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Curriculum Vitae

Israel Cohen

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ACADEMIC DEGREES

1998	Ph.D.	Electrical Engineering, Technion – IIT, Haifa, Israel
1993	M.Sc.	Electrical Engineering, Technion – IIT, Haifa, Israel
1990	B.Sc.	Electrical Engineering, Technion – IIT, Haifa, Israel ■ Graduated <i>Summa Cum Laude</i> (Rank in class: 1 st out of 241 students)

ACADEMIC APPOINTMENTS

2013-	Professor, Dept. of Electrical Engineering Technion – IIT, Haifa, Israel
2014-	Visiting Professor, School of Marine Science and Technology, Northwestern Polytechnical University, Xi'an, China
2006-2012	Associate Professor, Dept. of Electrical Engineering Technion – IIT, Haifa, Israel
2001-2006	Senior Lecturer, Dept. of Electrical Engineering Technion – IIT, Haifa, Israel
1998-2000	Postdoctoral Research Associate, Dept. of Computer Science, Yale Univ., New Haven, Connecticut

RESEARCH INTERESTS

Array processing, statistical signal processing, deep learning, analysis and modeling of acoustic signals, image analysis and processing, speech enhancement, noise estimation, voice activity detection, microphone arrays, source localization, blind source separation, system identification, echo cancellation, adaptive filtering.

TEACHING EXPERIENCE

Introduction to Digital Signal Processing (044198)	Undergraduate	Spring 2004, Winter 2005-6, Winter 2006-7, Winter 2007-8, Winter 2008-9
Spatial Signal Processing (046743)	Graduate & Undergraduate	Spring 2016, Spring 2019
Image Processing and Analysis (046200)	Graduate & Undergraduate	Winter 2001-2, Spring 2002, Winter 2002-3, Spring 2003, Winter 2003-4, Winter 2004-5, Spring 2005, Spring 2006, Spring 2007, Spring 2008,

		Spring 2009, Spring 2010, Winter 2010-11, Spring 2011, Winter 2011-12, Winter 2013-14, Winter 2014-15, Winter 2015-16, Winter 2016-17, Winter 2017-18, Winter 2018-19, Winter 2019-20
Image Processing and Analysis (04620083i)	International School of the Technion	Summer 2013, Summer 2014, Summer 2015, Summer 2016, Summer 2017, Summer 2018, Summer 2019
Array Signal Processing and Analysis (048828)	Graduate	Winter 2019-20
Digital Speech Processing in Noisy Environments (049035)	Graduate	Spring 2005, Spring 2006, Spring 2007, Spring 2008, Spring 2009, Spring 2010, Spring 2011, Spring 2012, Spring 2013, Spring 2014, Spring 2015, Winter 2015-16
Selected Topics in Signal Processing 1(048831)	Graduate	Spring 2003, Spring 2004
Selected Topics in Signal Processing 2 (048865)	Graduate	Winter 2016-17
Selected Topics in Signal Processing 3 (048939)	Graduate	Winter 2017-18, Winter 2018-19

TECHNION ACTIVITIES

2001-2003	EE Department Undergraduate studies committee
2001-2004	Consultant for students under discussion
2006-2009	Consultant for exchange students
2005-2009	Consultant for undergraduate students in the field of Signal Processing
2005-2009	Coordinator of graduate courses in the field of Signal Processing
2006-2008	Committee for departmental computerization
2007-2009	EE Department Committee for outstanding employees
2001-2004, 2009-2014	EE Department Committee for students under discussion
2009-2014	EE Department Committee for faculty and students
2007-2014	EE Department Committee for acceptance of students
2011-2014	EE Department Committee for academic development
2009-2014	Associate Dean for undergraduate student affairs

- 2014-2016 EE Department Graduate studies committee
- 2014- EE Department Committee for development, resources and finances
- 2014- Academic supervisor of the departmental labs and projects
- 2014- Committee for refreshing teaching experiments in departmental labs
- 2014- EE Department Chair of the award committee for students projects
- 2014- EE Department Chair of the committee for development of teaching labs
- 2017- Chair of the Appeal Court for Students

PUBLIC PROFESSIONAL ACTIVITIES

Editor

- 2004-2005 Guest Editor of a Special Issue of the *EURASIP Journal on Advances in Signal Processing* on Advances in Multi-Microphone Speech Processing (Vol. 2006)
- 2005-2006 Guest Editor of a Special Issue of the *EURASIP Speech Communication Journal* on Speech Enhancement (Vol. 49, Issues 7-8, July-August 2007)
- 2005-2007 Co-Editor of the Multichannel Speech Processing section of the *Springer Handbook of Speech Processing*
- 2004-2007 Associate Editor of the IEEE TRANSACTIONS ON AUDIO, SPEECH AND LANGUAGE PROCESSING (before 2006 the journal title was: IEEE TRANSACTIONS ON SPEECH AND AUDIO PROCESSING)
- 2004-2008 Associate Editor of the IEEE SIGNAL PROCESSING LETTERS

Professional Committees

- 2008 Professional Committee Member of the Israel Science Foundation (ISF)
- 2009 Professional Committee Member of the Israel Science Foundation (ISF)
- 2013-2015 Member of the IEEE Speech and Language Processing Technical Committee (SLTC)
- 2012-2017 Member of the IEEE Audio and Acoustic Signal Processing Technical Committee (AASP TC)
- 2018- Associate Member of the IEEE Audio and Acoustic Signal Processing Technical Committee (AASP TC)

Technical Committees

- 2008 International Program Committee Member, IASTED International Conference on Signal and Image Processing, SIP-2008, Hawaii, USA.
- 2009 International Program Committee Member, IASTED International Conference on Signal and Image Processing, SIP-2009, Hawaii, USA.
- 2010 International Program Committee Member, IASTED International Conference on Signal and Image Processing, SIP-2010, Hawaii, USA.
- 2011 International Technical Committee Member, the first annual "Speech Processing Day," June 22, 2011, Afeka College, Tel Aviv, Israel.

