

# ANDY M. SARROFF

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## EDUCATION

- 2018        **Dartmouth College**  
Ph.D. in Computer Science  
Thesis: "Complex Neural Networks for Audio," supervised by Michael A. Casey
- 2009        **New York University**  
M.M. in Music Technology  
Thesis: "Spaciousness in recorded music: Human Perception, objective measurement, and machine prediction," supervised by Juan P. Bello
- 2000        **Wesleyan University**  
B.A. in Music

## RESEARCH EXPERIENCE

- 2017 & 2018    **Mitsubishi Electric Research Laboratory, Cambridge, MA**  
*Research Intern, Speech & Audio Team*  
Derive and implement new models and optimization methods for speech enhancement and source separation in challenging multi-source and/or far-field scenarios, using advanced machine learning techniques.
- 2011–2017    **Bregman Media Labs, Dartmouth College, Hanover, NH**  
*Research Assistant for Professor Michael Casey*  
Complex Neural Networks for Audio (dissertation): Theory and application of deep learning for complex-valued frequency-domain spectra using complex-valued neural networks. Search By Groove: Characterize "danceability" using tempo invariant nonnegative matrix factorization. Automatic playlist generation: Leverage song adjacency features for learning optimal song sequencing.
- 2015        **LabROSA, Columbia University, New York, NY**  
*Visiting Researcher*  
Invited by Dan Ellis and Colin Raffel to collaborate on complex neural networks for audio.
- 2011        **Gracenote, Inc., Emeryville, CA**  
*Research Intern, Music Technology Lab*  
Source and location invariant characterization of reverberant environments.
- 2010–2011    **Mobile Sensing Group, Dartmouth College, Hanover, NH**  
*Research Assistant for Professors Andrew Campbell and Tanzeem Choudhury*  
Emotion detection in mobile audio.

- 2010           **Sound and Music Computing Lab, National University of Singapore**, Singapore  
*Research Assistant for Professor Ye Wang*  
Music tag recommendation.
- 2010           **Sourcetone, LLC**, New York, NY  
*Music Analysis, Classification Research, and Product Development*  
Music emotion recognition.
- 2007–2009     **Music and Audio Research Laboratory, New York University**, New York, NY  
*Research Assistant for Professor Juan Bello*  
Machine learning and perceived spaciousness of stereophonic recordings.
- 2008           **Sennheiser Electronic Corporation, R&D USA**, Palo Alto, CA  
*Audio DSP Engineer Intern*  
Development and implementation of a methodology for the objective evaluation of a new microphone.
- 2007 & 2008   **AuSIM, Inc.**, Palo Alto, CA  
*Engineer Intern*  
Development, calibration, and testing for “Vectsonic” system for NASA Langley Research Laboratory, “3DVx” wearable system, and other audio and acoustics products.

## PUBLICATIONS

- Sarroff, A. M.**, Shepardson, V., & Casey, M. A. (2015). Learning representations using complex-valued nets. (arXiv)
- Sarroff, A. M.**, & Casey, M. (2014). Musical audio synthesis using autoencoding neural nets. In *Joint 40th International Computer Music Conference (ICMC) and 11th Sound & Music Computing conference (SMC)*.
- Sarroff, A. M.**, & Casey, M. (2013). Groove kernels as rhythmic-acoustic motif descriptors. In *Proceedings of the 14th International Society for Music Information Retrieval Conference (ISMIR)* (p. 299–304).
- Sarroff, A. M.**, Hermans, & Bratus. (2013). SOS: Sonify your operating system. In *Proceedings of the 10th International Symposium on Computer Music Multidisciplinary Research* (pp. 726–733).
- Sarroff, A. M.**, & Casey, M. (2012). Modeling and predicting song adjacencies in commercial albums. In *Proceedings of the 9th Sound and Music Computing Conference* (p. 364–371).
- Sarroff, A. M.**, & Bello, J. P. (2011). Toward a computational model of perceived spaciousness in recorded music. *Journal of the Audio Engineering Society*, 59, 498–513.

