Kevin Beason

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Objective

Develop excellent software. I'm mainly interested in computer graphics but am open to other challenges.

Experience

Sr. Software Engineer, Rhythm & Hues Studios May 2014 - present

Maintaining and supporting our proprietary software renderer for film and TV visual effects. Developing and migrating shaders for renderers such as RenderMan, Arnold, and IRay.

Software Engineer, Rhythm & Hues Studios Jan 2006 - May 2014

Worked on a small team developing a proprietary software renderer used for visual effects in feature films and commercials. Interacted with artists to address rendering issues. Maintained and supported irradiance caching, subsurface scattering, shadow mapping, photon mapping, and displacement. Highlights:

- Added multi-threaded rendering mode. Efficient parallelization of the pixel loop, shading, subsurface scattering, deep shadows, photon maps, irradiance cache, shading cache, hair reflection cache, etc.
- Extended irradiance cache with gradients, neighbor clamping, smoothing, and stable placement.
- Added adaptive sampler, reduced caustic noise, implemented deterministic sampling techniques.
- Prototyped Open Shading Language support.
- Ported hair shaders to Houdini.
- Migrated department software codebase to new compilers and architectures.

Research Assistant, Dept. of C.S.I.T., Florida State University 2002 - 2005

Implemented a global illumination renderer. Adapted it for precomputed illumination of levelsets of 2D and 3D scalar heightfields for my thesis. Developed scientific visualizations for use in a variety of publications.

Skills

Programming	C++ (14 years), Perl (5 years), Python, C, bash, tcsh, MATLAB
Programming Tools	STL, Boost Threads, pthreads, gdb, gperftools, valgrind, helgrind, git, CVS, Makefiles
Graphics Tools	Open Inventor, Open Shading Language, RenderMan, Houdini, IRay, OpenEXR

Education

M.S. Computer Science, Florida State University 2000 - 2005
B.S. Computer Science, Florida State University 1995 - 2000
Minors in Mathematics, Physics

Projects

smallpt	Tiny path tracer that renders the Cornell Box in 99 lines of C++.
Pane	Physically based renderer in C++ and Open Inventor. Features path tracing and progressive photon mapping. Octree, KD-tree, and BIH ray acceleration. Triangle, sphere, levelset, distance field, instance, and IFS intersection. Area and HDRI environment lighting with MIS. Multi threading, pixel filtering, motion blur, and irradiance caching. Tone-, texture-, bump-, and displacement-mapping. Glare, participating media, blackbody emission, spectral rendering, and procedural noise. Diffuse, specular, Schlick, Ashikhmin and Shirley, and measured BRDFs.
Fluid	2D & 3D fluid simulator and visualization. Features vorticity confinement, vortex particles, thermal cooling, texture warping, and interactive volume rendering.
subd	Subdivision surface generator.

Honors and Awards

FSU ACM Programming Contest **1st:** 1997, 2004-Spr, 2004-Fall, 2005 **2nd:** 1998, 2001, 2002, 2003
ACM Southeastern Regional Programming Contest **6th** (out of 71): 2001, **12th** (out of 80): 1998