

Curriculum Vitae

Woon Seung Yeo

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EDUCATION

- 2007
(expected) Ph.D. in Computer-based Music Theory and Acoustics
[Center for Computer Research in Music and Acoustics,](#)
[Department of Music, Stanford University](#)
- 2002 M.S. in Multimedia Engineering
[Media Arts and Technology Program, University of California at Santa Barbara](#)
- 1999 M.S. in Engineering
[School of Electrical Engineering, Seoul National University,](#) Seoul, Korea
- 1995 B.S. in Engineering
[School of Electrical Engineering, Seoul National University,](#) Seoul, Korea
(Summa Cum Laude)

DISSERTATION

Raster Scanning: A New Approach to Image Sonification, Sound Visualization, Sound Analysis and Synthesis.

This study discusses a pair of data mappings between sound and image based on the geometric structure of raster scanning technique. In addition to its potential as a compelling cross modal representation, its use for constructing a chain of sonifications and visualizations is also presented. Special attention is paid to the raster visualization of sound as an intuitive visual interface to audio data for displaying significant auditory features. Construction of new sound synthesis systems based on image texture analysis/synthesis methods is also discussed.

Advisor: Jonathan Berger

Reading Committee: Chris Chafe, Julius Smith

TEACHING AND RESEARCH INTERESTS

Technical/artistic applications of image sonification and sound visualization, audio/multimedia application programming, digital signal processing techniques for sound analysis and synthesis, collaborative multimedia art, synthetic synesthesia, and controllers for musical performance and gesture sonification.

TEACHING EXPERIENCE

- Fall 2006 Instructor / Graduate Teaching Fellow, Stanford University.
Course: *Introduction to Audio/Multimedia Application Programming*.
- designed core curriculum (lectures, labs, and assignments).
- delivered weekly lectures and led lab sessions.
- maintained course website.
- supervised student projects.
- Summer 2006 Instructor, CCRMA Summer Workshop, Stanford University.
Course: *Introduction to Audio/Multimedia Application Programming (2 weeks)*.
- designed core curriculum (lectures and labs).
- delivered lectures and led lab sessions.
- Instructor, CCRMA Summer Workshop in Korea, Dongguk University, Korea.
Course: *Introduction to Digital Audio Signal Processing (1 week)*.
- designed core curriculum (lectures and labs).
- delivered lectures and led lab sessions.
- Spring 2006 Student Instructor / Course Leader, Stanford University.
Course: *Introduction to Audio/Multimedia Application Programming*.
- designed core curriculum (lectures, labs, and assignments).
- delivered weekly lectures and led lab sessions.
- maintained course website.
- supervised student projects.
- Fall 2005 Teaching Assistant, Stanford University.
Course: *Auditory Remapping of Bioinformatics*.
- designed half of core curriculum (lectures and labs).
- delivered half of class lectures and led lab sessions.
- maintained course website.
- supervised student projects.
- 2004 - 2005 Teaching Assistant, Stanford University.
- Course: *Signal Processing Techniques for Digital Audio Effects*.
- designed lab materials and led lab sessions.
- maintained course website.
- Course: *Physical Interaction Design for Music*.
- co-designed lab materials and led a lab session.
- Course: *Introduction to Digital Audio Signal Processing*.
- co-designed homework/lab materials and led lab sessions.
- held extensive office hours.
- graded student homework and lab assignments.

TEACHING EXPERIENCE CONTINUED

- 2003 - 2004 Teaching Assistant, Stanford University.

Course: *Research Seminar in Computer Generated Music*.
- supervised student projects.

Course: *Introduction to Jazz History*.
- maintained course website.

Course: *Auditory Remapping of Bioinformatics*.
- designed lab materials and led lab sessions.
- maintained course website.
- supervised student projects.
- Winter 2002 Teaching Assistant, University of California at Santa Barbara.
Course: *Introduction to Media Technology*.
- led lab sessions.
- 1998 Teaching Assistant, Seoul National University, Seoul, Korea.
Course: *Probability and Stochastic Theory*.