Miluzzo, E., Papandrea, M., Lane, N. D., **Sarroff, A. M.**, Giordano, S., & Campbell, A. T. (2011). Tapping into the vibe of the city using VibN, a continuous sensing application for smartphones. In *Proceedings of 1st international symposium on From digital footprints to social and community intelligence—SCI '11*. ACM Press.

Zhao, Z., Wang, X., Xiang, Q., **Sarroff, A. M.**, Li, Z., & Wang, Y. (2010). Large-scale music tag recommendation with explicit multiple attributes. In *Proceedings of the international conference on Multimedia—MM '10*. ACM Press.

**Sarroff, A. M.**, & Bello, J. P. (2009). Predicting the perceived spaciousness of stereophonic music recordings. In *Proceedings of the 6th Sound and Music Computing Conference*.

**Sarroff, A. M.**, & Bello, J. P. (2008). Measurements of spaciousness for stereophonic music. In *Audio Engineering Society Convention 125*.

#### SELECTED TALKS AND PRESENTATIONS

- 2018            **“Complex Neural Networks for Audio,”** Audio Laboratories Erlangen, Germany  
 2017            **“Azimuthal source localization in binaural audio using neural nets with complex weights,”** Speech and Audio in the Northeast (SANE), New York, NY  
 2015            **“Framework for Deep and Temporal Complex-Valued Networks,”** Speech and Audio in the Northeast (SANE), New York, NY  
 2009            **“Subjective Evaluation of Spatial Impression in Reproduced Stereophonic Music,”** Dean’s Graduate Student Research Colloquium, NYU, New York, NY

#### TEACHING

- 2014–2017    **Department of Computer Science, Dartmouth College**  
*Teaching Assistant*  
 Course included Deep Learning; Machine Learning and Statistical Data Analysis; Software Design and Implementation; Programming for Interactive Audio-Visual Arts; Introduction to Programming and Computation.
- 2010            **Department of Computer Science, National University of Singapore**  
*Teaching Assistant*  
 Designed seminar sessions and lectured for course on Sound and Music Computing
- 2008–2009    **Department of Music Technology, New York University**  
 Trained students in Matlab programming; digital signal theory and processing; and Music Information Retrieval.

## HONORS &amp; AWARDS

- 2013 Best Code, Hacking Audio and Music Research (HAMR), Columbia University
- 2013 Best Reviewer, International Society of Music Information Retrieval Conference, Brazil
- 2013 Selected Participant, NYU Abu Dhabi Rhythm Workshop, New York University
- 2011–2012 Graduate Fellowship, Neukom Institute for Computational Research
- 2009 Student-of-the-Year Award, Music Technology Program, New York University
- 2008 Dean's Grant to Support Graduate Student Research, New York University

## ACADEMIC SERVICE

- 2015–2017 Board Member, International Society for Music Information Retrieval (ISMIR)
- 2016 Education Initiatives Co-chair, ISMIR Conference, New York, NY
- 2011–2017 Organizer, Machine Learning Reading Group□, Dartmouth College
- 2014, 2015 Organizer, AV Synthesis Workshop, Neukom Institute for Computational Research
- 2013 Organizer, Hacking Audio and Music Research (HAMR), Neukom Institute
- 2012 Organizer, Northeast Music Information Special Interest Group (NEMISIG), Dartmouth College

## REVIEWING

- 2018 International Conference on Acoustics, Speech, and Signal Processing
- 2012–2016 International Society for Music Information Retrieval Conference
- 2010 Computer Music Journal
- 2010 ACM Transactions on Multimedia Computing, Communications, and Applications
- 2010 ACM Multimedia 2010 International Conference

## EMPLOYMENT

- 2004–2007 *Owner and Music Engineer, Woodshop Sound, Brooklyn, NY*
- 2001–2004 *Music Engineer, RPM Electronic Sound Studios, New York, NY*
- 2001 *Music Engineer, Loho Studio, New York, NY*
- 2001 *Music Engineer, Mission Sound Recording, New York, NY*
- 2000–2001 *Music Engineer, Greene Street Recording, New York, NY*
- 1999 *Intern, Greene Street Recording, New York, NY*

## MUSIC

Played drums in several projects, releasing two commercial recordings. Studied Samba percussion; South Indian mridangam and vocal percussion (solkattu); Javanese gamelan; and vibraphone.