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## PERSONAL DETAILS

First Name: Dana  
Surname: Lahat  
Date of birth: 1973  
Place of birth: Tel Aviv - Yafo, Israel  
Nationality: Israeli

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## CONTACT INFORMATION

Address: IRIT–ENSEEIH  
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## ACADEMIC POSITION

2018 – present Post-doctoral researcher, employed by the [CNRS](#), working at [IRIT](#), Toulouse, France.  
2013 – 2018 Post-doctoral researcher, employed by [Université Grenoble Alpes](#), worked at at [GIPSA-Lab](#), Grenoble, France.

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## HIGHER EDUCATION

PhD, 2005–2012 at the Department of Electrical Engineering-Systems, Faculty of Engineering, Tel Aviv University.  
*PhD degree approved 24 January 2013, diploma awarded 20 June 2013*  
Supervisors: Hagit Messer-Yaron (Tel Aviv University, Israel)  
Jean-François Cardoso (CNRS & Télécom ParisTech, France)  
Title: Second-Order Multidimensional ICA: Theory and Methods [[pdf](#)]

MSc, 2001–2004 at the Department of Electrical Engineering-Systems, Faculty of Engineering, Tel Aviv University.  
*MSc degree approved 08 December 2004, diploma awarded 28 June 2005*  
Supervisor: Anthony J. Weiss  
Title: Performance Analysis of a Blind High-Order Statistics Separation Criterion

BSc, 1995–1998 in Electrical and Electronics Engineering, Faculty of Engineering, Tel Aviv University  
Magna cum laude  
*BSc degree approved 01 October 1998, diploma awarded 16 June 1999*

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## AWARDS

- Cited on the Dean's list for outstanding achievements 3 times during B.Sc. studies
- Weinstein Prize for Best Conference Paper (number [2](#) in the conference publications list below)

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## SCHOLARSHIPS & GRANTS

2007–2008	Chateaubriand Fellowship of the French Government
2007–2009	Buchmann Fellowship for outstanding PhD students
2005–2006	Tel Aviv University scholarship for PhD students
2006	David and Paulina Trotsky Fund Scholarship
2002	Neiman Abraham and Shaul Marco Scholarship
2001–2003	Tel Aviv University scholarship for MSc students

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## PROFESSIONAL EXPERIENCE

### ACADEMIC LEVEL TEACHING

2001–2003, 2005–2010	Teaching assistant at the Faculty of Engineering, Tel Aviv University, Undergraduate-level courses in the 4-year BSc program in Electrical and Electronics Engineering. Frontal teaching: Digital Communication (35h), Introduction to Digital Signal Processing (DSP) (19h), Random Signals and Noise (17.5h). Educational lab: Advanced Communications Lab (252h), Advanced DSP Lab (420h)
2006–2008	Supervising three undergraduate, 4th-year student graduation projects, all under the framework of “Real-time extraction of sensory events from rat cerebellum” at the Faculty of Engineering, Tel Aviv University.

### OTHER RESEARCH ACTIVITIES

2005–2008	Member of the project <b>ReNaChip</b> , “Rehabilitation of a discrete motor learning function by a prosthetic chip”. Within this project, I collaborated with an interdisciplinary and international group (psychobiology, micro- and nano-electronics, data-mining, signal processing and others) as the principal signal processing active researcher. My contribution included developing algorithms (see items <b>2,1</b> in “conference without proceedings” below), writing parts of grants and regular reports to the EU, and academic supervision of student graduation projects.
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### INDUSTRY

1999–2001	NeoMagic Israel, Netanya, Israel. Algorithm engineer.
1997–1998	Orkit Communications Ltd., Tel Aviv, Israel. Operation and quality assessment of MATLAB and C++ simulations for VDSL and HDSL.