RESEARCH EXPERIENCE

- 2003 - 2004 Graduate Researcher, Stanford University.
Research topic: Acoustic remapping of hyperspectral data.
- designed and implemented data mapping software for sound synthesis over network.
- 2001 - 2002 Graduate Researcher, University of California at Santa Barbara.
Research topic: Sound visualization.
- developed algorithm and software for real-time sound visualization.
- 2001 Graduate Researcher, Testbed Center for Interoperability, University of California at Santa Barbara.
Research topic: Wireless LAN specification for intelligent transportation system.
- field-tested network devices for transportation system.
- 1999 - 2000 Researcher, Inter-university Semiconductor Research Center, Seoul National University.
Research topic: Speaking Partner: a portable multimedia device.
- designed and implemented MIDI file parser and PCM synthesis module.
- 1997 - 1999 Research Assistant, Seoul National University.
Research topic: Killing probability assessment of guided missile systems.
- implemented software module for missile simulation.

ACADEMIC AWARDS

- 2006 Stephen Fox Memorial Prize in Music, Stanford University.
- 2005 - 2006 Alice Wilbur Chapman Fellowship, Stanford University.
- 2005 Chair's Award for Excellence in Teaching, Stanford University.
- 2002 - 2003 Department Fellowship, Stanford University.

PUBLICATIONS

- Woon Seung Yeo, "Raster Scanning: A New Approach to Image Sonification, Sound Visualization, Sound Analysis And Synthesis (in Korean)," *In Proceedings of the Korean Electroacoustic Music Society Conference*, Seoul, Korea, 2006.
- Woon Seung Yeo, "The Bluetooth Radio Ball Interface (BRBI): A Wireless Interface for Music/Sound Control And Motion Sonification," *In Proceedings of the International Computer Music Conference*, New Orleans, LA, USA, 2006.
- Woon Seung Yeo and Jonathan Berger, "Raster Scanning: A New Approach to Image Sonification, Sound Visualization, Sound Analysis And Synthesis," *In Proceedings of the International Computer Music Conference*, New Orleans, LA, USA, 2006.
- Woon Seung Yeo and Jonathan Berger, "Application of Raster Scanning Method to Image Sonification, Sound Visualization, Sound Analysis and Synthesis," *In Proceedings of the International Conference on Digital Audio Effects*, Montreal, Canada, 2006.
- Woon Seung Yeo and Jonathan Berger, "Application of Image Sonification Methods to Music," *In Proceedings of the International Computer Music Conference*, Barcelona, Spain, 2005.
- Woon Seung Yeo and Jonathan Berger, "A Framework for Designing Image Sonification Methods," *In Proceedings of the International Conference on Auditory Display*, Limerick, Ireland, 2005.
- Woon Seung Yeo, Jonathan Berger, and Zune Lee, "SonART: A Framework for Data Sonification, Visualization, and Networked Multimedia Applications," *In Proceedings of the International Computer Music Conference*, Miami, Florida, USA, 2004.
- Woon Seung Yeo, Jonathan Berger, and R. Scott Wilson, "A Flexible Framework For Real-time Sonification with SonART," *In Proceedings of the International Conference on Auditory Display*, Sydney, Australia, 2004.
- Woon Seung Yeo, "Sound Visualization: with Real-time Software Implementation," M.S. Thesis Project, 2002.
- Woon Seung Yeo, "Target Tracking in Relative Coordinates Using Modified Kalman Filter," M.S. Thesis, 1999.

SELECTED MULTIMEDIA WORKS

Rodrigo Segnini and Woon Seung Yeo, "Fono," Performed at the *CCRMA@CNMAT Concert*, 2005.
- created visuals for the music of Rodrigo Segnini.

Curtis Roads and Woon Seung Yeo, "Half Life," *Point Line Cloud*, Asphodel, 2005.
- created visuals for the music of Curtis Roads.

PERFORMANCE

Rodrigo Segnini and Woon Seung Yeo, "Checkmate," Performed at the *MusiCollage: A Happening by CCRMA and Friends*, Stanford, CA, 2005.

INVITED TALKS

- 2006 *Raster Scanning: A New Approach to Image Sonification, Sound Visualization, Sound Analysis And Synthesis.*
- Graduate School of Culture Technology, Korea Advanced Institute of Science and Technology, Daejeon, Korea.
- Samsung Advanced Institute of Technology, Gyunggi-do, Korea.
- 2005 *Open Sound Control and Multimedia Applications* (part of one-week workshop).
- Department of Music, Hanyang University, Seoul, Korea.

REFERENCES

Prof. Jonathan Berger
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Prof. Chris Chafe
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