

KEITH WILEY

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Skills **Operating Systems:** Macintosh, Unix, Linux
Languages: C, C++, Objective-C, Java, HTML, Javascript, CSS, *Matlab*
IDEs: *CodeWarrior, Xcode*
Graphics: *Quesa, OpenGL, GLSL, ODE, Superpaint, Photoshop, Bryce*
Image Processing: FFT, wavelet, Bayer mosaic, denoise, sharpen, FITS, RAW, webcam acquisition

Education Ph.D. Computer Science University of New Mexico, Albuquerque Jul 2006
M.S. Computer Science University of New Mexico, Albuquerque Dec 2003
B.A. Psychology University of Maryland, College Park Dec 1997

Research *Winter 2003-Summer 2006, Ph.D. thesis*
Design and implementation of *Druid*, a novel computer-assisted drawing program which permits easy construction of scenes of interwoven surfaces.
Advisor: Dr. Lance Williams, UNM, Comp. Sci. Dept

Summer 2003-Winter 2003, Ontology and Semantic Languages, collaboration between UNM Comp. Sci. Dept and Steve Kleban at Sandia National Labs

Background research into the field of ontology and specific languages such as DAML+OIL and OWL.
Supervisor: Dr. George Luger, UNM, Comp. Sci. Dept and Steve Kleban, Sandia National Labs

Spring 2001-Spring 2002, Autonomous Robotic Glider, collaboration between UNM Comp. Sci. Dept and Mark Boslough at Sandia National Labs

Use of genetic programming trees to evolve behavioral routines for autonomous robotic unpowered gliders. These gliders must find and use various forms of rising air to stay aloft for extended periods of time.
Supervisor: Dr. George Luger, UNM, Comp. Sci. Dept and Mark Boslough, Sandia National Labs

Summer 1997, Auditory Neuroethology Lab, UMCP Psyc Dept

Study of bats' abilities to echolocate blind and learn selective behaviors via positive reinforcement.
Supervisor: Dr. Cynthia Moss, UMCP, Psychology Dept

Publications Peer Reviewed

Wiley, K. B., and L. R. Williams. Representation of Interwoven Surfaces in $2^{1/2}$ D Drawing. *IEEE Computer Graphics and Applications*, 2006. (in print)

Wiley, K. B., and L. R. Williams. Representation of Interwoven Surfaces in $2^{1/2}$ D Drawing. *Proc. of CHI, Conference on Human Factors in Computing Systems*, Montréal, Canada, 2006.

Invited

Wiley, K. B., and S. Chambers. Long Exposure Webcams and Image Stacking Techniques. *The Art and Science of CCD Astronomy*, 2nd edition. Ratledge, David, editor, 2005.

Wiley, K. B. Long Exposure Webcams and Image Stacking Techniques for the Budget-Minded Astrophotographer. *Astronomy*. Bakich, Michael, editor, Dec, 2003.

Wiley, K. B. Pattern Evolver, An Evolutionary Algorithm that Solves the Nonintuitive Problem of Black and White Pixel Distribution to Produce Tiled Patterns that Appear Gray. *The Handbook of Genetic Algorithms*. Chambers, Lance D., editor. CRC Press, 1999.

Additional technical reports, Department of Computer Science, University of New Mexico.

Awards, Recognition

Award for best paper in the *Computer Science at UNM Student Conference*, Mar 2005.

Sky & Telescope magazine. Software review: *Keith's Image Stacker* and *Keith's Astroimager*, Aug 2004.

First place in the *International Online ALife Contest, Cyberbotics Webots*, khepera robot sim., Jul 1999.

Personal, Voluntary Work

Programming

I have written many computer programs in the following fields (see my website for more information):

cellular automata, evolutionary simulation, robotic simulation, neural networks, genetic algorithms, emergent behavior & flocking, physics simulation, parallel distributed processing, astrophotography image capture & image processing, wavelet image processing, Fourier image & audio processing, vector drawing, HCI, realtime 3D rendering (games & virtual environments), programmable graphics cards (GPGPU)

Keith's Image Stacker has received wide acceptance in the amateur astrophotography community, as well as positive review on numerous websites and in the magazines *Astronomy* and *Sky & Telescope*.

WildSpectra is a collaborative effort with Dr. R. Haven Wiley (Biology dept, UNC-CH). *WildSpectra* is a real time spectrogram analyzer for the Mac that offers time-section and frequency-section analysis. *WildSpectra* is used in Dr. Wiley's research lab and by researchers throughout the acoustic-biology community.

Web Design

Personal homepage: <http://www.cs.unm.edu/~kwiley>

Auditory Neuroethology Lab, UMCP Psych Dept: URL is out of date

UMCP International House Homepage: URL is out of date

Computer Graphics, Art, Publishing

Cover design for the *Computer Science at UNM Student Conference* proceedings, 2006.

Proceedings chair for the *Computer Science at UNM Student Conference* committee, 2006.

Cover design for the *Workshop Proceedings of the Seventh International Conference on Artificial Life*, 2000.

Work Experience

University of Washington, Applied Physics Lab, May 2007 - present
Software Engineer.

University of New Mexico, Jan 2007 - May 2007

Adjunct Lecturer - CS241, Data Organization. The first half of this course teaches C language syntax and the second half teaches data structure implementation, such as linked lists, trees, hash tables, etc.

University of New Mexico, Jan 2001 - May 2006

Graduate Research Assistantships - see Research above

University of New Mexico, Sep 1999 - May 2003 (six semesters total)

Graduate Teaching Assistant - CS251 and CS351 C++ (intermediate and advanced C++)

Professors: Dr. Dave Ackley, Dr. Charles Crowley, Dr. Barak Pearlmutter, Dr. Chris Pedregal

University of New Mexico, Sep 1999 - Dec 1999

Mac C++ Programmer - Implementation of a Mac GUI for a cancer model designed by Dr. Carlo Maley.

The Institute for Genomic Research, Sep 1997 - Aug 1999

Mac C++ Programmer - Bioinformatics software development for DNA sequencing and closure analysis.

University of Maryland, Apr 1997

Mac C++ Programmer - Dr. Yager's neurology lab: visual computer display stimulus for praying mantises. Dr. David Yager