

# Andrew A. Kaufman

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## OBJECTIVE

To work for a visual effects company, in production or research and development, focusing on physical simulation.

## EDUCATION

**University of British Columbia**, Vancouver, BC  
**Master of Science in Computer Science**  
Graduated: September 2008  
GPA: 3.60

**Relevant Graduate Courses:** Computer Animation, Geometric Modeling, Human Computer Interaction, Computer Vision, Numerical Methods for Graphics, Level Set Methods, Sensorimotor Computation

**Northwestern University**, Evanston, IL  
**Bachelor of Science in Computer Science** from the McCormick School of Engineering & Applied Science with an **adjunct major in Animate Arts**  
Graduated: June 2006  
Major GPA: 3.77 / Overall GPA: 3.40

**Relevant Undergraduate Courses:** Computer Graphics, Human Computer Interaction, Graphics & Perception, Image Based Modeling & Rendering, Animation Studio, Animate Arts I, II, III, & IV, Computer Animation, Illustrated Worlds, Artificial Intelligence in Entertainment, Artificial Intelligence Programming, Scripting Languages, Data Structures & Management, Computer Engineering

## TECHNICAL SKILLS

**Programming:** C/C++, Python, Houdini HDK, Maya API, MEL, Java, OpenGL, tcsh, CommonLisp, Visual Basic, HTML  
**Multimedia:** Maya, Houdini, Nuke, SolidWorks, Blender, Photoshop, After Effects, Flash, Dreamweaver, Final Cut, Poser.  
**General:** Eclipse; Microsoft Visual Studio, Allegro CL, Word, Excel, PowerPoint, and Access

## PUBLICATIONS

S. Sueda, A. Kaufman, D. K. Pai. 2008. “**Musculotendon Simulation for Hand Animation**”, *In ACM Transactions on Graphics (Proceedings of SIGGRAPH 2008)*, Volume 27, Issue 3, Pages 83:1-83:8, Aug 2008.

A. Kaufman, S. Sueda, D. K. Pai. 2008. “**Dynamic Shoulder Simulation Using Musculoskeletal Strands**”, *In Proceedings of ISG 2008: Shoulder biomechanics in medicine, ergonomics, and sport*, July 2008.

## WORK EXPERIENCE

**Image Engine Design Inc.**, Vancouver, BC, Canada

**September 2009 – Present**

**Research & Development Programmer** – Major projects include designing/implementing a framework for modular rigging; custom deformers and skin weight manipulators; seamless Houdini integration into our vfx pipeline; integrating hair dynamics with our proprietary grooming system; maintaining and contributing to the open source visual effects project “cortex-vfx”.

**Image Engine Design Inc.**, Vancouver, BC, Canada

**September 2008 – September 2009**

**Junior R & D Programmer** – Major projects include a python interface and GUI for manipulating Renderman compliant render passes; upgrading, maintaining, and building a GUI for our proprietary dynamic simulation software; render farm management of batch renders and networked preview renders; a tool for viewing current work in place with cuts from editorial.

**Recon Instruments Inc.**, Vancouver, BC, Canada

**February 2008 – August 2008**

**Industrial Design Coordinator** – In charge of virtual prototyping, style design, technical modeling, and user interface design for multi-functional, wearable technology in competitive sporting environments.

**Sensorimotor Systems Lab**, Vancouver, BC, Canada

**June 2007 – September 2008**

**Graduate Research Assistant** – Developing a musculoskeletal simulation of the human upper limb using a strand-based muscle system; seamless integration of biomechanically realistic secondary motion into a traditional animation pipeline; created custom interfaces for the modeling of musculoskeletal systems; extended the simulation code base.

**University of British Columbia**, Vancouver, BC, Canada

**September 2006 – May 2007**

**Graduate Teaching Assistant** – Developing, running, and grading labs; holding office hours; developing, proctoring, and grading quizzes and exams; guiding and grading several group projects; and giving an occasional guest lecture.

**Tomorrow Lab**, Evanston, IL

**Summer 2005 – Winter 2006**

**Research Assistant** – MEL scripting for the visualization of complex molecular models; gained experience writing MEL procedures, creating custom interfaces for specific user groups, solving real world research problems, and documenting them as research papers.

