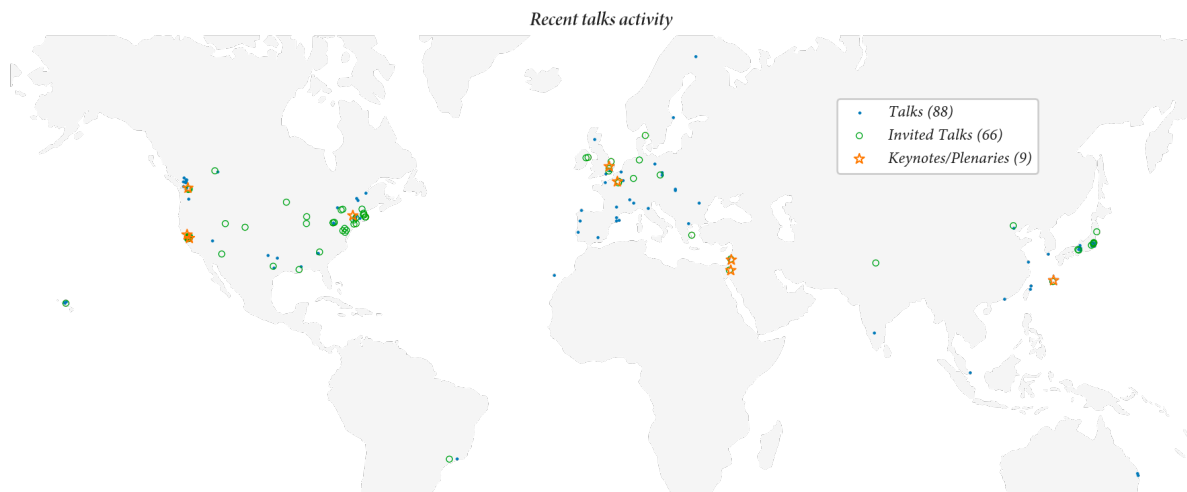
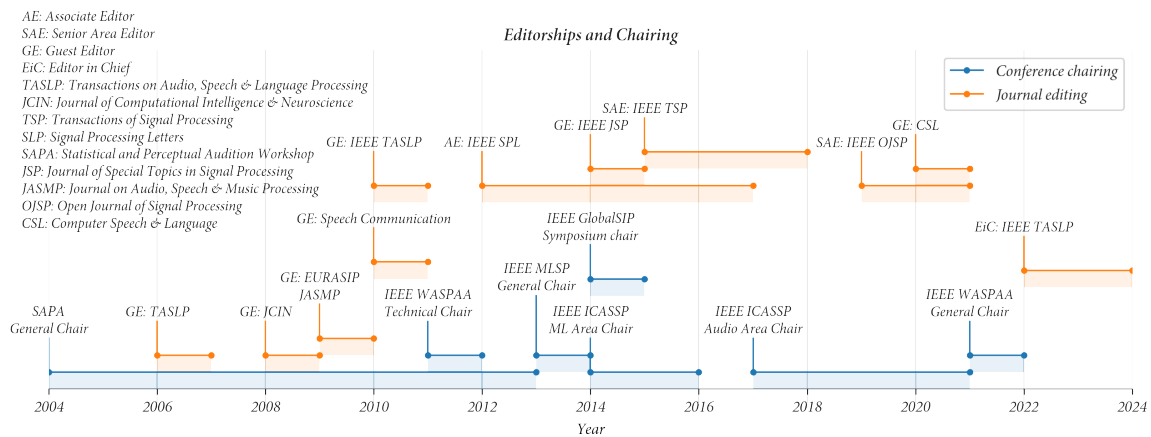
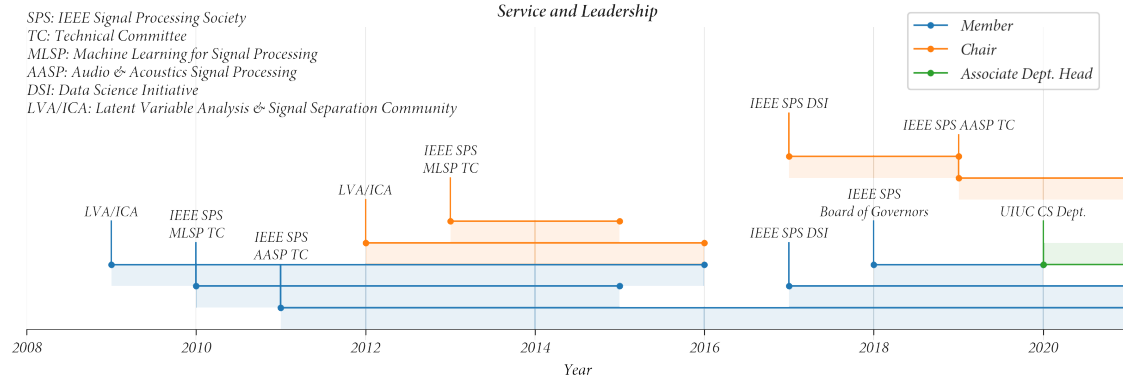
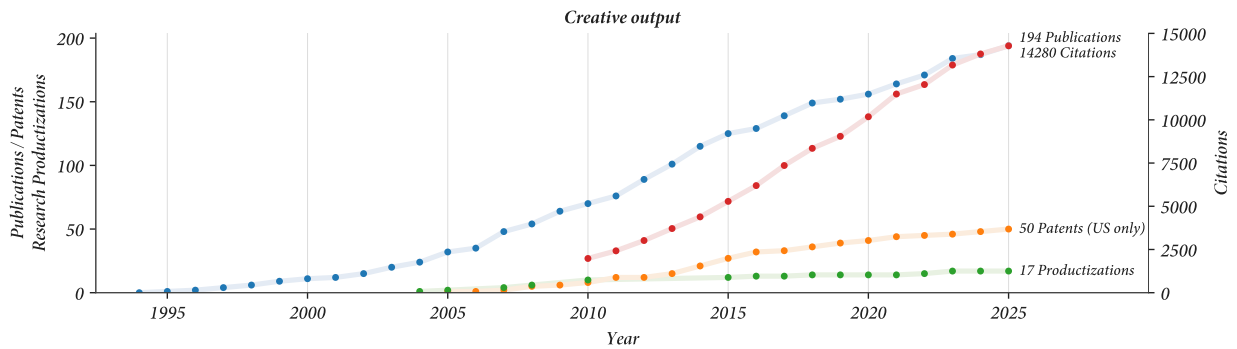


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VISUAL SUMMARY



RESEARCH INTERESTS

Machine learning, signal processing, audio, music, and speech analysis, computational perception (with emphasis on computational hearing), acoustical sensing, computing and the arts, computer music, music production, sound design.

