

Karl Stiefvater

qarl@qarl.com

415-938-7275

Hi. I'm a full-stack generalist software engineer with extensive experience in graphics for both the film and gaming industries.

KEY ACCOMPLISHMENTS

Created custom visual effects and software for the finale of the film "Matrix: Reloaded".
Created software for procedural generation of the bottomless pit in the film "300".
Nominated for an Emmy Award for the interactive project "Deep Down". Created novel image-based modeling technique revolutionizing the virtual reality platform "Second Life". Created the custom rendering software used for "Riven: The Sequel to Myst".

2015 - PRESENT - PIKAZO - FOUNDER / CTO

Launched company for exploring the intersection of computer graphics and artificial intelligence. Created full stack for Pikazo 1.0 consisting of iOS app, AWS Lambda coordinator, and hybrid Softlayer/AWS/custom linux-based render farm.

2009 - PRESENT - LUME GRAPHICS CONSULTING - FOUNDER

Contract software engineering in the area of computer graphics. Nominated for Emmy award for work on "Deep Down: The Virtual Mine". Worked with a variety of clients to produce software for iOS and Unity - especially WaveMachine labs on the realtime audio track editor for their flagship product Auria. Other clients include Ikayzo, Access Softtek, and happyMedium.

2011 - 2013 - COMPUTER GRAPHICS SOCIETY - INSTRUCTOR

Developed and taught courses on software engineering for visual effects and computer graphics in the film industry.

2007 - 2010 - LINDEN RESEARCH - SENIOR SOFTWARE ENGINEER

Full stack engineer for virtual world Second Life. Both server and client development within a hybrid python/C++ framework. Notable work includes improvements to the graphics system (organic modeling using a novel texture-based solution); extensions to the scripting engine to support more natural user interface; performance improvements; stability improvements. Often worked directly with users to directly improve their experience.

2005 - 2006 - MISCELLANEOUS FREELANCE

Primarily for Meteor Studios in Montreal - creating pipeline software for their transition from Maya to Renderman. Built a variety of tools and software for the film "Journey to the Center of the Earth". Also did substantial 11th-hour work on the film "300" with the wheat and pit sequences.

Also miscellaneous work for Electric Effects - shot-work, effects, and compositing for "Across the Universe".

2004 - OPEN SEASON - SONY PICTURES IMAGEWORKS FREELANCE

Created pipeline for rendering Maya scenes with Renderman - compiling Maya's shader networks into Renderman shaders (functionality very similar to Pixar's product "Renderman for Maya".) Led team of developers to extend functionality.

Created pipeline for translating Maya scenes to in-house tool "birps", greatly reducing time and cost required for lookdev.

Created tools/workflow for modeling/rendering trees used throughout the film.

2003 - THE MATRIX:REVOLUTIONS - ESC ENTERTAINMENT FREELANCE

Called in to assist sentinel swarm team meet production deadline. Created software to "destroy" sentinels - using both a hand-animated library for gross movement and physical simulations for legs and debris. Software was used throughout battle sequences.

Created software to re-time and filter undesirable high-frequency noise from swarm animations. Worked with the pipeline team to optimize rendering of swarm (created module for their in-house tool "plexus".) Worked with pipeline team to create utility mental ray shaders.

2003 - THE MATRIX:RELOADED - SONY PICTURES IMAGEWORKS FREELANCE

Created tool/workflow to create pipe needed for underground tunnels. Created Renderman DSO to create pipe procedurally from minimal descriptions - greatly reducing render time. Created tool to import hand-modeled pipe.

Created software for the "Hindenburg effect" of the Nebukadnezar destruction at the end of "Reloaded". Metal burned away from the underlying frame in a way reminiscent of the Hindenburg blimp.

Created the dynamics system (in Maya) for twisted metal and windshield debris for the Nebukadnezar destruction. Created particle-based fire and smoke visual effects.

2002 - THE MATRIX:RELOADED - CENTROPOLIS FX FREELANCE

Called in to troubleshoot Centropolis' atmospheric renderings using global illumination in mental ray. Created a photon-density cache mechanism, decreasing render times by a factor of 5.

Created a custom crowd system to guide the 600-sentinel attack on the Mjolner in "Revolutions". The system implemented a multi-goal flocking simulator - directing the sentinels in a high-speed chase in which they attacked in coordinated groups, dodged incoming fire, landed on the Mjolner, crawled along its surface in pursuit of the broadcast antenna.

1999 - 2001 - WASHINGTON UNIVERSITY - ADJUNCT INSTRUCTOR

Created and taught courses in computer graphics (both undergraduate and graduate) including "Computational Art" and "Graphics Laboratory".

Coordinated a student effort to create a data-flow based graphics library similar in function to Houdini. Coordinated a student effort to create a real-time virtual water simulation environment. "The Waterworks" was shown in the Emerging Technologies exhibition at SIGGRAPH 2001.

1996 - 1999 - LUME - FOUNDER

Created a suite of photo-realistic tools for the mental ray renderer. The tools used the then-ground-breaking technique of high-dynamic-range light, creating impressive water, metal, lighting and atmospheric renderings. Formed the company Lume, Inc., and oversaw the cross platform development of the tools to Renderman, Lightwave, Maya, and 3D Max.

1995 - 1997 - RIVEN: THE SEQUEL TO MYST - CYAN WORLDS - TECHNICAL DIRECTOR

Created the shader collection used in the rendering of Riven, including shaders for lighting, atmosphere, water (surface, subsurface, and displacement), metals, terrain, etc. Created the render queuing software used by Cyan to optimize their render farm.

1988 - 1995 - WASHINGTON UNIVERSITY

B.S. in computer science from Washington in 1992; pursued but did not complete a Ph.D. through to 1994.

OTHER

I have over 30 years experience developing software under a variety of operating systems and languages and design paradigms - including iOS, MacOS X, Linux, Windows. C, C++, Objective C, C#, Java, Javascript, Python, Perl, Lisp, assembly language, embedded machine code, etc. My scores for the computer science and math GREs ranked 98th and 99th percentile, respectively.