- 2011 International Program Committee Member, IASTED International Conference on Signal and Image Processing and Applications, SIPA-2011, Crete, Greece.
- 2011 Technical Program Committee Member, 3rd Joint Workshop on Hands-free Speech Communication and Microphone Arrays, HSCMA-2011, Edinburgh, Scotland.
- 2011 International Program Committee Member, IASTED International Conference on Signal and Image Processing, SIP-2011, Dallas, USA.
- 2011 International Program Committee Member, IEEE Workshop on Applications of Signal Processing to Audio and Acoustics, WASPAA-2011, New York, USA.
- 2012 International Technical and Steering Committee Member, 13th International Workshop on Acoustic Echo and Noise Control, IWAENC-2012, Aachen, Germany.
- 2012 International Technical Committee Member, the 2012 Speech Processing Conference, Afeka College, Tel Aviv, Israel.
- 2012 International Program Committee Member, IASTED International Conference on Signal and Image Processing, SIP-2011, Honolulu, Hawaii.
- 2013 International Technical Committee Member, the 2013 Speech Processing Conference, Afeka College, Tel Aviv, Israel.
- 2014 International Technical and Steering Committee Member, 14th International Workshop on Acoustic Signal Enhancement, IWAENC-2014, Juan les Pins, French Riviera.
- 2014 International Technical Committee Member, the 2014 Speech Processing Conference, Afeka College, Tel Aviv, Israel.
- 2015 International Technical Committee Member, the 2015 Speech Processing Conference, Afeka College, Tel Aviv, Israel.
- 2016 International Technical and Steering Committee Member, 15th International Workshop on Acoustic Signal Enhancement, IWAENC-2016, Xi'an, China.
- 2017 Technical Program Committee Member, IEEE Workshop on Applications of Signal Processing to Audio and Acoustics, WASPAA-2017, New York, USA.
- 2018 Tutorials Committee Member, Interspeech 2018, Hyderabad, India.
- 2018 Technical Advisory Committee Member, International Conference on Instrumentation, Control and Biomedical Signal Processing - ICICS'18, Coimbatore, Tamil Nadu, India.
- 2018 Technical Program Committee Member, IEEE Sensor Array and Multichannel Signal Processing Workshop, SAM-2018, Sheffield, United Kingdom.
- 2018 International Technical and Steering Committee Member, 16th International Workshop on Acoustic Signal Enhancement, IWAENC-2018, Tokyo, Japan.
- 2019 Technical Program Committee Member, IEEE Workshop on Applications of Signal Processing to Audio and Acoustics, WASPAA-2019, New York, USA.
- 2020 International Advisory Committee Member, 5th International Conference on Wireless Communications, Signal Processing and Networking, WiSPNET-2020, Chennai, India.

Other

Reviewer for IEEE Transactions on Audio, Speech and Language Processing, IEEE Signal Processing Letters, EURASIP Journal on Applied Signal Processing, EURASIP Signal Processing Journal, and EURASIP Speech Communication Journal.

Reviewer of proposals for the Israel Science Foundation (ISF).

MEMBERSHIP IN PROFESSIONAL SOCIETIES

IEEE Fellow

FELLOWSHIPS, AWARDS AND HONORS

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| 1987, 1988, 1989 | President of the Technion Honor List |
| 1988 | I. Kidron award at the Technion - IIT for excellent student at the faculty of electrical engineering |
| 1988 | The Israeli parliament honor for academic excellence |
| 1990 | Graduated 1 st in class out of 241 students in the faculty of electrical engineering |
| 1993 | Rafael excellence award for a remarkable individual contribution and outstanding solution |
| 1997 | Rafael excellence award for outstanding professional analysis of an important project |
| 1997 | Eliahu I. and Joyce Jury award at the Technion - IIT for outstanding achievement in systems, communication and signal processing |
| 1998 | Fulbright Israeli post-doctoral award (declined) |
| 2002, 2003 | Louis and Miriam Benjamin Lectureship - USA |
| 2003 | Technion award for Excellence in Teaching (top 15%) – course “Image Processing and Analysis” |
| 2004 | Best student paper award (23 rd IEEE Convention of the Electrical and Electronic Engineers in Israel, paper co-authored by Amir Noiboar and Israel Cohen) |
| 2005 | Technion Excellent Lecturer award (top 5%) – course “Image Processing and Analysis” |
| 2006 | Best student paper award (10 th International Workshop on Acoustic Echo and Noise Control, IWAENC-2006, Paris, France, paper co-authored by Ari Abramson and Israel Cohen) |
| 2006 | Technion Excellent Lecturer award (top 5%) – course “Image Processing and Analysis” |
| 2007 | Best student paper finalist (32 nd IEEE Internat. Conf. Acoust. Speech Signal Process., ICASSP-2007, Honolulu, Hawaii, paper co-authored by Ari Abramson and Israel Cohen) |
| 2007 | Technion award for Excellence in Teaching (top 12%) – course “Introduction to Digital Signal Processing” |

