

## Malcolm Slaney

### Current work address:

Yahoo! Research Laboratory  
701 North First Street  
Sunnyvale, CA 94089  
(408) 349-4008  
malcolm@ieee.org  
<http://www.slaney.org/malcolm/pubs.html>

### Home address:

2110 Yale Street  
Palo Alto, CA 94306  
(650) 251-9677  
Cell: (408) 242-1586  
malcolm@slaney.org  
<http://www.slaney.org/malcolm>

### Education and Academic Experience

1990–Present Visiting Scholar/Lecturer/Instructor/Consulting Professor  
Stanford University  
Center for Computer Research in Music and Acoustics  
Seminar leader for weekly CCRMA Hearing Seminar (Music 319)

1985 Ph.D., Purdue University  
Advisor: Prof. A. C. Kak  
Thesis: “Imaging with Diffraction Tomography”

1981 MSEE, Purdue University

1981 BSEE with Honors, Purdue University

### Professional Experience

2005–Present Principal Scientist, Yahoo! Research Laboratory  
Multimedia content analysis, search, music, image and video.

2000–2005 Research Staff Member, IBM Almaden Research Center  
User studies, sensemaking, large-data interfaces. Multimedia segmentation, identification and classification. Semantic signal processing.

1994–2000 Member of the Research Staff, Interval Research  
Project lead. People-centric processing. Manipulating audio and video signals, auditory modeling, machine learning. Developing business models to justify research efforts.

1988–1994 Senior Scientist, Apple Computer, Advanced Technology Group  
Auditory modeling, numerical tools, speech recognition.

1985–1988 Member Research Staff, Schlumberger Palo Alto Research  
Image processing architecture, signal processing environment, auditory modeling, port object-oriented window system.

1981–1985 Research Associate, Purdue University, School of Electrical Engineering  
Research on ultrasound and microwave tomography.

1978–1981 Summer employment at Bell Laboratories, Indian Hill and Holmdel

Software engineering for real-time call processing, fault testing, network hardware design.

### **Books**

Steve Greenberg, Malcolm Slaney (editors). *Computational Models of Auditory Function*. IOS Press, Amsterdam, 2001.

A. C. Kak, Malcolm Slaney. *Principles of Computerized Tomographic Imaging*. IEEE Press, New York, 1988. Republished by the Society of Industrial and Applied Mathematics (SIAM) in their series “Classics in Applied Mathematics,” 2001. This book is available on the Internet at <http://www.slaney.org/pct>.

### **Book Chapters**

Malcolm Slaney and Chris Bregler. “Image-based Facial Synthesis.” To be published in *Audio–Visual Speech Processing*, Eric Bateson, Gérard Bailly and Pascal Perrier, eds., Cambridge University Press, 2011.

Dulce Ponceleon and Malcolm Slaney. “Multimedia Information Retrieval.” In *Modern Information Retrieval*, Ricard Baeza-Yates and Berthier Ribeiro-Neto, Second Edition, 2010.

Malcolm Slaney, “The history and future of CASA.” In *Perspectives on Speech Separation*, Editor: P. Divenyi, Kluwer, 2006.

Malcolm Slaney, Dulce Ponceleon, James Kaufman. “Understanding the Semantics of Media.” In *Video Mining*, A. Rosenfeld, D. Doermann, D. DeMenthon (editors). Kluwer Academic Publishers, Boston, 2003.

Malcolm Slaney. “Connecting correlograms to neurophysiology and psychoacoustics.” In *Psychophysical and Physiological Advances in Hearing*, A.R. Palmer, A. Rees, A.Q. Summerfield and R. Meddis (editors). Whurr Publishers, London, 1998.

Malcolm Slaney. “A critique of pure audition.” In *Computational Auditory Scene Analysis*, David F. Rosenthal, Hiroshi G. Okuno (editors). Erlbaum, Mahwah, N.J. 1998.

Christoph Bregler, Stephen Omohundro, Michele Covell, Malcolm Slaney, Subutai Ahmad, David A. Forsyth, Jerry A. Feldman. “Probabilistic models of verbal and body gestures.” In *Computer Vision in Man-Machine Interfaces*, R. Cipolla, A. Pentland (editors). Cambridge University Press, Cambridge, UK, 1996.

Malcolm Slaney, Richard F. Lyon. “On the importance of time: A temporal representation of sound.” In *Visual Representations of Speech*, Martin Cooke, Steve Beet, Malcolm Crawford (editors). J. Wiley, New York, pp. 95–116, 1993.