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## PROFESSIONAL ACTIVITIES

### ORGANIZER OF SPECIAL SESSIONS AND MINISYMPOSIA IN INTERNATIONAL CONFERENCES

SIAM-ALA18	Organizer of a minisymposium “ <b>Coupled matrix and tensor decompositions: Theory and methods</b> ”
SIAM LA15	Co-organizer of a minisymposium “ <i>Matrix and Tensor Decompositions and Applications</i> ”, with Mariya Ishteva and Carmeliza Navasca
LVA/ICA 2015	Lead organizer of a special session “ <i>Joint Analysis of Multiple Datasets, Data Fusion and Related Topics</i> ”, with Christian Jutten
EUSIPCO 2014	Lead organizer of a special session “ <i>Signal processing for multimodal data</i> ”, with Christian Jutten and Tülay Adalı

**REVIEWER**

Journals: Transactions on Signal Processing (IEEE), Signal Processing (Elsevier), Digital Signal Processing (Elsevier), Behavior Research Methods (Springer), Journal of Machine Learning Research

Conferences: ICASSP, EUSIPCO, MLSP, GRETSI, LVA/ICA, SAM, CAMSAP

**MEMBERSHIP IN TECHNICAL COMMITTEES**

IEEE **SPTM** Technical Committee Affiliate Member  
 MLSP 2014 Program committee member  
 EUSIPCO 2015, 2017, 2018 Technical program committee member  
 LVA/ICA 2015, 2017, 2018 Program committee member

**TUTORIAL**

A 3-hour course on “**Data Fusion: Benefits of Fully Exploiting Diversity**”, with Tülay Adalı and Christian Jutten, EUSIPCO, Budapest, Hungary, August, 2016.

**PUBLICATIONS****JOURNAL (PEER-REVIEWED)**

- JO-6. **D. Lahat**, Ch. Jutten, and H. Shapiro. Schur’s Lemma for Coupled Reducibility and Coupled Normality. SIAM Journal on Matrix Analysis and Applications (SIMAX), Vol. 40, No. 3, 2019, pp. 998–1021. [\[paper\]](#)
- JO-5. **D. Lahat** and Ch. Jutten. Joint Independent Subspace Analysis: Uniqueness and Identifiability. IEEE Transactions on Signal Processing, Vol. 67, No. 3, February 2019, pp. 684–699. [\[paper\]](#)
- JO-4. **D. Lahat** and Ch. Jutten. Joint independent subspace analysis using second-order statistics. IEEE Transactions on Signal Processing, Vol. 64, No. 18, September 2016, pp. 4891–4904. [\[paper\]](#)
- JO-3. **D. Lahat**, T. Adalı and Ch. Jutten. Multimodal data fusion: an overview of methods, challenges and prospects. Proceedings of the IEEE, Vol. 103, No. 9, September 2015, pp. 1449–1477. [\[paper\]](#)
- JO-2. **D. Lahat**, J.-F. Cardoso, and H. Messer. Blind separation of multidimensional components via subspace decomposition: performance analysis. IEEE Transactions on Signal Processing, Vol. 62, No. 11, June 2014, pp. 2894–2905. [\[paper\]](#)
- JO-1. **D. Lahat**, J.-F. Cardoso, and H. Messer. Second-order multidimensional ICA: performance analysis. IEEE Transactions on Signal Processing, Vol. 60, No. 9, September 2012, pp. 4598–4610. [\[paper\]](#)

**TECHNICAL REPORTS**

- TE-1. **D. Lahat** and Ch. Jutten. A generalization to Schur’s lemma with an application to joint independent subspace analysis. <https://hal.archives-ouvertes.fr/hal-01247899>

**CONFERENCE (PEER-REVIEWED PAPER IN CONFERENCE PROCEEDINGS)**

- CO-13. **D. Lahat** and Ch. Jutten. A New Link Between Joint Blind Source Separation Using Second Order Statistics and the Canonical Polyadic Decomposition. LVA/ICA, Guildford, UK, July 2018. [\[paper\]](#)
- CO-12. **D. Lahat** and Ch. Jutten. Joint independent subspace analysis by coupled block decomposition: non-identifiable cases. ICASSP, Calgary, Canada, April 2018. [\[paper\]](#)

