

Ronen Talmon

Curriculum Vitae

February 2020

Personal Information

Address: Viterbi Faculty of Electrical Engineering, Technion - Israel Institute of Technology

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Academic Degrees

Technion - Israel Institute of Technology

Ph.D. at the Department of Electrical Engineering, direct course

2006–2011

Under the supervision of Prof. Israel Cohen and Prof. Sharon Gannot

Thesis title: "Supervised Speech Processing Based on Geometric Analysis"

The Open University

B.A. in Mathematics and Computer Science, Cum Laude

2001–2005

during military service

Academic Appointments

Technion - Israel Institute of Technology

Tenured Associate Professor in the Department of Electrical Engineering

2019–

Technion - Israel Institute of Technology

Assistant Professor in the Department of Electrical Engineering

2014–2018

Yale University

Gibbs Assistant Professor in the Mathematics Department

2011–2013

Research Interests

Signal processing, data analysis, manifold learning, diffusion geometry, kernel methods, sensor fusion, dynamical systems

Teaching Experience

Structure of Operating Systems

Teaching assistant

2006–2008

Department of Electrical Engineering, Technion - Israel Institute of Technology

Signal and Image Processing Lab (SIPL)

Undergraduate project supervisor

2007–2011

Department of Electrical Engineering, Technion - Israel Institute of Technology

Supervising 20 projects (2 appears in international conf. papers)

Introduction to Digital Signal Processing

Teaching assistant in charge

2008–2011

Department of Electrical Engineering, Technion - Israel Institute of Technology

Digital Speech Processing in Noisy Environments (Graduate Course)

Teaching assistant

2009–2011

Department of Electrical Engineering, Technion - Israel Institute of Technology

Calculus of Functions of One Variable I

Lecturer

2012–2013

Mathematics Department, Yale University

Ordinary Differential Equations

Lecturer

2013

Mathematics Department, Yale University

Harmonic Analysis of Graphs with Applications to Information Organization (Graduate Course)

Lecturer

2013

Mathematics Department, Yale University

Nonlinear Signal Processing using Geometric Methods (Graduate Course)

Lecturer

2014–

Department of Electrical Engineering, Technion - Israel Institute of Technology

Introduction to Digital Signal Processing

Lecturer

2015–

Department of Electrical Engineering, Technion - Israel Institute of Technology

Networks, Graphs and Signal Processing (Graduate Course)

Lecturer

2019–

Department of Electrical Engineering, Technion - Israel Institute of Technology

Departmental Activities

Department Meetings Secretary, 2014–2015, *EE Department, Technion.*

Member, Undergraduate studies committee, 2016–, *EE Department, Technion.*

Undergraduate students advisor, 2016–2018, *EE Department, Technion.*

Member, Math undergraduate studies sub-committee, 2018–, *EE Department, Technion.*

Professional Activities

Associate Editor, *IEEE Trans. Information Theory*, 10.2019–.

Elected member, IEEE audio and acoustic signal processing technical committee, 2018–.

Tutorials and Demos.....

Speech Modeling and Enhancement Using Diffusion Maps

The 37th International Conference on Acoustics, Speech, and Signal Processing (ICASSP'12)

With I. Cohen and S. Gannot

Speech Enhancement for Acoustic Communication using Multiple Microphones and Diffusion Maps

The 20th European Signal Processing Conference (EUSIPCO'12)

With I. Cohen, S. Gannot, and E. Habets

Manifold Learning for Data-driven Dynamical System Analysis

The 44th International Conference on Acoustics, Speech, and Signal Processing (ICASSP'19)

With K. Shiran, G. Kinberg, O. Yair and Y. Moshe

Multi-Microphone Source Localization on Manifolds

The 27th European Signal Processing Conference (EUSIPCO'19)

With B. Laufer-Goldstein and S. Gannot

Invited Talks.....