Malcolm Slaney. "Interactive signal-processing documents." In *Symbolic and Knowledge-Based Signal Processing*, Alan V. Oppenheim, S. Hamid Nawab (editors) Prentice Hall, Englewood Cliffs, NJ, pp. 173–204, 1992.

Malcolm Slaney, Mani Azimi, A. C. Kak, Lawrence. E. Larson. "Microwave imaging with first-order diffraction tomography." In *Medical Applications of Microwave Imaging*, L. E. Larsen, J. H. Jacobi (editors). IEEE Press, New York, pp. 184–212, 1986.

### **Refereed Articles**

Gregory Sell and Malcolm Slaney. "Solving Demodulation as an Optimization Problem." Accepted for publication in *IEEE Transactions on Audio, Speech and Language Processing*, 2010.

Michael Casey, Christophe Rhodes, Malcolm Slaney. "Analysis of Minimum Distances in High-Dimensional Musical Spaces." *IEEE Transactions on Audio, Speech, and Language Processing*, vol.16, no.5, pp.1015–1028, July 2008.

Michael A. Casey, R. Veltkamp, M. Goto, M. Leman, C. Rhodes, Malcolm Slaney. "Content-Based Music Information Retrieval: Current Directions and Future Challenges." *Proceedings of the IEEE*, vol.96, no.4, pp.668–696, April 2008.

Malcolm Slaney, Michael Casey. "Locality-Sensitive Hashing for Finding Nearest Neighbors." *IEEE Signal Processing Magazine*, vol.25, no.2, pp.128–131, March 2008.

Malcolm Slaney, D. P. W. Ellis, M. Sandler, M. Goto, M. Goodwin. "Introduction to the Special Issue on Music Information Retrieval." *IEEE Transactions on Audio, Speech, and Language Processing*, vol.16, no.2, pp.253–254, Feb. 2008

Kyogu Lee, Malcolm Slaney. "Acoustic chord transcription and key extraction from audio using key-dependent HMMs Trained on Synthesized Audio." *IEEE Transactions on Audio, Speech, and Language Processing*, vol.16, no.2, pp.291–301, Feb. 2008.

Nima Mesgarani, Malcolm Slaney, Shihab Shamma. "Discrimination of speech from non-speech based on multiscale spectro-temporal modulations." *IEEE Transactions on Audio, Speech and Language Processing*, 14(6), 920–930, May 2006.

Malcolm Slaney, Gerald McRoberts. "BabyEars: A recognition system for affective vocalizations." *Speech Communication*, 2002.

Malcolm Slaney. "Interactive signal processing documents." *IEEE ASSP Magazine*, pp. 8–20, April 1990.

Malcolm Slaney, A. C. Kak, L.E. Larson. "Limitations of imaging with first-order diffraction tomography." *IEEE Transactions on Microwave Theory and Techniques*, vol. MTT-32, pp. 860–873, August 1984.

### **Refereed Conference Publications**

Dhruv Kumar Mahajan and Malcolm Slaney. Image classification using the web graph. In *Proceedings of the International Conference on Multimedia (MM '10)*. ACM, Florence, Italy, 991-994, 2010.

Greg Sell and Malcolm Slaney, “The Information Content of Demodulated Speech,” *Proceedings of the International Conference on Acoustics, Speech and Signal Processing*, Dallas, Texas, March, 2010.

Eva Hörster, Malcolm Slaney, Marc’ Aurelio Ranzato, Kilian Weinberger. “Unsupervised Image Ranking.” *Proceedings of the 2009 ACM Multimedia: Workshop on Large-Scale Multimedia Retrieval and Mining*, Beijing, China, October 2009.

Lyndon Kennedy, Malcolm Slaney, Kilian Weinberger. “Reliable Tags Using Image Similarity: Mining Specificity and Expertise from Large-Scale Multimedia Databases.” *Proceedings of the 2009 ACM Multimedia: Workshop on Web-Scale Multimedia Corpus*, Beijing, China, October 2009.

Theodore Yu, Andrew Schwartz, John Harris, Malcolm Slaney, and Shih-Chii Liu. “Periodicity detection and localization using spike timing from the AER EAR.” *Proceedings of the 2009 IEEE International Symposium on Circuits and Systems*, Taipei, Taiwan, May 2009.

