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Ivica Kopriva

Home address:
Jakova Gotovca 14
10000 Zagreb, Croatia
Phone: 385-1-4617-536 (Home)
098 905 2433 (mobile)
e-mail: ikopriva@gmail.com

Business address:
Division of L.A.I.R.,
Rudjer Bošković Institute,
Bijenička cesta 54, P.O. Box 180,
10002 Zagreb, Croatia
Phone: 385-1-4571-286
Fax: 385-1-4680-104
e-mail: ikopriva@irb.hr

Curriculum Vitae

PERSONAL DATA: Born August 28, 1962 in Pakrac, Croatia. Marital status: single.

LANGUAGES: Croatian and English fluent. Can read and write German.

EDUCATION:

1995 – 1998. **Ph.D., Electrical Engineering, Faculty of Electrical Engineering and Computing, Zagreb, Croatia.**
Thesis: "Localization of light sources using blind signal separation theory."

1988 – 1990. **MS, Electrical Engineering, Faculty of Electrical Engineering and Computing, Zagreb, Croatia.**
Thesis: "Optimization of time discrete models for digital real time simulations".

1982 – 1987. **BS, Electrical Engineering, Military Technical Faculty – Missile systems department, Zagreb, Croatia.** Thesis: "Development and application of digital simulators for missile systems."

GENERAL KNOWLEDGE AND SKILLS:

- Experience in blind nonlinear and non-Gaussian signal processing by means of independent component analysis with applications in direction finding, beamforming, spatial filtering, multichannel blind deconvolution, space-time adaptive processing of RADAR signals, multichannel (MIMO) communication systems, blind separation of acoustic signals, single frame and multiframe blind image deconvolution, unsupervised classification of multispectral and hyperspectral images.
- Experience in signal and image denoising and compression employing multiscale analysis methods (wavelets and wavelet packets).
- Highly proficient in implementation of DSP algorithms in MATLAB, C and assembly languages on embedded systems based on Texas Instruments and Analog Devices digital signal processors and various microcontrollers.
- Experience of RF circuits and antennas for HF, UHF and microwave bands.
- Working knowledge of the programmable logic design.
- Understanding of novel kernel, support vector machines and independent component analysis based machine-learning algorithms with applications in data mining (text categorization, classification).

PROFESSIONAL EXPERIENCE WITH ACCOMPLISHMENTS:

11/06 – present **Senior Scientist. Rudjer Boskovich Institute, Zagreb, Croatia. Division of Laser and Atomic Research and Development.** Algorithms for blind image and signal separation and deconvolution (independent component analysis, dependent component analysis, sparse component analysis, nonnegative matrix and tensor factorization; unsupervised segmentation of multispectral and hyperspectral remotely sensed and medical images; blind extraction of pure components in spectroscopy and spectrometry-chemometrics; learned bases for sparse representation of signals/images with applications in compressive sensing and missing data reconstruction; second- and higher order statistics based direction finding.

08/05 – 10/06 **Consulting and collaborative work:** (i) applications of independent component analysis to extract spatial maps of basal cell carcinoma using photodynamic diagnosis for Institute Ruđer Boškoviæ, Croatia; (ii) denoising and extraction of speech signals using multiscale analysis and blind signal separation for WMC Digital, Croatia; (iii) applications of non-negative matrix factorization algorithms to blind image deconvolution and unsupervised multispectral image segmentation with Laboratory for Advanced Brain Signal Processing, Brain Science Institute, RIKEN, Japan.

09/02 – 07/05 **Senior Research Scientist. The George Washington University, Electrical and Computer Engineering Department**. Research projects were supported by the Office of Naval Research, National Science Foundation and International Technology Center, Raleigh, NC.

1. **Infrared image restoration under out-of-focus and low-level light intensity. Sponsor:** International Technology Center, Raleigh, NC. **Duration:** 03/2005-05/2005. Accomplishments: MATLAB implementation of the blind and non-blind single frame image restoration algorithms.

