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Education

- **University of California Santa Cruz** Santa Cruz, CA
  Ph.D., Computer Science, in progress (third year)
  - **Notable courses**: advanced artificial intelligence, advanced machine learning, combinatorial algorithms, interactive narrative, bayesian statistics, computational photography, computer vision for mobile devices, game design seminar, programming languages, analysis of algorithms
  - **Notable course projects**: theoretical basis and method for computing transient global illumination, interactive fiction remake of existing artificial reality game, new (but unremarkable) algorithms for 3SAT, enhancing low-light photography using infrared illumination, data mining for Netflix Prize using additional IMDB metadata, reinforcement learning agent for a real-time video game, soft-body physics simulator with rich scripting language
- **University of California Santa Cruz** Santa Cruz, CA
  B.S. with Honors, Computer Science (GPA 3.62), 2005
- **De Anza College** Cupertino, CA
  Transfered Credits, 2003

Research

- **Projects**
  - **Expressive Intelligence Studio (Advisor: Michael Mateas)**: *Tableau Machine* (an AI-based, interactive, visual art generator supporting long-term experiences in shared living spaces), *untitled* (a reusable core for creative intelligent systems based on a novel, knowledge-level theory of machine creativity)
  - **Motion Capture Lab (Advisor: James Davis)**: transient rendering (a theoretical basis for observations of short-term light patterns taking into account the finite propagation speed of light, including method for computation and applications)
  - **Machine Learning Lab (Advisor: Manfred Warmuth)**: learning rotations (a novel online learning algorithm using optimization over Lie groups)
- **Reviewed Publications**
  - A. Smith, M. Romero, Z. Pousman, and M. Mateas. "Tableau Machine: A Creative Alien Presence." Creative Intelligent Systems (AAAI Spring Symposium Series 2008).
- **Class Papers**
  - A. Smith and J. Skorupski. "Transient Rendering." December, 2007. CMPS 290B.
  - A. Smith. "Learning Transformations Between Directed Subspaces Online." June, 2007. CMPS 290C.
  - A. Smith. "Selected Classical Problems from the History of Mathematics." March, 2007. MATH 180.
  - A. Smith and P. Gunawardane. "Genre-space Clustering of Users for the Netflix Prize." December, 2006. CMPS 242.
  - A. Smith. "Experience in the Game Design Seminar." June, 2006. CMPS 297.

- S. Scher and A. Smith "Night into Day: Enhancing Low-Light Color Photography." December, 2005. CMPS 290B.

Teaching

- **Teaching Assistantships** UC Santa Cruz
  - Courses: "Introduction to Computer Graphics", "Scientific Visualization, Computer Animation, and Games", and "Computer Literacy"
  - Earned *Outstanding Teaching Assistant Award (2006)*
  - Earned *Excellence in Teaching Award [for Teaching Assistants] (2007)*
  - Emphasized self-teaching and experimentation
  - Counseled students on large-scale, free-form, group projects
  - Synthesized material for teaching creation of real-time, multimedia, physically-based 3D games and simulations
  - Created cross-platform, transparent, video-game template project (used by others in current computer vision and game design research)
  - Introduced novice computer users to programming by having them write a simple story generator in javascript (on a day that lab section would have otherwise been cancelled)
  - Designed complete exams and homework
  - Synthesized and supported programming assignments for subjects not taught in previous years
- **Guest Lectures** UC Santa Cruz
  - Digital Image Compositing
  - Non-photorealistic Rendering
  - Elementary Game Design
  - Game Engine Architecture Spectrum
  - Game Programming in Python for Non-Python Programmers
  - Programmer-oriented Tools for Creativity in Graphics
- **Volunteer Consulting** UC Santa Cruz
  - Coached undergraduate volunteers on facilitating students in graphics programming assignments
  - Verified homework questions and exams as well as their solutions before posting to students to ensure accuracy and educational value
  - Guided curriculum development discussions, maintaining focus on student engagement and long-term benefit
- **Education Related Talks** Various Un-conferences, Sillicon Valley, CA
  - **New Foundations**: bayesian reasoning and geometric algebra as powerful yet simple foundations in STEM curricula and beyond, suitable for introduction in high school *(EduCamp Stanford)*
  - **Formal Language Skills for Reading, Writing, and Arithmetic**: teaching primitive graph operations and distinctions to very young kids to support skills in direct, symbolic, formal communication *(EduCamp Stanford)*
  - **An Ecosystem of BarCamp-like Events**: fostering an social environment where several focused yet casual un-conferences can coexist, sharing participants, ideas, and processes for the life-long learning benefit of all participants *(BarCamp Block)*