Misha Pavel, Malcolm Slaney, Hynek Hermansky. Reconciliation of human and Machine speech recognition performance. *Proceedings of the 2008 International Conference on Acoustics, Speech and Signal Processing*, Taipei, Taiwan, April 2009.

Kilian Weinberger, Malcolm Slaney, Roelof van Zwol. Resolving tag ambiguity. *Proceeding of the 16th ACM international Conference on Multimedia*, Vancouver, British Columbia, Canada, pp. 111–120, October 26–31, 2008.

Malcolm Slaney, Kilian Weinberger, William White. Learning a metric for music similarity.” *Proceedings of the International Society of Music-Information Retrieval*, pp. 313–318, Philadelphia, PA, September, 2008.

Eva Hörster, Rainer Lienhart, Malcolm Slaney. Continuous Visual Vocabulary Models for pLSA-Based Scene Recognition. *ACM International Conference on Image and Video Retrieval (CIVR) 2008*, pp. 319–328, Niagara Falls, Canada, 2008.

Eva Hörster, Thomas Greif, Rainer Lienhart, Malcolm Slaney. Comparing Local Feature Descriptors in pLSA-Based Image Models. *30th Annual Symposium of the German Association for Pattern Recognition (DAGM)*, G. Rigoll, Ed. *Lecture Notes In Computer Science*, vol. 5096. Springer-Verlag, pp. 446–455, Munich, Germany, 2008.

Malcolm Slaney and William White. Similarity Based on Rating Data. *Proceedings on the International Society of Music-Information Retrieval*, Vienna, Austria, September

2007.

Kyogu Lee and Malcolm Slaney. A Unified System for Chord Transcription and Key Extraction Using Hidden Markov Models. *Proceedings on the International Society of Music-Information Retrieval*, Vienna, Austria, September 2007.

Eva Hörster, Rainer Lienhart, Malcolm Slaney. Image retrieval on large-scale image databases. Proceedings of the 6th ACM international conference on Image and video retrieval CIVR '07, July 2007.

Benjamin M. Marlin, Richard S. Zemel, Sam Roweis, and Malcolm Slaney. Collaborative Filtering and the Missing at Random Assumption. In the *Proceedings of the 23rd Conference on Uncertainty in Artificial Intelligence (UAI2007)*, IJCAI, July 2007.

Rainer Lienhart, Malcolm Slaney. "pLSA on Large-scale Image Databases." *Proceedings of the 2007 International Conference on Acoustics, Speech and Signal Processing*, Honolulu, Hawaii, April 2007.

David Anderson, Sourabh Ravindran, Malcolm Slaney. "Varying Time Constants and Gain Adaptation in Feature Extraction for Speech Processing." *Proceedings of the 2007 International Conference on Acoustics, Speech and Signal Processing*, Honolulu, Hawaii, April 2007.

Michael Casey, Malcolm Slaney. "Fast Recognition of Remixed Music Audio." *Proceedings of the 2007 International Conference on Acoustics, Speech and Signal Processing*, Honolulu, Hawaii, April 2007.

S. H. Srinivasan and M. Slaney . "A Bipartite Graph Model for Associating Images and Text." IJCAI-2007 Workshop on Multimodal Information Retrieval, Hyderabad, India, January 6, 2007.

Malcolm Slaney and William White. "Measuring Playlist Diversity for Recommendation Systems." *Proceedings of the Audio and Music Computing for Multimedia Workshop in conjunction with ACM Multimedia*, October 2006.

Song Chon, Malcolm Slaney and Jonathan Berger. "Predicting Success from Music Sales Data: A Statistical and Adaptive Approach." *Proceedings of the Audio and Music Computing for Multimedia Workshop in Conjunction with ACM Multimedia*, October 2006.

Kyogu Lee, Malcolm Slaney. "Automatic Chord Recognition from Audio Using a Supervised HMM Trained with Audio-from-Symbolic Data." *Proceedings of the Audio*

*and Music Computing for Multimedia Workshop in conjunction with ACM Multimedia*, October 2006.

Kyogu Lee, Malcolm Slaney. "Automatic Chord Recognition Using an HMM with Supervised Learning." in *Proceedings of International Conference in Music Information Retrieval*, Victoria, BC, October 2006.

Michael Casey and Malcolm Slaney. Song Intersection by Approximate Nearest Neighbor Search. *Proceedings on the International Society of Music-Information Retrieval*, Victoria, BC, October 2006.