2013 DOE Applied Mathematics Program Meeting in Albuquerque, NM, Aug. 2013

TCE International Conference, Technion - IIT, May. 2014

SIAM Conference on Computational Science and Engineering (CSE), Salt Lake City UT, Mar. 2015

Workshop on Mathematics for Signal Processing, Hausdorff Research Institute for Mathematics, Bonn, Mar. 2016

Workshop on Applied Harmonic Analysis, Massive Data Sets, Machine Learning, and Signal Processing, Banff International Research Station – Casa Matematica Oaxaca (CMO), Oaxaca, Mexico, Oct. 2016

Dagstuhl Seminar on Functoriality in Geometric Data, Schloss Dagstuhl, Germany, Jan 2017

SIAM conference on applications of dynamical systems, Snowbird, Utah, May 2017

NSF-CRCNS annual meeting, ICERM, Providence RI, June 2017

Applied Harmonic Analysis and Data Processing Workshop, Oberwolfach, Germany, March 2018
 Manifold Discovery in Neural Data Workshop, Simons Foundation, NYC, April 2018
 IPAM Geometry of Big Data Workshop, LA, May 2019
 Workshop on Applied Harmonic Analysis and Data Science, Banff International Research Station – Casa
 Matematica Oaxaca (CMO), Oaxaca, Mexico, Oct. 2019

Seminars and Talks.....

Applied Math Seminar, Mathematics Department, Yale University, Apr. 2010
 Applied Math Seminar, Mathematics Department, Yale University, Apr. 2012
 IDEAS Seminar, The Program in Applied and Computational Mathematics, Princeton University, Apr. 2012
 Applied Math Seminar, Mathematics Department, Duke University, Oct. 2012
 Signal Processing Seminar, Electrical and Computer Engineering, Rice University, Dec. 2012
 Applied Mathematics Seminar, Tel Aviv University, Dec. 2012
 Colloquium, Faculty of Engineering, Bar-Ilan University, Dec. 2012
 EE Colloquium, Electrical Engineering Department, Tel Aviv University, Dec. 2012
 Electrical Engineering Department, Technion - IIT, Dec. 2012
 Colloquium, Electrical and Computer Engineering Department, Ben Gurion University, Jan. 2013
 The Learning Club, The Hebrew University of Jerusalem, Jan. 2013
 Faculty of Mathematics and Computer Science, Weizmann Institute of Science, Jan. 2013
 Statistics and Topology Seminar, Electrical Engineering Department, Technion - IIT, May. 2014
 Electrical and Computer Engineering Department, NC State University, Aug. 2014
 The Learning Club, The Hebrew University of Jerusalem, May. 2015
 Applied Mathematics Seminar, Tel Aviv University, May. 2015
 Nonlinear Analysis and Optimization Seminar, Mathematics Department, Technion, June. 2015
 Applied Math Seminar, Mathematics Department, Yale University, Dec. 2015
 Tel Aviv University Annual Meeting on Alzheimer’s disease, Tel Aviv, Israel, Jun. 2016
 ICML workshop on Multi-View Representation Learning, New York, NY, Jun. 2016
 EEI Colloquium, Friedrich-Alexander-University Erlangen-Nurnberg, Erlangen, Germany, July 2016
 EE Colloquium, Tel Aviv University, April 2017
 Faculty of Mathematics and Computer Science, Weizmann Institute of Science, July 2017
 Faculty of Mathematics and Computer Science, Weizmann Institute of Science, Jan 2019

Misc.....

Organizer of the Applied Mathematics Seminar, 2011–2013, *Yale University*
 Reviewer for IEEE Transactions on Signal Processing, IEEE Transactions on Audio, Speech and Language
 Processing, IEEE Transactions on Pattern Analysis and Machine Intelligence, IEEE Transactions on Neu-
 ral Systems and Rehabilitation Engineering, IEEE Transactions on Signal and Information Processing over
 Networks, IEEE Signal Processing Letters, Applied and Computational Harmonic Analysis, Signal Process-
 ing, EURASIP Journal on Advances in Signal Processing, Machine Learning, Artificial Intelligence, IEEE
 Transactions on Cybernetics, Acta Acoustica, and for many signal processing conferences
 Reviewer of proposals for the Israel Science Foundation (ISF), Ministry of Science, Technology and Space
 (MOST), Pazy foundation, Natural Sciences and Engineering Research Council of Canada (NSERC), Swiss
 National Science Foundation (SNF), and for the United States - Israel Binational Science Foundation (BSF).

