

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

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. Nuttapon Chentanez, Ron Alterovitz, Daniel Ritchie, Lita Cho, Kris K. Hauser, Ken Goldberg, Jonathan R. Shewchuk, and James F. O'Brien. *SIGGRAPH 2009*.

TECHNICAL REPORTS

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 Programs	
Massachusetts Institute of Technology, <i>Vision Seminar</i>	September 2017

PANELIST

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

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

TEACHING

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	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
	<i>Next position:</i> 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	Journal Reviewer	
	Computer Aided Design: 2016	
	IEEE TVCG: 2016	
	Computer Graphics Forum: 2017	
	Conference Proceedings Reviewer	
	SIGGRAPH: 2016, 2017	
	SIGGRAPH Asia: 2016, 2017	
	UIST: 2016	
	NIPS: 2016	
	Eurographics: 2017, 2018	
	ICLR: 2018	
	WebPPL	http://webppl.org
	Probabilistic programming language embedded in Javascript.	
OPEN-SOURCE SOFTWARE		

adnn <https://www.npmjs.com/package/adnn>
Pure Javascript library for neural networks and automatic differentiation.

Quicksand <http://dritchie.github.io/quicksand>
Low-level probabilistic programming language embedded in Terra.

PATENTS

Methods and Apparatus for Comic Creation (US 20130073952 A1)