2. **Emitter range estimation system. Sponsor:** National Science Foundation/National Security Agency. **Duration:** 06/2002-12/2004. Accomplishments: (i) Design and realization of the system for bearing and range estimation of the RF emitters. A system comprised of two linear arrays of patch antennas, RF circuits and multi-channel data acquisition system has been built and tested; (ii) Development and implementation of novel blind source separation algorithms for number of emitter detection in direction of arrival estimation problems; (iii) Development and implementation of novel second and fourth order statistics based algorithms for direction finding and spatial filtering.
3. **Unsupervised classification of multispectal and hyperspectral images with transition to other multimodal signal processing applications. Sponsor:** Office of Naval Research. **Duration:** 10/2002-12/2004. Accomplishments: (i) Development and implementation of novel independent component analysis based algorithms for unsupervised classification of low-dimensional multispectral and high-dimensional hyperspectral images; (ii) Development of novel algorithms for stochastic optimization that combines simulated annealing and gradient optimization.

06/01 – 08/02 **Visiting Research Scholar. The George Washington University, Electrical and Computer Engineering Department.** Algorithm development for unsupervised classification mutispectral and hyperspectral remote sensing imagery.

1/95 - 05/01 **Senior advisor for tactical communications and missile systems. Ministry of Defense, Republic of Croatia**, **Zagreb, Croatia.** Accomplishments:

1. Designed, developed and implemented original algorithms based on blind signal separation theory in order to resolve the multi-source limitation of the reticle based optical trackers useful in jamming resistant missile seekers.
2. Designed and developed multiprocessor (four TMS320C40) hardware-in-the-loop simulator for semiautomatic anti-armor missile system.
3. Designed and developed digital moving target indicator for Doppler's radar.

3/92 – 12/94 **DSP design engineer. G&D Electronics Samobor, Croatia.**

Accomplishments:

1. Designed, developed and implemented DSP based exciter (6 TMS320C31 and 4 TMS320C25) for 20kW pulse digital modulated short wave radio transmitter (SSB and DSB audio peak limiters, Hilbert transform based SSB signal synthesis, FIR bandpass filters).
2. Designed, developed and implemented algorithms for man-in-the loop digital flight simulator.

10/91 – 2/92 **DSP design engineer. Marine Institute Zagreb.** Responsible for the real time implementation (C language) of the 6-DOF model of the anti-armor missile on the TMS320C30 digital signal processor.

9/87 – 6/91 **R&D engineer. Radio Industry Zagreb – Professional Electronic. Short wave department, Zagreb, Croatia.**

Accomplishments:

1. Designed, developed and implemented algorithms in C and assembly language on 80C552 microcontroller for control of the whip antennas matching units.
2. Developed and implemented algorithms for the parameter identification of the whip antennas equivalent circuit by using nonlinear programming methods.
3. Run extensive FORTRAN off line simulations of the short wave radio channel in synchronization process in the short wave frequency hopping radio transceiver.
4. Implemented frequency hopping radio synchronization algorithms on the TMS320C10 signal processor.

TEACHING EXPERIENCE:

Spring 2009 "Blind signal separation and independent component analysis," graduate course at Faculty of Electrical Engineering and Computing, University of Zagreb, Croatia.

Fall 2005, 2006, Spring 2007 "Signals and Systems", undergraduate course at Faculty of Electrical Engineering, University of Osijek, Croatia.

Spring 2004 "DOA Estimation Using Higher Order Statistics" – part of the ECE 335 graduate course "Signal Processing Antennas", The George Washington University, ECE Department, Washington, D.C., USA.

"Information maximization approach to independent component analysis" – part of the ECE 284 graduate course "Biomedical signal processing", The George Washington University, ECE Department, Washington, D.C., USA.

