

# SHRIKANT VENKATARAMANI

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## CONTACT INFORMATION

**e-mail:** svnktrm2@illinois.edu  
**website:** www.vshrikant.com

**Alternate e-mail:** svj1991@gmail.com

## EDUCATION

**University of Illinois at Urbana Champaign, Illinois, USA**

Candidate for *Ph.D.*

**August 2015 - present**

- Major : Electrical Engineering
- Specialization : Machine Learning and Audio Signal Processing
- GPA : **3.83 /4**

**Indian Institute of Technology - Bombay, Mumbai, India**

*Master of Technology*

**July 2012 - May 2015**

- Major : Electrical Engineering
- Specialization : Electronic Systems and Signal Processing
- CGPA : **9.78 /10**
- Thesis: Hybrid vocal separation from single channel polyphonic mixtures

**Mumbai University, Mumbai, India**

*Bachelor of Engineering*

**July 2008 - June 2012**

- Major : Electronics and Communication Engineering
- Percentage : **78.4 %**

## RESEARCH INTERESTS

### **Machine Learning**

Deep Learning, Matrix factorization, Sparse dictionary learning, Neural-network alternatives to matrix factorization models.

### **Signal Processing**

Source separation for speech and music, speech processing, Neural networks for source separation, Wavelets and multi-rate signal processing.

### **Human Computer Interaction for Audio Signal Processing**

Automating audio processing for faster editing

## WORK EXPERIENCE

### **Research Intern, Adobe Research**

Adobe Creative Intelligence Lab.  
Advisor(s): Gautham Mysore, Paris Smaragdis

**June 2016 - August 2016**

**June 2017 - August 2017**

### **Research Assistant, University of Illinois at Urbana Champaign.**

Department of Computer Science.  
Advisor(s): Paris Smaragdis  
Project: CAREER: Scaling Source Separation to Big Audio Data.

**August 2015 - present**

### **Research Assistant, Indian Institute of Technology Bombay.**

Department of Electrical Engineering.  
Advisor(s): Preeti Rao, Rajbabu Velmurugan  
Project: Speech and Music Source Separation.

**July 2013 - May 2015**

## SELECTED CURRENT PROJECTS

### **Generative neural network alternatives to Non-negative audio modeling**

- Propose “generative” neural network alternatives to NMF
- Convolutional, Recurrent and multi-layer extensions give significant improvement in source separation performance over NMF
- Amenable to real time and big-data processing
- Best student paper award at MLSP 2017

### **Adaptive front-ends for source separation**

- Neural network alternatives to Fourier and Cosine Transforms
- Inspired the first end-to-end source separation system
- Learns data-driven transforms - Significant improvements in source separation and denoising performance

### **Acoustics Matching**

- Make recordings in one room sound like they were recorded in a different room
- Novel approach to dealing with room reverb (echoes) using modulation envelopes

#### **AutoDub: Automatic Redubbing for Voiceover Editing**

- Automated alternative to redubbing to automatically locate and correct errors in a voiceover using Dynamic Time warping
- Only requires recording small snippets with the correct content
- Automatically corrects and replace the error in the voiceover

#### AWARDS

##### **Best Student Paper Award MLSP 2017**

for the paper, “Neural Networks Alternatives to Convolutional Audio Models for Source Separation”

##### **Microsoft Research PhD Fellowship Nominee Oct. 2017**

Selected as one of three applicants to represent the Dept. of Electrical and Computer Engineering in the University of Illinois

##### **Google PhD Fellowship Nominee Nov. 2017**

Selected as one of three applicants to represent the Dept. of Electrical and Computer Engineering in the University of Illinois

#### ADVISING

##### **Undergraduate Research at UIUC**

- Jonah Casabeer, Adaptive Front-ends for Separation.
- Ryley Higa, Bitwise networks for Audio Denoising.

##### **Undergraduate Research at IIT Bombay**

- Shivangi Mahto, Convolutional NMF for Speech separation
- Shrey Agrawal, Species identification by bird-song analyses using convolutional NMF

#### PROFESSIONAL ACTIVITIES

##### **Reviewer for Journal and Peer-reviewed Conferences**

- IEEE Workshop on Machine Learning for Signal Processing (MLSP)
- IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA)
- IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)
- IEEE Transactions on audio, speech and language processing (IEEE-TASLP)

#### PUBLICATIONS

##### **Peer-reviewed Conference Publications**

**Shrikant Venkataramani**, Paris Smaragdis, Gautham Mysore “*AutoDub: Automatic Redubbing for Voiceover Editing.*”, in the proceedings of 30<sup>th</sup> ACM User Interface Software and Technology Symposium (UIST), Quebec City, Canada, October 2017.

**Shrikant Venkataramani**, Cem Subakan, Paris Smaragdis, “*Neural Network Alternatives to Convolutional Audio models for Source Separation.*”, in the proceedings of IEEE International Workshop on Machine Learning for Signal Processing (MLSP), Tokyo, Japan, September 2017. (**Best student paper award**)

Paris Smaragdis, **Shrikant Venkataramani**, “*A Neural Network Alternative to Non-negative Models.*”, in the proceedings of IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), New Orleans, Louisiana, May 2017.

**Shrikant Venkataramani**, Nagesh Nayak, Preeti Rao, Rajbabu Velmurugan, “*Vocal Separation using Singer Vowel Priors obtained from Polyphonic audio.*”, in the proceedings of the Fifteenth International Society for Music Information Retrieval (ISMIR) 2014, Taipei, Taiwan, October 2014.

**Shrikant Venkataramani**, Rajbabu Velmurugan, Preeti Rao, “*Improving mobile phone based query recognition with a microphone array*”, in the proceedings of Twentieth National Conference on Communications 2014 (NCC), Kanpur, India, February 2014.

#### PATENTS

**Shrikant Venkataramani**, Paris Smaragdis, Gautham Mysore “*AutoDub: Automatic Redubbing for Voiceover Editing.*”, US Patent Application (pending), 2016