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

Creative AI for Computer Graphics (It's More Than Just Style Transfer)
Google Brain, *Magenta Group* — January 2017

PANELIST

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

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

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, 2017
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
Oxford University
fwood@robots.ox.ac.uk