Hiroko Terasawa, Malcolm Slaney and Jonathan Berger: "A Statistical Model of Timbre Perception." *Proceedings of ISCA Tutorial and Research Workshop on Statistical And Perceptual Audition (SAPA2006)*, Pittsburgh, PA, September 2006.

Hiroko Terasawa, Malcolm Slaney and Jonathan Berger. "Determining the Euclidean Distance Between Two Steady State Sounds." *Proceedings of 9th International Conference on Music Perception and Cognition (ICMPC9)*, Bologna, Italy, August 2006.

Michael Casey and Malcolm Slaney. "The importance of sequences in musical similarity", *IEEE International Conference on Acoustics, Speech and Signal Processing*, Toulouse, France, May 2006.

Daniel M. Russell, Malcolm Slaney, Yan Qu, Mave Houston. Being Literate with Large Document Collections: Observational Studies and Cost Structure Tradeoffs. *Proceedings of the 39th Annual Hawaii International Conference on System Sciences (HICSS '06)*, Volume 3, 04–07 Jan. 2006, Page(s):55.

Hiroko Terasawa, Malcolm Slaney, Jonathan Berger. "The thirteen colors of timbre." *Proceedings of the 2005 IEEE Workshop on Applications of Signal Processing to Audio and Acoustics*, New Paltz, NY, October 16–19, 2005.

Grace Crowder, Sterling Foster, Daniel M. Russell, Malcolm Slaney, Lisa Yanguas. "Analytic worksheets: A framework to support human analysis of large streaming data volumes." *Proceedings of Interact 2005*, Rome, Italy, September 12–16, 2005.

Hiroko Terasawa, Malcolm Slaney, Jonathan Berger. "A timbre space for speech." *Proceedings of InterSpeech 2005*, Lisbon Portugal, September 4–8, 2005.

Hiroko Terasawa, Malcolm Slaney, Jonathan Berger. "Perceptual distance in timbre space." Japan Acoustical Society, August, 2005, (in Japanese.)

Hiroko Terasawa, Malcolm Slaney, Jonathan Berger. "Perceptual distance in timbre space." *Proceedings of International Conference on Auditory Display (ICAD) 2005*, Limerick, Ireland, July 6–9, 2005.

Daniel M. Russell, Malcolm Slaney, Yan Qu, Mave Houston. A cost structure analysis of manual and computer-supported sensemaking behavior.” *Proceedings of Intelligence Analysis 2005*, McLean, VA, May 2–6, 2005.

Malcolm Slaney and D. M. Russell. “Measuring information understanding in large document collections.” HICSS ’05. *Proceedings of the 38th Annual Hawaii International Conference on System Sciences*, Page(s):105–105, Jan. 03–06, 2005.

Nima Mesgarani, Malcolm Slaney, Shihab Shamma. “Speech discrimination based on multiscale spectro-temporal modulations.” *Proceedings IEEE International Conference on Acoustics, Speech, and Signal Processing. (ICASSP '04)*, Page(s):I-601–604, May 17–21, 2004.

Sourabh Ravindran, David Anderson, Malcolm Slaney. “Low-power audio classification for ubiquitous sensor networks.” *Proceedings IEEE International Conference on Acoustics, Speech, and Signal Processing. (ICASSP '04)*, Page(s):iv-337–340, May 17–21 2004.

Malcolm Slaney, Jayashree Subrahmonia, Paul Maglio. “Modeling Multitasking Users” Published in *Spring-Verlag Lecture Notes in Artificial Intelligence, UM2003 User Modeling: Proceedings of the Ninth International Conference, July 2003*.

Malcolm Slaney. “Mixtures of probability experts for audio retrieval and indexing.” *Proceedings of the International Conference on Multimedia and Expo*, Lausanne, Switzerland, August 2002.

Malcolm Slaney. “Semantic–audio retrieval.” Invited paper in *Proceedings of 2002 International Conference on Acoustics, Speech and Signal Processing*, Orlando, CA, May 2002.

Malcolm Slaney, Dulce Ponceleon, James Kaufmann. “Multimedia edges: Finding hierarchy in all dimensions.” *Proceedings ACM Multimedia Conference*, Los Angeles, CA, October 2001.

Malcolm Slaney and Dulce Ponceleon. “Hierarchical segmentation using latent semantic indexing in scale space.” *Proceedings of the 2001 International Conference on Acoustics, Speech and Signal Processing*, Salt Lake City, UT, May 2001.

