

EDUCATION

Princeton University, Princeton, NJ

PhD candidate in Computer Science since September 2006, completion expected 2010

MA in Computer Science received 2008

National Science Foundation Graduate Research Fellowship

Upton Fellowship in Engineering

McGill University, Montreal, QC, October 2006

Master of Arts in Music Technology

Thesis: An exploration of feature selection as an optimization tool for musical genre classification

The Ohio State University, Columbus, OH, June 2004

Majors: Computer Science and Engineering - Bachelor of Science with Honors in Engineering

Music - Bachelor of Arts with Honors in the Liberal Arts and with Distinction in Music

Minor: Women's Studies

Summa Cum Laude

RESEARCH EMPLOYMENT AND ACTIVITIES

Imagine Research

12/08–present San Francisco, California

Consultant

- Consult and prototype regarding music information retrieval, machine learning, and machine listening systems.

Smule

5/09–7/09

Palo Alto, California

Senior Engineer Contractor

- Participated in design and software implementation of iPhone music and gaming applications.
- Worked on audio programming for “I am T-Pain” application, ranked #1 in the iTunes App Store, which allows users to re-tune their voices in real-time.

Microsoft Research

6/08–8/08

Redmond, Washington

Intern, Visualization and Interaction for Business and Entertainment (VIBE) group

- Studied the problem of supporting precise user control in the context of collaborative, multi-touch surface computing environments.
- Designed and implemented a collaborative audio editor for a large multi-touch tabletop.

Sun Microsystems Laboratories

6/06–8/06

Burlington, Massachusetts

Intern, Search Inside the Music Project

- Participated in the development, implementation, and evaluation of a scalable, robust method for audio fingerprinting. (U.S. patent application filed)

McGill University

1/06–4/06

Montreal, Quebec

Research Assistant, Music Perception and Cognition Lab

- Assisted in the preparation of teaching materials for an undergraduate course in music perception and cognition.

Sun Microsystems Laboratories

9/05–12/05

Burlington, Massachusetts

Intern, Search Inside the Music Project

- Designed and evaluated optimized feature extraction, feature selection, and classification techniques in the context of a Java digital music recommendation system.

McGill University 5/05–9/05 Montreal, Quebec
Research Assistant, Music Technology, Distributed Digital Music Archives and Libraries Lab

- Performed empirical investigation of classification techniques for music information retrieval, with a focus on feature selection algorithms.
- Experimented with the use of ad hoc cluster computing to reduce processing time for music classification tasks.

The Ohio State University 12/03–6/04 Columbus, Ohio
Senior Distinction Project in Music: Modeling Flute Fingering Difficulty

- Investigated the application of machine learning techniques to the computational assessment of fingering difficulty on the flute.

Ohio Supercomputer Center 6/03–9/03 Columbus, Ohio
Undergraduate Researcher, High Performance Computing

- Investigated the problems of providing user support on secure, nationally distributed networks of computing resources.
- Designed and implemented software to assist support personnel in tracking and solving problems of grid users.

TEACHING ACTIVITIES

Princeton University 2/08–5/08, 2/09–5/09, 2/10–5/10 Princeton, New Jersey
Assistant in Instruction, Computer and Electronic Music, Computer Science/Music 314

- Lead bi-weekly lectures on topics in computer programming, digital audio, and computer music.
- Helped to plan and lead rehearsals of the Princeton Laptop Orchestra.

Princeton University 1/08–Present Princeton, New Jersey
Mentor and supervisor of undergraduate independent work

- Helped to supervise one senior thesis and several junior independent projects in computer science.
- Conducted individual meetings with students to provide feedback on their research plans and progress.

Princeton University 9/07–12/07 Princeton, New Jersey
Assistant in Instruction, Human Computer Interface Technology, Computer Science 436

- Assisted students with hardware controller design and construction and with written work.

Princeton University 6/07–7/07 Princeton, New Jersey
Graduate Advisor, Summer Programming Experiences Program

- Advised two Princeton undergraduates on an independent multimedia programming project.

OTHER EMPLOYMENT

The Ohio State University 8/01–8/04 Columbus, Ohio
Assistant, Computer & Information Science Diversity Program

- Oversaw peer tutor programs and managed the program website and mailing lists.
- Collaborated with faculty, staff, and students on other projects to recruit and retain women and minorities in computer science.

Independent Work 2/96–8/04 Central Ohio
Piano Accompanist

- Accompanied vocalists and instrumentalists from middle school through graduate levels in studio classes, performances, and competitions.

Ohio Supercomputer Center <i>Chaperone, Young Women's Summer Institute</i>	8/03	Columbus, Ohio
<ul style="list-style-type: none"> Mentored and supervised middle school girls participating in a science research camp. 		
Nationwide Insurance <i>Intern, Financial Systems Department</i>	6/00–8/00	Columbus, Ohio
<ul style="list-style-type: none"> Designed and implemented software to automate error report handling. 		
Information Control Corporation <i>Intern</i>	5/99–8/99	Westerville, Ohio
<ul style="list-style-type: none"> Developed web applications for client projects and company intranet. 		