**ArticuLab**, Evanston, IL

**Summer 2005 – Fall 2005**

Animator – Responsible for animating a virtual character designed for collaborative storytelling with children. Improved the animation pipeline of the embodied conversational agent by reworking the connection between animation software and the code base; helped develop an automatic real-time lip syncing system based on pre-made viseme animations and phonemes extracted from audio files.

**Cognition and Language Lab**, Evanston, IL

**Summer 2004 – Spring 2006**

Computer Technician – Managed a network of 16 computers; fix, upgrade, and install hardware and software; maintain backup systems; program experiments to be run both in the lab and around the world.

**Mathematica Policy Research Inc.**, Princeton, NJ

**Summer 2003**

Supervisor's Assistant – Updated the databases of research data for several projects; processed finalized surveys and maintained records for multiple projects; did research to locate specific PhD candidates; took and directed calls from doctors and medical directors for medical policy research; organized the working hours for a group of employees.

## PROJECT WORK

**Simulated Control for Balancing**, Computer Animation

**Winter 2008**

Developed a controller for stabilizing the center of mass of an articulated character. Demonstrated the versatility of the balance controller with a range of simulated scenarios, including the effects of noise, reacting to projectiles, and the use of unstable and inclined ground surfaces.

**Planar Matchmove**, Computer Vision

**Winter 2007**

Implemented a planar version of the matchmove problem. The matchmove problem involves inserting computer graphics into real images. The implementation provides a matchmove pipeline that can be used in post production.

**iFree**, Human Computer Interaction

**Fall 2006**

Designed and developed a prototype MP3 player that is accessible to people with visual disabilities. Conducted a user study with visually disabled subjects, indicating that visually disabled users are fully capable of using iFree.

**Skewed Time**, Animate Arts Senior Project

**Winter & Spring 2006**

Wrote a custom video filter to experiment with the relationship between time and space. This artwork was exhibited in Chicago throughout October 2006 in the show *Structural Elements: Selected Chicago New Media Artists*.

**Information**, Animate Arts IV

**Winter 2006**

Modeled, animated, and rendered a 3D animated short based on a Rube Goldberg machine. Used Maya's physics engine to perform the rigid body collisions that drive the motion throughout the short.

**Mime and Punishment**, Animation Studio

**Fall 2005 & Winter 2006**

Spent the fall developing a story, creating storyboards, modeling, and rigging the characters. Spent the winter instructing a group of animators to create a 3D animated short film ready for submission to animation festivals.

**Virtual Interactive Environment**, Illustrated Worlds

**Spring 2005**

The goal of this project was to reconstruct a 3D architectural model of the Chicago Midway Gardens. We used non-photorealistic rendering techniques to visualize uncertainty in the model, and finalized the design with Alias Maya.

**Glare Removal**, Independent Study

**Fall 2004**

The goal of this project was to be able to remove excess glare from high dynamic range images in order to make them seem more realistic; gained experience working on the research side of computer graphics.

**Image Morphing Demo**, Image Based Modeling & Rendering

**Spring 2004**

Created a graphical user interface to demonstrate the differences between the leading methods of image morphing.

**Autonomous Robot**, Northwestern Design Competition

**Winter & Spring 2004**

Organized and lead an eclectic group of experts to design, build, and use an autonomous robot in competition; responsible for the electronic and programmed portions of the robot.

**Leaf blower Backpack**, Engineering Design & Communication

**Spring 2003**

Learned to work in a small team to bring a client's idea to creation; gained a thorough knowledge of the entire engineering design process; improved abstract thinking skills involved in solving a design problem.

## HONORS, ACTIVITIES, & INTERESTS

Exhibited Chicago New Media Artist 2006; ACM SIGGRAPH Member since 2005; Dean's List: Spring 2006, Winter 2006, Fall, Spring & Winter 2005; Phi Gamma Delta Fraternity, 2002-2006; Northwestern University Men's Club Ice Hockey, 2002-2003; Skiing, Hiking, Camping, Travel, Musculoskeletal Simulation, Physically-based Simulation, Simulation of Natural Phenomena, Animation, Film, Sculpture, Installation Art, Interactive Media.