Spring 2003 ECE-161 - "Microcontroller embedded systems", undergraduate course at The George Washington University, ECE Department, Washington, D.C., USA.

Spring 2000 "Basics of the real time digital simulation of dynamic systems" – lectures on the undergraduate studies of the Faculty of Mechanical Engineering, Zagreb, Croatia.

Fall 1996 "Real time digital simulations" – lectures on the University Zagreb graduate studies "Guidance and Control of the moving objects", University Zagreb, Croatia.

PHD STUDENTS SUPERVISION:

Marko Filipović, "Learned bases for sparse representation of signals," Faculty of Mathematics, University of Zagreb, Croatia, since August 2007.

Ante Jukić, "Tensor factorization based blind separation of multi-dimensional sources," Faculty of Electrical Engineering and Computing, University of Zagreb, Croatia, since February 2010.

PROFESSIONAL SOCIETIES MEMBERSHIP:

Senior Member of the Institute of Electrical and Electronics Engineering (IEEE)
Member of the Optical Society of America (OSA)

JOURNAL REFEREE ACTIVITY:

1999 – Present: Proceedings of the IEEE, IEEE Transactions on Geoscience and Remote Sensing, Optics Letters, Optics Communications, IEEE Transactions on Signal Processing, IEEE Signal Processing Letters, IEEE Transactions on Aerospace and Electronic Systems, IEEE Transactions on Medical Imaging, IEEE Transactions on Circuits and Systems-I, EURASIP Journal on Applied Signal Processing, IEE Proc. Vision, Image and Signal Processing, Information Sciences, Mathematical and Computer Modeling, Waves in Random Media, Optics & Laser Technology, for the areas of blind signal separation, neural networks, image restoration, unsupervised image classification and segmentation, higher order statistics and array signal processing;

CONFERENCE REFEREE ACTIVITY:

IEEE Joint Conference on Neural Networks (2003, 2004, 2005).
IEEE International Circuits and Systems Conference, Seattle, WA, USA; May, 18-21, 2008.
16th European Signal Processing Conference, EUSIPCO2008, August 25-29, 2008, Lausanne, Switzerland.
2008 IEEE International Geoscience and Remote Sensing Symposium, July 6-11, 2008, Boston, Massachusetts, USA.

AWARDS and RECOGNITIONS

- State Award of the Republic of Croatia for scientific achievements in for the year 2008 in the field of technical sciences.
- Senior Member of the IEEE, September, 2004.
- Opponent on the PhD Thesis defense of Toni Huovinen "Independent Component Analysis in DS-CDMA Multiuser Detection and Interference Cancellation," Department of Communication Engineering, Tampere University of Technology, Tampere, Finland, January 9, 2009.
- Organized special session on “Applications of independent component analysis and higher order statistics to array signal processing,” at IEEE International Symposium on Antennas and Propagation, Washington DC, July 3-8, 2005, http://www.apsursi2005.org/.
- Lectured short course on “Independent component analysis and blind signal separation with illustrative applications,” at IEEE International Symposium on Antennas and Propagation, Washington DC, July 3-8, 2005, http://www.apsursi2005.org/.
- Member of the Program Committee of the 2005 International Conference on Intelligent Computing (ICIC’05) August 23-26, 2005, Hefei, China (http://www.icic2005.org/)
- Member of the Program Committee of the SPIE Defense and Security Symposium Conference on Independent Component Analysis, Wavelets and Neural Networks 2002-2005.