- 2007 Technion award for Excellence in Teaching (top 12%) – course “Image Processing and Analysis”
- 2008 Technion award for Excellence in Teaching (top 12%) – course “Introduction to Digital Signal Processing”
- 2008 Technion award for Excellence in Teaching (top 12%) – course “Image Processing and Analysis”
- 2009 Technion award for Excellence in Teaching (top 12%) – course “Introduction to Digital Signal Processing”
- 2009 Muriel & David Jacknow award for Excellence in Teaching
- 2009 Technion award for Excellence in Teaching (top 12%) – course “Image Processing and Analysis”
- 2010 Best student paper award (12th International Workshop on Acoustic Echo and Noise Control, IWAENC-2010, Tel-Aviv, Israel. Paper co-authored by S. Markovich Golan, S. Gannot and I. Cohen).
- 2010 Technion award for Excellence in Teaching (top 12%) – course “Image Processing and Analysis”
- 2010 Alexander Goldberg Prize for Excellence in Research
- 2011 Technion award for Excellence in Teaching (top 12%) – course “Image Processing and Analysis” (winter semester)
- 2011 Technion award for Excellence in Teaching (top 12%) – course “Image Processing and Analysis” (spring semester)
- 2012 Best student paper award (27th IEEE Convention of Electrical and Electronics Engineers in Israel, IEEEI-2012, Eilat, Israel. Paper co-authored by S. Markovich Golan, S. Gannot and I. Cohen)
- 2014 Technion award for Excellence in Teaching (top 12%) – course “Image Processing and Analysis”
- 2014 The 2014 SPS Signal Processing Letters Best Paper Award, IEEE Signal Processing Society, for the paper: E. A. P. Habets, S. Gannot and I. Cohen, “Late Reverberant Spectral Variance Estimation Based on a Statistical Model,” IEEE Signal Processing Letters, Vol. 16, Issue 9, Sep. 2009, pp. 770-773.
- 2015 Qualcomm Research Award
- 2015 IEEE Fellow, for contributions to the theory and application of speech enhancement
- 2015 Technion award for Excellence in Teaching (top 12%) – course “Image Processing and Analysis”
- 2016 Best student paper award (IEEE International Conference on the Science of Electrical Engineering, ICSEE-2016, Eilat, Israel, Nov. 16-18, 2016. Paper co-authored by Y. Zonis, Y. Buchris and I. Cohen).
- 2017 Norman Seiden Prize for Academic Excellence
- 2019 IEEE Signal Processing Society Distinguished Lecturer

- 2019 Technion award for Excellence in Teaching (top 12%) – course “Image Processing and Analysis” (winter semester)
- 2019 Louis and Samuel Seidan Chair

GRADUATE STUDENTS

Completed PhD Theses

1. Ari Abramson, Ph.D. (direct track), (2008), “Markov-Switching GARCH Models and Applications to Digital Speech Processing”.
2. Yekutiel Avargel, Ph.D. (direct track), (2008), “System Identification and Adaptive Filtering in the Short-Time Fourier Transform Domain”.
3. Ronen Talmon, Ph.D. (direct track) (2011), “Supervised Speech Processing Based on Geometric Analysis” (Sharon Gannot - Co-supervisor).
4. Shmuel Markovich, Ph.D. (2013), “Distributed Speech Processing for Microphone Networks” (Sharon Gannot - Principal supervisor).
5. Idan Ram, Ph.D. (2014), “Wavelets for Graphs and Their Deployment to Image Processing” (Michael Elad - Co-supervisor).
6. Saman Mousazadeh, Ph.D. (direct track) (2015), “Speech and Audio Processing Based on Harmonic Analysis and Statistical Models”.
7. Gal Mishne, Ph.D. (direct track) (2017), “Diffusion Nets and Manifold Learning for High-Dimensional Data Analysis in the Presence of Outliers”.
8. David Dov, Ph.D. (2018) “Multimodal Signal Processing on Manifolds” (Ronen Talmon - Co-supervisor).
9. Yaakov Buchris, Ph.D. (2019), “Design Methods of Sparse and Robust Differential Microphone Arrays”.

Completed MSc Theses

10. Arnon Goldman, M.Sc. (2004), “Multi-Scale Anomaly Detection in Multi-Dimensional Cluttered Data”.
11. Gal Reuven, M.Sc. (2006), “Dual Transfer Function Generalized Sidelobe Canceller and Application to Joint Noise Reduction and Echo Cancellation” (Sharon Gannot - Principal supervisor).
12. Lior Shadhan, M.Sc. (2007), “Detection of Anomalies in Texture Images Using Multi-Resolution Features”.
13. Amir Noiboar, M.Sc. (2007), “Anomaly Detection Based on Wavelet Domain GARCH Random Field Modeling”.
14. Alon Heimer, M.Sc. (2008), “Multichannel Deconvolution of Sparse Reflectivity Images Using Layered Medium Models”.
15. Shmuel Markovich, M.Sc. (2008), “Multichannel Eigenspace Beamforming in a Reverberant Noisy Environment with Multiple Interfering Speech Signals” (Sharon Gannot - Principal supervisor).