Scholarships and Awards

Dean’s List (*cum laude*)

The Open University 2001, 2002

President’s List (*summa cum laude*)

The Open University 2004, 2005

Excellence in Teaching Award for Outstanding TAs <i>Technion - IIT</i>	2008, 2011
SIPL Distinguished Supervisors Award <i>Signal and Image Processing Lab, Technion - IIT</i>	2010
Irwin and Joan Jacobs Fellowship <i>Technion - IIT</i>	2011
Gibbs Assistant Professorship <i>Yale University</i>	2011–2014
Viterbi Fellowship for Nurturing Future Faculty Members <i>Department of Electrical Engineering, Technion - IIT</i>	2011–2013
Students Cooperation in Research Award <i>Technion - IIT</i>	2012
AMS-Simons Travel Grant <i>American Mathematical Society</i>	2012–2014
Horev Fellowship <i>Technion - IIT</i>	2014–2016
Distinction for Excellence in Teaching <i>Technion - IIT</i>	2018

Graduate Students and Postdocs

Graduate Students In Progress.....

- 1: Tal Shnitzer, Ph.D. (direct track), "Time-series analysis based on geometric signal modeling and filtering".
- 2: Or Yair, Ph.D. (direct track), "Geometry learning for data-driven analysis of dynamical systems".
- 3: Bracha Laufer-Goldshtein, Ph.D. (Prof. Sharon Gannot – Principal supervisor), "Manifold learning techniques for source localization and beamforming".
- 4: Ori Katz, Ph.D. "Signal processing on multiple graphs".
- 5: Almog Lahav, Ph.D. (direct track), "Optimal transport on manifolds for domain adaptation and metric learning".
- 6: Amitay Bar, Ph.D.
- 7: Ya-Wei Lin, M.Sc., "Anomaly detection with geometric methods".
- 8: Joumana Silbek, M.Sc., "Revealing the dynamic connectivity underlying high-dimensional time-series".
- 9: Ido Cohen, M.Sc., "Multimodal data-driven target and anomaly detection".
- 10: Aviad Wiegner, M.Sc., "Prediction of stochastic dynamical systems using Koopman operator analysis".
- 11: Lior Aloni, M.Sc. (Prof. Omer Bobrowski – Principal supervisor), "Representation and metric learning with geometric and topological analysis".
- 12: Adi Arbel, M.Sc., "Holomorphic interpolation schemes for multimodal manifold learning".

Graduated Students and Postdocs.....

- 1: Ariel Schwartz, M.Sc., "Deep learning for intrinsic manifold regularization in dynamical systems", Graduation date: 9.2017.
- 2: Ori Katz, M.Sc., "Adaptive covariance matrix estimation with application to intrinsic manifold learning", Graduation date: 8.2017.
- 3: David Dov, Ph.D. (Prof. Israel Cohen – Principal supervisor), "Multimodal signal processing on manifolds", Graduation date: 8.2018.
- 4: Hadas Benisty, Postdoc (Prof. Ron Meir - Co-host), "Neuronal activity data analysis", 11.2015-8.2018.
- 5: Noam Bloom, M.Sc., "Covariance matrix estimation for geometric modeling of signals", Graduation date: 11.2018.
- 6: Maya Harel, M.Sc. (Prof. Ron Meir – Co-supervisor), "Analyzing neuronal signals using geometric methods", Graduation date: 12.2018.

International Graduate Students.....

- 1: Tabea Kossen, M.Sc., TU Berlin, Graduation date: 12.2017.
- 2: Lukas Forster, M.Sc., University Erlangen-Nuremberg, Graduation date: 6.2018.
- 3: Jonas Laake, M.Sc., University Erlangen-Nuremberg, Graduation date: 6.2018.