EDUCATION

- 1997–2001 *Ph.D. in Perceptual Computing, Massachusetts Institute of Technology*
Dissertation: “Redundancy Reduction for Computational Audition, a Unifying Approach”
Advisor: Prof. Barry Vercoe
- 1995–1997 *M.S. in Media Technology, Massachusetts Institute of Technology*
Thesis: “Information Theoretic Approaches to Sound Separation”
Advisor: Prof. Barry Vercoe
- 1993–1995 *B.Mus. (Magna Cum Laude) in Music Synthesis, Berklee College of Music*
Thesis: “A Real-Time Toolbox for the Performing Musician”
Advisor: Prof. Richard Boulanger

WORK EXPERIENCE

- 2025–pres. *Professor, Electrical Engineering & Computer Science*
Professor, Music and Theater Arts
Massachusetts Institute of Technology
Faculty member in Schwarzman College of Computing. Faculty member in Music Technology Program. Faculty member in the Research Lab for Electronics (RLE) in Signal Processing, and part of the AI+D faculty group.
- 2010–2025 *Professor, Computer Science & Electrical and Computer Engineering depts.*
Associate Department Head, Computer Science
Affiliate Faculty, Coordinated Science Laboratory
University of Illinois at Urbana-Champaign
Faculty member in Artificial Intelligence (CS dept.) and Digital Signal Processing (ECE dept.). Faculty member in the Human-Computer Intelligent Interaction group at the Beckman Institute for Advanced Science and Technology. Developing multiple new cross-departmental courses on machine learning, signal analysis and media processing. Developed initiative on industrial sponsored undergraduate research opportunities. Conceived and developed CS+Music major. As associate head, responsible for operations, computing resources, and space infrastructure planning in CS dept. Supervises students in CS, ECE, and Music depts.
- 2021–2023 *Scholar, Amazon AWS*
Charts new research directions and facilitates the growth of audio and speech related research activities within AWS. Responsible for mentoring and career development of research scientists.
- 2007–2021 *Senior Research Scientist, Adobe Systems Inc.*
Performs basic and applied research on machine learning and statistical signal processing with a focus on audio signals. Responsible for fostering and directing research programs with collaborating universities, and joint supervision of doctoral students and postdocs.
- 2002–2007 *Research Scientist, Mitsubishi Electric Research Laboratories (MERL)*
Performed basic and applied research on machine learning and signal processing with emphasis on audio processing. Research applications include computational audition systems, scene analysis, source separation, recognition and multiple-source tracking.

- 2001–2002 *Postdoctoral Research Associate, Media Laboratory, Massachusetts Institute of Technology*
Worked in the Machine Listening group advised by Prof. Barry Vercoe. Performed research on multi-modal statistics and audio/visual processing, as well as novel machine learning techniques. Supervised doctoral students.
- 1995–2001 *Research Assistant, Media Laboratory, Massachusetts Institute of Technology*
Worked in the Machine Listening group under the supervision of Prof. Barry Vercoe. Performed research in computational auditory perception, source separation, machine learning and mathematical models of psychoacoustics. Participated in the formulation of MPEG–4 and MPEG–7 standards, and the development of the CSound audio synthesis language.
- 2000 *Mitsubishi Electric Research Laboratories (MERL), Cambridge MA*
Worked with Prof. Michael Casey on subspace methods for source separation and sparse basis decompositions. Consulted on audio classification and MPEG–7 issues.
- 1999 *Interval Research Corporation, Palo Alto CA*
Worked under Drs. Tony Bell and Malcolm Slaney. Performed research on information theory and perception, source separation, and machine learning methods using Clifford and hyper-complex algebras. Additionally worked with Drs. Bill Verplank and Max Matthews (at Stanford) on music synthesis methods and musical performance interfaces.
- 1998 *Starlab NV/SA, Brussels, Belgium*
Worked with Mr. Adam Lindsay. Performed research and implementations of MPEG–7 standard modules.
- 1995 *Analog Devices Inc., Norwood MA*
Worked with Prof. Barry Vercoe and Mr. Mikhail Haidar on the development of advanced real-time audio synthesis and manipulation algorithms, and high-level signal processing language features for the Shark DSP.
- 1990–pres. *Institute for Research on Music and Acoustics, Athens Greece*
Development of extensive signal processing and machine learning libraries for synthesis and manipulation of audio signals. Participated in development of physical models of ancient Greek instruments.

VISITING APPOINTMENTS

- 2007–2011 *Associate Research Scientist, Harvard, EECS dept.*
Performed basic research in the field of machine learning signal processing for media computations
- 01/2009 *Visiting Research Scientist, U. of Tokyo, School of Information Science and Technology*
Performed basic research on audio analysis in the group of Prof. Sagayama
- 2007–2009 *Affiliate Research Scientist, MIT, Brain and Cognitive Sciences Dept.*
Performed basic research on computational perception in the group of Prof. Tomaso Poggio

2025

1. Churchwell, C., M. Kim, P. Smaragdis. Combolutional Neural Networks, in IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA) 2025, Lake Tahoe, CA, USA, October 2025.
2. Bralios, D., J. Casebeer, P. Smaragdis. Learning to Upsample and Upmix Audio in the Latent Domain, in IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA) 2025, Lake Tahoe, CA, USA, October 2025.
3. Miccini, R., M. Kim, C. Laroche, L. Pezzarossa, P. Smaragdis. Adaptive Slimming for Scalable and Efficient Speech Enhancement, in IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA) 2025, Lake Tahoe, CA, USA, October 2025.
4. Subramani, K., P. Smaragdis, T. Higuchi, M. Souden. Rethinking Non-Negative Matrix Factorization with Implicit Neural Representations, in IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA) 2025, Lake Tahoe, CA, USA, October 2025.
5. Wen, Y., M. Kim, P. Smaragdis. User Guided Generative Source Separation, International Society for Music Information Retrieval Conference (ISMIR), Daejeon, Korea, September, 2025.
6. Azmoodeh, S.K., K. Subramani, P. Smaragdis. Continuous-Time Signal Decomposition: An Implicit Neural Generalization of PCA and ICA, in IEEE International Workshop on Machine Learning for Signal Processing (MLSP) 2025, Istanbul, Turkey. August 2025.
7. Bralios, D., J. Casebeer, P. Smaragdis. Re-Bottleneck: Latent Re-Structuring for Neural Audio Autoencoders, in IEEE International Workshop on Machine Learning for Signal Processing (MLSP) 2025, Istanbul, Turkey. August 2025.
8. Lin, J., G. Götz, H.S. Llopis, H. Hafsteinsson, S. Guðjónsson, D.G. Nielsen, F. Pind, P. Smaragdis, D. Manocha, J. Hershey, T. Kristjansson, M. Kim. Generative data augmentation challenge: Synthesis of room acoustics for speaker distance estimation, in ICASSP 2025-2025 IEEE International Conference on Acoustics, Speech and Signal Processing, Hyderabad, India, April, 2025.
9. TF Tavares, FJ Ayres, Z Wang, P Smaragdis. On class separability pitfalls in audio-text contrastive zero-shot learning, in ICASSP 2025-2025 IEEE International Conference on Acoustics, Speech and Signal Processing, Hyderabad, India, April, 2025.

2024

10. Helwani, K., M. Togami, P. Smaragdis, M.M. Goodwin. Sound source separation using latent variational block-wise disentanglement, in IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Seoul, South Korea, April 2024
11. Casebeer, J., J.Wu, P. Smaragdis. Meta-AF Echo Cancellation for Improved Keyword Spotting, in IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Seoul, South Korea, April 2024
12. Subramani, K., J.M. Valin, J. Buethe, P. Smaragdis, M. Goodwin. Noise-Robust DSP-Assisted Neural Pitch Estimation with Very Low Complexity, in IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Seoul, South Korea, April 2024

2023

13. Wang, Z., C. Subakan, K. Subramani, J. Wu, T. Tavares, F. Ayres, P. Smaragdis. Unsupervised Improvement of Audio-Text Cross-Modal Representations, in IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA), New Paltz, NY, USA, Oct 22-25, 2023
14. Bralios, D., E. Tzinis, P. Smaragdis. Complete and Separate: Conditional Separation with Missing Target Source Attribute Completion, in IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA), New Paltz, NY, USA, Oct 22-25, 2023

15. Soltanmohammadi, E., P. Smaragdis, P., M.M. Goodwin. Low-complexity streaming speech super-resolution. In IEEE 33rd International Workshop on Machine Learning for Signal Processing (MLSP), Rome, Italy, 2023
16. Helwani, K., P. Smaragdis, M. Goodwin. Generative Modeling Based Manifold Learning for Adaptive Filtering Guidance. In IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Rhodes, Greece, 2023
17. Wang, Z., R. Giri, D. Shah, J.M. Valin, M. Goodwin. A framework for unified real-time personalized and non-personalized speech enhancement. In IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Rhodes, Greece, 2023
18. Mustafa, A., J.M. Valin, J. Bütthe, P. Smaragdis, M. Goodwin. Framewise Wavegan: High Speed Adversarial Vocoder In Time Domain With Very Low Computational Complexity. In IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Rhodes, Greece, 2023
19. Bralios, D., E. Tzinis, G. Wichern, P. Smaragdis, J. Le Roux. Latent Iterative Refinement for Modular Source Separation. In IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Rhodes, Greece, 2023
20. Tzinis, E., G. Wichern, P. Smaragdis, J. Le Roux. Optimal Condition Training for Target Source Separation. In IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Rhodes, Greece, 2023