16. Maria Zontak, M.Sc. (2008), "Defect Detection in Patterned Wafers Using Anisotropic Kernels".
17. Erez Cohen, M.Sc. (2009), "Wavelet Based Image Restoration Using Cross-Band Operators".
18. Amos Schreiber, M.Sc. (2009), "Adaptive Stereo Acoustic Echo Cancellation in Reverberant Environments".
19. Idan Ram, M.Sc. (2009), "Multichannel Deconvolution of Layered Media Using Markov Chain Monte Carlo methods" (Shalom Raz - Co-supervisor).
20. Yevgeni Litvin, M.Sc. (2010), "Single-Channel Blind Source Separation of Audio Signals" (Dan Chazan - Co-supervisor).
21. Yaakov Buchris, M.Sc. (2010), "A Bayesian approach to coherent wideband array processing" (Miriam Doron - Co-supervisor).
22. Michal Genussov, M.Sc. (2011), "Transcription and classification of audio data by sparse representations and geometric methods".
23. Guy Rapaport, M.Sc. (2011), "Codebook-based Single Channel Blind Source Separation of Audio Signals".
24. Ilana Volfin, M.Sc. (2011), "Dominant Speaker Identification for Multipoint Videoconferencing".
25. Itai Katsir, M.Sc. (2012), "Speech Bandwidth Extension Based on Speech Content and Speaker Information" (David Malah - Principal supervisor).
26. Anna Oyzerman, M.Sc. (2012), "Speech Dereverberation in the Time-Frequency Domain".
27. Evgeny Kupershtein, M.Sc. (2013), "Indoor Localization based on Multipath Fingerprinting" (Mati Wax – Co-supervisor).
28. Mingzi Li, M.Sc. (2013), "Multisensory Speech Enhancement in Noisy Environments Using Bone-Conducted and Air-Conducted Microphones".
29. Eliav Benisty, M.Sc. (2014), "Dereverberation and Noise Suppression of Multichannel Speech Signals" (Jacob Benesty – Co-supervisor).
30. Uri Okun, M.Sc. (2014), "Image Registration by Probabilistic Multi-Assignment Graph Matching" (Yosi Keller - Co-supervisor).
31. David Dov, M.Sc. (2014), "Audio Visual Speech Processing using Diffusion Maps and the Scattering Transform".
32. Reuven Berkun, M.Sc. (2015), "Quality Analysis and Enhancement of Reverberated Speech Using Microphone Arrays" (Jacob Benesty – Co-supervisor).
33. Yaron Doweck, M.Sc. (2015), "Frequency Analysis of Non-Stationary Signals with Harmonic Components" (Alon Amar - Co-supervisor).
34. Nurit Spingarm, M.Sc. (2015), "Speaker Diarization Using GMM Mean Supervector and Advanced Dimensionality Reduction Algorithms".
35. Oren Rosen, M.Sc. (2016), "Design and Analysis of a Constant Beamwidth Beamformer".

36. Deborah Pereg, M.Sc. (2017), "Sparse Seismic Inversion".

37. Mirel Merabi, M.Sc. (2018) "Multichannel Semi-blind Sparse Deconvolution of Seismic Signals".

PhD Theses in Progress

38. Deborah Pereg, Ph.D, "Three-dimensional Seismic Imaging and Sparse Inversion".

39. Ido Ariav, Ph.D. (direct track), "Multimodal Deep Neural Networks".

MSc Theses in Progress

40. Gilad Avrashi, M.Sc., "Time Varying Carrier Frequency Offset Estimation in Multicarrier Underwater Acoustic Communication" (Alon Amar- Co-supervisor).

41. Aviva Atkins, M.Sc., "Non-Stationary Harmonic Noise Reduction for Single-Channel Speech Enhancement".

42. Itay Yehezkel Karo, M.Sc., "True Spatial IIR Processing" (Tsvi Dvorkind- Co-supervisor).

43. Amir Ivry, M.Sc., "Deep Learning Approach for Voice Activity Detection" (Baruch Berdugo- Co-supervisor).

44. Eran Zeitouni, M.Sc., "Supervised Single-Sensor Source Localization of Moving Sources Using Diffusion Kernels".

45. Maya Rapaport, M.Sc., "Few-Shot Learning for Image Classification".

46. Yehav Alkaher, M.Sc., "In-Car Speech Communication and Reinforcement System".

47. Avital Kleiman, M.Sc., "Constant-Beamwidth Concentric Circular Array Beamformer" (Baruch Berdugo- Co-supervisor).

RESEARCH GRANTS

2005-6, Applied Materials Israel, 144,000 NIS, PI: Israel Cohen, "Anomaly Detection in Three Dimensional Data Based On Gauss Markov Random Field Modeling".

2005-9, ISF - Israel Science Foundation, 1,040,000 NIS, PI: Israel Cohen, "Statistical Modeling and Multichannel Processing of Speech Signals for Hands-Free Speech Communication Applications".

2006-7, MAFAAT - Israel Ministry of Defense, 47,000NIS, PI: Israel Cohen, "Blind Speaker separation in Adverse Conditions".

2006-8, European Community, Sixth Framework Program, 156,000 €, PI: Israel Cohen, MEMORIES project, "Design of an Audio Semantic Indexation System Allowing Information Retrieval for the Access to Archive Content".

