# 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*.

**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

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

## BOOK CHAPTERS

**Probabilistic Programming for Procedural Modeling and Design**. Daniel Ritchie, Pat Hanrahan, Noah D. Goodman. In Vikash Mansinghka and Daniel Roy (Eds.), *Probabilistic Programming (working title; in preparation)*.

## INVITED TALKS

**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

## EMPLOYMENT

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

**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** — 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)

Ben Mildenhall — Stanford CS BS 2015
*Next position:* **PhD Student, UC Berkeley**

**AWARDS & HONORS**

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|---|---|
| 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

**Conference Proceedings Reviewer**
SIGGRAPH: 2016
SIGGRAPH Asia: 2016
UIST: 2016
NIPS: 2016
Eurographics: 2017

**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.

**Quicskand** `http://dritchie.github.io/quicksand`
Low-level probabilistic programming language embedded in Terra.

**PATENTS**

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

**REFERENCES**

Pat Hanrahan
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Stanford University
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Noah Goodman
Associate Professor of Psychology
Stanford University
`ngoodman@stanford.edu`

Thomas Funkhouser
Professor of Computer Science
Princeton University
`funk@cs.princeton.edu`

Frank Wood
Associate Professor of Engineering Science
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`fwood@robots.ox.ac.uk`