2022

21. Casebeer, J., N.J. Bryan, P. Smaragdis. Meta-AF: Meta-Learning for Adaptive Filters, IEEE/ACM Transactions on Audio, Speech, and Language Processing 31, 355-370.
22. Wu, J., J. Casebeer, N. Bryan and P. Smaragdis. Meta-Learning for Adaptive Filters with Higher-Order Frequency Dependencies, in Proceedings of International Workshop on Acoustic Signal Enhancement (IWAENC 2022), Bamberg, Germany, September 2022.
23. Lu, A., K. Sarkar, M. Mittal, R. Corey, P. Smaragdis, and A. Singer. Mechatronic Generation of Datasets for Acoustics Research, in Proceedings of International Workshop on Acoustic Signal Enhancement (IWAENC 2022), Bamberg, Germany, September 2022.
24. Tzinis, E., G. Wichern, A. Shanmugam Subramanian, P. Smaragdis and J. Le Roux. Heterogeneous Target Speech Separation, in Proceedings of the Conference of the International Speech Communication Association (INTERSPEECH), Incheon Korea, September 2022.
25. Tzinis, E., Y. Adi, V.K. Ithapu, B. Xu, P. Smaragdis, A. Kumar. RemixIT: Continual self-training of speech enhancement models via bootstrapped remixing, IEEE Journal of Selected Topics in Signal Processing, 2022
26. Subramani, K., J-M Valin, U. Isik, P. Smaragdis and A. Krishnaswamy. End-to-end LPCNet: A Neural Vocoder With Fully-Differentiable LPC Estimation, in Proceedings of the Conference of the International Speech Communication Association (INTERSPEECH), Incheon Korea, September 2022.
27. J-M Valin, A. Mustafa, C. Montgomery, T. B. Terriberry, M. Klingbeil, P. Smaragdis and A. Krishnaswamy. Real-Time Packet Loss Concealment With Mixed Generative and Predictive Model, in Proceedings of the Conference of the International Speech Communication Association (INTERSPEECH), Incheon Korea, September 2022.
28. Valin, J.M., U. Isik, P. Smaragdis, and A. Krishnaswamy. Neural speech synthesis on a shoe-string: Improving the efficiency of LPCNet, In IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Singapore, 2022
29. Wang, Z., C. Subakan, X. Jiang, J. Wu, E. Tzinis, M. Ravanelli, P. Smaragdis. Learning Representations for New Sound Classes With Continual Self-Supervised Learning, IEEE Signal Processing Letters.

2021

30. Tzinis, E., J. Casebeer, Z. Wang, P. Smaragdis. Separate but Together: Unsupervised Federated Learning for Speech Enhancement from Non-IID Data, in proceedings of IEEE Workshop on Applications of Signal Processing to Audio and Acoustics, Mohonk Mountain House, New Paltz, NY, 2021
31. Subramani, K. and P. Smaragdis. Point Cloud Audio Processing, in proceedings of IEEE Workshop on Applications of Signal Processing to Audio and Acoustics, Mohonk Mountain House, New Paltz, NY, 2021 **Best Paper Award**
32. Casebeer, J., N. Bryan, P. Smaragdis. Auto-DSP: Learning to Optimize Acoustic Echo Cancellers, in proceedings of IEEE Workshop on Applications of Signal Processing to Audio and Acoustics, Mohonk Mountain House, New Paltz, NY, 2021
33. Wang, Z., J. Casebeer, A. Clemmitt, E. Tzinis, P. Smaragdis, Sound Event Detection with Adaptive Frequency Selection, in proceedings of IEEE Workshop on Applications of Signal Processing to Audio and Acoustics, Mohonk Mountain House, New Paltz, NY, 2021
34. Ramírez, M., O. Wang, P. Smaragdis, N. J. Bryan. Differentiable Signal Processing With Black-Box Audio Effects, in IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Toronto, Canada, 2021
35. Zhao, A., K. Subramani, P. Smaragdis. Optimizing Short-Time Fourier Transform Parameters via Gradient Descent, In IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Toronto, Canada, 2021
36. Tzinis, E., D. Bralios, P. Smaragdis. Unified Gradient Reweighting For Model Biasing with Applications to Source Separation, in IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Toronto, Canada, 2021
37. Casebeer, J., J. Kaikau, P. Smaragdis. Communication-Cost Aware Microphone Selection for Neural Speech Enhancement with Ad-Hoc Microphone Arrays, in IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Toronto, Canada, 2021
38. Tzinis, E., Z. Wang, X. Jiang, P. Smaragdis. Compute and memory efficient universal sound source separation, Journal of Signal Processing Systems, 2021

2020

39. Tzinis, E., Z. Wang and P. Smaragdis. Sudo rm-rf: Efficient Networks for Universal Audio Source Separation, in IEEE Workshop on Machine Learning for Signal Processing, September 2020.
40. Mimitakis, S., N. Bryan, and P. Smaragdis. One-Shot Parametric Audio Production Style Transfer with Application to Frequency Equalization. In IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Barcelona, Spain, 2020.
41. Venkataramani, S., E. Tzinis, and P. Smaragdis. End-to-end Non-Negative Autoencoders for Sound Source Separation. In IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Barcelona, Spain, 2020.
42. Tzinis, E., S. Venkataramani, Z. Wang, Y.C. Sübakan and P. Smaragdis. Two-Step Sound Source Separation: Training on Learned Latent Targets. In IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Barcelona, Spain, 2020.

2019

43. Wang, Z., Y.C. Sübakan, E. Tzinis, P. Smaragdis, and L. Charlin. Continual Learning of New Sound Classes using Generative Replay. In IEEE Workshop for Applications of Signal Processing to Audio and Acoustics (WASPAA), New Paltz, NY, USA. October 2019.
44. Casebeer, J., M. Colomb, and P. Smaragdis. Deep Tensor Factorization for Spatially-Aware Decomposition. In IEEE Workshop for Applications of Signal Processing to Audio and Acoustics (WASPAA), New Paltz, NY, USA. October 2019.

45. Venkataramani, S., E. Tzinis, and P. Smaragdis. A Style-Transfer Approach to Source Separation. In IEEE Workshop for Applications of Signal Processing to Audio and Acoustics (WASPAA), New Paltz, NY, USA. October 2019.
46. Fagot, D., H., Wendt, Cédric Févotte, and P. Smaragdis. Majorization-Minimization Algorithms for Convolutional NMF with the Beta-Divergence. In IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Brighton, UK, 2019
47. Tzinis, E., S. Venkataramani, and P. Smaragdis, Unsupervised Deep Clustering for Source Separation: Direct Learning from Mixtures Using Spatial Information. In IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Brighton, UK, 2019
48. Casebeer, J., Z. Wang and P. Smaragdis, Multi-View Networks for Multi-Channel Audio Classification. In IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Brighton, UK, 2019
49. Seetharaman, P., G. Mysore, B. Pardo, P. Smaragdis and C. Gomes. VoiceAssist: Guiding Users to High-Quality Voice Recordings. In proceedings of ACM CHI, Glasgow, UK, May, 2019

