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Education

- **University of California Santa Cruz** — Santa Cruz, CA
  Ph.D., Computer Science, in progress (fourth year)
- **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

- **Dissertation Research**
  - Area: Artificial Intelligence
  - Keywords: machine creativity, discovery systems, game design
  - Statement: My research explores the intersection of machine creativity (which traditionally focuses on aesthetic artifact generation), discovery systems (which traditionally automate the scientific or mathematical discovery processes), and game design (which is traditionally carried out by particularly creative humans), with the aim of producing a systems that creatively discovers game design knowledge through experience (popping out sweet games along the way). Provocative, yeah?
- **Publications**
  - Pousman, Z., Romero, M., Smith, A., and Mateas, M. (September 2008) "Living with Tableau Machine: A Longitudinal Investigation of a Curious Domestic Intelligence" In Proc. of the 10th Intl. Conference on Ubiquitous Computing (UbiComp 08).
  - Smith, A., and Warmuth, M. K. (July 2008) "Open Problem: Learning Rotations." In Proc. of the 12th Annual Conference on Learning Theory (COLT 08).
  - Smith, A., Romero, M., Pousman, Z., and Mateas, M. (March 2008) "Tableau Machine: A Creative Alien Presence." AAAI Spring Symposium on Creative Intelligent Systems.
  - Smith, A., Skorupski, J., and Davis, J. (February 2008) "Transient Rendering" Technical Report UCSC-SOE-08-26, School of Engineering, University of California, Santa Cruz.
- **Selected Project Reports**
  - Smith, A., and Skorupski, J. (2007) "Transient Rendering."
  - Smith, A. (2007) "Learning Transformations Between Directed Subspaces Online."
  - Smith, A. (2007) "Selected Classical Problems from the History of Mathematics."
  - Smith, A., and Gunawardane, P. (2006) "Genre-space Clustering of Users for the Netflix Prize."
  - Smith, A. (2006) "Experience in the Game Design Seminar."
  - Scher, S., and Smith, A. (2005)"Night into Day: Enhancing Low-Light Color Photography."

Teaching

- **Teaching Assistantships** UC Santa Cruz
  - Courses (deduped): "Introduction to Computer Graphics", "Scientific Visualization and Computer Animation", "Game Engine Architecture" and "Computer Literacy"
  - Earned *2006 Outstanding Teaching Assistant Award* and *2007 Excellence in Teaching Award (for Teaching Assistants)*
  - Counseled students on large-scale, free-form, group projects
  - Taught javascript programming to computer literacy students (without authorization!)
  - Emphasized self-teaching, playful experimentation, and the use of awesome FOSS tools
  - Continue to provide life-long graphics and game programming advice to past students
- **Development** UC Santa Cruz
  - Courses: "Introduction to Computer Graphics", "Scientific Visualization and Computer Animation", and "Game Engine Architecture"
  - Designed lectures, exams, homework, programming projects, and demos
  - Developed new units for video game programing, shader programming, and ray-tracing
  - Created cross-platform, transparent, video game software template (used by 100+ students and multiple researchers to bootstrap game projects)
  - Guided larger curriculum development discussions, maintaining focus on student engagement and long-term benefit
  - Coached undergraduate volunteers
- **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
- **Education Talks** Various Un-conferences, Silicon Valley, CA
  - New Foundations / Bayesian Reasoning and Geometric Algebra (EduCamp Stanford)
  - Formal Language Skills for Reading, Writing, and Arithmetic (EduCamp Stanford)
  - An Ecosystem of BarCamp-like Events (BarCamp Block)

