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

Neurally-Guided Procedural Models: Amortized Inference for Procedural PUBLICATIONS 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 Gradientbased 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 LabMarch 2016Brown University, Computer Science DepartmentFebruary 2016Harvey Mudd College, Computer Science DepartmentFebruary 2016Yale University, Computer Science DepartmentFebruary 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

Postdoctoral ResearcherStanford, CAStanford University Computer Science Department2016 – present

Research Intern

Adobe Creative Technologies Lab

San Francisco, CA

Summer 2011

Graduate Research AssistantStanford, CAStanford University Computer Science Department2010 - 2016

Technical Director InternEmeryville, CAPixar Animation StudiosSummer 2009

Software InternRoseville, 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 Mention2015Stanford Graduate Fellowship2010UC Berkeley EECS Departmental Citation2010UC Berkeley Computer Science Highest Achievement Award2010CRA Outstanding Undergraduate Researcher Honorable Mention2010UC Berkeley Edward Frank Kraft Scholarship2007

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 WebPPL

http://webppl.org

SOFTWARE Probabilistic programming language embedded in Javascript.

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)

REFERENCES Pat Hanrahan

Canon USA Professor of Computer Science

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