Research Grants

Past:

- 1: The Integration of Data-Mining with Multiscale Engineering Computations
National Science Foundation (NSF), PIs: R. R. Coifman (Yale University) and I. G. Kevrekidis (Princeton University), CoPI: R. Talmon, 2013–2016 (\$250,000 per year for 4 years)
- 2: Acoustic Scene Identification
MAFAT, PIs: R. Talmon and S. Gannot, 2016–2017 (50,000NIS)
- 3: Analysis and Modeling of Noisy Signals
Elbit Systems, PI: R. Talmon, 2016–2017 (90,000NIS)
- 4: Empirical Intrinsic Modeling for Nonlinear Signal Processing
Marie Curie Actions – Career Integration Grants (CIG), *European Research Council*, PI: R. Talmon, 2014–2018 (25,000 Euros per year for 4 years)
- 5: Environment-Aware Data-Driven Acoustic Signal Processing
Kamin, PIs: R. Talmon and S. Gannot, 2017–2019 (1,320,000NIS)

Current:

- 1: Sensory-Motor Integration in the Mammalian Brain: experiment, data-analysis and modeling
BSF-NSF-NIH Program in Computational Neuroscience, PIs: R. Talmon, J. Schiller, R. Meir and R. R. Coifman, 2016–2020 (Israeli part: \$80,000 per year for 4 years)
- 2: Common Manifold Learning for Nonlinear Signal Processing
ISF, PI: R. Talmon, 2016–2020 (280,000NIS per year for 4 years)
- 3: Cyber defense of industrial control systems and critical infrastructure by intrinsic sensor data analysis
Hiroshi Fujiwara Cyber Security Research Center, Technion, PI: R. Talmon, 2017–2020 (300,000NIS)
- 4: **Nonlinear Data and Signal Analysis with Diffusion Operators**
ERC Starting Grant, PI: R. Talmon, 2018–2023 (1,260,000 Euros for 5 years)
- 5: Data-driven High-dimensional Multimodal Data Fusion with Applications to Anomaly Detection and Condition Monitoring
Pazy Foundation, PIs: R. Talmon and Alon Amar (Rafael), 2019–2023 (200,000 NIS per year for 4 years)

Publications

Journal Publications

Published:

- 1: R. Talmon, I. Cohen, and S. Gannot, "Relative transfer function identification using convolutive transfer function approximation," *IEEE Trans. on Audio, Speech and Language Processing*, Vol. 17, Issue 4, pp. 546-555, 2009.
- 2: R. Talmon, I. Cohen, and S. Gannot, "Convolutive transfer function generalized sidelobe canceler," *IEEE Trans. on Audio, Speech and Language Processing*, Vol. 17, Issue 7, pp. 1420-1434, 2009.
- 3: R. Talmon, I. Cohen, and S. Gannot, "Transient noise reduction using nonlocal diffusion filters," *IEEE Trans. on Audio, Speech and Language Processing*, Vol. 19, Issue 6, pp. 1584-1599, 2011.
- 4: R. Talmon, D. Kushnir, R. R. Coifman, I. Cohen, S. Gannot, "Parametrization of linear systems using diffusion kernels," *IEEE Trans. on Signal Processing*, Vol. 60, Issue 3, pp. 1159-1173, 2012.
- 5: R. Talmon, I. Cohen, S. Gannot, and R. R. Coifman, "Supervised graph-based processing for sequential transient interference suppression," *IEEE Trans. on Audio, Speech and Language Processing*, Vol. 20, Issue 9, pp. 2528-2538, 2012.
- 6: R. Talmon, I. Cohen, and S. Gannot, "Single-channel transient interference suppression with diffusion maps," *IEEE Trans. on Audio, Speech and Language Processing*, Vol. 21, Issue 1, pp. 132-144, 2013.
- 7: D. Duncan, R. Talmon, H. P. Zaveri, and R. R. Coifman, "Predicting seizures in intracranial EEG data using diffusion kernels," *Special Issue in the Mathematical Biosciences and Engineering (MBE)*, vol. 10, no. 2, pp. 579-590, 2013.
- 8: R. Talmon and R. R. Coifman, "Empirical intrinsic geometry for nonlinear modeling and time series filtering," *Proc. Nat. Acad. Sci. (PNAS)*, vol. 110, no. 31, pp. 12535-12540, 2013.
- 9: R. Talmon, I. Cohen, S. Gannot, and R. R. Coifman, "Diffusion maps for signal processing," *Special Issue on Advances in Kernel-based Learning for Signal Processing in the IEEE Signal Processing Magazine*, vol. 30, no. 4, pp. 75-86, 2013 (invited paper).
- 10: C. J. Dsilva, R. Talmon, N. Rabin, R. R. Coifman, I. G. Kevrekidis, "Nonlinear intrinsic variables and state reconstruction in multiscale simulations," *The Journal of Chemical Physics*, vol. 139, 2013.
- 11: R. Talmon and R. R. Coifman, "Intrinsic modeling of stochastic dynamical systems using empirical geometry," *Applied and Computational Harmonic Analysis*, Vol. 39, No.1, pp. 138-160, 2015.
- 12: G. Mishne, R. Talmon, and I. Cohen, "Graph-based supervised automatic target detection," *IEEE Transactions on Geoscience and Remote Sensing*, Vol. 53, No. 5, pp. 2738 -2754, 2015.
- 13: H.-T. Wu, R. Talmon, and Y.-L. Lo, "Assess sleep stage by modern signal processing techniques," *IEEE Transactions on Biomedical Engineering*, Vol. 62, No. 4, pp. 1159-1168, 2015.
- 14: D. Dov, R. Talmon, and I. Cohen, "Audio-visual voice activity detection using diffusion maps," *IEEE Trans. on Audio, Speech and Language Processing*, Vol. 23, No. 4, pp. 732-745, 2015.
- 15: W. Lian, R. Talmon, H. Zaveri, L. Carin, and R. R. Coifman, "Multivariate time-series analysis and diffusion maps," *Signal Processing*, Vol. 116, pp. 13-28, 2015.
- 16: R. Talmon, S. Mallat, H. Zaveri, and R. R. Coifman, "Manifold learning for latent variable inference in dynamical systems," *IEEE Trans. Signal Processing*, Vol. 63, No.15, pp. 3843-3856, 2015.
- 17: C. J. Dsilva, R. Talmon, R. R. Coifman, and I. G. Kevrekidis, "Parsimonious representation of nonlinear dynamical systems through manifold learning: a chemotaxis case study," *Applied and Computational Harmonic Analysis*, Vol. 44, No. 3, pp. 759-773, 2018 (accepted for publication in 2015).
- 18: R. R. Lederman and R. Talmon, "Learning the geometry of common latent variables using alternating-diffusion," *Applied and Computational Harmonic Analysis*, Vol. 44, No. 3, pp. 509-536, 2018 (accepted for publication in 2015).
- 19: C. J. Dsilva, R. Talmon, C. W. Gear, R. R. Coifman, and I. G. Kevrekidis, "Data-driven reduction for a class of multiscale fast-slow stochastic dynamical systems," *SIAM J. Appl. Dyn. Syst.*, 15(3), 1327-1351, 2016.
- 20: B. Laufer-Goldstein, R. Talmon, S. Gannot, "Semi-supervised sound source localization based on manifold regularization," *IEEE Trans. Audio, Speech, Lang. Proces.*, 24(8), 1393-1407, 2016.
- 21: G. Mishne, R. Talmon, R. Meir, J. Schiller, U. Dubin, M. Lavzin, R. R. Coifman, "Hierarchical coupled-geometry analysis for neuronal structure and activity pattern discovery," *IEEE Journal of Selected Topics in Signal Processing*, 10(7), 1238-1253, 2016
- 22: D. Dov, R. Talmon, I. Cohen, "Kernel Method for Voice Activity Detection in the Presence of Transients," *IEEE/ACM Trans. Audio Speech Lang. Process.*, 24(12), 2313-2326, 2016.