2008, MAFAAT - Israel Ministry of Defense, 47,000NIS, PI: Israel Cohen, "Blind Speaker separation in Adverse Conditions".

2008-9, MAFAAT - Israel Ministry of Defense, 75,000NIS, PI: Israel Cohen, “Source Localization in Reverberant Noisy Environments”.

2011-15, ISF - Israel Science Foundation, 842,400 NIS, PI: Israel Cohen, “Supervised Speech and Audio Processing Based on Harmonic Analysis and Diffusion Maps”.

2013, Robert H. Hillman Foundation for Global Security - Collaboration Technion and University Northeastern, \$ 45,000, PI: Israel Cohen, “Self-Learning Engine for Anomaly Detection in Crowd Behavior (SLEAD)”.

2015, Qualcomm Research Award, \$ 50,000, PI: Israel Cohen, “Array Processing with Application to Audio and Cellular Networks”.

2016-8, MAFAAT - Israel Ministry of Defense, 200,000NIS, PI: Israel Cohen, “Wideband Underwater Acoustic Differential Sensors Arrays”.

2016-20, ISF - Israel Science Foundation, 1,120,000 NIS, PI: Israel Cohen, “Anomaly and Target Detection with a Geometry-Based Manifold Learning Approach”.

2017-20, ISF-NSFC, Israel Science Foundation and the National Natural Science Foundation of China joint research program, 1,110,000 NIS, PI: Israel Cohen, “Frequency-Invariant Microphone Array Design and Beamforming for Immersive Voice Communication”.

PUBLICATIONS

Theses

1. *Electromagnetic properties of periodic structures in HPM sources*, M.Sc. thesis, Dept. of Electrical Engineering, Technion – IIT, Haifa, Israel, May 1993 (Supervisors: Prof. Amiram Ron, Prof. Haim Cory and Dr. Moti Botton).
2. *Shift-Invariant Adaptive Wavelet Decompositions and Applications*, Ph.D. thesis, Dept. of Electrical Engineering, Technion – IIT, Haifa, Israel, June 1998 (Supervisors: Prof. Shalom Raz and Prof. David Malah).

Refereed papers in professional journals

Published papers

1. I. Cohen, S. Raz and D. Malah, “Orthonormal shift-invariant adaptive local trigonometric decomposition,” *Signal Processing*, Vol. 57, No. 1, Feb. 1997, pp. 43-64.
2. I. Cohen, S. Raz and D. Malah, “Orthonormal shift-invariant wavelet packet decomposition and representation,” *Signal Processing*, Vol. 57, No. 3, Mar. 1997, pp. 251-270.
3. I. Cohen, S. Raz and D. Malah, “Adaptive suppression of Wigner interference using shift-invariant wavelet packet decompositions,” *Signal Processing*, Vol. 73, No. 3, Jan. 1999, pp. 203-223.
4. I. Cohen, S. Raz and D. Malah, “Translation-invariant denoising using the minimum

- description length criterion,” *Signal Processing*, Vol. 75, No. 3, June 1999, pp. 201-223.
5. I. Cohen and B. Berdugo, “Speech Enhancement for Non-Stationary Noise Environments,” *Signal Processing*, Vol. 81, No. 11, Nov. 2001, pp. 2403-2418.
 6. I. Cohen and B. Berdugo, “Noise Estimation by Minima Controlled Recursive Averaging for Robust Speech Enhancement,” *IEEE Signal Processing Letters*, Vol. 9, No. 1, Jan. 2002, pp. 12-15.
 7. I. Cohen, “Optimal Speech Enhancement Under Signal Presence Uncertainty Using Log-Spectral Amplitude Estimator,” *IEEE Signal Processing Letters*, Vol. 9, No. 4, Apr. 2002, pp. 113-116.
 8. I. Cohen and R. R. Coifman, “Local Discontinuity Measures for 3-D Seismic Data,” *Geophysics*, Vol. 67, No. 6, Nov.-Dec. 2002, pp. 1933-1945.
 9. H. A. Schmitt, J. G. Riddle, T. M. Brucks, R. R. Coifman and I. Cohen, “An Object Detection Strategy for Uncooled Infrared Imagery,” *Journal of Modern Optics*, Vol. 50, No. 9, June 2003, pp. 1373-1382.
 10. I. Cohen, “Noise Spectrum Estimation in Adverse Environments: Improved Minima Controlled Recursive Averaging,” *IEEE Trans. Speech and Audio Processing*, Vol. 11, No. 5, Sep. 2003, pp. 466-475.
 11. I. Cohen and B. Berdugo, “Multichannel Signal Detection Based on the Transient Beam-to-Reference Ratio,” *IEEE Signal Processing Letters*, Vol. 10, No. 9, Sep. 2003, pp. 259-262.
 12. I. Cohen, S. Gannot and B. Berdugo, “An Integrated Real-Time Beamforming and Postfiltering System for Non-Stationary Noise Environments,” *Special Issue of the EURASIP Journal on Applied Signal Processing: Signal Processing for Acoustic Communication System*, Vol. 2003, No. 11, Oct. 2003, pp. 1064-1073.
 13. I. Cohen, “Analysis of Two-Channel Generalized Sidelobe Canceller (GSC) with Post-Filtering,” *IEEE Trans. Speech and Audio Processing*, Vol. 11, No. 6, Nov. 2003, pp. 684-699.
 14. I. Cohen, “Multichannel Post-Filtering in Nonstationary Noise Environments,” *IEEE Trans. Signal Processing*, Vol. 52, No. 5, May 2004, pp. 1149-1160.
 15. A. Goldman and I. Cohen, “Anomaly Detection Based on an Iterative Local Statistics Approach,” *Signal Processing*, Vol. 84, No. 7, July 2004, pp. 1225-1229.
 16. I. Cohen, “Identification of Speech Source Coupling Between Sensors in Reverberant Noisy Environments,” *IEEE Signal Processing Letters*, Vol. 11, No. 7, July 2004, pp. 613-616.
 17. I. Cohen, “Relative Transfer Function Identification Using Speech Signals,” *Special Issue of the IEEE Trans. Speech and Audio Processing on Multi-channel Signal Processing for Audio and Acoustics Applications*, Vol. 12, No. 5, Sep. 2004, pp. 451-459.
 18. I. Cohen, “Speech Enhancement Using a Noncausal *A Priori* SNR Estimator,” *IEEE Signal Processing Letters*, Vol. 11, No. 9, Sep. 2004, pp. 725-728.
 19. I. Cohen, “Modeling Speech Signals in the Time-Frequency Domain Using GARCH,” *Signal Processing*, Vol. 84, No. 12, Dec. 2004, pp. 2453-2459.
 20. S. Gannot and I. Cohen, “Speech Enhancement Based on the General Transfer Function GSC and Postfiltering,” *IEEE Trans. Speech and Audio Processing*, Vol. 12, No. 6, Nov. 2004, pp. 561-571.

