

Todd D. Keeler

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http://www.tolk.ca/people

Degrees

- Ph.D. Computer Science, University of British Columbia, Jan 2012 - September 2017
- M.Sc. Applied and Computational Mathematics, Simon Fraser University, September 2005 - September 2007 (Completed December 2011)
- Ph.D. Applied and Computational Mathematics, Simon Fraser University, September 2007 - August 2011 unfinished
- B.Sc. Specialization in Computational Science (Math), University of Alberta, 2005
- B.Sc. Specialization in Physics, University of Alberta, 2004

Selected Experience

- Aug 2018 - Present, Software Engineer - Rendering at Oculus/Facebook: Advancing Mobile Graphics Composition for VR/AR
- November 2015 - July 2018, Software Engineer at Double Negative: Optimizing and Maintaining Ocean and Water simulations for Visual Effects
Developed and Open-Sourced the Openvdb Potential Flow tool - Presented at SIGGRAPH 2017 <https://tinyurl.com/y8peje2t> (github.com)
- March - Oct 2015, Contracting for the University of British Columbia: commercialization of automatic hexahedral mesh generating software
- November 2012 - September 2013, Microsoft Studios: commercialization of mesh based smoke effects for computer games; research on surface based wave dynamics for fluid animation
- September 2007 - September 2010, Radical Entertainment: Industrial Internship Awards, researching real-time smoke simulations for computer games.

Selected Publications and Presentations

Compact Iso-Surface Representation and Compression for Fluid Phenomena

A novel method for representing and compressing dynamic fluid surfaces for real-time playback with varying levels of detail.

Todd Keeler and Robert Bridson, ACM SIGGRAPH 2017 - (talk & 2page abstract)

Ocean Waves Animation using Boundary Integrals and Explicit Mesh Tracking

Todd Keeler and Robert Bridson, ACM SIGGRAPH/Eurographics Symposium on Computer Animation 2014 - Best Technical Paper Award

Real Time Smoke and Fire using Triangle Meshes

Ryan Goldade, Todd Keeler, Robert Bridson, Symposium on Computer Animation 2013 (Poster and demo) - (best poster winner)

Linear-Time Smoke Animation with Vortex Sheet Meshes

Tyson Brochu, Todd Keeler, and Robert Bridson, ACM SIGGRAPH/Eurographics Symposium on Computer Animation 2012

The Spherical Visibility Map

Todd Keeler, John Fedorkiw, and Sherif Ghali, Computer-Aided Design, Volume 39, Issue 1, January 2007, Pages 17-26

Ph.D. Thesis *Surface Based Fluid Animation: Simulation and Compression*

M.Sc. Thesis *An integral equation method for solving Laplace's equation with Robin boundary conditions*

Skills

Significant Experience:

Modern C++, GPU Computing (OpenCL), Python, Linux, OpenVDB, OpenGL, Conversant French, Communication, Teaching, Writing (Technical and Prose)

Plugin Writing Experience

Houdini, Clarisse, Maya

Familiar With:

PyTorch, Go, Visual Studio, Perforce, Git, Svn, Qt, Javascript, Node.js, Django, Perl, MPI, Supervising

Knowledge Base

Graduate Courses Taken:

- Advanced Mathematical Methods I
- Advanced Mathematical Methods II
- Applied Functional Analysis
- Real Analysis I
- Numerical Solution of Partial Differential Equations
- Fluid Dynamics
- Computational Fluid Dynamics
- Analysis and Computation of Models
- Integral Equations
- Complexity of Computation
- Computer Architecture

Skills, Hobbies Conversant French, Piano and Voice, Soccer and Football, Summer and Winter Camping - Boy Scout Leader

Teaching

Taught Tutorial Sessions for:

- Macm 316: Numerical Analysis
- Math 310: Ordinary Differential Equations
- Math 322: Complex Analysis
- Math 257: Vector Calculus
- Math 254: Vector Calculus and Complex Analysis for Engineers

Mentoring

- co-supervised a graduate industrial internship with Microsoft Studios for Ryan Goldade - M.Sc in Sonar Engineering, Student went on to do a Ph.D. in Computer Graphics
- Facebook Intern Manager - June-August 2019
Created an internal program and mentored an undergraduate intern through 3 months of industry experience
- Facebook Intern Manager - September-Nov 2019
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Personal

Father, Husband, Farmboy, Adventurer, Technologist