI 2240: Advanced Computer Graphics	
	Instructor	Fall 2017
	Brown CSCI 2951-W: Creative Artificial Intelligence for Computer Graphics	
	Instructor	Summer 2016
	DARPA Probabilistic Programming for Advanced Machine Learning Summer School	
	Course Assistant	Spring 2014
	Stanford CS 348b: Image Synthesis Techniques	
	Course Assistant	Fall 2011
	Stanford CS 148: Introduction to Computer Graphics and Imaging	
	Graduate Student Instructor	Fall 2009, Spring 2010
	UC Berkeley CS 184: Foundations of Computer Graphics	
	Student Facilitator	Spring 2009 – Spring 2010
	UC Berkeley Undergraduate Graphics Group	
	Tutor	Fall 2008
	UC Berkeley Self-Paced Center	
RESEARCH MENTORING	Current Students	
	Aditya Ganeshan	Brown CS PhD
	Arman Maesumi	Brown CS PhD
	Maxim Gumin	Brown CS PhD
	Yuanbo Li	Brown CS PhD
	Jason Liu	Brown CS PhD
	Ben Ahlbrand	Brown CS PhD
	Xiaoxi Yang	Brown CS Research Assistant

Tianxing Ji	Brown CS ScM (expected 2026)
Chengye Hao	Brown CS ScM (expected 2026)
Pranav Sankar	Brown CS ScM (expected 2027)
Henry Yin	Brown CS ScM (expected 2027)
Yuyan (Una) Wu	Brown CS ScM (expected 2027)
Do Heon (Bryan) Han	Brown CS Undergrad (expected 2026)
Ryan Huang	Brown CS Undergrad (expected 2026)
Nirayka Monga	Brown CS Undergrad (expected 2026)
Tanish Makadia	Brown CS Undergrad (expected 2026)
Yuqiao Guan	Brown CS Undergrad (expected 2026)
Ryan Lee	Brown CS Undergrad (expected 2026)

Alumni

Russell (Kenny) Jones <i>Next position: Postdoc, Stanford University</i>	Brown CS PhD 2025
Xianghao Xu <i>Next position: Waymo</i>	Brown CS PhD 2024
Kai Wang <i>Next position: Postdoc, Amazon</i>	Brown CS PhD 2023
Zihan Zhu <i>Next position: PhD Student, University of Montreal</i>	Brown CS ScM 2025
Junyu Liu <i>Next position: PhD Student, EPFL</i>	Brown CS ScM 2025
Ruiqi (Ray) Xu <i>Next position: PhD Student, Purdue University</i>	Brown CS ScM 2025
Stewart Morris <i>Next position: CS curriculum development, VA middle school</i>	Brown CS Undergrad 2025
Zack Amiton <i>Next position: Duolingo</i>	Brown CS Undergrad 2025
Jean Yoo <i>Next position: Basis AI</i>	Brown CS Undergrad 2025
Chengfan Li <i>Next position: TikTok</i>	Brown CS ScM 2025

Vivian Lu <i>Next position: Bloomberg</i>	Brown CS Undergrad + ScM 2025
Krishi Saripalli <i>Next position: Bezi</i>	Brown CS Undergrad 2024
Dylan Hu <i>Next position: Microsoft</i>	Brown CS Undergrad 2024
Jay Sarva <i>Next position: Databricks</i>	Brown CS Undergrad 2024
Sarah Roberts <i>Next position: Chewonki Foundation</i>	Brown CS Undergrad 2024
Anh Truong <i>Next position: PhD Student, MIT</i>	Brown CS Undergrad 2024
Renhao (Norman) Zhang <i>Next position: PhD Student, UMass Amherst</i>	Brown CS ScM 2024
Alex Ding <i>Next position: Jane Street</i>	Brown CS Undergrad + ScM 2024
Neil Xu <i>Next position: Gecko Robotics</i>	Brown CS Undergrad 2024
Alex Wang <i>Next position: ScM Student, Brown University</i>	Brown CS Undergrad 2024
Cal Nightingale <i>Next position: Gradient Health</i>	Brown CS Undergrad 2024
Coco Kaleel <i>Next position: Analog Devices</i>	Brown CS Undergrad 2024
Chloe Yeh <i>Next position: InterSystems</i>	Brown CS Undergrad 2024
Yifan Ruan <i>Next position: PhD Student, University of Toronto</i>	Brown CS Undergrad 2023
Xiao (Sean) Zhan <i>Next position: PhD Student, MIT</i>	Brown CS Undergrad 2023
Paul Biberstein <i>Next position: PhD Student, UPenn</i>	Brown CS Undergrad 2023
Adrian Chang <i>Next position: Vision Systems, Inc.</i>	Brown CS Undergrad 2023
David Han <i>Next position: Roblox</i>	Brown CS Undergrad 2023

