

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

Brown University Computer Science Department

Providence, RI

2017 – Present

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

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

ScanComplete: Large-Scale Scene Completion and Semantic Segmentation for 3D Scans Angela Dai, Daniel Ritchie, Martin Bokeloh, Scott Reed, Jrgen Sturm, Matthias Niener. *arXiv:1712.10215*.

Learning to Infer Graphics Programs from Hand-Drawn Images. Kevin Ellis, Daniel Ritchie, Armando Solar-Lezama, Joshua B. Tenenbaum. *arXiv:1707.09627, 2017*.

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

INVITED TALKS

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

Creative AI for Computer Graphics (It's More Than Just Style Transfer)	
Google Brain, <i>Magenta Group</i>	January 2017

Learning and Inferring Graphics ProgramsMassachusetts Institute of Technology, *Vision Seminar*

September 2017

Inferring Graphics ProgramsUniversity of Washington, *ML+PL Workshop*

February 2018

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

Spring 2018

Brown CS 2240: Interactive Computer Graphics

Instructor

Fall 2017

Brown CS 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 &
MENTORING**

Kai Wang

Brown CS PhD (current)

Yifan Liu

Brown CS M.S. (expected 2019)

Ruolan Tang

Brown CS M.S. (expected 2019)

Nathan Umbanhowar

Brown Math+CS B.Sc. (expected 2019)

Daniel Murphy

Brown Applied Math+CS B.Sc. (expected 2019)

Anna Thomas

Stanford CS BS (expected 2018)

Sarah Jobalia

Stanford CS MS (expected 2018)

Maxime Voisin

Stanford MS&E MS (expected 2018)

Shreya Shankar

Stanford CS BS (expected 2019)

Ben Mildenhall

Stanford CS BS 2015

Next position: **PhD Student, UC Berkeley**

AWARDS & HONORS	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
SERVICE	Program Committee Member	
	ICML: 2018	
	Journal Reviewer	
	Computer Aided Design: 2016	
	IEEE TVCG: 2016	
	Computer Graphics Forum: 2017	
	Conference Proceedings Reviewer	
	SIGGRAPH: 2016, 2017, 2018	
	SIGGRAPH Asia: 2016, 2017	
	UIST: 2016	
	NIPS: 2016	
	Eurographics: 2017, 2018	
	ICLR: 2018	
OPEN-SOURCE SOFTWARE	WebPPL	http://webppl.org
	Probabilistic programming language embedded in Javascript.	
	adnn	https://www.npmjs.com/package/adnn
	Pure Javascript library for neural networks and automatic differentiation.	
	Quicksand	http://dritchier.github.io/quicksand
	Low-level probabilistic programming language embedded in Terra.	
PATENTS	Methods and Apparatus for Comic Creation (US 20130073952 A1)	