Michele Covell, Malcolm Slaney and Art Rothstein. “FastMPEG: Time-scale modification of bit-compressed audio information.” *Proceedings of the 2001 International Conference on Acoustics, Speech and Signal Processing*, Salt Lake City, UT, May 2001.

Malcolm Slaney, Dulce Ponceleon. “Hierarchical segmentation: Finding changes in a text signal.” *Proceedings of the SLAM Text Mining 2001 Workshop*, Chicago, IL, pp. 6–13, April 7, 2001

Malcolm Slaney, Michele Covell. "FaceSync: A linear operator for measuring synchronization of video facial images and audio tracks." In *Advances in Neural Information Processing Systems 13*, edited by Leen, Todd K., Dietterich, Thomas G. and Tresp, Volker, MIT Press, 2001.

Michele Covell, Margaret Withgott, and Malcolm Slaney. "Mach1: Nonuniform time-scale modification of speech," *Proceedings IEEE International Conference on Acoustics, Speech, and Signal Processing*, Seattle WA, vol. 1, pp. 349–352, May 12–15 1998.

Christoph Bregler, Michele Covell, Malcolm Slaney. "Video Rewrite: Photorealistic synthetic lip sync." *Proceedings INA Imagina*, Monte Carlo, Monaco, pp.193–203, March 4–6 1998, (invited).

Malcolm Slaney and Gerald McRoberts. "BabyEars: A recognition system for affective vocalizations." *Proceedings of the 1998 International Conference on Acoustics, Speech, and Signal Processing*, Seattle, WA, vol. 2, pp. 985–988, May 12–15, 1998.

Christoph Bregler, Michele Covell, Malcolm Slaney. "Video Rewrite: Visual speech synthesis from video." *Proceedings the 1997 ACM SIGGRAPH*, Los Angeles, pp. 353–360, August 1997.

Eric Scheirer, Malcolm Slaney. "Construction and evaluation of a robust multifeature speech/music discriminator." *Proceedings of the 1997 IEEE International Conference on Acoustics, Speech and Signal Processing*, vol. 2, pp. 1331–1334, April 1997.

Malcolm Slaney. "Pattern playback in the '90s." in *Advances in Neural Information Processing Systems 7*, Gerald Tesauro, David Touretzky, Todd Leen (editors). MIT Press, Cambridge, MA, pp. 827–834, 1995.

Malcolm Slaney. "Pattern playback from 1950 to 1995." *1995 IEEE International Conference on Systems, Man and Cybernetics*, Seattle, Vol. 4, pp. 3519–3524, Oct. 1995.

Malcolm Slaney. "A critique of pure audition." *Proceedings of the Computational Auditory Scene Analysis Workshop*, 1995 International Joint Conference on Artificial Intelligence, Montreal, Canada, August 19–20, 1995.

Malcolm Slaney, Michele Covell, Bud Lassiter. "Automatic audio morphing." *Proceedings of the 1995 International Conference on Acoustics Speech and Signal Processing*, Atlanta, GA, vol. 2, pp. 1001–1004, May 1995.

Malcolm Slaney, Daniel Naar, Richard F. Lyon. "Auditory model inversion for sound separation." *Proceedings of the 1994 International Conference on Acoustics Speech and Signal Processing*, Adelaide, SA, Australia, vol. II, pp. 77–80, April 1994.

Mark Fanty, Ron Cole, Malcolm Slaney. “A comparison of DFT, PLP and cochleagram for alphabet recognition.” *Conference Record of the Twenty-Fifth Asilomar Conference on Signals, Systems and Computers*, Pacific Grove, CA, vol.1, pp. 326–329, November 1991.

Yeshwant K. Muthusamy, Ron Cole, Malcolm Slaney. “Speaker-independent vowel recognition: Spectrograms versus cochleagrams.” *Proceedings of the 1990 International Conference on Acoustics, Speech, and Signal Processing*, Albuquerque, NM, vol. 5, pp. 533–536, April 1990.

Richard Duda, Richard Lyon, Malcolm Slaney. “Correlograms and the separation of sounds.” *Conference Record: Twenty-Fourth Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, pp. 457–461, November 1990.

Malcolm Slaney, Richard F. Lyon. “A perceptual pitch detector.” *Proceedings of the 1990 International Conference on Acoustics, Speech, and Signal Processing*, Albuquerque, NM, vol. 1, pp. 357–360, April 1990.