- 23: D. Dov, R. Talmon and I. Cohen, "Kernel-based sensor fusion with application to audio-visual voice activity detection," *IEEE Trans. Signal Process.*, 64(24), 6406-6416, 2016.
- 24: J. Sulam, Y. Romano and R. Talmon, "Dynamical systems classification with diffusion embedding for ECG-based person identification," *Signal Processing*, 130, 403-411, 2017.
- 25: T. Shnitzer, R. Talmon and J. J. Slotine, "Manifold learning with contracting observers for data-driven time-series analysis," *IEEE Trans. Signal Process.*, 65(4), 904-918, 2017.
- 26: O. Yair and R. Talmon, "Local canonical correlation analysis for nonlinear common variables discovery," *IEEE Trans. Signal Process.*, 65(5), 1101-1115, 2017.
- 27: A. Shemesh, R. Talmon, M. Bar, O. Karp, I. Amir, Y. J. Grobman, "Affective Response to Architecture - Investigating Human Reaction to Spaces with Different Geometry," *Architectural Science Review*, 60(2), 116-125, 2017.
- 28: D. Dov, R. Talmon and I. Cohen, "Multi-modal kernel method for activity detection of sound sources," *IEEE/ACM Trans. Audio, Speech, Lang. Proces.*, 25(6), 1322-1334, 2017.
- 29: B. Laufer-Goldstein, R. Talmon, S. Gannot, "Semi-supervised source localization on multiple-manifolds with distributed microphones," *IEEE/ACM Trans. Audio, Speech, Lang. Proces.*, 25(7), 1477-1491, 2017.
- 30: O. Yair, R. Talmon, R. R. Coifman, I. G. Kevrekidis, "Reconstruction of normal forms by learning informed observation geometries from data," *Proceedings of the National Academy of Sciences (PNAS)*, 201620045, 2017.
- 31: R. Talmon and H.-T. Wu, "Latent common manifold learning with alternating diffusion: Analysis and applications," *accepted for publication in Applied and Computational Harmonic Analysis*, Dec. 2017.
- 32: V. Papyan, R. Talmon, "Multimodal Latent Variable Analysis," *Signal Processing*, Vol. 142, pp. 178-187, 2018.
- 33: G. Mishne, R. Talmon, I. Cohen, R. R. Coifman, and Y. Kluger, "Data-Driven Tree Transforms and Metrics," *IEEE Transactions on Signal and Information Processing over Networks*, Vol. 4, No. 3, 2018.
- 34: B. Laufer-Goldstein, R. Talmon, S. Gannot, "A hybrid approach for speaker tracking based on TDOA and data-driven models," *IEEE/ACM Trans. Audio, Speech, Lang. Proces.*, 26(4), 725-735, Apr 2018.
- 35: D. Dov, R. Talmon and I. Cohen, "Sequential audio-visual correspondence with alternating diffusion kernels," *IEEE Trans. Signal Process.*, Vol. 66, No. 12, pp. 3100-3111, 2018.
- 36: D. W. Sroczynski, O. Yair, R. Talmon, and I. G. Kevrekidis, "Data-driven evolution equation reconstruction for parameter-dependent nonlinear dynamical systems," *Israel Journal of Chemistry*, Vol. 58, No. 6-7, Special Issue: Nonlinear Dynamics in Chemical Reaction Engineering, pp. 787-794, 2018.
- 37: O. Katz, R. Talmon, Y.-L. Lo and H.-T. Wu, "Alternating diffusion maps for multimodal data fusion," *Information Fusion*, Vol. 45, pp. 346-360, 2019.
- 38: A. Lahav, R. Talmon, Y. Kluger, "Mahalanonbis distance informed by clustering," *Information and Inference: A Journal of the IMA*, iay011, <https://doi.org/10.1093/imaiai/iay011>, 2018.
- 39: B. Laufer-Goldstein, R. Talmon, S. Gannot, "Source Counting and Separation Based on Simplex Analysis," *IEEE Trans. Signal Process.*, Vol. 66, No. 24, pp. 6458-6473, 2018.
- 40: F. P. Kemeth, S. W. Haugland, F. Dietrich, T. Bertalan, Q. Li, E. M. Bollt, R. Talmon, K. Krischer, and I. G. Kevrekidis, "An Emergent Space for Distributed Data With Hidden Internal Order Through Manifold Learning," *IEEE Access*, Vol. 6, pp. 77402-77413, 2018.
- 41: O. Yair, M. Ben-chen, and R. Talmon, "Parallel Transport on the Cone Manifold of SPD Matrices for Domain Adaptation," *IEEE Trans. Signal Process.*, Vol. 67, no. 7, pp. 1797-1811, 2019.
- 42: A. Schwartz, and R. Talmon, "Intrinsic isometric manifold learning with application to localization," *SIAM Journal on Imaging Science*, Vol. 12, No. 3, pp. 1347-1391, 2019.
- 43: T. Shnitzer, M. Ben-Chen, L. Guibas, R. Talmon and H.-T. Wu, "Recovering Hidden Components in Multimodal Data with Composite Diffusion Operators," *SIAM Journal on Mathematics of Data Science*, Vol. 1. No. 3, pp. 588-616, 2019.
- Accepted for publication:**
- 44: F. Aeed, T. Shnitzer, R. Talmon, and Y. Schiller, "Layer- and cell-specific recruitment dynamics during epileptic seizures in-vivo", *accepted for publication in Annals of Neurology*, 2019.
- 45: M. Taseska, T. V. Waterschoot, E. A. P. Habets and R. Talmon, "Nonlinear Filtering with Variable-Bandwidth Exponential Kernels", *accepted for publication in IEEE Trans. Signal Processing*, 2019.
- Submitted:**
- 46: B. Laufer-Goldstein, R. Talmon, S. Gannot, "Analysis of Linear Optimization over Correlations for Speaker Diarization and Separation," *submitted*, 2018.

