

GRAHAM C. GRINDLAY

Columbia University
Dept. of Electrical Engineering
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EDUCATION

Ph.D. Electrical Engineering Columbia University, New York, NY	Expected 2012
M.S. Media Arts and Sciences Massachusetts Institute of Technology, Cambridge, MA	2007
M.S. Computer Science University of California, Santa Cruz, CA	2004
B.A. Computer Science Oberlin College, Oberlin, OH	2000

RESEARCH INTERESTS

- Statistical models of audio and music
- Source separation
- Machine learning/artificial intelligence
- Acoustics

PUBLICATIONS

Grindlay, G. and Ellis, D. P. W., "A Probabilistic Subspace Model for Multi-Instrument Polyphonic Transcription", *International Society for Music Information Retrieval*, 2010.

Grindlay, G. and Ellis, D. P. W., "Multi-Voice Polyphonic Music Transcription using Eigeninstruments", *IEEE Workshop on Applications of Signal Processing to Audio and Acoustics*, 2009.

Grindlay, G., "Haptic Guidance Benefits Musical Motor Learning", *Symposium on Haptic Interfaces. IEEE Virtual Reality*, 2008.

Grindlay, G., "The Impact of Haptic Guidance on Musical Motor Learning", Master's Thesis, Media Laboratory, Massachusetts Institute of Technology, 2007.

Grindlay, G. and Vasilescu, M., "A Multilinear (Tensor) Framework for HRTF Analysis and Synthesis", *IEEE International Conference on Acoustics, Speech, and Signal Processing*, 2007.

Grindlay, G. and Helmbold, D. "Modeling, Analyzing, and Synthesizing Expressive Piano Performance with Graphical Models", *Machine Learning* 65 (2-3), pp. 361-387, 2006.

Grindlay, G., "Modeling Expressive Musical Performance with Hidden Markov Models", Master's Thesis, Dept. of Computer Science, U.C. Santa Cruz, 2005.

Grindlay, G., "Modeling Expressive Musical Performance with HMMs", Musical Information Processing Systems Workshop. *Neural Information Processing Systems (NIPS 2004)*, Whistler, Canada, 2004.

Grindlay, G., "Statistical Models of Expressive Musical Performance", *Workshop in Algorithmic Computer Music (WACM 2004)*, Santa Cruz, CA, 2004.

ACADEMIC EXPERIENCE

Research Assistant Fall 2008-present
Columbia University, New York, NY

- Conducting research on blind source separation
- Developing models for automated music transcription

Research Assistant Fall 2005-Summer 2007
Massachusetts Institute of Technology, Cambridge, MA

- Conducted research on audio and music applications of machine learning
- Worked extensively on the design of motion control hardware and software
- Designed, conducted, and analyzed a human motor learning experiment

Teaching Assistant Fall 2002-Spring 2004
University of California, Santa Cruz, CA

- Taught lower and upper-division undergraduate computer science labs including: Introduction to Programming, Data Structures, and Artificial Intelligence
- Graded exams/homework and wrote student evaluations

PROFESSIONAL EXPERIENCE

Science Engineer 2008
Matchmine.com, Needham, MA

- Worked as part of the core science team to help develop Matchmine's user preference modeling technology.
- Primary duties included algorithmic development and prototyping.
- Responsible for working with engineering teams to ensure that new algorithms were implemented properly and efficiently.

Sponsored Research Staff 2004
MIT McGovern Institute for Brain Research (Moore Lab), Cambridge, MA

- Developed software for studying various aspects of tactile perception.
- Developed electrophysiology analysis tools in Matlab.
- Developed analysis tools for optical imaging data.
- Responsible for maintaining lab computing facilities.

Software Engineer

2001

ImaginEngine Corp., San Francisco, CA

Was responsible for engineering of several projects, including:

- Three educational CD-ROM titles: *Arthur's Kindergarten*, *Arthur's First Grade*, and *Arthur's Second Grade*
- *PerfectPasser*, an online football game for Pogo.com

Software Engineer

2000

On2 Corporation, Eight Cylinders Division, San Francisco, CA

- Worked on the Python-based scripting language for the Eight Cylinder Engine, a web browser plug-in allowing for high quality 3D graphics and sound over the internet
- Worked on converting portions of the code base, including the math engine, physics engine, as well as sound and video rendering components, to the COM object model

PROFESSIONAL ACTIVITIES & SERVICE

- IEEE Student Member
- Reviewer for
 - IEEE Transactions on Audio, Speech, and Language Processing
 - IEEE International Conference on Acoustics, Speech, and Signal Processing
 - International Society for Music Information Retrieval
 - International Computer Music Conference
 - IEEE Virtual Reality