Colloquia and Talks

1. I. Kopriva (2010). Tensor Factorization Approach to Blind Separation of Multidimensional Sources, The George Washington University, School of Engineering and Applied Science, Department of Electrical and Computer Engineering, Washington D.C., USA, February 19, 2010
2. I. Kopriva (2010). Tensor Factorization Approach to Blind Separation of Multidimensional Sources, Virginia Commonwealth University, Department of Computer Science, Richmond, VA, USA, February 17, 2010
3. I. Kopriva (2009). (Semi-)blind Source Separation with Sparseness Constraints, The George Washington University, School of Engineering and Applied Science, Department of Electrical and Computer Engineering, Washington D.C., USA, February 13.
4. I. Kopriva (2008). Blind separation of signal sources, Polytechnic of Turin, Laboratory for Engineering of the Neuromuscular Systems, May 21.
5. I. Kopriva (2007). Blind Separation of Statistically Dependent Sources, Technical University Berlin, Faculty of Electrical Engineering and Computer Science, Institute of Energy and Automation Technology, Electronic and Medical Signal Processing Group, Berlin, Germany, October 11.
6. I. Kopriva (2007). Blind Separation of Statistically Dependent Sources, The George Washington University, School of Engineering and Applied Science, Department of Electrical and Computer Engineering, Washington D.C., USA, September 21.
7. I. Kopriva (2005). Independent Component Analysis and Blind Signal Separation with Illustrative Applications, Virginia Tech Alexandria Research Institute, Alexandria, USA, February 24.
8. W. Wasylkiwskyj, I. Kopriva and D. Nagel (2005). Passive range estimation using short baseline interferometer, Naval Research Laboratory, Washington, DC, USA, February 17.
9. I. Kopriva and W. Wasylkiwskyj (2004). Improving the accuracy of DOA and range estimation using independent component analysis, Applied Physics Laboratory, Johns Hopkins University, Baltimore, USA, August 12.
10. I. Kopriva. (2004). Independent Component Analysis and Blind Signal Separation – Application to the Sensory Microsystems, Naval Research Laboratory, Washington, DC, USA, August 20.
11. I. Kopriva and V. Borjanovic. (2004). Independent Component Analysis and Blind Signal Separation – Application to the Sensory Microsystems, International Technology Center, Raleigh, NC, USA, May 19.
12. I. Kopriva. (2004). DOA Estimation Using Fourth Order Statistics – Aperture Extension and Additive Gaussian Noise Suppression, University of Zagreb – Faculty of Electrical Engineering and Computing, Zagreb, Croatia, March 9.
13. I. Kopriva. (2002), Blind Signal Separation – Basic Theory and Some Applications, The George Washington University, School of Engineering and Applied Science, Department of Electrical and Computer Engineering, Washington D.C., USA, April 29.

PUBLICATIONS:

Technical reports:

1. W. Wasylkiwskyj, **I. Kopriva**, A.I. Zaghloul, H. Abdallah and M. Doroslovacki, "System for passive Estimation of Range and Bearing of RF Emitters," NSA/NSF project, 05/2002-12/2004.
2. **I. Kopriva**, "Infrared image restoration under out-of-focus and low light level conditions," International Technology Center, Raleigh, NC, 03/2005-05/2005.

Patents:

1. H. Szu, J. Buss, and **I. Kopriva**, *Nonlinear blind demixing of single pixel underlying radiation sources and digital spectrum local thermometer,* US Patent 7,366,564 B2.
2. **I. Kopriva**, *Method for real time tumour visualisation and demarcation by means of photodynamic diagnosis*, WO 2008/132522 A1.
3. **I. Kopriva**, I. Jerić, and V. Smrečki, *Method of and system for blind extraction of more than two pure components out of spectroscopic or spectrometric measurements of only two mixtures by means of sparse component analysis*" PCT /HR2008/000037.
4. **I. Kopriva**, I. Jerić, *Method of and system for blind extraction of more pure components than mixtures in 1D and 2D NMR spectroscopy and mass spectrometry combining sparse component analysis and single component points,* PCT/HR2009/000028.

Book:

T.-M. Huang, V. Kecman, **I. Kopriva**, "Kernel Based Algorithms for Mining Huge Data Sets: Supervised, Semi-supervised and Unsupervised Learning," Springer Series: Studies in Computational Intelligence, Vol. 17, XVI, ISBN: 3-540-31681-7, 2006.