21. A. Goldman and I. Cohen, "Anomaly Subspace Detection Based on a Multi-Scale Markov Random Field Model," *Signal Processing*, Vol. 85, No. 3, Mar. 2005, pp. 463-479.
22. I. Cohen, "Relaxed Statistical Model for Speech Enhancement and *A Priori* SNR Estimation," *IEEE Trans. Speech and Audio Processing*, Vol. 13, No. 5, Sep. 2005, pp. 870-881.
23. I. Cohen, "Speech Enhancement Using Super-Gaussian Speech Models and Noncausal *A Priori* SNR Estimation," *Speech Communication*, Vol. 47, No. 3, Nov. 2005, pp. 336-350.
24. I. Cohen, "Speech Spectral Modeling and Enhancement Based on Autoregressive Conditional Heteroscedasticity Models," *Signal Processing*, Vol. 86, No. 4, Apr. 2006, pp. 698-709.
25. A. Abramson and I. Cohen, "State Smoothing in Markov-Switching Time-Frequency GARCH Models," *IEEE Signal Processing Letters*, Vol. 13, No. 6, June 2006, pp. 377-380.
26. I. Cohen, N. Coult and A. Vassiliou, "Detection and Extraction of Fault Surfaces in 3-D Seismic Data," *Geophysics*, Vol. 71, No. 4, July-August 2006, pp. 21-27.
27. Y. Avargel and I. Cohen, "On Multiplicative Transfer Function Approximation in the Short-Time Fourier Transform Domain," *IEEE Signal Processing Letters*, Vol. 14, No. 5, May 2007, pp. 337-340.
28. Y. Avargel and I. Cohen, "System Identification in the Short-Time Fourier Transform Domain with Crossband Filtering," *IEEE Trans. Audio, Speech and Language Processing*, Vol. 15, No. 4, May 2007, pp. 1305-1319.
29. A. Noiboar and I. Cohen, "Anomaly Detection Based on Wavelet Domain GARCH Random Field Modeling," *IEEE Trans. Geoscience and Remote Sensing*, Vol. 45, No. 5, May 2007, pp. 1361-1373.
30. A. Abramson and I. Cohen, "On the Stationarity of Markov-Switching GARCH Processes," *Econometric Theory*, Vol. 23, No. 3, June 2007, pp. 485-500.
31. A. Abramson and I. Cohen, "Recursive Supervised Estimation of a Markov-Switching GARCH Process in the Short-Time Fourier Transform Domain," *IEEE Trans. Signal Processing*, Vol. 55, No. 7, July 2007, pp. 3227-3238.
32. G. Reuven, S. Gannot and I. Cohen, "Performance Analysis of Dual Source Transfer-Function Generalized Sidelobe Canceller," *Special Issue of Speech Communication on Speech Enhancement*, Vol. 49, Issues 7-8, July-August 2007, pp. 602-622.
33. G. Reuven, S. Gannot and I. Cohen, "Joint Noise Reduction and Acoustic Echo Cancellation using the Transfer-Function Generalized Sidelobe Canceller," *Special Issue of Speech Communication on Speech Enhancement*, Vol. 49, Issues 7-8, July-August 2007, pp. 623-635.
34. A. Abramson and I. Cohen, "Simultaneous Detection and Estimation Approach for Speech Enhancement," *IEEE Trans. Audio, Speech and Language Processing*, Vol. 15, No. 8, November 2007, pp. 2348-2359.
35. L. Shadhan and I. Cohen, "Detection of Anomalies in Texture Images Using Multi-Resolution Random Field Models," *Signal Processing*, Vol. 87, No. 12, December 2007, pp. 3045-3062.
36. H. Ofir, D. Malah and I. Cohen, "Audio Packet Loss Concealment in a combined MDCT-MDST Domain," *IEEE Signal Processing Letters*, Vol. 14, No. 12, December 2007, pp. 1032-1035.
37. Y. Avargel and I. Cohen, "Adaptive System Identification in the Short-Time Fourier Transform Domain Using Cross-Multiplicative Transfer Function Approximation," *IEEE Trans. Audio,*

Speech and Language Processing, Vol. 16, No. 1, January 2008, pp. 162-173.

