

Cynthia Maxwell

1045 Marcussen Drive
Menlo Park, CA 94025

T (xxx) xxx-xxxx
cynthia@code404.com

EDUCATION

University of California at Berkeley, Computer Science Department *Berkeley, CA*

Ph.D. in Computer Science, December 2008.

Thesis title: Sound Synthesis from Shape-Changing Geometric Models.

Thesis advisor: Carlo Séquin

M.S. in Computer Science May 2005.

Stanford University, Mechanical Engineering Department *Stanford, CA*

M.S. in Mechanical Engineering May 1997.

Rensselaer Polytechnic Institute *Troy, NY*

B.S. in Mechanical Engineering May 1995.

RESEARCH EXPERIENCE

DSP Engineer in Core Audio Group, Apple Computer (2003-present) *Cupertino, CA*

- Developed API used by developers for the Mac OS X platform
- Created plug-ins for analysis, synthesis and audio processing

Senior Research Scientist, Stanford University (2001-2002) *Stanford, CA*

- Research into real-time physical modeling schemes and implementation in an efficient, open source surgical simulation

Research Scientist, NASA Ames Research Center (1998-2001) *Moffett Field, CA*

- Invented technologies for real-time interaction and manipulation of virtual objects
- Implemented a scheme for distributed simulation architectures allowing for a shared virtual environment

RESEARCH INTERESTS

- User interface design for musical performance
- iPhone audio processing and applications
- Music Information Retrieval
- Modeling physics of instruments
- Numerical linear algebra, particularly eigenvalue problems
- Computational mechanics and finite element analysis
- Software library design for rapid software implementation

TEACHING EXPERIENCE

Teaching Assistant, University of California at Berkeley (Spring 2003) *Berkeley, CA*

- Graded for introductory data structures course
- Taught recitation and laboratory classes for introductory data structures course

HONORS and AWARDS

Interactive Media Group Intern Competition, Winner, Apple Computer (2006)

NASA Software of the Year, First Runner-Up, NASA Ames Research Center (1999)

NASA Scholar, Rensselaer Polytechnic Institute (1991-1995)

Tau Beta Pi, Rensselaer Polytechnic Institute (1991-1993)

PATENTS

- P08298US00 Pending. Sound synthesis method and software system for shape-changing geometric models.

PROFESSIONAL ACTIVITIES

- Supercomputing 2008, Music Initiative Committee, Austin, Texas, November 2008
- 125th Audio Engineering Society Convention, Session Chair on Innovative Audio Applications, San Francisco 2008
- CCRMA Musical Information and Retrieval workshop, Stanford University, July 2008.

PUBLICATIONS AND PRESENTATIONS

Journal articles

- **C. Bruyns**. Modal Synthesis for Arbitrary Shaped Objects. *Computer Music Journal*, 30(3): 22-37, September 2006.
- **C. Bruyns**, S. Senger, A. Menon, S. Wildermuth, K. Montgomery R. and Boyle. A Survey of Interactive Mesh Cutting Techniques and a New Method for Implementing Generalized Interactive Mesh Cutting Using Virtual Tools. *The Journal of Visualization and Computer Animation*, 13: 21-42, 2002.
- **C. Bruyns** and S. Senger. Interactive Cutting of 3-D Surface Meshes. *Computer & Graphics*, 25(4): 635-642, 2001.

Reports

- **C. Maxwell**. Sound Synthesis from Shape-Changing Geometric Models. Ph.D. Thesis, Department of Computer Science, University of California at Berkeley, August 2008
- **C. Bruyns**. Sound Synthesis and Instrument Design for Computer Music, Master's Thesis, Department of Computer Science, University of California at Berkeley, May 2005.

Invited talks

- **C. Maxwell**. Modal parameter estimation for shape-changing geometric objects. Acoustics 2008, Paris, France, July, 2008.
- **C. Bruyns**. Interactions With Rigid and Deformable Objects: Cutting. 3eme Romand d'Informatique Virtual Reality and Medicine, Geneva, Switzerland, October 8-10, 2001.

Conference talks

- **C. Maxwell**. Radiation Simulation of Fluid-Structure Interaction. *Proceedings of AES 123rd 2007*, New York City, October 2007.
- **C. Maxwell** and D. Bindel. Spectrum Tracking for Shape Changing-Objects. *Proceedings of DAFx 2007*, Bordeaux, France, September 2007.
- **C. Bruyns** and D. Bindel. Shape-changing Symmetric Objects for Sound Synthesis. *In Proceedings of 121st AES 2006*, San Francisco, CA, October 2006.
- **C. Maxwell**. Real-Time Reverb Simulation Using Arbitrary Models. *DAFx 2007*, Bordeaux, France, September 2007.
- **C. Bruyns**, R.L. Taylor and C. Séquin. Virtual Instrument Design and Animation. *In Proceedings of SIGGRAPH Tech Sketches 2004*, Los Angeles, CA, July 2004.

Poster presentations

- **C. Bruyns**, S. Wildermuth and K. Montgomery. Active Edges: On Interacting in a Virtual Environment. *In Proceedings Vision, Modeling and Visualization*, Stuttgart, Germany, November 21-23, 2001.
- **C. Bruyns**, S. Wildermuth and K. Montgomery. Simulated Animal Dissection. In: Niessen, W. et. al. (Eds.) MICCAI 2001, LNCS 2208, Springer, Berlin (2001) pp. 1345-1346.
- **C. Bruyns**, S. Senger, K. Montgomery, S. Wildermuth and R. Boyle. Real-time Interactive Cutting Using Virtual Surgical Instruments. In: Niessen, W. et. al. (Eds.) MICCAI 2001, LNCS 2208, Springer, Berlin (2001) pp. 1349-1351.

Academic References

David Wessel, Center for New Media and Audio Technologies, University of California at Berkeley
1750 Arch Street, Berkeley, CA 94709. Phone: (510) 643-9990 x302.
Fax: (510) 642-7918. E-mail: wessel@cnmat.berkeley.edu.

Carlo Séquin, Department of Computer Science, University of California at Berkeley
639 Soda Hall #1776, Berkeley, CA 94720-1776. Phone: (510) 642-5103.
Fax: (510) 643-1289. E-mail: sequin@cs.berkeley.edu.

Adrian Freed, Center for New Media and Audio Technologies, University of California at Berkeley
1750 Arch Street, Berkeley, CA 94709. Phone: (510) 643-9990 x308.
Fax: (510) 642-7918. E-mail: adrian@cnmat.berkeley.edu.

John Lazzaro, University of California at Berkeley
315 Soda Hall #1776 , Berkeley, CA 94720-1776. Phone: (510) 643-4005.
E-mail: lazzaro@cs.berkeley.edu.