- CO-11. **D. Lahat** and Ch. Jutten. Joint analysis of multiple datasets by cross-cumulant tensor (block) diagonalization. The Ninth IEEE Sensor Array and Multichannel Signal Processing Workshop (**SAM**), Rio de Janeiro, Brazil, July 2016. [\[paper\]](#)
- CO-10. **D. Lahat** and Ch. Jutten. An alternative proof for the identifiability of independent vector analysis using second order statistics. ICASSP, Shanghai, China, March 2016. [\[paper\]](#)
- CO-9. **D. Lahat** and Ch. Jutten. Joint independent subspace analysis: a quasi-Newton algorithm. LVA/ICA, Liberec, Czech Republic, August 2015, pp. 111–118 [\[paper\]](#).
- CO-8. **D. Lahat** and Ch. Jutten. Joint blind source separation of multidimensional components: model and algorithm. EUSIPCO, Lisbon, Portugal, September 2014, pp. 1417–1421 [\[paper\]](#)
- CO-7. **D. Lahat**, T. Adali and Ch. Jutten. Challenges in multimodal data fusion. EUSIPCO, Lisbon, Portugal, September 2014, pp. 101–105. [\[paper\]](#)
- CO-6. **D. Lahat**, J.-F. Cardoso, and H. Messer. Identifiability of second-order multidimensional ICA. EUSIPCO, Bucharest, Romania, August 27–31, 2012. [\[paper\]](#)
- CO-5. **D. Lahat**, J.-F. Cardoso, and H. Messer. Joint block diagonalization algorithms for optimal separation of multidimensional components. In *Latent Variable Analysis and Signal Separation*, ser. LNCS, F. Theis, A. Cichocki, A. Yeredor, and M. Zibulevsky, Eds., vol. 7191. Heidelberg: Springer, 2012, pp. 155–162. [\[paper\]](#)
- CO-4. **D. Lahat**, J.-F. Cardoso, M. Le Jeune and H. Messer. Multidimensional ICA and its performance analysis, applied to CMB observations. ICASSP, Prague, Czech Republic, May 22–27, 2011. [\[paper\]](#) [\[video\]](#)
- CO-3. **D. Lahat**, J.-F. Cardoso and H. Messer. ICA of correlated sources mismodeled as uncorrelated: performance analysis. IEEE Workshop on Statistical Signal Processing (SSP), Cardiff, Wales, UK. 31 August–3 September 2009. [\[paper\]](#)
- CO-2. **D. Lahat**, J.-F. Cardoso and H. Messer. Optimal performance of second-order multidimensional ICA. In T. Adali, C. Jutten, J. M. T. Romano, and A. K. Barros, Eds., *Independent Component Analysis and Signal Separation*, pages 50–57. Springer, 2009. [\[paper\]](#)
- CO-1. **D. Lahat** and A. J. Weiss. Performance analysis of a blind HOS separation criterion. In *Proc. IEEE 23rd Convention of Electrical and Electronics Engineers in Israel*, Herzliya, Israel, September 2004, pp. 396–399. [\[paper\]](#)

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#### TALKS IN CONFERENCES WITHOUT PROCEEDINGS

- TA-9. **D. Lahat** and Ch. Jutten. Tensor and Coupled Decompositions in Block Terms: Uniqueness and Irreducibility. **Signal Processing with Adaptive Sparse Structured Representations (SPARS)**, Toulouse, France, July 2019. [\[extended abstract\]](#)
- TA-8. **D. Lahat** and Ch. Jutten. Tensor and coupled decompositions in block terms: Some results on uniqueness and irreducibility. **GdR ISIS meeting: Nouvelles méthodes tensorielles et applications (New tensor methods and applications)**, Ivry-sur-Seine, France, June 2019
- TA-7. **D. Lahat** and Ch. Jutten. Decompositions in Sum of Low-rank Block Terms: Can Block Size be Considered as a Type of Diversity. **SIAM Annual Meeting (SIAM AN18)**, Portland, Oregon, USA, July 2018
- TA-6. **D. Lahat** and Ch. Jutten. Tensor and coupled decompositions in block terms: uniqueness and irreducibility. **TRICAP**, Angel Fire Resort, New Mexico, USA, June 2018.