47: M. Lavzin, S. Levy, H. Benisty, U. Dubin, Z. Brosh, F. Aeed, Y. Schiller, R. Meir, O. Barak, R. Talmon, A. Hantman and J. Schiller, "Cell type and context specific outcome representation in primary motor cortex", *submitted*, 2019

48: T. Shnitzer, R. Talmon and J. J. Slotine, "Diffusion maps Kalman filter," *submitted*, 2018.

49: B. Laufer-Goldstein, R. Talmon, S. Gannot, "Global and Local Simplex Representations for Multichannel Source Separation," *submitted*, 2019.

Book Chapters

R. Talmon, I. Cohen, and S. Gannot, "Identification of the relative transfer function between sensors in the short-time Fourier transform domain," in I. Cohen, J. Benesty, and S. Gannot (Eds.), *Speech Processing in Modern Communication: Challenges and Perspectives*, Springer, 2010.

R. R. Coifman, R. Talmon, M. Gavish, and A. Haddad, "Information Integration, Organization and Numerical Harmonic Analysis", *Springer Proceedings of AMMCS-2013*, 2014.

D. Dov, R. Talmon, I. Cohen, "Audio-visual Source Separation with Alternating Diffusion Maps", *Audio Source Separation*, Springer, 2018.

T. Shnitzer, R. Lederman, R. Talmon, G. R. Liu, H. T. Wu, "Diffusion operators for multimodal data analysis", in R. Kimmel and X.-C. Tai (Eds.), *Processing, Analyzing and Learning of Images, Shapes, and Forms: Part 2*, Handbook of Numerical Analysis, Vol. 20, Elsevier, 2019.

T. Shnitzer, R. Talmon, J. J. Slotine, "Manifold Learning for Data-Driven Dynamical System Analysis", in A. Mauroy, I. Mezic, Y. Susuki (Eds.), *The Koopman Operator in Systems and Control*, Springer, 2019.

Refereed Conference Publications

Published:

1: R. Talmon, I. Cohen, and S. Gannot, "Identification of the relative transfer function between microphones in reverberant environments," *Proc. 25th IEEE Convention of the Electrical and Electronics Engineering in Israel*, Eilat, Israel, Dec. 2008, pp. 208-212.

