Kai Ninomiya

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Education

University of Pennsylvania, May 2016: Student, MSE, Comp. Graphics & Game Tech. GPA: 3.88
University of Pennsylvania, Dec 2015: Student, BSE, Computer Science. CIS GPA: 3.50

- **Selected coursework, past:** CIS: 565 GPU Programming, 563 Physically-based Animation, 560 Comp. Graphics, 562 Comp. Animation, 552 Haskell, 601 Security in Multicore Arch., 391 Artificial Intelligence, 380 Operating Systems, 371 Computer Architecture, 320 Algorithms, 261 Discrete Probability. PHYS: 250 Modern Physics, 361 Electrostatics, 421 Modern Optics

Stanford University Online High School & other institutions, 2011

Work Experience

Intern, Virtual Graphics, VMware, Inc. Summer 2014
VMware Virtual Graphics driver for Windows/Linux Guests on Fusion/Workstation/ESX

- Upgrading existing C drivers (within Mesa 3D Graphics Library) to support OpenGL 3.x
- Worked closely with others in a small project team (including Mesa creator Brian Paul)

Systems Administrator & Residential Program Manager Summer 2012–*present*
Science and Technology Wing, Kings Court English College House (UPenn)

- Administering servers for web, e-mail, mailing list, authentication, database
- Leading/organizing/coordinating college house & residential program events

Teaching Assistant, CIS 277, CIS 560: Computer Graphics (UPenn) Spring 2014–Spring 2015
Co-instructor, CIS 191: Linux/Unix Skills (UPenn) Fall 2013

- Writing/editing lectures, quizzes, homework, projects; office hours, student advising

Coursework

GPGPU Fracture Physics Simulation in the Browser (Nov 2014, pair, 1200 SLOC): *JS, WebCL.*
CUDA Rasterizer (Oct 2014, solo, +260 SLOC): Vert/geom/frag shading, depth test, interpolation.
CUDA Path Tracer (Oct 2014, solo, +400 SLOC): Interactive. Diffuse, Fresnel effects, focal blur.
Smoke Sim (Mar 2014, solo, +200 SLOC): Phys-based, expanded with volumetric renderer. *C++.*
Volumetric Renderer (Oct 2013, solo, 1200 SLOC): Expanded from Graphics coursework. *C++.*

Projects (details on website)

Elsie (Jul–Oct 2014, group, 3000 SLOC): LC4 CPU simulator for CPU architecture students. *JS.*
Rusttrace (Jun 2014–intmt, pair, 430 SLOC): Simple raytracer with lights, materials, and primitive photon mapping. Used as a learning project for the Rust language. *Rust.*
Proper (Sep 2013, hackathon team, 500 SLOC): EDSL for interactive graphical narratives. *Haskell.*
Chickens (Jan 2011–intmt, group, 3400 SLOC): Networked 2D platforming game with infinite-extent, live-editable maps. Custom OpenGL GUI library and networking framework. *C#, OpenGL.*

Publications

Ninomiya, K., Kapadia, M., Shoulson, A., Garcia, F., and Badler, N.I. "Planning Approaches to Constraint-Aware Navigation in Dynamic Environments." *Comp. Anim. Virtual Worlds*, 2014.
(Previous version available on website above.) May 2013–September 2014

- Path planning framework w/ multiple spatial constraints between objects and agents.
- (Previous version) Winner of the Diane Chi Summer Research Award 2013 August 2013

Awards

Penn Play Game Jam: "Exploration" – Best Game Design March 2014
Invincible, a 2D physics-based cave exploration simulator – Team of 2
International Space Apps Challenge – Best Use of Hardware April 2013
ISS Base Station, Hardware/Software Public Art & Science Awareness Hack – Team of 13

Skills

Computer Languages

- Proficient: C, C#, Python 2/3, Java, LaTeX, Shell, Regular expressions.
- Working knowledge: Rust, Haskell, C++, HTML/CSS/JavaScript. Familiar: Verilog.

Technologies

- Proficient: Git/Mercurial, basic/assorted OpenGL 3.x & GLSL, Linux usage & administration (Ubuntu/Debian/Arch Linux, Vim).
- Working knowledge: CUDA, WebCL, WebGL, CMake, Qt, sockets, JUnit/NUnit, Unity3D.
- Familiar: Eigen, Android, Docker, Arduino, SQL, JQuery, electronics, computer architecture.