

# 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

## REFEREED PUBLICATIONS

**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*.

	<b>Dynamic Local Remeshing for Elastoplastic Simulation.</b> Martin Wicke, Daniel Ritchie, Bryan M. Klingner, Sebastian Burke, Jonathan R. Shewchuk, and James F. O'Brien. <i>SIGGRAPH 2010</i> .	
	<b>Interactive Simulation of Surgical Needle Insertion and Steering.</b> Nuttapong Chentanez, Ron Alterovitz, Daniel Ritchie, Lita Cho, Kris K. Hauser, Ken Goldberg, Jonathan R. Shewchuk, and James F. O'Brien. <i>SIGGRAPH 2009</i> .	
<b>TECHNICAL REPORTS</b>	<b>Deep Amortized Inference for Probabilistic Programs.</b> Daniel Ritchie, Paul Horsfall, Noah D. Goodman. <i>arXiv:1610.05735</i> , 2016.	
<b>BOOK CHAPTERS</b>	<b>Probabilistic Programming for Procedural Modeling and Design.</b> Daniel Ritchie, Pat Hanrahan, Noah D. Goodman. In Vikash Mansinghka and Daniel Roy (Eds.), <i>Probabilistic Programming (working title; in preparation)</i> .	
<b>INVITED TALKS</b>	<b>Probabilistic Programming for Procedural Modeling and Design</b> 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	
	<b>Creative AI for Computer Graphics (It's More Than Just Style Transfer)</b> Google Brain, <i>Magenta Group</i> January 2017	
<b>PANELIST</b>	Advances in Software for Approximate Bayesian Inference. <i>NIPS 2016 Workshop on Advances in Approximate Bayesian Inference</i> .	
<b>EMPLOYMENT</b>	<b>Postdoctoral Researcher</b> Stanford University Computer Science Department	Stanford, CA 2016 – present
	<b>Research Intern</b> Adobe Creative Technologies Lab	San Francisco, CA Summer 2011
	<b>Graduate Research Assistant</b> Stanford University Computer Science Department	Stanford, CA 2010 – 2016
	<b>Technical Director Intern</b> Pixar Animation Studios	Emeryville, CA Summer 2009
	<b>Software Intern</b> Hewlett-Packard	Roseville, CA Summer 2008
<b>TEACHING</b>	<b>Instructor</b> DARPA Probabilistic Programming for Advanced Machine Learning Summer School	Summer 2016
	<b>Course Assistant</b> Stanford CS 348b: Image Synthesis Techniques	Spring 2014
	<b>Course Assistant</b> Stanford CS 148: Introduction to Computer Graphics and Imaging	Fall 2011

	<b>Graduate Student Instructor</b> UC Berkeley CS 184: Foundations of Computer Graphics	Fall 2009, Spring 2010
	<b>Student Facilitator</b> UC Berkeley Undergraduate Graphics Group	Spring 2009 – Spring 2010
	<b>Tutor</b> UC Berkeley Self-Paced Center	Fall 2008
<b>ADVISING &amp; MENTORING</b>	Anna Thomas Ben Mildenhall <i>Next position:</i> <b>PhD Student, UC Berkeley</b>	Stanford CS BS (expected 2018) Stanford CS BS 2015
<b>AWARDS &amp; HONORS</b>	Eurographics Best Paper Honorable Mention Stanford Graduate Fellowship UC Berkeley EECS Departmental Citation UC Berkeley Computer Science Highest Achievement Award CRA Outstanding Undergraduate Researcher Honorable Mention UC Berkeley Edward Frank Kraft Scholarship	2015 2010 2010 2010 2010 2007
<b>SERVICE</b>	<b>Journal Reviewer</b> Computer Aided Design: 2016 IEEE TVCG: 2016  <b>Conference Proceedings Reviewer</b> SIGGRAPH: 2016 SIGGRAPH Asia: 2016 UIST: 2016 NIPS: 2016 Eurographics: 2017	
<b>OPEN-SOURCE SOFTWARE</b>	<b>WebPPL</b> Probabilistic programming language embedded in Javascript.  <b>adnn</b> Pure Javascript library for neural networks and automatic differentiation.  <b>Quicksand</b> Low-level probabilistic programming language embedded in Terra.	<a href="http://webppl.org">http://webppl.org</a>  <a href="https://www.npmjs.com/package/adnn">https://www.npmjs.com/package/adnn</a>  <a href="http://dritchie.github.io/quicksand">http://dritchie.github.io/quicksand</a>
<b>PATENTS</b>	<b>Methods and Apparatus for Comic Creation</b> (US 20130073952 A1)	
<b>REFERENCES</b>	Pat Hanrahan Canon USA Professor of Computer Science Stanford University <a href="mailto:hanrahan@cs.stanford.edu">hanrahan@cs.stanford.edu</a>  Noah Goodman Associate Professor of Psychology Stanford University <a href="mailto:ngoodman@stanford.edu">ngoodman@stanford.edu</a>	

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