PUBLICATIONS AND PRESENTATIONS

2010

Fiebrink, R. 2010. "Real-time interaction with supervised learning." *ACM CHI Extended Abstracts*, Atlanta, April 10–15. (CHI doctoral consortium participant with published abstract)

Fiebrink, R., M. Schedel, and B. Threw. 2010. "Constructing a personalizable gesture-recognizer infrastructure for the K-Bow." *3rd International Conference on Music and Gesture (MG3)*, Montreal, March 5–6. (oral presentation with published abstract)

Fiebrink, R., D. Trueman, C. Britt, M. Nagai, K. Kaczmarek, M. Early, M.R. Daniel, A. Hege, and P. R. Cook. 2010. "Toward understanding human-computer interactions in composing the instrument." Accepted for publication in *Proceedings of the International Computer Music Conference (ICMC)*, New York City, June 1–5. (paper)

2009

Hlatky, M. (chair). 2009. "Interacting with Semantic Audio – Bridging the gap between humans and algorithms." *127th Annual Convention of the Audio Engineering Society (AES)*. (invited panelist)

Fiebrink, R., P. R. Cook, and D. Trueman. 2009. "Play-along mapping of musical controllers." *Proceedings of the International Computer Music Conference (ICMC)*, Montreal, August 4–9. (demo with paper)

Fiebrink, R., D. Trueman, and P. R. Cook. 2009. "A meta-instrument for interactive, on-the-fly learning." *Proceedings of New Interfaces for Musical Expression (NIME)*, Pittsburgh, June 4–6. (paper)

Fiebrink, R., D. Morris, and M. R. Morris. 2009. "Dynamic mapping of physical controls for tabletop groupware." *Proceedings of ACM CHI*, Boston, April 4–9. (paper)

2008

Fiebrink, R., G. Wang, and P. R. Cook. 2008. "Foundations for on-the-fly learning in the Chuck programming language." *Proceedings of the International Computer Music Conference (ICMC)*, Belfast, August 24–29. (paper; tied for winner of ICMC 2008 "Best Presentation" award)

Fiebrink, R., G. Wang, and P. R. Cook. 2008. "Support for MIR prototyping and real-time applications in the Chuck programming language." *Proceedings of the International Conference on Music Information Retrieval (ISMIR)*, Philadelphia, PA, September 14–18. (paper)

Wang, G., Fiebrink, R., and Cook, P. R. "Music information retrieval in ChucK: Real-time prototyping for MIR systems and performance." Tutorial at *ISMIR 2008*, Philadelphia PA, September 14. (tutorial)

2007

Wang, G., and R. Fiebrink. 2007. "Introduction to ChucK and livecoding" and "ChucK programming workshop." Talk and workshop given at *Electro-music 2007*, Philadelphia, PA, June 1–3. (talk and workshop)

Fiebrink, R., G. Wang, and P. R. Cook. 2007. "Don't forget the laptop: Using native input capabilities for expressive musical control." *Proceedings of the International Conference on New Interfaces for Musical Expression (NIME)*, New York City, USA, June 6–10. (paper)

Wang, G., R. Fiebrink, and P. R. Cook. 2007. "Combining Analysis and Synthesis in the ChucK Programming Language." *Proceedings of the International Computer Music Conference (ICMC)*, Copenhagen, Denmark, August 27–31. (paper)

DeCoro, C., Z. Barutcuoglu, and R. Fiebrink. 2007. "Bayesian aggregation for hierarchical genre classification." *Proceedings of the International Conference on Music Information Retrieval (ISMIR)*, Vienna, Austria, September 23–27. (paper)

2006

Fiebrink, R., and I. Fujinaga. 2006. "Feature selection pitfalls and music classification." *Proceedings of the International Conference on Music Information Retrieval (ISMIR)*, Victoria, Canada, October 8–12. (poster with paper in proceedings)

2005

Birnbaum, D., R. Fiebrink, J. Malloch, and M. M. Wanderley. 2005. "Towards a Dimension Space for Musical Devices." *Proceedings of the International Conference on New Interfaces for Musical Expression (NIME)*, Vancouver, Canada, May 26–28. (poster with paper in proceedings)

Fiebrink, R., C. McKay, and I. Fujinaga. 2005. "Combining D2K and JGAP for Efficient Feature Weighting For Classification Tasks in Music Information Retrieval." *Proceedings of the International Conference on Music Information Retrieval (ISMIR)*, London, September 11–15. (poster with paper in proceedings)

McKay, C., R. Fiebrink, D. McEnnis, B. Li, and I. Fujinaga. 2005. "ACE: A Framework for Optimizing Music Classification." *Proceedings of the International Conference on Music Information Retrieval (ISMIR)*, London, September 11–15. (paper)

McKay, C., D. McEnnis, R. Fiebrink, and I. Fujinaga. 2005. "ACE: A General-Purpose Classification Ensemble Optimization Framework." *Proceedings of the International Computer Music Conference (ICMC)*, Barcelona, Spain, September 5–9. (poster with paper in proceedings)

Sinyor, E., C. McKay, R. Fiebrink, D. McEnnis, and I. Fujinaga. 2005. "Beatbox Classification Using ACE." *Proceedings of the International Conference on Music Information Retrieval (ISMIR)*, London, September 11–15. (poster with paper in proceedings)

PATENTS

Fiebrink, R., and P. Lamere. "System and method for media fingerprint indexing." U.S. patent application 20090290764, filed May 23, 2008 (not yet issued).