2018

50. Venkataramani, S., R. Higa, and P. Smaragdis. Performance Based Cost Functions for End-to-End Speech Separation, in Asia-Pacific Signal and Information Processing Association Annual Summit and Conference 2018.
51. Venkataramani, S., J. Casebeer and P. Smaragdis. End-to-end Separation with Adaptive Front-Ends. In Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA USA, October 2018.
52. Casebeer, J., B. Luc and P. Smaragdis. Multi-View Networks for Denoising of Arbitrary Numbers of Channels. In IEEE IWAENC 2018, Tokyo, Japan.
53. Sübakan, C.Y., and P. Smaragdis. Generative Adversarial Source Separation, in IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Calgary, Canada, 2018
54. Kim, M. and P. Smaragdis. Bitwise Neural Networks for Efficient Single-Channel Source Separation, in IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Calgary, Canada, 2018
55. Seetharaman, P., G.J. Mysore, P. Smaragdis, B. Pardo, Blind Estimation of the speech transmission index for speech quality prediction, in IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Calgary, Canada, 2018

2017

56. Kim, M. and P. Smaragdis. Bitwise Neural Networks for Efficient Single-Channel Source Separation, in Workshop for Audio Signal Processing, NIPS 2017
57. Venkataramani, S., and P. Smaragdis. Adaptive Front-ends for End-to-end Source Separation, in Workshop for Audio Signal Processing, NIPS 2017
58. Smaragdis P., and C.G. Correa Carvalho. Towards End-to-end Polyphonic Music Transcription: Transforming Music Audio Directly to a Score, in IEEE Workshop for Applications of Signal Processing to Audio and Acoustics (WASPAA), New Paltz, NY, USA. October 2017.
59. Sübakan, Y.C. and P. Smaragdis. 2017. Diagonal RNNs in Symbolic Music Modeling, in IEEE Workshop for Applications of Signal Processing to Audio and Acoustics (WASPAA), New Paltz, NY, USA. October 2017.
60. Venkataramani, S., P. Smaragdis, G. Mysore. 2017. AutoDub: Automatic Redubbing for Voice-over Editing, in ACM User Interface Software and Technology (UIST), in Quebec City, Canada, October 2017.
61. Venkataramani, S., Y.C. Sübakan, and P. Smaragdis. A Neural Network Alternative to Convolutional Audio Models For Source Separation. 2017. In IEEE Workshop on Machine Learning for Signal Processing (MLSP), Tokyo, Japan, September. 2017. **Best Paper Award**

62. Smaragdis, P. and S. Venkataramani. 2017. A Neural Network Alternative to Non-Negative Audio Models, in IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), New Orleans. March, 2017.
63. Févotte, C., G. Mysore, P. Smaragdis, and N. Mohammadiha. 2017. Temporal extensions of Nonnegative Matrix Factorization, in Audio Source Separation and Speech Enhancement, eds. E. Vincent, T. Virtanen, S. Gannot. Wiley.
64. Smaragdis, P., G. Mysore, and N. Mohammadiha. 2017. Temporal NMF models: HMMs with NMF and Kalman filters, ed. Shoji Makino, Springer.
65. Minje, K. and P. Smaragdis. 2016. Efficient Source Separation Using Bitwise Neural Networks, in Audio Source Separation, ed. Shoji Makino, Springer.

2016

66. Babaeizadeh, M., P. Smaragdis R.H. Campbell. 2016. A Simple yet Effective Method to Prune Dense Layers of Neural Networks. International Workshop on Efficient Methods for Deep Neural Networks, Barcelona, Spain.
67. Friedlander, G., P. Smaragdis, B. Raj, and J. McDermott. 2016. Audition for Multimedia Computing, in ACM Book on Research Frontiers of Multimedia, ed. Shi-Fu Chang. Morgan-Claypool.
68. Traa, J., D. Wingate, N. Stein and P. Smaragdis. 2016. Robust Source Localization and Enhancement With a Probabilistic Steered Response Power Model, In IEEE Transactions on Audio, Speech and Language Processing, April 2016.
69. Kim, M. and P. Smaragdis. 2016. Efficient Neighborhood-Based Topic modeling for Collaborative Audio Enhancement on Massive Crowdsourced Recordings. 2016. in IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Shanghai, China, March 2016

2015

70. Huang, P.-S., M. Kim, M. Hasegawa-Johnson, P. Smaragdis. 2016. Joint Optimization of Masks and Deep Recurrent Neural Networks for Monaural Source Separation, In IEEE Transactions on Audio, Speech and Language Processing, December 2015.
71. Traa, Smaragdis, Stein, Wingate. 2015. Directional NMF for Joint Source Separation and Localization. In proceedings of IEEE workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA). New Paltz, NY. October 2015
72. Sübakan, Traa, Smaragdis, Hsu. 2015. Method of Moments Learning for Left to Right Hidden Markov Models, In proceedings of IEEE workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA). New Paltz, NY. October 2015
73. Minje Kim and Paris Smaragdis. 2015. Adaptive Denoising Autoencoders: A Fine-tuning Scheme to Learn from Unknown Sources, In Proceedings of the International Conference on Latent Variable Analysis and Signal Separation (LVA/ICA), Liberec, Czech Republic, August 25-28, 2015.
74. Kim, M. and P. Smaragdis. 2015. Bitwise Neural Networks, in International Conference on Machine Learning (ICML), Workshop on Resource-Efficient Machine Learning. Lille, France, July 2015.
75. Aki Nikolaidis, Drew Goatz, Paris Smaragdis and Arthur Kramer. 2015. Predicting Skill-Based Task Performance and Learning with fMRI Motor and Subcortical Network Connectivity, in 5th International Workshop on Pattern Recognition in Neuroimaging, Stanford University, June 10-12 2015.
76. Virtanen, T., J. Gemmeke, B. Raj and P. Smaragdis. 2015. Compositional models for audio processing, in IEEE Signal Processing Magazine, March 2015.
77. Mohammadiha, N. P. Smaragdis and S. Doclo. 2015. Joint Acoustic and Spectral Modeling for Speech Dereverberation using Non-Negative Representations, in IEEE International Confer-

ence on Acoustics, Speech, and Signal Processing (ICASSP), Brisbane, Australia, April 19-24, 2015.