Malcolm Slaney, A. C. Kak. “Imaging with higher order diffraction tomography.” *Proceedings of the IEEE 1985 Ultrasonics Symposium*, San Francisco, vol. 2, pp. 808–813, 1985.

Malcolm Slaney, A. C. Kak. “Diffraction tomography.” *Inverse Optics: Proceedings of the SPIE*, Vol. 412, Arlington, VA, pp. 2–19, April 1983.

### **Conference Presentations**

Malcolm Slaney and Patrick Naylor. Invited presentation for “Trends Expert Summary: Audio and Acoustic Signal Processing,” ICASSP, Prague, CZ, 2011.

Malcolm Slaney. “Web-Scale Multimedia Indexing and Retrieval.” Invited talk at Cal IT Conference, UCSD, February 2011.

Malcolm Slaney. “Web-Scale Multimedia Indexing and Retrieval.” Invited keynote at IS&T and SPIE International Conference on Multimedia Content Access: Algorithms and Systems V, San Francisco, CA, January 2011.

Malcolm Slaney. “Multimodal retrieval and ranking: More than waveforms.” Invited talk at 11<sup>th</sup> ACM SIGMM International Conference on Multimedia Information Retrieval, Philadelphia, PA, 241-242, March 2010.

Malcolm Slaney. “An introduction to auditory model inversion.” Invited talk at the 1994 ATR Workshop on a Biological Framework for Speech Perception and Production, Kyoto Japan, September 16–17, 1994.

Malcolm Slaney. “On the importance of time.” Invited talk at the 1992 Workshop on Music Representations, Capri, Italy, October 1992.

Malcolm Slaney. “On the importance of time—A temporal representation of sound.” Invited talk at the ESCA Workshop on Visual Representations of Speech, Sheffield, England, April 1992.

Malcolm Slaney. “Implementing cochlear models.” Invited talk at *1989 IEEE Asilomar Microprocessor Workshop*, Asilomar Conference Center, Pacific Grove, CA, April 27, 1989.

Malcolm Slaney. “How Apple uses a CRAY supercomputer to design personal computers.” Invited talk at Cray Research Japan Ltd. *Technical Seminar*, Tokyo, Japan, April 18, 1989.

A. C. Kak, Robert. J. Safranek, Malcolm Slaney, Marc Andersen. “Depth perception for robot vision: A survey of competing technologies.” *Conference on Artificial Intelligence*, Rochester, MI, 1983.

#### Other Articles

A. Ihlefeld, and Malcolm Slaney. “The story of AudioSapiana,” *The Neuromorphic Engineer*, <http://www.ine-news.org/view.php?source=0029-2005-12-1>, 2005.

Mike Obermier, Gus Pabon, Malcolm Slaney, Larry Yaeger. “Supercomputer research and engineering applications at Apple.” *Cray Channels*, vol.11, no.3, p. 6–11, Fall 1989.

A. C. Kak, Mani Azimi, Malcolm Slaney. “Estimation of porosity in composites.” *Review of Progress in Quantitative NDE Conference*, San Diego, CA, vol. 2a, pp. 851–866, August 1982.

#### Patents

Patent #	Title	Date Issued	Date Filed
US7143047	Time-scale modification of data-compressed audio information	2006-11-28	2004-09-17
US7137062	System and method for hierarchical segmentation with latent semantic indexing in scale space	2006-11-14	2001-12-28
US7134132	System and method for displaying advertisements	2006-11-07	2003-04-17
US6996244	Estimation of head-related transfer functions for spatial sound representative	2006-02-07	1999-08-06
US6968565	Detection of content display observers with prevention of unauthorized access to identification signal	2005-11-22	2000-11-28
US6842735	Time-scale modification of data-compressed audio information	2005-01-11	2000-09-13

US6628821	Canonical correlation analysis of image/control-point location coupling for the automatic location of control points	2003-09-30	2002-05-13
US6574793	System and method for displaying advertisements	2003-06-03	2000-02-25
US6570991	Multi-feature speech/music discrimination system	2003-05-27	1996-12-18
US6400828	Canonical correlation analysis of image/control-point location coupling for the automatic location of control points	2002-06-04	2001-02-13
US6173260	System and method for automatic classification of speech based upon affective content	2001-01-09	1998-03-31
US6108612	Coded objects and methods for detecting such coded objects	2000-08-22	1998-06-23
US6054646	Sound-based event control using timbral analysis	2000-04-25	1998-03-27
US5749073	System for automatically morphing audio information	1998-05-05	1996-03-15
US5473759	Sound analysis and resynthesis using correlograms	1995-12-05	1993-02-22

Plus 6 published but not issued patents, and 18 additional patents assigned to Yahoo that are filed but not yet published.