Internships

- **Software Engineering Intern** Summer 2008
  Google, Inc. - Developer Tools Kirkland, WA
  - Developed parser, name resolver, and type checker for Protocol Buffers language
  - Helped explore solutions for unified parsing of many languages
  - Contributed to design of *large*-scale, distributed notgunnasay
- **Software Engineering Intern** Summer 2007
  Google, Inc. - Enterprise Engineering Mountain View, CA
  - Developed modules to expose GData services to Google Search Appliance
  - Collaborated with technical writer on user-facing documentation
  - Contributed to architecture debates for next-gen appliance
  - Released modules as open source projects on Google Code
  - 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 visualization software
  - Developed reference software implementation for comparison on cluster
  - Created interactive visualizations of huge materials science datasets
  - Organized experiments across a non-uniform cluster of eight nodes
  - Performed technical demonstration for dignitaries
- **Educational Associate (Intern)** Summer 2005
  NASA Ames Research Center, Intelligent Robotics Group Moffet Field, CA
  - Developed and documented deploy/test procedures for motion tracking system
  - Created automated data analysis tool chain for sensor data
  - Integrated sensor into rover sensing infrastructure
  - Proposed and prototyped matched filtering to improve sensor robustness
- **Consultant** Summer 2004
  Terracom Communications Kigali, Rwanda
  - Created and scheduled several automated web scrapers and log analyzers
  - Developed database driven mini-sites
  - Created full text search tool with stemming for multiple mini-sites
  - Researched sources and setup self-updating tech-news site
  - Worked 80+ hours/week in Kigali, meeting deadlines, completing side-projects, climbing mountains, acting in movies, pirating media, and eating locally

High-Density Supplemental Information

Language Paradigms

For each area, I have used one or more languages in a non-trivial project and would feel comfortable implementing a simple new language in this area (including a parser, name resolver, type checker, type inference, code emitter, interpreter, and/or garbage collector as needed).

- functional (static/dynamic/meta)
- logical (static/dynamic/meta)
- object-oriented (static/dynamic)
- imperative (static/dynamic/meta)
- trendy-scripting (dynamic/meta)
- assembly (stack/register)
- patcher
- mathematical (numeric/symbolic)
- build (declarative/procedural)
- parser (flex-bison/combinator)
- data (various)

Development Settings

For each area, I have developed multiple non-trivial projects in this setting before.

- enterprise
- research
- hacking
- live demo

Well-developed Personal Interests

- hacker culture
- recreational academic reading in mathematics and physics
- learning programming languages and language implementation techniques
- livecoding (writing code, live, while it is running, while the audience watches)
- experimental electronic music (both analysis/synthesis)
- procedural art (writing code that makes art)

Selected Recreational Projects

- 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)
- 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)
- DriveByCTF (real-life wardriving game with centralized scoring through the web)
- spammer.pl (automation of laptop 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)
- katamari.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)
- Project Cicada (WiFi reporting tool using DNS for clandestine upstream data transport)

Selected Musical Compositions

- soundless music (an experiment in composing without listening)
- bilingualism (a livecoding session where a synthesizer and composer module were developed simultaneously using PureData and Impromptu)
- endless claims (a procedural music piece involving generation and performance of random lyrics via text-to-speech library)
- idm.ck (a infinite stream of super-gritty intelligent dance music, generated sample-by-sample in Chuck)
- /music/reason (25+ full-length tracks and countless loops of original, synth-heavy, experimental electronic music created with Reason)
- /music/hardware (a sampling of experimentations with various pieces of electronic music hardware)

Selected Visual Compositions

- blurry_earth (a scalable web service that provides a front end for Google Maps which tastefully reinterprets the original map tiles)
- boxen (a series of path-traced procedural cube sculptures, printed and framed)
- codepoem (a series of abstract, concrete code poems juxtaposing code for a context-free design grammar with one of its visual compositions)
- spraw (an artistic mis-application of lossy image codecs to wavelet-encoded images)

References

Contact info available on request for:

- Michael Mateas (Research Advisor from UCSC)
- James Davis (Teaching Mentor from UCSC)
- Theodora Yeung (Mentor from Google, WA)
- Eric Haugh (Mentor from Google, CA)
- 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 19, 2009.