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2014

80. Mohammadiha, N., P. Smaragdis, G. Panahandeh and S. Doclo. 2014, A State-Space Approach to Dynamic Nonnegative Matrix Factorization, IEEE Transactions on Signal Processing, Volume 63, Issue 4, December 2014
81. Kim, M., and P. Smaragdis. 2014. Collaborative Audio Enhancement: Crowdsourced Audio Recording, in Neural Information Processing Systems (NIPS) 2014, Workshop on Crowdsourcing and Machine Learning. Montreal, Canada.
82. Sübakan, Y.C., J. Traa and P. Smaragdis. 2014. Spectral Learning of Mixture of Hidden Markov Models, in Neural Information Processing Systems (NIPS) 2014. Montreal, Canada.
83. Traa, J. and P. Smaragdis. 2014. Multichannel Source Separation and tracking with RANSAC and Directional Statistics, in IEEE Transactions on Audio, Speech and Language Processing, Volume 22, Issue 12, October 2014.
84. Kim, M. and P. Smaragdis. 2014. Efficient Model Selection for Speech Enhancement Using a Deflation Method for Nonnegative Matrix Factorization, in GlobalSIP 2014.
85. Kim, M. and P. Smaragdis. 2014. Mixtures of Local Dictionaries for Unsupervised Speech Enhancement, IEEE Signal Processing Letters, Volume:22 , Issue: 3, August 2014.
86. Traa, J. and P. Smaragdis. 2014. Multiple Speaker Tracking with the Factorial von Mises-Fisher Filter, In Proceedings of the IEEE Workshop on Machine Learning for Signal Processing, Reims, France, September 2014.
87. Liu, D., M. Kim, and P. Smaragdis. 2014. Experiments on Deep Learning for Speech Denoising, in Proceedings of the Conference of the International Speech Communication Association (INTERSPEECH), Singapore, September 2014.
88. Huang, P-S. M. Kim, M. Hasegawa-Johnson, and P. Smaragdis. 2014. Singing-Voice Separation From Monaural Recordings Using Deep Recurrent Neural Networks, in Proceedings of the International Society for Music Information Retrieval Conference (ISMIR), Taipei, Taiwan, Oct. 27-31, 2014
89. Traa, J. and P. Smaragdis. 2014. Robust Interchannel Phase Difference Modeling with Wrapped Regression Splines, in IEEE Sensor Array and Multichannel Signal Processing Workshop (SAM), La Coruña, Spain, June 22-25, 2014
90. Traa, J., M. Kim, P. Smaragdis. 2014. Phase and level difference fusion for robust multichannel source separation, In Proceedings of the IEEE International Conference on Acoustics, Speech and Signal Processing, Florence, Italy, May 2014.
91. Traa, J. and P. Smaragdis. 2014. A Wrapped Kalman Filter for Azimuthal Speaker Tracking, In Proceedings of the IEEE International Conference on Acoustics, Speech and Signal Processing, Florence, Italy, May 2014.
92. Huang, P-S., M. Kim, M. Hasegawa-Johnson, P. Smaragdis. 2014. Deep Learning for Monaural Speech Separation, In Proceedings of the IEEE International Conference on Acoustics, Speech and Signal Processing, Florence, Italy, May 2014.
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95. Mohammadiha, N., P. Smaragdis, A. Leijon. 2013. Supervised and Unsupervised Speech Enhancement Using Nonnegative Matrix Factorization, in *IEEE Transactions on Audio, Speech and Language Processing*, Vol. 21, Issue 10, Oct 2013, pp. 2140–2151. **IEEE Best Paper Award**
96. Mohammadiha, N., P. Smaragdis, A. Leijon. 2013. Low-Artifact Source Separation using Probabilistic Latent Component Analysis, in *IEEE Workshop for Applications of Signal Processing in Audio and Acoustics*. New Paltz, NY. October 2013.
97. Smaragdis, P. and M. Kim. 2013. Non-Negative Matrix Factorization for Irregularly-Spaced Transforms, in *IEEE Workshop for Applications of Signal Processing in Audio and Acoustics*. New Paltz, NY. October 2013.
98. Mohammadiha, N., P. Smaragdis, A. Leijon. 2013. Simultaneous Noise Classification and Reduction using a Priori Learned Models, in *IEEE Workshop for Machine Learning in Signal Processing*, Southampton, UK. September 2013.
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100. Kim, M. and P. Smaragdis. 2013. Manifold Preserving Hierarchical Topic Models for Quantization and Approximation, in *International Conference on Machine Learning*, Atlanta, GA. June 2013.
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102. Kim, M. and P. Smaragdis. 2013. Collaborative Audio Enhancement using Probabilistic Latent Component Sharing. In *Proceedings of the IEEE International Conference on Acoustics, Speech and Signal Processing*, Vancouver, Canada, May 2013 (*best paper finalist*)
103. Mohammadiha, N., P. Smaragdis, A. Leijon. 2013. Prediction-based filtering and smoothing to exploit temporal dependencies in NMF. In *Proceedings of the IEEE International Conference on Acoustics, Speech and Signal Processing*, Vancouver, Canada, May 2013.
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International Society for Music Information Retrieval Conference (ISMIR), Porto, Portugal, 2012.

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117. Mysore, G.J. and P. Smaragdis. 2012. A Non-negative Approach to Language Informed Speech Separation, in the proceedings of the international conference on Latent Variable Analysis / Independent Component Analysis, Tel-Aviv, Israel, 2012
118. Duan, Z., G.J. Mysore and P. Smaragdis. 2012. Online PLCA for Real-time Semi-supervised Source Separation, in the proceedings of the international conference on Latent Variable Analysis / Independent Component Analysis, Tel-Aviv, Israel, 2012

2011

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120. Smaragdis, P., B. Raj. 2011. The Markov Selection Model for Concurrent Speech Recognition. Neurocomputing Journal, *Invited Paper*
121. Smaragdis, P. 2011. Polyphonic Music Transcription by Example, In proceedings of IEEE Workshop on Applications Signal Processing to Audio and Acoustics. New Paltz, NY. October 2011.
122. Mysore, G. and P. Smaragdis. 2011. A Non-Negative Approach to Semi Supervised Separation of Speech from Noise with the Use of Temporal Dynamics. In proceedings IEEE International Conference on Audio and Speech Signal Processing, Prague, Czech Republic. May 2011.
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124. Smaragdis, P. 2011. Approximate Nearest-Subspace Representations for Sound Mixtures. In proceedings IEEE International Conference on Audio and Speech Signal Processing, Prague, Czech Republic. May 2011. *Invited Paper*

2010

- 125. Mysore, G., P. Smaragdis, and B. Raj. 2010. Non-negative hidden Markov modeling of audio with application to source separation. In proceedings of 9th international conference on Latent Variable Analysis and Signal Separation (LVA-ICA). St. Malo, France. September, 2010 **Best paper award**
- 126. Brown, J.C., P. Smaragdis, and A. Nousek-McGregor. 2010. Automatic identification of individual killer whales, in the Journal of the Acoustical Society of America 128 (3), Express Letters. September 2010.
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- 151. Smaragdis, P. and M.V. Shashanka. 2007. A Framework for Secure Speech Recognition. IEEE Transactions on Audio Speech and Language Processing, May 2007.
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- 153. Shashanka M.V., B. Raj, P. Smaragdis. 2007. Sparse Overcomplete Decomposition for Single Channel Speaker Separation. In proceedings IEEE International Conference on Audio and Speech Signal Processing, Honolulu, Hawaii, USA. April 2007
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171. Smaragdis, P. 2004. Discovering Auditory Objects through Non-Negativity Constraints. In *ISCA Tutorial and Research Workshop on Statistical and Perceptual Audio Processing*, Jeju, South Korea, October 2004.
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179. Smaragdis, P. and M. Casey, 2003. Audio/Visual Independent Components. 4 *International Symposium on Independent Components Analysis and Blind Signal Separation*, Nara, Japan April 1–5, 2003.

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180. Brown, J.C. and P. Smaragdis, 2002, Independent Component Analysis for Onset detection in Piano Trills. In 143rd Meeting of the Acoustical Society of America, Pittsburgh, PA, USA, June 3–7, 2002.
181. Whitman, B. and P. Smaragdis, 2002, Combining Musical and cultural Features for Intelligent Style Detection. 3rd *International Conference on Music Information Retrieval 2002*, Paris, France, Oct. 2002.
182. Smaragdis, P. 2002, Small-scale Independent Auditory Components and Frequency Transforms. *CMAF-CREST workshop on Computational models of Auditory Processing at ICAD 2002*. Japan, July 2002.

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183. Smaragdis, P. 2001, Redundancy Reduction for Computational Audition, a Unifying Approach, Ph.D. dissertation, MIT Media Lab.

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184. Boulanger, R., P. Smaragdis and J. Fitch, 2000, Scanned Synthesis: an introduction and demonstration of a new synthesis and signal processing technique. In *proceedings of the International Computer Music Conference 2000*, Berlin, Germany, September, 2000.
185. Smaragdis, P. 2000, Efficient CSound Programming, in *The CSound Book* eds. Richard Boulanger and Barry Vercoe, MIT Press.

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- 189. Smaragdis, P. 1998. Blind Separation of Convolved Mixtures in the Frequency Domain in *Neurocomputing* 22 (1998) 21–34.
- 190. Smaragdis, P. 1998. Blind Separation of Convolved Mixtures in the Frequency Domain. In: *International Workshop on Independence & Artificial Neural Networks* University of La Laguna, Tenerife, Spain, February 9 –10, 1998.