Alana White <i>Next position: Netflix</i>	Brown CS Undergrad 2023
Adam Wang <i>Next position: Five Rings</i>	Brown CS Undergrad 2023
Bryce Blinn <i>Next position: PhD Student, USC</i>	Brown CS Undergrad + ScM 2022
Yuchen Zhou <i>Next position: Amazon</i>	Brown CS ScM 2022
Zhouqi Gong <i>Next position: Amazon</i>	Brown CS ScM 2022
Joshua Pierce <i>Next position:</i>	Brown CS ScM 2022
Caleb Trotz <i>Next position: Goldman Sachs</i>	Brown CS Undergrad 2022
Aalia Habib <i>Next position: Adobe</i>	Brown CS Undergrad 2022
Vikas Thamizharasan <i>Next position: R&D Engineer, Activision</i>	Brown CS ScM 2022
Xiangyu Li <i>Next position:</i>	Brown CS ScM 2021
Selena Ling <i>Next position: PhD Student, University of Toronto</i>	Brown CS ScM 2021
David Charatan <i>Next position: Common Sense Machines</i>	Brown CS Undergrad 2021
Andrew Peterson <i>Next position: Disney Animation</i>	Brown CS Undergrad + ScM 2021
Maggie Wu <i>Next position: Microsoft</i>	Brown CS Undergrad 2021
Homer Walke <i>Next position: PhD Student, UC Berkeley</i>	Brown CS Undergrad 2021
Theresa Barton <i>Next position: The New York Times</i>	Brown CS ScM 2021
Naveen Srinivasan <i>Next position: Amazon Lab126</i>	Brown CS Undergrad 2020
Brian Oppenheim <i>Next position: Google</i>	Brown CS Undergrad 2020

Brad Guesman <i>Next position: NVIDIA</i>	Brown CS Undergrad 2020
Miles Freeman <i>Next position: Winnie</i>	Brown CS Undergrad 2020
Siqi Wang <i>Next position: PhD Student, Boston University</i>	Brown CS ScM 2020
Loudon Cohen <i>Next position: NVIDIA</i>	Brown CS Undergrad + ScM 2020
Purvi Goel <i>Next position: PhD Student, Stanford University</i>	Brown CS Undergrad + ScM 2020
Natalie Lindsay <i>Next position: Apple</i>	Brown CS Undergrad + ScM 2020
Leon Lei <i>Next position: Amazon</i>	Brown CS Undergrad + ScM 2020
Ellen Jiang <i>Next position: Google Brain</i>	Brown CS Undergrad 2020
Ruolan Tang <i>Next position: Two Sigma</i>	Brown CS ScM 2019
Ben Weissmann <i>Next position: Down Dog</i>	Brown CS Undergrad 2019
Mae Heitmann <i>Next position: AirBnB</i>	Brown CS Undergrad 2019
Montana Fowler <i>Next position: PhD Student, UC Santa Cruz</i>	Brown CS Undergrad 2019
Yu-An (Andy) Lin <i>Next position: Microsoft</i>	Brown ECE ScM 2018
Yifan Liu <i>Next position: Google</i>	Brown CS ScM 2018
Shreya Shankar <i>Next position: Machine Learning Engineer, Viaduct</i>	Stanford CS Undergrad 2019
Maxime Voisin <i>Next position: Research Assistant, Stanford University</i>	Stanford MS&E MS 2018
Anna Thomas <i>Next position: Masters Student, University of Cambridge (Churchill Scholar)</i>	Stanford CS Undergrad 2018
Sarah Jobalia <i>Next position: Microsoft</i>	Stanford CS MS 2018

Ben Mildenhall
Next position: PhD Student, UC Berkeley

Stanford CS Undergrad 2015

Visitors

Nicole Ge Visiting Undergraduate Researcher Summer 2025
Home institution: Harvey Mudd College

Aruna Anderson Visiting Undergraduate Researcher Summer 2025
Home institution: Loyal Marymount University

Henro Kriel Visiting PhD Student Nov - Dec 2024
Home institution: Inria

Clara Fee Visiting Undergraduate Researcher Summer 2024
Home institution: Bryn Mawr College

Caitlin Gong Visiting Undergraduate Researcher Summer 2024
Home institution: Vassar College

Rio Aguina-Kang Visiting Undergraduate Researcher Summer 2023
Home institution: UCSD

Imani Finkley Visiting Undergraduate Researcher Summer 2022
Home institution: Cornell University

Hameed Abdul-Rashid Visiting Undergraduate Researcher Summer 2019
Home institution: University of Southern Mississippi

External Thesis Committees

Wenzhe Peng 2022
MIT Department of Architecture

FUNDING **NSF HCC Small #2519772** 10/2025 – 09/2028
Open-vocabulary Neurosymbolic 3D Models
Sole PI. \$477,651