### **Short Courses, Tutorials and Instructor**

Malcolm Slaney and Edward Y. Chang. Processing web-scale multimedia data. In *Proceedings of the International Conference on Multimedia (MM '10)*. ACM, Florence, Italy, 1771-1772, 2010.

Malcolm Slaney and Michael Casey. "Web-Scale Music Information Retrieval." Tutorial at International Symposium on Music Information Retrieval, Kobe, Japan, October 2009.

Malcolm Slaney and David Anderson. "Applications of Psychoacoustics to Signal Processing." Tutorial at IEEE ICASSP, Taipei, Taiwan, April 2009.

Dulce Ponceleon and Malcolm Slaney. "Multimedia Retrieval: Audio, Speech, Images, and Video." Tutorial at ACM SIGIR 2005, Salvador Brazil, August 2005. Also presented at IEEE ICASSP, Toulouse, France, May 2006.

Invited Faculty, Telluride Workshop on Neuromorphic Engineering, 1998, 2003-2010. Led audio groups and attention group in recent years.

Malcolm Slaney and Richard F. Lyon. "Applications of psychoacoustics to signal processing." Tutorial at 1996 International Conference on Acoustics, Speech, and Signal Processing, Atlanta, GA, May 11, 1996.

A. C. Kak and Malcolm Slaney. "Computerized tomographic imaging." Two-day short-course organized by Continuing Education Institute, Columbia, MD and Houston, TX, June 1981.

### **Technical Reports**

Malcolm Slaney, Michele Covell. "Matlab multi-dimensional scaling tools." Interval Research Corporation Technical Report #2000-025, Palo Alto, CA 2000.

Malcolm Slaney. "QuickTime Movie Tools for Matlab." Interval Research Corporation Technical Report #1999-066, Palo Alto, CA, 1999.

Malcolm Slaney. "Auditory Toolbox (version 2)." Interval Research Corporation Technical Report #1998-010, Palo Alto, CA, 1998.

Chris Bregler and Malcolm Slaney. "Snakes—A Matlab Toolbox." Interval Research Corporation Technical Report #1995-017, Palo Alto, CA, 1995.

Malcolm Slaney. "Sound and Image Toolbox." Apple Computer Technical Report #61, Apple Computer, Inc., Cupertino, CA, 1994.

Malcolm Slaney. "An Auditory Toolbox." Apple Computer Technical Report #45, Apple Computer, Inc., Cupertino, CA, 1994.

Malcolm Slaney. "An Efficient Implementation of the Patterson–Holdsworth Auditory Filter Bank." Apple Computer Technical Report #35, Apple Computer, Inc., Cupertino, CA, 1993.

Malcolm Slaney. "A Review of Filter Design." Apple Computer Technical Report #34, Apple Computer, Inc., Cupertino, CA, 1993.

Malcolm Slaney, Richard. F. Lyon. "Apple Hearing Demo Reel." Apple Computer Technical Report #25, Apple Computer, Inc., Cupertino, CA, 1991

Malcolm Slaney. "Lyon's Cochlear Model." Apple Computer Technical Report #13, Apple Computer, Inc., Cupertino, CA, November 1988.

Malcolm Slaney, and others. "SRL/ISP". Technical Report 73, Schlumberger Palo Alto Research, Palo Alto, CA, 1988.

Malcolm Slaney, A. C. Kak. "Imaging with Diffraction Tomography." Technical Report EE 85-5, School of Electrical Engineering, Purdue University, W. Lafayette, IN, February 1985.

Carl Crawford, Mani Azimi, Malcolm Slaney. “The CRC Plotting Package.” Technical Report EE 84-43, School of Electrical Engineering, Purdue University, West Lafayette, IN, October 1984.

### **Software Programs**

Malcolm Slaney. “Ear.” Published as the SPECfp92 benchmark “ear,” 1992.

Malcolm Slaney. “VUMeters: Digital Volume Meters for the Macintosh 660/AV and 840/AV computers.” Distributed by *develop* magazine, 1993.