1997

- 191. Smaragdis, P. 1997. Efficient Blind Separation of Convolved Sound Mixtures, *IEEE Workshop on Applications of Signal Processing to Audio and Acoustics*. New Paltz NY, USA, October 1997.
- 192. Smaragdis, P. 1997. Information Theoretic Approaches to Source Separation, Masters Thesis, MAS Department, Massachusetts Institute of Technology.

1996

- 193. Casey, M. and P. Smaragdis, 1996. Netsound: Real-time audio from semantic descriptions, In *proceedings of the International Computer Music Conference 1996*, Kowloon, Hong-Kong, August 1996.

1995

- 194. Boulanger, R. and P. Smaragdis. 1995. “Symbiotic Systems: Max Performance Software for Radio Baton, MIDI Power Glove, and Acoustic Instrument.”, in *Proceedings for the Fifth Biennial Symposium for Arts and Technology*. New London, Connecticut College, 298–302.

AWARDS AND PROFESSIONAL RECOGNITION

2023	AAIA Fellow
2023	List of teachers ranked as excellent by their students – University of Illinois
2021	Recognition for contribution to Emmy for Outstanding Sound Editing For A Nonfiction Or Reality Program (<i>The Beatles: Get Back “Part 3: Days 17-22”</i>)
2021	IEEE Signal Processing Society Best Paper Award
2021	IEEE WASPAA Best Paper Award
2021	List of teachers ranked as excellent by their students – University of Illinois
2020	Campus Award for Excellence in Graduate and Professional Teaching
2019	List of teachers ranked as excellent by their students – University of Illinois
2019	Dean’s Award for Excellence in Research
2018	IEEE Signal Processing Society Best Paper Award
2018	List of teachers ranked as excellent by their students – University of Illinois
2017	IEEE MLSP Best Paper Award
2017	List of teachers ranked as excellent by their students – University of Illinois
2016	Campus Distinguished Promotion Award
2016	Dean’s Award for Excellence in Research
2016	List of teachers ranked as excellent by their students – University of Illinois
2016-2017	IEEE Distinguished Lecturer
2015	College of Engineering Outstanding Advisor award
2015	IEEE Fellow
2015	NSF CAREER Award
2015	List of teachers ranked as excellent by their students – University of Illinois
2015	C.W. Gear Outstanding Junior Faculty Award
2014	College of Engineering Outstanding Advisor award
2014	Starkey award for best student paper in AASP (ICASSP 2014)
2014	List of teachers ranked as excellent by their students – University of Illinois (twice)
2013	Google award for best student paper in AASP (ICASSP 2013)
2012	List of teachers ranked as excellent by their students – University of Illinois
2011	List of teachers ranked as excellent by their students – University of Illinois
2010	List of teachers ranked as excellent by their students – University of Illinois
2010	Best paper award, 9 th International Conference on Signal Separation
2008	Elected Full Member Acoustical Society of America (ASA)
2007	Senior Member Institute of Electrical and Electronics Engineers (IEEE)
2007	Top Greek Men of the Year in Science, press poll
2006	Top 35 Young Innovators Under 35, MIT Technology Review
2006	Full Member International Speech Communications Association (ISCA)
1999	Fellow, Interval Research Corporation
1998	Fellow, Starlab NV/SA
1994	Roland Award for Outstanding Achievement in Music Synthesis
1993–1995	Dean’s List/International Student Scholarships

TECHNOLOGY TRANSFER

Only listing major projects with worldwide commercial exposure to thousands of users.

2023	Conceptualized and implemented a number of speech enhancement neural nets that are used by voice systems in AWS (actively servicing thousands of users worldwide)
2021-23	Collaborated with sound engineers for <i>The Beatles: Get Back</i> documentary series produced by Peter Jackson. The collaboration resulted in the development of new audio restoration algorithms to enhance archival recordings of the Beatles, and was the recipient of an Emmy award in 2022. Same technology also used in new Beatles song release <i>Now and Then</i> in 2023.
2018	Viseme Alignment System in headline Adobe product
2017	Audio Classification Technology in headline Adobe product
2015	Developed core technology for Adobe VIBE, a slideshows app with smart music syncing
2012-2013	Developed a headline feature for Adobe's Audition CS6 called "Automatic Speech Alignment". This is the first commercial system that automatically time-warps re-dubbing audio tracks to match the original video recording. It has been received with enthusiastic reviews. Adobe's CS6 software suite is used by millions of users around the world and is the company's flagship product. This research was highlighted in an IEEE promotional video on the use of machine learning and signal processing in real-life.
2012	Developed a headline feature for Adobe's Audition CC called "Sound Remover". This is the first implementation of a monophonic source separation algorithm released for mass-market usage. It has been received with great reviews. Adobe's CC software suite is used by millions of users around the world and is the company's flagship product.
2012	Developed a headline feature for Adobe's Premiere Pro CS6 and Premiere Elements called "Multi-Camera Sync". This technology allows the importing of thousands of camera recordings, and temporally aligning them based on their audio tracks. Adobe's Premiere is a very popular video editing post-processing product, that is used by millions of users including many Oscar- and Pulitzer-winning video makers.
2008-2011	Designed sound classification algorithms for mixtures of sounds used for automated metadata extraction in core technology within Adobe Systems and its video products.
2007	In cooperation with the Verbier Orchestra and Immersive music, developed a real-time virtual orchestra conducting interface displayed at the Lincoln Center, the Boston Symphony Hall, the Los Angeles Walt Disney Concert Hall, Genoa's Teatro Carlo Felice the Zurich Tonhalle and the Lyon Opera House among other major symphony halls.
2003-2007	Co-developed sound recognition algorithms for video content analysis which are now part of various Mitsubishi PVR, TV and cell phone products.
2005	Developed a machine listening system for Mitsubishi Electric that can detect automotive incidents using sound. This system scans incoming audio signals for sounds like impacts, screeching tires, yelling, broken glass sounds, etc. and alerts authorities if such telltale signs of an automotive incident have been detected. This system has been widely deployed in Japan.
1995-2000	Co-developed NetSound, a project that evolved into the structured audio part of the MPEG-4 international standard. Multiple contributions in signal estimators and syntax implementation used in the audio part of the MPEG-7 international standard.
1993-2000	Numerous contributions in the CSound audio generation and processing language, and development of various audio synthesis and performance interface techniques for live electronic music. Key developer in Analog Devices' Shark DSP audio capabilities.

TEACHING (★ denotes courses designed or co-designed)

2018-pres.	★ UIUC CS498 – Audio Computing Lab
2010-pres.	★ UIUC CS598 – “Machine Learning for Signal Processing”
2016	★ UIUC MUS 105/205/305 – Core courses for CS+Music Major Also initiated and co-designed curriculum for new undergraduate CS+Music major
2016	UIUC CS361 – Statistics and Probability for Computer Science
2014-2015	★ UIUC ECE403 – “Audio Engineering”
2012,2013	UIUC ECE310 – “Digital Signal Processing”
2012,2013	UIUC ECE311 – “Digital Signal Processing Laboratory”
2011	★ UIUC CS498 – “Building Intelligent Systems”
2005	★ Harvard CSCI-E-282 “Statistical Techniques for Audio and Video Processing”

ACADEMIC COMMITTEE SERVICE

2021	Student Competition Team Committee, University of Illinois.
2018	IVCB Financial Reporting Initiative, University of Illinois.
2018	Data Science Initiative Steering Committee, University of Illinois.
2017-pres.	Recruiting committee, Computer Science Dept.
2015-2017	Advisory Committee, Computer Science Dept.
2015-pres.	Capricious Grading Committee, Computer Science Dept.
2014-2016	Public Relations Committee, Computer Science Dept.
2014-2016	Public Relations Committee, Electrical Computer Engineering Dept.
2013-2014	Graduate Recruitment Committee, Electrical Computer Engineering Dept.
2012-2014	Undergraduate Curriculum Committee, Electrical Computer Engineering Dept.
2010-2012	Undergraduate Curriculum Committee, Computer Science Dept.