- TA-5. **D. Lahat** and Ch. Jutten. Understanding the uniqueness of decompositions in low-rank block terms using Schur’s lemma on irreducible representations. [SIAM Conference on Applied Linear Algebra \(SIAM-ALA18\)](#), Hong Kong, May 2018.
- TA-4. **D. Lahat** and Ch. Jutten. On the uniqueness of coupled matrix block diagonalization in the joint analysis of multiple datasets. [SIAM Conference on Applied Linear Algebra \(SIAM LA15\)](#), Atlanta, Georgia, USA, October 2015.
- TA-3. **D. Lahat** and Ch. Jutten. Multi-set data analysis and simultaneous matrix block diagonalization: models and algorithms. [SIAM Conference on Computational Science and Engineering \(SIAM CSE15\)](#), Salt Lake City, Utah, USA, March 2015.
- TA-2. A. Taub, M. Mintz, A. Magal, **D. Lahat**, H. Messer, M. Marcus-Kalish, and Y. Shacham. Brain-machine hybrid for the rehabilitation of a discrete motor learning function. The Nano2Life annual meeting, Champéry, Switzerland, January 2008.
- TA-1. A. Taub, M. Mintz, **D. Lahat**, H. Messer, M. Oksman, M. Marcus-Kalish, and Y. Shacham. Brain-machine hybrid for the rehabilitation of a discrete motor learning function. The Center for Complexity Science meeting, Bar-Ilan University, Ramat-Gan, Israel, February 15th 2007. (2nd prize in the poster session at the Center for Complexity Science open day).

#### INVITED TALKS, NOT IN CONFERENCES

- “Diversity and uniqueness in coupled decompositions”,  
 INP-ENSEEIH, Toulouse, France, February 2018. [\[link to event\]](#)  
 SIMULA, Fornebu, Norway, February 2018
- “Joint independent subspace analysis: when blind source separation and data fusion meet”,  
 IRISA / INRIA Rennes Bretagne Atlantique, Rennes, France, December 2015.  
 IDeAS Seminar at the Program in Applied and Computational Mathematics (PACM), Princeton University, NJ, USA, November 2015. [\[link to event\]](#)  
 Seminar at the Applied Mathematics Program, Yale University, New Haven, CT, USA, November 2015. [\[link to event\]](#)
- “Challenges in multimodal data fusion and multiset data analysis”,  
 ETIS-ENSEA, Cergy-Pontoise, France, June 2014. [\[link to event\]](#)
- “Second-order multidimensional ICA: theory and methods”,  
 Séminaire CRAN, Centre de Recherche en Automatique de Nancy, Nancy, France, December 2012. [\[link to event\]](#)  
 Séminaire INRIA, Université Rennes 1, Rennes, France, December 2012.  
 Institute of Bioinformatics and Systems Biology, Helmholtz Zentrum München, Germany, November 2012.  
 GIPSA-Lab seminar, Grenoble Campus, Saint-Martin-d’Hères, France, November 2012.  
 Séminaire du Pôle SIS (Signal, Images et Systèmes), Laboratoire d’Informatique, Signaux et Systèmes de Sophia-Antipolis, France, November 2012. [\[link to event\]](#)  
 SISTA Seminar, KU Leuven, Leuven, Belgium, September 2012. [\[link to event\]](#)

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## MISCELLANEOUS: INTERNATIONAL SCHOOLS AND WORKSHOPS THAT I ATTENDED

- April 2016 Hausdorff School: Low-rank Tensor Techniques in Numerical Analysis and Optimization, Universität Bonn, Germany [\[link to event\]](#)
- June 2015 Workshop: Low-rank Optimization and Applications, Hausdorff Center for Mathematics (HCM), Universität Bonn, Germany [\[link to event\]](#)
- June 2015 Structured low-rank approximation, Grenoble, France [\[link to event\]](#)
- February 2015 Winter School: Search for Latent Variables: ICA, Tensors, and NMF, Villard de Lans, France [\[link to event\]](#)
- August 2014 The 21st International Conference on Computational Statistics (COMPSTAT), Geneva, Switzerland [\[link to event\]](#)
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## SCIENTIFIC SOFTWARE

2. Joint block diagonalization (JBD) of a weighted set of positive-definite symmetric matrices, <http://www.gipsa-lab.grenoble-inp.fr/~dana.lahat/jbd.zip>, Matlab (with Jean-François Cardoso)
  1. Joint blind source separation (JBSS) of multidimensional components by coupled matrix block diagonalization and tensor block term decomposition (BTD), <http://chess-erc.eu/download/project.php?p=jisa#tab-1>, Matlab (main developer)
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## PROGRAMMING SKILLS

MATLAB

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## LANGUAGES

English–fluent, French–advanced, Hebrew–native speaker