Journals:

Overall impact factor according to 2002-2008 SCI database is ≈53.1.

Submitted:

1. **I. Kopriva,** A. Peršin, N. Puizina-Ivić, L. Mirić, "Robust demarcation of basal cell carcinoma by dependent component analysis-based segmentation of multi-spectral fluorescence image,"***Journal Photochemistry and Photobiology B: Biology***, R1.
2. M. Filipović, **I. Kopriva**, "Inpainting and denoising of natural images with learned basis," ***Inverse Problems in Imaging***.
3. **I. Kopriva**, "5D Tensor Factorization for Space-variant Single-frame Model-free Blind Deconvolution of Multi-spectral Image," ***Optics Express***.

Papers in CC/SCI journals:

1. **I. Kopriva,** I. Jerić (2010). Blind separation of analytes in nuclear magnetic resonance spectroscopy and mass spectrometry: sparseness-based robust multicomponent analysis, ***Analytical Chemistry***, vol. 82, pp. 1911-1920 (IF: 5.71).
2. **I. Kopriva,** I. Jerić, V. Smrečki (2009). Extraction of multiple pure component ^{1}H and ^{13}C NMR spectra from two mixtures: novel solution obtained by sparse component analysis-based blind decomposition, ***Analytica Chimica Acta***, vol. 653, pp. 143-153 (IF: 3.14).

3. **I. Kopriva,** A. Cichocki (2009).Blind decomposition of low-dimensional multi-spectral image by sparse component analysis, ***Journal of Chemometrics***, vol. 23, issue 11, pp. 590-597(IF: 1.415).
4. **I. Kopriva,** I. Jerić (2009). Multi-component Analysis: Blind Extraction of Pure Components Mass Spectra using Sparse Component Analysis, ***Journal of Mass Spectrometry***, vol. 44, issue 9, pp. 1378-1388 (IF: 2.94).
5. **I. Kopriva,** A. Cichocki (2009). Blind Multi-spectral Image Decomposition by 3D Nonnegative Tensor Factorization, ***Optics Letters*** vol. 34, No. 14, pp 2210-2212(IF: 3.77)**.**
6. **I. Kopriva** (2009). 3D Tensor Factorization Approach to Single-frame Model-free Blind Image Deconvolution," ***Optics Letters***, vol. 34, Issue 18, pp. 2385-2387(IF: 3.77).
7. **I. Kopriva,** I. Jerić, A. Cichocki (2009). Blind Decomposition of Infrared Spectra Using Flexible Component Analysis," ***Chemometrics and Intelligent Laboratory Systems*** 97 (2009) 170-178 (IF: 1.94)**.**
8. **I. Kopriva** and A. Peršin (2009). Unsupervised decomposition of low-intensity low-dimensional multi-spectral fluorescent images for tumour demarcation, ***Medical Image Analysis*** 13, 507-518 (IF: 3.6).
9. W. Wasylkiwskyj and **I. Kopriva** (2009). Second and Fourth Order Statistics -Based Reduced Polynomial Rooting Direction Finding Algorithms, ***Signal Processing*** 89, 1050-1060, 2009(IF: 1.256)**.**
10. Q. Du and **I. Kopriva** (2009). Dependent component analysis for blind restoration of images degraded by turbulent atmosphere, ***Neurocomputing*** 72, 2682-2692, (IF: 1.415).
11. **I. Kopriva** and D. Seršić (2008). Wavelet Packets Approach to Blind Separation of Statistically Dependent Sources**, *Neurocomputing***, vol. 71, Issues 7-9, pp. 1642-1655 (IF: 1.415).
12. Q. Du and **I. Kopriva** (2008). Automated Target Detection and Discrimination Using Constrained Kurtosis Maximization, ***IEEE Geoscience Remote Sensing Letters***, vol. 5, No. 1, pp. 38-42 (IF: 1.83).
13. W. Wasylkiwskyj, **I. Kopriva** and M. Doroslovački (2007). Image Frequency Suppression In Frequency-Scanned Direction-Of-Arrival Estimation Systems, ***IET Proc. Radar, Sonar & Navigation,*** vol.1, (3), pp. 191-197 (IF: 0.41).
14. **I. Kopriva**, (2007). Approach to Blind Image Deconvolution by Multiscale Subband Decomposition and Independent Component Analysis, ***Journal Optical Society of America A***, Vol. 24, No.4, pp. 973-983 (IF: 2.002).
15. W. Wasylkiwskyj, **I. Kopriva**, M. Doroslovački, and A.I. Zaghloul (2007). A New Root –Based Direction Finding Algorithm, ***Radio Science*** 42: RS2S90, doi: 10.1029/2004RS003147. (IF: 0.951).
16. **I. Kopriva**, D.J. Garrood, V. Borjanović (2006). Single Frame Blind Image Deconvolution by Non-negative Sparse Matrix Factorization, ***Optics Communications***, Vol. 266, Issue 2, pp. 456-464 (IF: 1.456)
17. H. Abdallah, W. Wasylkiwskyj, **I. Kopriva** (2006). Equalization of Numerically Calculated Element Radiation Patterns for Root-Based Direction Finding Algorithms, ***ACES Journal***, ISSN 1054-4887, Vol. 21, No. 1, pp. 76-80, March, 2006 (IF: 0.356).
18. Q. Du, **I. Kopriva** and H. Szu (2006). Independent Component Analysis for Hyperspectral Remote Sensing, ***Optical Engineering***, vol. 45, 017008, January 2006 (IF: 0.952).
19. **I. Kopriva** (2005). Single Frame Multichannel Blind Deconvolution by Non-negative Matrix Factorization with Sparseness Constraint, ***Optics Letters***, Vol. 30, No. 23, pp. 3135-3137 (IF: 3.882).
20. H. Szu and **I. Kopriva** (2005). Unsupervised Learning with Stochastic Gradient, ***Neurocomputing***, Vol. 68 pp. 130-160 (IF: 0.790).