SEMINARS / TUTORIALS

2012	Tutorial section on topic models for acoustic processing of speech in INTERSPEECH 2012
2010	Tutorial section on topic models for signal processing in ICASSP 2010
2006	Tutorial section on machine learning for source separation in ICSLP 2006
2006	Machine learning seminars for the Technical University of Crete
2000-pres.	Frequent guest lectures and seminars at University of Illinois at Urbana-Champaign, Harvard University, Massachusetts Institute of Technology, Carnegie Mellon University, Technical University of Crete, and Berklee College of Music
1995	Seminars series on audio signal processing, computer music and psychoacoustics at the Institute for Research in Music and Acoustics, Athens, Greece

STUDENTS

<i>Name</i>	<i>Details</i>	<i>Post-UIUC position</i>
<i>Minje Kim</i>	Computer Science PhD 2016	Associate Prof, U of Illinois
<i>Johannes Traa</i>	Electrical Engineering PhD 2016	Research Sci., Analog Devices
<i>Cem Sübakan</i>	Computer Science PhD 2018	Assistant Prof, Laval University
<i>Ralf Gunter Correa Carvalho</i>	Computer Science MS 2016	Sift Science
<i>Ramin Anushiravani</i>	Computer Science MS 2016	Dolby
<i>Kang Kang</i>	Electrical Engineering MS 2015	Texas Instruments
<i>Vinay Maddali</i>	Electrical Engineering MS 2015	Pindrop
<i>Ryley Higa</i>	Electrical Engineering MS 2019	Sumo Logic
<i>Shrikant Venkataramani</i>	Electrical Engineering PhD 2020	Amazon AWS
<i>An Zhao</i>	Electrical Engineering MS 2020	Apple
<i>Zhepei Wang</i>	Computer Science PhD 2023	Amazon AWS
<i>Efthimios Tzinis</i>	Computer Science PhD 2023	Google Brain
<i>Jonah Casebeer</i>	Computer Science PhD 2024	Adobe Research
<i>Krishna Subramani</i>	Electrical Engineering PhD 2025	–
<i>Dimitris Bralios</i>	Computer Science PhD 2027	–
Visiting students		
<i>Jesper Klær Nielsen</i>	2011 Visiting PhD student, Aalborg U.	
<i>Romain Hennequin</i>	2011 Visiting PhD student, Paris-Tech Telecom	
<i>Dylan Fagot</i>	2018 Visiting PhD student, U of Toulouse	
<i>Nasser Mohammediha</i>	2012-14 Visiting PhD student, KTH	
<i>Francisco Ibarrola</i>	Fall 2018 Visiting PhD student, Universidad Nacional del Litoral	
<i>Dimitris Bralios</i>	Fall 2020 Visiting Undergraduate, NTUA, Greece	
<i>Riccardo Miccini</i>	Technical University of Denmark	
Thesis advisor		
<i>Gautham Mysore</i>	Stanford University 2010	
<i>Madhu Shashanka</i>	Boston University 2007	

INVITED TALKS (2008-PRESENT)

Year	Talks (bold indicates keynote/plenary)
2023	INSPIRE University
2022	Tsinghua University • MERL Open House Keynote
2021	Johns Hopkins University • Amazon AWS
2020	IEEE Winter School on Speech and Audio Processing, IIT-Mandi • 2020 Speech Processing Courses Summer School, Crete, Greece
2019	Johns Hopkins University 2019 • Amazon AWS “AI in Practice” event keynote
2018	APSIPA 2018 • Innovation Forum ICASSP 2018
2017	IEEE ASRU 2017 <i>invited talk</i> • IEEE MMSP 2017 • University of Washington • HSCMA 2017 • Cirrus Logic • Dolby • University of Rochester, <i>Distinguished Lecture</i> • CU Boulder, <i>CompSci Colloquium</i> • Utah University, <i>Distinguished Lecture</i>
2016	CRA Career Mentoring Workshop • IEEE SPS Summer School on Signal Processing and Machine Learning for Big Data • MM-SPARSE 2016 • IEEE SPS Santa Clara Chapter, <i>Distinguished lecture</i> • Georgia Tech, <i>Distinguished lecture</i> • IEEE SPS Sendai chapter, <i>Distinguished lecture</i> • NEC • National Informatics Institute, Tokyo • Tsukuba University • Signal Processing Symposium, <i>Distinguished lecture</i> • ICSEE, Eilat, Israel
2015	Neuroengineering IGERT 2015 Symposium • Starkey Laboratories Inc. • Toyota Technical Institute • SANE Workshop • MIT Brain and Cognitive Sciences & EECS
2014	SONY Computer Entertainment America
2013	Schloss Dagstuhl, Featured stimulus speaker for computational audio workshop • IEEE WASPAA
2012	LVA/ICA conference • Lyric Semiconductor / Analog Devices • SONY Computer Entertainment America • Johns Hopkins University, Center for Language and Speech Processing
2011	Stanford University x 2 • IEEE ICASSP, Special session on promising audio representations • Dolby Laboratories • WHK, Hanse Institute for Advanced Study • CMU ECE <i>Department Colloquium</i>
2010	New York University • MIT Computer Science and AI Laboratory • École Nationale Supérieure des Télécommunications
2009	NTT research laboratories • University of Tokyo, dept. of information physics & computing • IBM Watson research laboratory • DARPA ISAT workshop on secure outsourcing of classified data • Dartmouth College, <i>music innovators’ series</i> • Carnegie Mellon University, CS dept.
2008	Cambridge University, UK, electrical engineering dept. • École Nationale Supérieure des Télécommunications ASA workshop • Harvard University, EECS dept. • University of Aalborg, dept. of Electronic Systems • MIT EECS dept. • MIT Computer Science and AI Laboratory • Arizona University, Arts, media and engineering dept • University of Rochester, electrical and computer engineering dept.

1. #12,354,593 Efficient Voice Synthesis Using Frame-Based Processing
2. #12,334,095 Meta-Learning for Adaptive Filters
3. #12,254,892 Audio Source Separation Processing Workflow Systems and Methods
4. #11,900,902 Deep Encoder for Performing Audio Processing
5. #11,763,826 Audio Source Separation Processing Pipeline Systems and Methods
6. #11,208,884 Acoustic Array Signal Processing for Flow Detection
7. #11,082,789 Audio Production Assistant for Style Transfers of Audio Recordings
8. #11,053,790 Acoustic Downhole Leak Classification and Quantification
9. #10,760,410 Stitching Methods to Enhance Beamforming Results
10. #10,638,221 Time Interval Sound Alignment
11. #10,453,475 Automatic Voiceover Correction System
12. #10,262,680 Variable Sound Decomposition Masks
13. #10,249,321 Sound Rate Modification
14. #10,079,028 Sound Enhancement through Reverberation Matching
15. #10,002,622 Irregular Pattern Identification Using Landmark-based Convolution
16. #9,966,088 Online Source Separation
17. #9,734,844 Irregularity Detection in Music
18. #9,514,722 Automatic Detection of Dense Ornamentation in Music
19. #9,451,304 Sound Feature Priority Alignment
20. #9,449,085 Pattern Matching of Sound Data using Hashing
21. #9,355,649 Sound Alignment using Timing Information
22. #9,351,093 Multichannel sound source identification and location
23. #9,215,539 Sound Data Identification
24. #9,201,580 Sound Alignment User Interface
25. #9,165,565 Sound Mixture Recognition
26. #9,047,867 Systems and Methods for Concurrent Signal Recognition
27. #8,965,832 Feature Estimation in Sound Sources
28. #8,954,175 User-Guided Audio Selection from Complex Sound Mixtures
29. #8,924,345 Clustering and Synchronizing Content
30. #8,843,364 Language Informed Source Separation
31. #8,812,322 Semi-Supervised Source Separation Using Non-Negative Techniques
32. #8,775,167 Noise-Robust Template Matching
33. #8,724,798 System and Method for Acoustic Echo Cancellation Using Spectral Decomposition
34. #8,699,858 Joint Video/Audio Analysis and Editing
35. #8,611,558 System and Method for Dynamic Range Extension using Interleaved Gains
36. #8,554,553 Non-Negative Hidden Markov Modeling of Signals
37. #8,380,331 Method and Apparatus for Relative Pitch Tracking of Multiple Arbitrary Sounds
38. #8,055,662 Method and System for Matching Audio Recording
39. #8,041,577 Method for Expanding Audio Signal Bandwidth
40. #8,015,003 Denoising Acoustic Signals Using Constrained Non-Negative Matrix Factorization
41. #7,937,270 System and Method for Recognizing Speech Securely
42. #7,698,143 Constructing Broadband Acoustic Signals from Lower-Band Acoustic Signals
43. #7,672,834 Detecting and Temporally Relating Components in Non-stationary Signals
44. #7,583,808 Locating and Tracking Acoustic Sources with Microphone Arrays
45. #7,526,084 Secure Classifying of Data with Gaussian Distributions
46. #7,475,014 Method and System for Tracing Signal Sources with Wrapped-Phase HMMs
47. #7,415,392 Separating Multiple Sound Sources from Mono Input with NMF Deconvolution
48. #7,318,005 Shift-Invariant Probabilistic Component Analysis
49. #7,218,755 Detecting Temporally Related Components of Multimodal Signals
50. #6,934,651 Method for Synchronizing Signals Acquired from Unsynchronized Sensors

