

## KARL HILLESLAND

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### SUMMARY

I'm seeking a software engineering position with an opportunity to innovate. I have over five years industry experience developing 3D graphics and simulation applications as well as a background in research.

**Skills:** 3D graphics, high performance code, real-time and large model rendering, parallel programming, physical simulation, GPGPU programming, artist collaboration, occlusion culling, VFX.

**Languages:** C/C++, Python, Perl, MATLAB, Fortran, C#

### EDUCATION

**Ph.D. in Computer Science**, University of North Carolina at Chapel Hill, Spring 2005

**M.S. in Electrical Engineering**, Washington State University, Spring 1997

**B.S. in Engineering Physics**, Pacific Lutheran University, Spring 1993

### EXPERIENCE

**Pixelux Entertainment** (April 2007 to present)

Senior Programmer

- Developed features for a real-time physics library based on the finite element method (*Digital Molecular Matter* or DMM).
- Architected and implemented our next generation product in collaboration with the CTO.
- Researched and prototyped solutions for Pixelux and our customers.
- Responsible for making our most important customers successful using our technology.
- Involved in all aspects of development including research, design, implementation, testing, delivery and support.

**Electronic Arts** (May 2005 to April 2007)

Software Engineer

- Worked on the game engine for *The Lord of the Rings: The White Council* and two unannounced *Sims* projects (PC, 360, PS3).
- Gathered requirements, prioritized, scheduled and performed the work to expand the VFX system from *Spore* (called *Swarm*) for use on other game projects.
- Proactively collaborated with artists to develop visual effect functions that senior management seized on for demos.

**University of North Carolina at Chapel Hill** (August 1999 to May 2005)

Research Assistant

- Researched GPGPU programming, specifically for building shading models from photographs through nonlinear optimization implemented on GPUs.
- Developed *GPU Paranoia* to empirically determine the accuracy of floating-point operations on graphics hardware.
- Created new occlusion culling techniques for rendering models with tens of millions of polygons at interactive rates: one using hardware occlusion queries, and another using LODs and multiple graphics pipes on an SGI.
- Developed and maintained tools for processing large polygonal models.

**University of North Carolina at Chapel Hill** (Fall 2003)

Course Instructor: *COMP136: Introduction to Computer Graphics*

- Prepared and taught a full-semester undergraduate course.

**Intel** (May 2002 to May 2003)

Software Engineer

- Designed and implemented a system for fitting shading parameters to match photographs using numerical nonlinear optimization fully implemented on DirectX 9 hardware.
- Co-authored and presented a SIGGRAPH paper, *Nonlinear Optimization Framework for Image-Based Modeling on Programmable Graphics Hardware*, 2003.
- Coinventor on related patent: U.S. 6999074.

**Disney's VR Studio** (Summer 2001)

Software Engineer

- Added distributed rendering support to Panda3D, a game engine used in the MMOG *Toontown Online* and for virtual prototyping within Disney Imagineering.

**NVIDIA** (Summer 2000)

Software Engineer

- Optimized NVIDIA OpenGL driver performance.

**Washington State University** (Fall 1998)

Research Assistant

- Implemented wavelet decompression of images using graphics hardware.

**Westinghouse Hanford and Fluor Daniel Northwest** (August 1993 to June 1999)

Engineer, Software Developer

- Performed engineering analysis, code development (C, C++, Fortran), and data visualization.
- Lead programming effort on *Radcalc for Windows*.
- Contracted to other companies as domain expert.