2: R. Talmon, I. Cohen, and S. Gannot, "Multichannel speech enhancement using convolutive transfer function approximation in reverberant environments," *Proc. 34th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP'09)*, Taipei, Taiwan, Apr. 2009, pp. 3885-3888.

3: R. Talmon, I. Cohen, and S. Gannot, "Speech enhancement in transient noise environments using diffusion filtering," *Proc. 35th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP'10)*, Dallas, TX, Mar. 2010, pp. 4782-4785.

4: R. Talmon, I. Cohen, and S. Gannot, "Clustering and suppression of transient noise in speech signals using diffusion maps," *Proc. 36th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP'11)*, Prague, Czech Republic, May 2011, pp. 5084-5087.

5: Y. Michalevsky, R. Talmon, I. Cohen, "Speaker identification using diffusion maps," *Proc. 19th European Signal Processing Conference (EUSIPCO'11)*, Barcelona, Spain, Aug. 2011.

6: R. Talmon, I. Cohen, and S. Gannot, "Supervised source localization using diffusion kernels," *Proc. IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA'11)*, New Paltz, NY, Oct. 2011.

7: T. Koren, R. Talmon, and I. Cohen, "Supervised system identification based on local PCA models," *Proc. 37th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP'12)*, Kyoto, Japan, Mar. 2012.

8: A. Hirschhorn, D. Dov, R. Talmon and I. Cohen, "Transient interference suppression in speech signals based on the OM-LSA algorithm," *Proc. International Workshop on Acoustic Signal Enhancement (IWAENC'12)*, Aachen, Germany, Sept. 2012.

9: R. Talmon and E.A.P. Habets, "Blind reverberation time estimation by intrinsic modeling of reverberant speech", *Proc. 38th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP'13)*, Vancouver, Canada, Jun. 2013.

10: R. Talmon, Y. Shkolnisky, and R. R. Coifman, "Nonlinear modeling and processing using empirical intrinsic geometry with application to biomedical imaging", *Proc. Conf. Geometric Science of Information (GSI'13)*, Paris, France, Aug. 2013 (invited paper).

11: R. Talmon, I. Cohen, S. Gannot, and R. R. Coifman, "Graph-based Bayesian approach for transient interference suppression", *Proc. 21th European Signal Processing Conference (EUSIPCO'13)*, Marrakech, Morocco, Sept. 2013 (invited paper).

12: R. Talmon, and S. Gannot, "Relative transfer function identification on manifolds for supervised GSC beamformers", *Proc. 21th European Signal Processing Conference (EUSIPCO'13)*, Marrakech, Morocco, Sept. 2013 (invited paper)

- 13:** B. Laufer, R. Talmon, and S. Gannot, "Relative transfer function modeling for supervised source localization", *Proc. IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA)*, New Paltz, NY, Oct. 2013.
- 14:** R. V. Chudacek, R. Talmon, J. Anden, S. Mallat, R. R. Coifman, P. Abry, M. Doret, "Low dimensional manifold embedding for scattering coefficients of intrapartum fetal heart rate variability", *Proc. of The 36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC'14)*, Aug. 2014.
- 15:** R. R. Lederman, R. Talmon, H.-T. Wu, Y.-L. Lo, and R. R. Coifman, "Alternating diffusion for common manifold learning with application to sleep stage assessment", *Proc. 40th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP'15)*, Brisbane, Australia, Apr. 2015.
- 16:** B. Laufer, R. Talmon, and S. Gannot, "A Study on Manifolds of Acoustic Responses", *Proc. of the 12th International Conference on Latent Variable Analysis and Signal Separation*, Czech Republic, Aug. 2015 (*runner up – best student paper award*).
- 17:** B. Laufer, R. Talmon, and S. Gannot, "Manifold-based Bayesian inference for semi-supervised source localisation", *Proc. IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP'16)*, Shanghai, China, Mar. 2016 (*invited paper*).
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