Internships

- **Software Engineering Intern** Summer 2007
  Google, Inc. - Enterprise Engineering Mountain View, CA
  - Developed a plug-in modules called connectors to allow the Google Search Appliance to index content from any GData enabled service as well as easily index data from an entire Google Apps domain with simple configuration
  - Designed software to be accessible and support easy localization
  - Contributed usefully to debates on medium-scale architecture of the search appliance
  - Provided technical consulting and detailed examples to technical writing team for the production of an extensive connector developer's guide targeted at enterprise developers outside of Google
  - Packaged code and documentation for distribution on Google Code open source site
  - Attended or watched 100+ Tech Talks on a variety of topics
- **Staff Research Assistant** Summer 2006
  Los Alamos National Laboratory - High Performance Computing Los Alamos, NM
  - Integrated hardware-based image compositing system into standard distributed visualization software
  - Developed novel, highly optimized, distributed, software image compositing system with competitive performance (mpi)
  - Created interactive visualizations of huge materials science datasets (paraview)
  - Organized experiments across a non-uniform cluster of eight nodes
  - Performed technical demonstration for dignitaries
  - Presented work at research symposium, final poster appeared at SC06
- **Educational Associate** Summer 2005
  NASA Ames Research Center, Intelligent Robotics Group Moffet Field, CA
  - Developed and documented test procedures for PhaseSpace motion tracking system (LaTeX)
  - Evaluated system accuracy and precision (data collection, analysis)
  - Created automated data analysis tool chain for sensor data (perl, gmake, gnuplot)
  - Integrated sensor into test rover sensor system (c++, ice, java)
  - Proposed new filtering method to improve sensor robustness (octave)
- **Programmer / Other** Summer 2004
  Terracom Communications Kigali, Rwanda
  - Created and scheduled several automated web scrapers and log analyzers (perl)
  - Developed database driven mini-sites (php, templating libraries)
  - Created full text search tool with stemming for multiple mini-sites (mysql)
  - Researched sources and setup automated filtering for a dynamic tech-news site (perl)
  - Setup and secured servers (linux)
  - Proposed and implemented new web-caching policy yielding vastly increased performance, noticed by clients (squid)
  - Worked 80+ hours/week in Kigali, meeting deadlines and completing side-projects

High-Density Additional Information

Well-developed personal interests: computational light science (the intersection of computer graphics, computer vision, and physics), experimential electronic music, procedural visual media, next-next-gen web, network hacking, computer game design, geometry, abstract algebra, advanced physics, backpacking, snowboarding, mountain biking, philosophy of mathematics/science/systems/art/hacking, unconferences (*Camps), hackathons (SuperHappyDevHouse)

Some recreational projects (completed alone or with friends): invisible hand (prototype for document camera system that removes foreground objects from scene to improve readability), the.cubing.game (simple video game based on realistic physical simulation with original art, sound effects, and music), codepoem (a series of abstract, concrete code poems juxtaposing code for a context-free design grammar with one of its visual compositions), slut-o-meter (SafeSearch reporting gimmick), AjaxWar (distributed, multi-player, real-time strategy game made using only javascript on web client before AJAXy support libraries existed), data visualizer for There.com participants, DriveByCTF (real-life wardriving game with centralized scoring through the web), spammer.pl (automation of laptop duties in wardriving game), GoGetter (javascript-based web crawler and collage generator), GifGif (a steganographic image codec), RadAudio (wavelet based audio codec with psychoacoustic modeling), markov.lisp (instant messaging log re-synthesizer), karamari.lisp (prototype for text adventure remake of the popular Katamari Damacy), POSIX Monkey Puncher (thread programming tutorial that is also silly game), Winter (music visualizer created at informal demo-party), cicada-client (WiFi reporting tool using DNS for clandestine upstream data transport)

Technical skill dump: html/xhtml/xml/xslt/css, sdl, opengl, osg, design patterns, prolog, matlab/octave, lisp/scheme, java/c++/c#, python, ocaml, perl, php, make, bash, flex/bison, ms office, LaTeX(for papers and presentations)

References

Contact info available on request for:

- Michael Mateas (Research Advisor from UCSC)
- James Davis (Teaching Mentor from UCSC)
- Eric Haugh (Mentor from Google)
- Carolyn Connor-Davenport (Mentor from LANL)
- Terry Fong (Mentor from NASA)
- Joël Franusic (Friend, Coworker from Terracom, education/hacker/art philosophy discussion cohort)
- Jeff Lindsay (Friend, Founder of DevjaVu (a startup for which I am on the board of directors), education/hacker/systems philosophy discussion cohort)

Citizenship

- United States (by birth)

Compiled January 31, 2008.