NSF REU Site #2447190 06/2025 – 05/2028
Artificial Intelligence for Computational Creativity
Sole PI. \$364,562

Adobe Inc. 2020 – 2025
Unrestricted Gifts
Sole PI. \$164,000

Roblox Corporation 2024 – 2024
Unrestricted Gifts
Sole PI. \$60,000

Google exploreCSR 2024 – 2027
Unrestricted Gift

Co-PI: Malte Schwarzkopf. \$32,000

NSF CISE-ANR HCC Small #2315354 10/2023 - 09/2026
Learning to Translate Freehand Design Drawings into Parametric CAD Programs
Co-PI: Adrien Bousseau (INRIA). \$599,999

NSF REU Site #2150184 03/2022 – 02/2025
Artificial Intelligence for Computational Creativity
Sole PI. \$313,000

Google exploreCSR 2021 – 2023
Unrestricted Gift
Co-PIs: James Tompkin, Jeff Huang, Amy Greenwald. \$18,000

Autodesk Inc. 2020 – 2024
Unrestricted Gifts
Sole PI. \$170,000

NSF CCRI Planning #2016532 10/2020 – 03/2024
A Community-Standard, Large-Scale Synthetic 3D Scene Dataset for Scene Analysis and Synthesis
Sole PI. \$50,000

NSF CAREER #1941808 04/2020 – 03/2025
Learning Neurosymbolic 3D Models
Sole PI. \$549,999

NSF CHS Small #1907547 10/2019 – 06/2024
Learning to Automatically Design Interior Spaces
Sole PI. \$498,333

DARPA GAILA HR00111990064 07/2019 – 12/2020
Cognitively-Motivated Word Learning in Embodied Virtual Agents
Co-PIs: Ellie Pavlick, Roman Fieinan, Stefanie Tellex, Carsten Eickhoff. \$954,509

Brown University OVPR Research Seed Fund Award 2019
Building a Large Dataset of Articulated 3D Object Models
Sole PI. \$42,500

NSF CRII #1753684 05/2018 – 04/2021
Learning Procedural Modeling Programs for Computer Graphics from Examples
Sole PI. \$175,000

AWARDS & HONORS	Eliot Horowitz Assistant Professorship	2021
	NSF CAREER Award	2020
	Eurographics Best Paper Honorable Mention	2015
	Stanford Graduate Fellowship	2010
	UC Berkeley EECS Departmental Citation	2010
	UC Berkeley Computer Science Highest Achievement Award	2010
	CRA Outstanding Undergraduate Researcher Honorable Mention	2010
	UC Berkeley Edward Frank Kraft Scholarship	2007

**PROFESSIONAL
SERVICE**

Program Chair

3DV: 2026

Program Committee Member / Area Chair

SIGGRAPH: 2021, 2022

SIGGRAPH Asia: 2018, 2019, 2023, 2024

SIGGRAPH Asia Courses: 2020

SIGGRAPH Asia Papers Sort Committee: 2025

NeurIPS: 2019

ICLR: 2021, 2023

Eurographics: 2020 – 2024

Eurographics State-of-the-Art Reports: 2025

Conflict of Interest Coordinator

SIGGRAPH Asia: 2020

Conference Proceedings Reviewer

SIGGRAPH: 2016 – 2025

SIGGRAPH Asia: 2016 – 2024

CVPR: 2019 – 2025

UIST: 2016

NeurIPS: 2016, 2018, 2019

Eurographics: 2017 – 2019

Graphics Interface: 2019

ICCV: 2019, 2021, 2025

ECCV: 2020

ICML: 2018

ICLR: 2018

Journal Editor

Computer Graphics Forum (Associate Editor): 2021 – 2025

IEEE TVCG (Associate Editor): 2023 – 2024

Journal Reviewer

ACM TOG: 2019, 2022

IEEE TVCG: 2016, 2019, 2021

Computer Graphics Forum: 2017, 2020, 2022

Pattern Recognition: 2019

Computer Aided Design: 2016

Transactions on Games: 2020

IEEE TPAMI: 2022

Grant Reviewer

NSF Proposal Reviewer: 2018, 2020, 2021, 2025

Other Reviews

SIGGRAPH Thesis Fast Forward: 2024

**UNIVERSITY
SERVICE**

Sophomore Advising

2022 – 2023

First-Year Advising

2021 – 2022, 2025 – 2026

**DEPARTMENT
SERVICE**

Faculty Search Chair

2023 – 2024

Diversity & Inclusion Committee Chair

2021 – 2023

Diversity & Inclusion Committee Member	2021 – Present
Undergraduate Concentration Advising	2018 – Present
PhD Admissions Committee Member	2017 – 2024

PATENTS **Methods and Apparatus for Comic Creation** (US 20130073952 A1)

FILM CREDITS	Day & Night	2010
	Pixar Animation Studios	
	<i>Shading Technical Director</i>	