38. G. Reuven, S. Gannot and I. Cohen, "Dual Source Transfer-Function Generalized Sidelobe Canceller," *IEEE Trans. Audio, Speech and Language Processing*, Vol. 16, Issue 4, May 2008, pp. 711-727.
39. A. Heimer and I. Cohen, "Multichannel Blind Seismic Deconvolution Using Dynamic Programming," *Signal Processing*, Vol. 88, Issue 7, July 2008, pp. 1839-1851.
40. E. A. P. Habets, S. Gannot, I. Cohen and P. C. W. Sommen, "Joint Dereverberation and Residual Echo Suppression of Speech Signals in Noisy Environments," *IEEE Trans. Audio, Speech and Language Processing*, Vol. 16, Issue 8, Nov. 2008, pp. 1433-1451.
41. A. Abramson and I. Cohen, "Single-Sensor Audio Source Separation Using Classification and Estimation Approach and GARCH Modeling," *IEEE Trans. Audio, Speech and Language Processing*, Vol. 16, Issue 8, Nov. 2008, pp. 1528-1540.
42. E. A. P. Habets, I. Cohen and S. Gannot, "Generating Non-Stationary Multi-Sensor Signals under a Spatial Coherence Constraint," *Journal of the Acoustical Society of America*, Vol. 124, Issue 5, Nov. 2008, pp. 2911-2917.
43. R. Talmon, I. Cohen and S. Gannot, "Relative Transfer Function Identification Using Convolutional Transfer Function Approximation," *IEEE Trans. Audio, Speech and Language Processing*, Vol. 17, Issue 4, May 2009, pp. 546-555.
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Patents

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Invited talks and tutorials

1. "On a Tradeoff Between Dereverberation and Noise Reduction Using the MVDR Beamformer," 34th IEEE Internat. Conf. Acoust. Speech Signal Process., ICASSP-2009, Taipei, Taiwan, April 19 –24, 2009 (invited talk given by my postdoctoral student E. Habets).
2. "GARCH Models and Their Applications to Speech Enhancement and Sea-Mine Detection in Sonar Images," the First Israeli Signal Processing Workshop, Bar-Ilan University, Israel, January 30, 2011 (invited talk).
3. "Speech Modeling and Enhancement in Nonstationary Noise Environments," IASTED International Conference on Signal and Image Processing and Applications, SIPA-2011, Crete, Greece, June 22 –24, 2011 (tutorial given by I. Cohen and S. Gannot).
4. "Speech Modeling and Enhancement Using Diffusion Maps," 37th IEEE Internat. Conf. Acoust. Speech Signal Process., ICASSP-2012, Kyoto, Japan, March 25-30, 2012 (tutorial given by I. Cohen, S. Gannot and R. Talmon).
5. "Speech Enhancement for Acoustic Communication Using Multiple Microphones and Diffusion Maps" 20th European Signal Processing Conference, EUSIPCO-2012, Bucharest, Romania, August 27-31, 2012 (tutorial given by I. Cohen, S. Gannot, E. Habets and R. Talmon).
6. "A Weighted Multichannel Wiener Filter for Multiple Sources Scenarios," 27th IEEE Convention of Electrical and Electronics Engineers in Israel, IEEEI-2012, Eilat, Israel, 14-17 November 2012 (invited talk given by my student S. Markovich Golan).
7. "Dominant Speaker Identification for Multipoint Videoconferencing," 27th IEEE Convention of Electrical and Electronics Engineers in Israel, IEEEI-2012, Eilat, Israel, 14-17 November 2012 (invited talk given by my student I. Volfin).
8. "Graph-Based Bayesian Approach for Transient Interference Suppression," 21st European Signal Processing Conference, EUSIPCO-2013, Marrakech, Morocco, September 9-13, 2013 (invited talk given by S. Gannot).
9. "Multisensory Speech Enhancement in Noisy Environments Using Bone-Conducted and Air-Conducted Microphones", 2nd IEEE China Summit and International Conference on Signal and Information Processing, ChinaSIP'14, July 9-13, 2014 (invited talk given by my student M. Li).
10. "GARCH Models and Their Applications to Speech Enhancement and Sea-Mine Detection in Sonar Images", The 2015 IEEE International Conference on Signal Processing, Communications and Computing (ICSPCC 2015), Ningbo, Zhejiang, China, September 19-22, 2015 (keynote speaker).
11. "GARCH Models and Applications to Speech Enhancement and Anomaly Detection", Winter

School on Speech and Audio Processing (WiSSAP 2016), Chennai, India, January 8-11, 2016 (invited speaker).

