

Sarah Rose Smith

Curriculum Vitae

405 Computer Studies Building
PO Box 270231
Rochester, NY 14627
✉ sarahsmith@rochester.edu
🌐 sarahrosesmith.net

EDUCATION

- May 2019 **Ph.D. Electrical Engineering**, University of Rochester, Rochester, NY.
Dissertation: Instantaneous Frequency Analysis of Reverberant Audio
- 2015 **M.S. Electrical Engineering**, University of Rochester, Rochester, NY.
- 2013 **M.A. Music, Science, and Technology**, Stanford University, Stanford, CA.
- 2010 **B.A. Music**, *cum laude*, Cornell University, Ithaca, NY.
- 2010 **B.A. Physics**, *cum laude*, Cornell University, Ithaca, NY.

AWARDS

- 2017 **Student Technical Paper Award**, 143rd Audio Engineering Society Convention.
- 2015 **Best Student Paper in Musical Acoustics - First Prize**, 170th Meeting of the Acoustical Society of America.
- 2015 **Student Challenge Problem Finalist**, Acoustical Society of America, Technical Committee on Signal Processing.
- 2013 **Robert L. and Mary L. Sproull Fellowship**, University of Rochester.

PUBLICATIONS

Peer Reviewed Journal Papers

- 2017 Zhang, Mingfeng, Hengwei Lu, Gang Ren, **Sarah Smith**, James Beauchamp, and Mark F. Bocko. "A Matlab-Based Signal Processing Toolbox for the Characterization and Analysis of Musical Vibrato." *Journal of the Audio Engineering Society* 65.5 (2017): 408-422.

Manuscript Reviewed Conference Proceedings

- 2017 **Smith, Sarah R.**, and Mark F. Bocko. "Modeling the Effects of Rooms on Frequency Modulated Tones." Audio Engineering Society Convention 143. Audio Engineering Society, 2017.
- 2016 **Smith, Sarah R.**, and Mark F. Bocko. "Preserving Reverberation in a Sinusoidally Modeled Pitch Shifter." Audio Engineering Society Convention 141. Audio Engineering Society, 2016
- 2015 **Smith, Sarah R.**, and Mark F. Bocko. "Effect of Reverberation on Overtone Correlations in Speech and Music." Audio Engineering Society Convention 139. Audio Engineering Society, 2015.

Abstract Reviewed Conference Presentations

- 2018 **Smith, Sarah R.**, and Mark F. Bocko. "A Statistical Metric for Stability in Instrumental Vibrato." Audio Engineering Society Convention 145. Audio Engineering Society, 2018.
- 2017 **Smith, Sarah R.**, and Mark F. Bocko. "A model for the observed decorrelation of partials in the overtone spectra of bowed stringed instruments." The Journal of the Acoustical Society of America 141.5 (2017): 3723-3723.
- 2015 **Smith, Sarah R.**, and Mark F. Bocko. "Impact of acoustic resonances on overtone correlations across a large musical instrumental database." The Journal of the Acoustical Society of America 138.3 (2015): 1936-1936.
- 2015 **Smith, Sarah R.**, and Mark F. Bocko. "Effect of reverberation on instrumental vibrato tones." The Journal of the Acoustical Society of America 137.4 (2015): 2437-2437.
- 2015 Zhang, Minhao, Mingfeng Zhang, **Sarah Smith**, and Mark Bocko. "Real-time visualization of musical vibrato for music pedagogy." The Journal of the Acoustical Society of America 137.4 (2015): 2404-2404.

Patent Applications

- 2017 Bocko, Mark F., and **Sarah Smith**. "Systems and methods for removing reverberation from audio signals." U.S. Patent Application No. 15/255,366.

LOCAL PRESENTATIONS

- 2017 "Understanding Instantaneous Frequency Deviations in Musical Tones: Methods and Applications." Upstate NY Sound Research Get-Together, August 10-11, 2017, Rochester, NY

- 2016 "Interpreting the Instantaneous Frequency of Reverberant Audio Signals." Western New York Image and Signal Processing Workshop, Nov 18 2016, Rochester, NY
- 2016 "Effect of Reverberation on Overtone Correlations in Speech and Music." Rochester Interdisciplinary Audio Engineering Symposium, August 31 2016, Rochester, NY

TEACHING EXPERIENCE

Courses Designed

- 2016 - Present **Acoustics Portfolio**, University of Rochester.
Undergraduate project based course in musical acoustics.

Courses Assisted

- 2016 - Present **Musical Acoustics**, University of Rochester.
- 2013 - 2015 **Introduction to Audio and Music Engineering**, University of Rochester.
- 2015 **ECE Math Workshop**, University of Rochester.
- 2014 **Fundamentals of Audio and Music Engineering, Part I**, Coursera.
- 2014 **Circuits and Microcontrollers for Engineers and Scientists**, University of Rochester.

PROFESSIONAL EXPERIENCE

- 2014 - Present **Research Assistant**, University of Rochester, Rochester, NY.
Time-frequency analysis of instrumental vibrato
- 2013 - Present **Teaching Assistant**, University of Rochester, Rochester, NY.
Leading lab and recitation sections and developing an acoustics project course
- 2010 - 2011 **Process Engineering Intern**, NEXX Systems Inc. (now Tel Nexx), Billerica, MA.
Analyzing data and running experiments on thin film deposition parameters in a semiconductor packaging process
- 2009 - 2010 **Intern**, Bioacoustics Research Program, Cornell Lab of Ornithology, Ithaca, NY.
Testing and documenting new versions of Cornell's Raven software, a commercially available audio analysis program for bioacoustic applications

Skills

Programming Experienced with MATLAB and L^AT_EX. Familiarity with C++, Python, JMP, CATT
Acoustic

Musical Classical cellist for 20+ years in orchestras and chamber music

Affiliations

Acoustical Society of America, Student Member.

Audio Engineering Society, Student Member.