

Matthew Lausch

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About Me

I am a generalist software engineer with over seven years experience as a developer on the Autodesk Maya rendering team. Working on this very large software project has given me extensive exposure to real time rendering technologies, the Maya scripting and API environments, cross-platform development strategies, the Qt user-interface toolkit, the mental ray rendering engine and Agile development methodologies. I have also directly collaborated with engineers from most major film and video game studios to aid them in the integration of Maya into their pipelines. I am interested in opportunities that allow me to leverage my skills and experience in order to pursue my interest in computer graphics specifically with respect to the film and video game industries.

Skills

- *Programming Languages:* C/C++, Python, MEL, Perl, Java
- *Operating Systems:* Linux, Microsoft Windows, OSX
- *Software:* GCC, GDB, Microsoft Visual Studio, Xcode, CVS/Subversion, Perforce, VIM, Autodesk Maya, standard UNIX shell utilities (grep, diff, etc.)
- *Other Experience:* Maya API/scripting; GPU work including OpenGL/DirectX programming and Cg/GLSL/HLSL shader development; web development (HTML, CSS, Javascript, PHP, Apache); GUI development (Qt, wxWidgets, GTK); database management (SQL, Oracle); system and network administration
- Excellent written and oral communication skills

Education

- Honours Bachelor of Mathematics in Computer Science. University of Waterloo, Waterloo, Ontario, Canada. Graduated 2006 with Distinction (Dean's Honours List).

Work Experience

Autodesk: Toronto, Ontario, Canada

Senior Software Engineer, Maya Rendering Team: September 5, 2006 – present

Viewport 2.0, 2009-present

- Lead engineer on the ongoing Viewport 2.0 project; seeking to replace Maya's legacy, fixed-function, OpenGL viewport with a modern, high quality, high performance, API-agnostic, real-time rendering system based on the OGS library: an Autodesk-developed toolkit for advanced GPU rendering
- Extensive work with OpenGL, DirectX, Cg and HLSL shader authoring, scene acceleration structures, and advanced rendering techniques (order-independent transparency, screen-space effects, volume rendering, etc.)
- Responsible for the development and maintenance of much of the Viewport 2.0 public API as well as its documentation in the Maya API guide (published on the Autodesk website)
- Frequent Viewport 2.0 plug-in development (internal plugins, devkit samples, etc.)
- Regular interaction with customers to aid in the adoption of Viewport 2.0 in their pipelines (ILM, Pixar, Disney FA, SPI, Double Negative, Dreamworks, Weta, EA, SCE, etc.)
- Significant experience debugging graphics problems due to platform differences (Windows/OSX/Linux), vendor differences (nVidia/AMD/Intel) and driver problems

- Regularly provide guidance to other Maya teams looking to leverage the new features and benefits of Viewport 2.0 in their work (modeling, animation, dynamics, etc.)
- Regularly provide technical leadership to junior developers working on the project, including design decisions and code reviews
- Daily interactions with team members distributed around the globe
- Aided in creation and maintenance of a large regression test suite
- Gave a talk on Viewport 2.0 at a company-wide internal developer conference in Shanghai in 2010

Maya Qt Port, 2008-2009

- Contributing member on the staggeringly massive project to port the Maya user-interface layer from legacy, platform-specific UI toolkits to the cross-platform Qt toolkit
- Gained deep knowledge of Qt and of the intricacies of Maya's custom user-interface widgets and behaviours

Mental Ray for Maya, 2006-2008

- Lead engineer on the mental ray for Maya plugin for two years, requiring strong communication skills to effectively work with mental ray engineers in Germany as well as local documentation, QA and product design
- Extensive work with the Maya API, MEL and Python scripting, various profiling tools, the mental ray API and mental ray shader development, all in a multi-platform environment (Windows/OSX/Linux)
- One of three developers on the Maya render pass system, for which we were awarded two patents (see Patents section below)

General Maya Rendering, 2006

- Feature, performance and maintenance work on general Maya rendering features
- Assisted with the implementation of the original Python wrappers for the Maya C++ API (using SWIG) and gave a short talk to ILM pipeline and R&D engineers on the topic

Alias: Toronto, Ontario, Canada

Software Development Intern, User Experience Team: September 5, 2005 – December 22, 2005

- Worked with the User Experience team to develop and refine user interface components for Autodesk Showcase, a real-time 3D visualization solution
- Developed complex UI components using C++, Python and wxWidgets
- Developed an interactive, direct texture manipulation tool that can be used to adjust the offset, scale and rotation of projective (planar, triplanar, cylindrical) textures
- Developed code to generate cinematic camera motion paths using simple Bezier splines

Software Development Intern, Maya Foundation Team: January 3, 2005 – April 29, 2005

- Performed various Maya development tasks in C++ and MEL on Windows and Linux, primarily assisting the Maya x86-64 porting effort
- Used Perl to enhance the Maya nightly testing framework

NORTH Network: Toronto, Ontario, Canada

Web Developer: May 3, 2004 – August 27, 2004

- Worked on a complex, mission-critical, J2EE scheduling application connecting health care workers with patients in remote communities using telepresence technology
- Planned, designed and developed a complete, automated acceptance and regression test suite using JMeter and Ant
- Built, configured, deployed and maintained the production machines for the application

Patents

United States Patent 8,379,024

Modular shader architecture and method for computerized image rendering
Justin Novosad, Eric Bourque, Matthew Lausch
Awarded February 19, 2013

United States Patent 8,416,238

Modular shader architecture and method for computerized image rendering
Justin Novosad, Eric Bourque, Matthew Lausch
Awarded April 9, 2013

Awards and Achievements

- Graduated from my undergraduate studies with Distinction, Dean's Honours List (88% cumulative average), Fall 2006
- Awarded silver medal on final Computer Graphics project, Summer 2005
- Valedictorian for graduating class at Medway High School, June 2001
- Chief Scout Award, May 1997

Interests and Hobbies

- Technology of all kinds, computer graphics (and the associated mathematics), ray tracing
- Photography, literature, classical music, cooking
- Craft beer, single malt scotch whisky, very dark single-origin chocolate
- Rock climbing, snowboarding, camping, canoeing
- World travel
- Personal website development