Co-inventor of pending patent on techniques for mapping physical controls for surface computing (not yet public).

SELECTED ARTISTIC PROJECTS

Sideband

New professional laptop performance ensemble. First performed Dan Trueman's *CMMV* at the 2010 International Computer Music Conference.

The Third Pixel

With Samson Young and collaborators. (I worked on interaction design of video games and a tabletop music interface.) Presented at the HKICC Lee Shau Kee School of Creativity, Hong Kong, August 2010. Turns old-school video games into a multi-sensory chamber concert experience and an installation project that comments on the darker side of urban childhood.

PLOrk Beat Science

Flute and laptop new music duo with Ge Wang. Performances include New Interfaces for Musical Expression (NIME) 2009, National Academy of Sciences 2007, Philadelphia electro-music 2007.

nets0

Original composition for 8 laptops, in which performers dynamically modify the mapping from gestural controllers to sounds using interactive, real-time machine learning. Performed at Princeton, January 2009.

blinky

Original composition for laptop orchestra. A meditation on light, sound, and webcam-driven performance. Performed at Princeton 2009 with guest shakuhachi artist Riley Lee; also performed at 2009 MmIX Festival of Interactive Music Technology (New York) and HASTAC 2009 (Chicago).

Box of Revelation

Interactive digital multimedia installation in collaboration with composer Samson Young. Social network data, local sensing of human movement, internet vlogs, algorithmically generated computer music, and a live performance of Messaien's *Quartet for the End of Time* come together in one commentary on the meanings of God in the age of digital omniscience. Hong Kong Arts Centre, 2009.

PROFESSIONAL ACTIVITIES

Computer Music Journal

Editorial consultant for News and Announcements, 2010–present

Association for Computing Machinery (ACM)

Member 2003–Present

Affiliations: SIG Information Retrieval, SIG Multimedia

International Computer Music Association

Member, 2007–Present

Electronic Music Foundation

Member, 2009–Present

Conference and Journal Reviewer

ACM User Interface Software and Technology (UIST) 2008–10

ACM Human Factors in Computing Systems (CHI) 2009 Works-in-Progress and Interactivity

ACM CHI 2010 Multimedia showcase

ACM Designing Interactive Systems (DIS) 2010

f(MIR) 2010

International Conference on Music Information Retrieval 2006–07

International Computer Music Conference 2008–10

New Interfaces for Musical Expression 2009–10

Journal of Pattern Recognition Research

Journal of Zhejiang University

EURASIP Journal on Audio, Speech, and Music Processing

Computer Music Journal

UNIVERSITY AND COMMUNITY ACTIVITIES

Princeton Laptop Orchestra, Princeton University

Performer, instructional assistant, and composer (2006–present); Assistant director (2008–10)

Computer Science Graduate Committee, Princeton University

Student representative (2006–2009)

Graduate Engineering Council, Princeton University

Computer Science Department representative and Secretary (2007–present)

New York City Girls' Engineering Colloquium, day-long outreach workshop for 100 high school girls

Co-organizer (2008), Presenter (2009, 2010)

Allies, Community group that designs and conducts workshops for Montreal students, with an emphasis on building peer support networks and combating homophobia

Workshop leader (2004–06)

Post-Graduate Students' Society, McGill University

Councilor from the Faculty of Music (2004–05)

Alpha Omega Epsilon, Ohio State University: Social and professional engineering sorority

Chapter founding member, Treasurer (2001–03) and Webmaster (2003–04)

Association for Computing Machinery Committee on Women in Computing, Ohio State University

Chapter Webmaster (2003–04)

HONORS AND AWARDS

National Science Foundation Graduate Research Fellowship, 2006–present

Princeton University Upton Fellowship in Engineering, 2006–present

International Computer Music Conference, 2008 Best Presentation award (tie)

McGill University Max Stern in Music Fellowship, 2004–06

The Ohio State University Computer and Information Science Departmental Scholarship, 2003–04

Bradshaw Scholarship in Engineering, 2003–04

The Ohio State University President's Salute to Undergraduate Academic Achievement, 2003–04

Lockheed Martin Women in Engineering Award, 2002 and 2003

Raytheon Women in Engineering Award, 2001

The Ohio State University School of Engineering Dean's Award, 1999–2004

The Ohio State University Distinguished Merit Scholar, 1999–2003

Phi Kappa Phi Honor Society

Iota Iota Iota Women's Studies Honor Society

Tau Beta Pi Engineering Honor Society

OTHER SKILLS

Proficiency in Java, C#, Objective-C, C++, MATLAB, R, Perl, PHP, SQL, Processing, Quartz Composer, ChucK, Max/MSP.

Experience developing applications for Unix, Linux, Solaris, Windows, OS X, Facebook and iPhone/iPod platforms.

Musician with experience in flute (16 years), piano (25 years), and electronics (5 years).