

Curriculum Vitae

DEREK GERSTMANN

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EDUCATION

- 2004** **Bournemouth University, UK**
National Centre for Computer Animation (NCCA)
Master of Science in Computer Animation
Procedural Modeling and Generative Animation
- 2002** **University of Washington, Bothell, WA**
Bachelor of Science in Computing & Software Systems
Application Programming and Information Engineering

INTERESTS

Parallel programming, multi-core processors, programmable graphics hardware, visualization, tomography, computer graphics & animation, visual effects for film, procedural modeling, generative art and user-interface design.

EXPERIENCE

- 2009-now** **University of Western Australia. Crawley, WA**
Research Fellow
Visualization and compute specialist for biomedical imaging, co-funded by the Western Australia Supercomputer Program (WASP) and the Centre for Microscopy, Characterisation and Analysis.
- 2008-2009** **Apple, Inc., Cupertino, CA**
Software Engineer
Member of OpenCL engineering team at Apple, which helped define an open standard for programming multi-core processors in a heterogenous compute environment consisting of GPUs and multi-core CPUs. Assisted in driver, compiler and application layer development tasks. Developed compute and graphics oriented applications. Examples include GPGPU algorithms, physical simulations, and advanced rendering techniques.
- 2006-2008** **Weta Digital, Ltd., Miramar, New Zealand**
Production Engineer
Designed and developed a custom Grid management software layer to support thousands of render farm machines. Provided statistical analysis to define software requirements for render system migration. Developed custom asset management tools, including a multi-threaded GUI for browsing assets, as well as custom plugins for third-party applications and scripts for publishing shader parameters. Provided maintenance for legacy pipeline tools for ongoing projects. Used PyQt, Python, Perl, RenderMan, Maya, Shake and Nuke.

- 2005-2006** **ATI Research, Inc., Santa Clara, CA**
Software Engineer - GPGPU
Principle engineer for CTM, a Close-to-the-Metal GPGPU runtime library and SDK for performing data-parallel computations on the R5xx (X1k) architecture. Developed low-level driver components, as well as high-level language and compilation tools. Provided support for external partners. Served as build manager for Win 32/64 and Linux 32/64 bit platforms in C/C++.
- 2004-2005** **Cycling '74, San Francisco, CA**
Software Engineer - Jitter
Worked with lead developer to extend the feature-set of Jitter, a real-time visual programming environment for new media. Personal contributions include programmable shading language support (GLSL,Cg,ARB,NV), OpenGL buffer objects, direct render-to-texture feedback, and HDR texture support (OpenEXR). Also developed an advanced procedural texturing and modeling engine with support for multi-threaded n-dimensional function graph evaluation, iso-surface generation, and volume visualization techniques. Developed in C/C++ on Win32 and OSX.
- 2002-2003** **ESC Entertainment, Alameda, CA**
Research & Development, Jr. Position
Developed a database file-system and client application for managing film color calibration information for the Matrix:Reloaded and the Matrix:Revolutions films. Created a plug-in for Apple's Shake
Compositing software package for retrieving shot calibration data. Additional development work done in Alias Maya, Trolltech's Qt toolkit, C/C++, and shell scripting.
- 2002** **Industrial Light & Magic, San Rafael, CA**
Research & Development Technical Director, Internship
Researched and developed a real-time, high quality, image-based lighting technique for previewing the effects of a lighting environment on a particular 3D model. Worked with a lead Research & Development Technical Director to develop a proof-of-concept application using C++, OpenGL, FLTK, & Python, which allowed real-time interactivity and a visual preview comparable to a final-frame render.
- 2001-2002** **University of Washington, Bothell, WA**
Researcher & Lab Consultant
Worked with the University's Center for Multimedia Research (CMMR) on their immersive video navigation research project. Helped design and develop a prototype application in Java for reconstructing arbitrary 3D viewpoints of a virtual environment obtained from digital video footage. Provided consultation for Unix, Java, and general lab related issues for the University's Applied Operating Systems course working in the CSS department's Linux lab.
- 1999-2001** **Pinnacle Studios, Seattle, WA**
System Administrator & Software Engineer
Administered and maintained heterogeneous network for visual effects production, including all servers, workstations and office computers. Developed proprietary in-house tools to automate production and administration work-flow. Examples include compositing tools, render management utilities, file conversion utilities, administrative tools, plug-ins, and dynamic intranet applications using C/C++, Perl, SQL and HTML.
- 1998** **Utah Valley Regional Medical Center, Provo, UT**
Research Programmer & Hardware Consultant
Developed an initial conversion program in Visual Basic for translating 2D ultrasound video into 3D medical data. Created a software interface to access proprietary hardware and software components. Built multiple computers to detailed specifications for use in other specialized research projects.
- 1997** **Viewpoint Datalabs, Orem, UT**
3D Modeler & Group Assistant
Created 3D models of varying geometric detail for real-time content. Provided quality assurance for entire 3D model data bank, including complex scanned polygon geometry. Utilized a wide variety of 3D modeling and animation packages, including Alias|Wavefront, 3D Studio Max, Lightwave, and Softimage. Provided HTML authoring for catalog of model submissions.

PAPERS & PUBLICATIONS

- 2006** **A Performance-Oriented Data Parallel Virtual Machine for GPUs.**
Derek Gerstmann, Mark Peercy, Mark Segal
ACM SIGGRAPH Sketch 2006.
- A Performance-Oriented Data Parallel Virtual Machine for GPUs.**
Derek Gerstmann, Mark Peercy, Mark Segal
Graphics Hardware Hot3d Session 2006.
- Spawner: A Genetic Procedural Animation System.**
Derek Gerstmann
Proceedings of EVOMUSART 2006.
- 2004** **A Stream Processing Abstraction and Rendering Toolkit for GPUs.**
Derek Gerstmann
Masters Thesis, NCCA Bournemouth University. 2004.
- 2002** **A High Quality Image Based Relighting System for Visual Effects Production.** Derek Gerstmann Undergraduate Research. University of Washington. 2004.

AWARDS & HONORS

- 2006** Graphics Hardware Presentation on CTM
SIGGRAPH Sketch for a Data-Parallel Virtual Machine for GPUs
MIT Presentation for CTM
EvoMusart Publication for Spawner
- 2004** NCCA MSc Computer Animation w/Distinction
NCCA MSc Computer Animation Student Representative.
- 2002** UW CSS Colloquium Best Poster Award.
UW Dean's List for Academic Achievement.
ASUWB Academic Certificate of Recognition.
- 1999** UW Student Film Group Screenwriter Contest Winner.

AFFILIATIONS

University of Washington Alumni
Association of Computing Machinery (ACM)
ACM SIGGRAPH
ACM SIGCHI
ACM SIGOPS
IGDA