12. "Real-time microphone selection in noisy reverberant environments for teleconferencing systems", IEEE ICASSP-2016 Workshop on Sensor Array and Communications, Xi'an, China, March 28, 2016 (keynote speaker).
13. "Analysis and Design of Time-Domain First-Order Circular Differential Microphone Arrays," Proc. 22nd International Congress on Acoustics, ICA-2016, Buenos Aires, Argentina, Sep. 5-9, 2016 (invited talk given by my student Y. Buchris).
14. "Microphone array power ratio for speech quality assessment in noisy reverberant environments", 15th International Workshop on Acoustic Signal Enhancement, IWAENC-2016, Xi'an, China, Sep. 14-16, 2016 (keynote speaker).
15. "Multichannel speech enhancement and quality assessment in noisy reverberant environments", International Conference on Innovations in Electrical, Electronics, Instrumentation and Media Technology, ICIEEIMT 2017, Coimbatore, Tamil Nadu, India, February 3-4, 2017 (keynote speaker).
16. "Optimal multichannel signal enhancement in the time domain", 10th Anniversary of IEEE Xi'an Section, Xi'an, China, December 16, 2017 (keynote speaker).
17. "Array Processing and Beamforming with Kronecker Products", Tohoku University, Sendai, Japan, October 7, 2019 (distinguish lecturer).
18. "Array Processing and Beamforming with Kronecker Products", NTT Communication Science Laboratories, Kyoto, Japan, October 9, 2019 (distinguish lecturer).
19. "Array Processing and Beamforming with Kronecker Products", the University of Tokyo, Tokyo, Japan, October 11, 2019 (distinguish lecturer).
20. "Array Processing and Beamforming with Kronecker Products", University of Minnesota, Minneapolis, MN, USA, October 14, 2019 (distinguish lecturer).
21. "Array Processing and Beamforming with Kronecker Products", Mayo Clinic, Rochester, MN, USA, October 15, 2019 (distinguish lecturer).
22. "Array Processing and Beamforming with Kronecker Products", Iowa State University, Ames, Iowa, USA, October 17, 2019 (distinguish lecturer).
23. "Array Processing and Beamforming with Kronecker Products", 8th IET International Conference on Wireless, Mobile and Multimedia Networks, ICWMMN 2019, Beijing, China, November 15-17, 2019 (keynote speaker, distinguish lecturer).
24. "Optimal Multichannel Signal Enhancement", University of Chile, Santiago, Chile, December 2, 2019 (distinguish lecturer).
25. "Audio-Visual Voice Activity Detection Using Deep Neural Networks", University of Chile, Santiago, Chile, December 3, 2019 (distinguish lecturer).
26. "Array Processing and Beamforming with Kronecker Products", University of São Paulo, São Paulo, Brazil, December 4, 2019 (distinguish lecturer).
27. "Audio-Visual Voice Activity Detection Using Deep Neural Networks", Federal University of ABC (UFABS), Santo André, Brazil, December 5, 2019 (distinguish lecturer).
28. "Audio-Visual Voice Activity Detection Using Deep Neural Networks", Federal University of

Rio de Janeiro (UFRJ), Rio de Janeiro, Brazil, December 6, 2019 (distinguish lecturer).

Participation in organizing conferences

- 2007 Organizer and Chair of a Workshop on Speech Enhancement and Multichannel Audio Processing, Technion, Israel, Feb. 22, 2007.
- 2010 General Co-Chair of the Organizing Committee, International Workshop on Acoustic Echo and Noise Control, IWAENC, August 30th – September 2nd, 2010, Tel-Aviv, Israel.
- 2014 Co-Chair of the Organizing Committee, The 4th Annual International TCE Conference, May 26-27, 2014, Technion, Haifa, Israel.
- 2016 Organizing Committee, IEEE International Conference on the Science of Electrical Engineering (ICSEE), Nov. 16 – 18, 2016, Eilat, Israel.
- 2016 Co-Chair of the IEEE International Symposium on Speech and Audio Processing, Nov. 17, 2016, Eilat, Israel.

Conference activities

- 2004 Session Chair, 23rd IEEE Convention of the Electrical and Electronic Engineers in Israel, Israel
- 2005 Speech Technical Committee Associate for ICASSP-2005
- 2006 Session Chair, 31st IEEE Internat. Conf. Acoust. Speech Signal Process., ICASSP-2006, France
- 2006 Speech Technical Committee Associate for ICASSP-2006
- 2009 Session Chair, 34th IEEE Internat. Conf. Acoust. Speech Signal Process., ICASSP-2009, Taiwan
- 2011 Session Chair, 1st Technion Computer Engineering (TCE) Conference, Technion, Haifa, Israel.
- 2011 Scientific Review Committee Member, 12th Annual Conference of the International Speech Communication Association (ISCA), INTERSPEECH 2011, Florence, Italy.
- 2012 Session Chair, 13th International Workshop on Acoustic Echo and Noise Control, IWAENC-2012, Aachen, Germany.
- 2013 Session Chair, 38th IEEE Internat. Conf. Acoust. Speech Signal Process., ICASSP-2013, Vancouver, Canada.
- 2014 Session Chair, 39th IEEE Internat. Conf. Acoust. Speech Signal Process., ICASSP-2014, Florence, Italy.
- 2016 Session Chair, 41st IEEE Internat. Conf. Acoust. Speech Signal Process., ICASSP-2016, Shanghai, China.
- 2017 Session Chair, IEEE Workshop on Applications of Signal Processing to Audio and Acoustics, WASPAA-2017, New Paltz, NY.