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

Assistant Professor — Providence, RI
Brown University Computer Science Department — 2017 – Present

Postdoctoral Researcher — Stanford, CA
Stanford University Computer Science Department — 2016 – 2017

Research Intern — San Francisco, CA
Adobe Creative Technologies Lab — Summer 2011

Graduate Research Assistant — Stanford, CA
Stanford University Computer Science Department — 2010 – 2016

Technical Director Intern — Emeryville, CA
Pixar Animation Studios — Summer 2009

Software Intern — Roseville, CA
Hewlett-Packard — Summer 2008

REFEREED PUBLICATIONS

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

Learning to Infer Graphics Programs from Hand-Drawn Images. Kevin Ellis, Daniel Ritchie, Armando Solar-Lezama, Joshua B. Tenenbaum. *NeurIPS 2018*. SPOTLIGHT PRESENTATION.

Improving Shape Deformation in Unsupervised Image-to-Image Translation Aaron Gokaslan, Vivek Ramanujan, Daniel Ritchie, Kwang In Kim, James Tompkin. *ECCV 2018*.

Deep Convolutional Priors for Indoor Scene Synthesis Kai Wang, Manolis Savva, Angel X. Chang, Daniel Ritchie. *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. *CVPR 2018*.

Example-based Authoring of Procedural Modeling Programs with Structural and Continuous Variability Daniel Ritchie, Sarah Jobalia, Anna Thomas *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. *NIPS 2016.*

C3: Lightweight Incrementalized MCMC for Probabilistic Programs using Continuations and Callsite Caching. Daniel Ritchie, Andreas Stuhlmüller, Noah D. Goodman. *AISTATS 2016.*

Controlling Procedural Modeling Programs with Stochastically-Ordered Sequential Monte Carlo. Daniel Ritchie, Ben Mildenhall, Noah D. Goodman, and Pat Hanrahan. *SIGGRAPH 2015.*

Generating Design Suggestions under Tight Constraints with Gradient-based Probabilistic Programming. Daniel Ritchie, Sharon Lin, Noah D. Goodman, and Pat Hanrahan. *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. *PLDI 2014.*

Probabilistic Color-by-Numbers: Suggesting Pattern Colorizations Using Factor Graphs. Sharon Lin, Daniel Ritchie, Matthew Fisher, and Pat Hanrahan. *SIGGRAPH 2013.*

Example-based Synthesis of 3D Object Arrangements. Matthew Fisher, Daniel Ritchie, Manolis Savva, Thomas Funkhouser, and Pat Hanrahan. *SIGGRAPH Asia 2012.*

d.tour: Style-based Exploration of Design Example Galleries. Daniel Ritchie, Ankita Arvind Kejriwal, and Scott R. Klemmer. *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. *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. *SIGGRAPH 2009.*

TECHNICAL REPORTS

Fast and Flexible Indoor Scene Synthesis via Deep Convolutional Generative Models. Daniel Ritchie, Kai Wang, Yu-an Lin. *arXiv:1811.12463, 2018.*

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

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

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

TUTORIALS & WORKSHOPS	**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 2018
	Brown CSCI 1470/2470: Deep Learning	
	Instructor	Spring 2018, Spring 2019
	Brown CSCI 2240: Interactive 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

ADVISING &   Theresa Barton   Brown CS PhD (current)
MENTORING
                     Kai Wang   Brown CS PhD (current)

                     Siqi Wang   Brown CS ScM (expected 2020)

                     Zejiang Shen   Brown Data Science ScM (expected 2019)

                     Ruolan Tang   Brown CS ScM (expected 2019)

                     Yu-An (Andy) Lin   Brown ECE ScM (expected 2018)

                     Michael Cosgrove   Brown CS ScB (expected 2021)

                     Dylan Tian   Brown CS ScB + Visual Art AB (expected 2021)

                     Brad Guesman   Brown Physics ScB (expected 2020)

                     Brian Oppenheim   Brown CS ScB (expected 2020)

                     Philip Xu   Brown CS ScB (expected 2020)

                     Ben Weissmann   Brown CS ScB (expected 2019)

                     Mae Heitmann   Brown CS ScB (expected 2019)

                     Montana Fowler   Brown CS AB + Visual Art AB (expected 2019)

                     Nathan Umbanhowar   Brown Math+CS ScB (expected 2019)

                     Daniel Murphy   Brown Applied Math+CS ScB (expected 2019)

                     Shreya Shankar   Stanford CS BS (expected 2019)

Yifan Liu		Brown CS ScM 2018
Next position: Google		
Maxime Voisin		Stanford MS&E MS 2018
Next position: Research Assistant, Stanford University		
Anna Thomas		Stanford CS BS 2018
Next position: Masters Student, University of Cambridge (Churchill Scholar)		
Sarah Jobalia		Stanford CS MS 2018
Next position: Microsoft		
Ben Mildenhall		Stanford CS BS 2015
Next position: PhD Student, UC Berkeley		

FUNDING	**Brown University OVPR Research Seed Fund Award**	2019
	Building a Large Dataset of Articulated 3D Object Models	
	Sole PI, $42,500	
	NSF CRII #1753684	2018
	Learning Procedural Modeling Programs for Computer Graphics from Examples	
	Sole PI, $175,000	

AWARDS &	Eurographics Best Paper Honorable Mention	2015
HONORS	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

SERVICE

Program Committee Member
SIGGRAPH Asia: 2018, 2019
NeurIPS: 2019

Conference Proceedings Reviewer
SIGGRAPH: 2016, 2017, 2018, 2019
SIGGRAPH Asia: 2016, 2017, 2018, 2019
CVPR: 2019
UIST: 2016
NeurIPS: 2016, 2018, 2019
Eurographics: 2017, 2018, 2019
Graphics Interface: 2019
ICCV: 2019
ICML: 2018
ICLR: 2018

Journal Reviewer
Computer Aided Design: 2016
IEEE TVCG: 2016
Computer Graphics Forum: 2017

Grant Reviewer
NSF Proposal Reviewer: 2018

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