Malcolm Slaney. “QuickTime Movie Exchange Toolkit: Movie creation software for Unix and DOS computers.” Apple Programmers and Developer’s Association (APDA) Product #R0190LL/A, 1992.

Malcolm Slaney. “ASA Hypercard Stack—A navigation program for the ASA *Auditory Demonstrations* CD.” Published by Apple Computer, 1991.

Malcolm Slaney. “MacEar: A program that implements a cochlear model.” Distributed informally by the author.

Malcolm Slaney. “SunTroff: A program for displaying device independent TROFF on a Sun Workstation.” Published on the 1988 Sun Users Group Tape. Basis for the Linux xtroff tool.

### **Editing**

Guest Editor, IEEE Proceedings on Web-Scale Multimedia, February 2012.

Malcolm Slaney and Joshua McDermott. Organizer for special session on “Innovative Representations of Audio,” ICASSP-2011, Prague, CZ, May 2011.

Les Atlas and Malcolm Slaney. Organizer for special session on “Novel Modulation Decompositions of Signals: Theory and Applications,” ICASSP-2010, Dallas, Texas, March 2010.

Associate Editor, IEEE Transactions on Audio, Speech and Language Processing, 2006–2011.

Lead Guest Editor, IEEE Transactions on Audio, Speech and Language Processing, Special Issue on Music Information Retrieval, February 2008.

Guest Editor, IEEE Transactions on Speech and Audio, Special Issue *on Statistical and Perceptual Audio Processing*, January 2006.

### **Distinguished Lectures**

Invited Lecturer, “Winter School in Speech and Audio Processing,” Mumbai, India, January 2010.

Keynote Lecture, “Music Search on the Web, A Yahoo! Perspective,” Information Processing Society of Japan, SIGMUS meeting, Tokyo Japan, November 2009

Distinguished Lectures, “Multimedia at the size of the Internet,” Chinese University of Hong Kong and Shenzhen China, October 2009.

Invited Faculty (and co-leader of the audio group), Neuromorphic Workshop, Telluride, CO, July 2005-2010.

Keynote, HCSNet SummerFest, Sidney, Australia, December 2008.

Keynote talk, “We're drowning in Multimedia. Hurray!” WebMedia, Gramado, Brazil, October 2007.

Keynote talk, 1994 Neural Information Processing Society (NIPS) Meeting, Denver, CO, November 1994.

### **Reviewer**

IEEE ICASSP, ICME, WASPAA, Transactions on Speech and Audio, Transactions on Multimedia; ACM Computing Surveys, SIGGRAPH, CHI, SIGIR and MM; Journal of the Acoustical Society of America, EuroSpeech, Interspeech, NIPS, ICAD.

### **Conference Organization**

ACM 20th Anniversary Liason. ACM Multimedia Conference. Nara, Japan, October 2012.

Practitioners Co-Chair, ACM International Conference on Multimedia Retrieval, Hong Kong, June 2012.

Grand Challenges Co-Chair, ACM Multimedia, Florence, Italy, 2010.

Panel Co-Chair, IEEE International Conference and Multimedia Expo, Cancun, Mexico, June 2009.

Tutorial Chair, ACM Multimedia 2007. Augsburg, Germany, September 2007.

CoOrganizer, NIPS'01 Multi-Sensory Perceptive Systems: Human and Machine Processing of Multi-Modal Data, Whistler, BC, Canada, December 2001

Program Chair, IEEE Workshop on Applications of Signal Processing to Audio and Acoustics, New Palz, NY, October 2001.

Program Committee, NIPS'99 Conference, Denver, CO, October 2000.

CoOrganizer, NIPS'99 Neural Mechanisms of Music Perception, Breckenridge, CO, December 1999.

CoOrganizer, IJCAI Computational Auditory Scene Analysis Workshops, August 1995 in Montreal Canada, August 1997 in Nagoya, Japan, August 1999 in Stockholm, Sweden. CoOrganizer, AudioVisual Speech Perception Workshop, Santa Cruz, CA, August 1999.

CoOrganizer, NATO Advanced Studies Institute on Computational Hearing, Il Ciocco (Tuscany), Italy, July 1998.

Treasurer, ICASSP-92 (International Conference on Acoustics, Speech and Signal Processing), San Francisco, CA, March 1992.

### **Professional Activities**

Fellow of the IEEE

For “contributions to perceptual signal processing and tomographic imaging.”

Member ACM

Member Association for Research in Otolaryngology.