PROFESSIONAL COMMITTEE SERVICE

2022-2024	IEEE Signal Processing Society Publications Board
2020-2024	IEEE Signal Processing Society Financial Strategic Planning Committee
2020-pres.	IEEE Signal Processing Society Challenges and Data Collection Committee
2019-2020	Chair of Technical Committee, IEEE Audio and Acoustic Signal Processing
2018-2020	Board of Directors, IEEE Signal Processing Society
2018-2019	Founding Chair of IEEE SPS Data Science Initiative
2018	Vice-Chair of Technical Committee, IEEE Audio and Acoustic Signal Processing
2017-pres.	Steering Committee, IEEE SPS Data Science Initiative
2016-2018	EURASIP Special Area Team for Signal and Data Analytics for Machine Learning
2012-2015	Chair, Steering Committee, International Conference on Latent Variable Analysis
2013/2014	Member of IEEE Signal Processing Society Technical Directions Board
2013/2014	Chair of Technical Committee, IEEE Machine Learning for Signal Processing Regions 1-6 representative, IEEE Machine Learning for Signal Processing Committee Industry subcommittee chair, IEEE Machine Learning for Signal Processing Committee
2011/2012	Vice-Chair of Technical Committee, IEEE Machine Learning for Signal Processing
2011-pres.	Member, IEEE Audio and Acoustic Signal Processing Technical Committee
2009-pres.	Steering committee member, International Conference on Independent Component Analysis and Signal Separation International advisory panel, ICA research network international workshops

CORPORATE COMMITTEE SERVICE

2023-pres.	AI Alliance, Co-lead for University of Illinois
2013-2016	Board of Directors for Audio Technologies, Lyric Semiconductor / Analog Devices
2013-2016	Technology Transfer committee member CTL (Adobe Systems Inc. research team)
2010-2012	Executive committee member of CTL
2010-2012	Research strategy committee member for CTL
2009-2011	Chair of recruiting committee for research scientist positions at Adobe Systems Inc.
2009-2011	Committee for university research funding program at Adobe systems Inc.
2009-2010	Committee for research technology transfer at Adobe Systems Inc. (rotating chair 2010)
2007-2008	Intern czar for research intern program at Adobe Systems Inc.
2004-2007	Program manager of intern program at Mitsubishi Electric Research Labs
2004-2007	Multimedia research program manager at Mitsubishi Electric Research Labs

CONFERENCE, WORKSHOP AND SESSION ORGANIZATION

2021	IEEE WASPAA 2021, General chair
2015-pres.	IEEE ICASSP Audio and Acoustic Signal Processing area chair/committee member
2014	IEEE GLOBALSIP 2014, Machine Learning for Speech Processing symposium organizer
2014	IEEE ICASSP 2014, Machine Learning for Signal Processing area chair
2014	IEEE Machine Learning Applications in Speech Processing Symposium, General Chair
2013	IEEE MLSP 2013, General chair
2013	IEEE ICASSP 2013, Machine Learning for Signal Processing area chair
2012	Primary organizer for special session “Learning with Music Signals”, in International Conference on Acoustics and Speech Signal Processing, Kyoto Japan, Mar. 2012.
2011	IEEE WASPAA 2011, Technical chair
2008	Primary organizer for special session “Statistical Methods in Musical Acoustics and Speech Processing”, in Acoustical Society of America meeting, Miami, FL, Nov. 2008
2006–2012	Program Committee for PERVASIVE 2006, ICMI 2008, IEEE WASPAA 2009, ICMI 2009, MLMI 2009, ASRU 2009, LCA-ICA 2010, MLSP 2010, ICMI-MLMI 2010, MLSP 2011, ICMI 2011, ISMIR 2011, IEEE WASPAA 2011, LVA-ICA 2012, ACM Multimedia 2013.
2004–2012	Primary organizer for the biennial Statistical and Perceptual Audition (SAPA) workshops in 2004 (Jeju, Korea), 2006 (Pittsburgh PA, USA), 2008 (Brisbane, Australia), 2010 (Makuhari, Japan) and SAPA-SCALE 2012 (Portland, OR, USA)
2012	IEEE ICASSP 2012, Machine Learning for Signal Processing area co-chair
2004-pres.	Recurring session/panel chair for ASRU, IEEE ICASSP, LVA-ICA, IEEE MLSP, IEEE WASPAA

JOURNAL EDITING DUTIES

2022-2024	Editor in Chief – IEEE Transactions on Audio, Speech, and Language Processing
2021	Guest Editor – Computer Speech & Language – Special issue on Voice Privacy
2019-pres.	Senior Area Editor – IEEE Open Journal for Signal Processing
2015–2019	Senior Area Editor – IEEE Signal Processing Transactions
2012–2017	Associate Editor – IEEE Signal Processing Letters
2014	The Journal of Signal Processing Systems – Special issue on MLSP
2010	Speech Communication – Special issue on statistical and perceptual speech processing
2010	IEEE Transactions on Audio, Speech and Language processing – Special issue on signal models and representations for musical and environmental sounds
2009	EURASIP Journal on Audio, Speech and Music Processing – Special issue on automatic audio classification
2008	Journal of Computational Intelligence and Neuroscience – Special issue on advances of non-negative matrix and tensor factorization
2006	IEEE Transactions on Audio, Speech and Language processing – Special issue on statistical and perceptual audio processing

REVIEWING

Neural Information Processing Systems (NeurIPS), IEEE Transactions on Signal Processing, ACM SIGGRAPH, Neural Computation Journal, IEEE Signal Processing Letters, ACM Multimedia, IEEE Transactions on Pattern Analysis and Machine Intelligence, IEEE Transactions on Audio, Speech and Language Processing, International Symposium on Music Information Retrieval (ISMIR), IEEE International Conference on Acoustics speech and Signal Processing (ICASSP), IEEE Workshop in Applications of Signal Processing in Audio and Acoustics (WASPAA), IEEE Workshop in Machine Learning for Signal Processing (MLSP), International Conference on Machine Learning (ICML), Neurocomputing Journal, EURASIP Journal on Audio Speech and Music Processing, IEEE Transactions on Neural Networks, EURASIP Journal on Advances in Signal Processing, IEEE Transactions on Multimedia, Journal of Computational Intelligence and Neuroscience, Journal of Neural systems, User Interface Software and Technology (UIST), and probably more that I forget ...