21. **I. Kopriva**, Q. Du, H. Szu and W. Wasylkiwskyj (2004). Independent Component Analysis Approach to Image Sharpening in the Presence of Atmospheric Turbulence, ***Optics Communications***, Vol. 233 (1-3) pp. 7-14 (IF: 1.581).
22. H. Szu, P. Chanyagorn, and **I. Kopriva**. (2002). Sparse Coding Blind Source Separation through Powerline, ***Neurocomputing***, Vol. 48 (1-4) pp. 1015-1020 (IF: 0.62).
23. **I.Kopriva**, H.H.Szu, A.Persin. (2002). Optical Reticle Trackers with Multi-Source Dicrimination Capability By Using Independent Component Analysis, ***Optics Communications***, Vol. 203 (3-6) pp. 197-211 (IF: 1.488).
24. H. H. Szu, **I. Kopriva**. (2001). Artificial Neural Networks for Noisy Image Super-resolution, ***Optics Communications***, Vol. 198 (1-3) pp. 71-81 (IF: 1.488).
25. H. H. Szu, **I. Kopriva**, A. Peršin. (2000). Independent component analysis approach to resolve the multi-source limitation of the nutating rising-sun reticle based optical trackers, ***Optics Communications***, Vol. 176 (1-3) pp. 77-89 (IF: 1.488).
26. **I. Kopriva**, A. Peršin. (1999). Discrimination of optical sources by use of adaptive blind source separation theory, ***Applied Optics***, Vol. 38, No. 7, pp. 1115-1126 (IF: 1.515).
27. K. Ćosić, **I. Kopriva**, T. Kostić, M. Slamić, M. Volarević. (1999). Design and implementation of a hardware-in-the-loop simulator for a semi-automatic guided missile system, ***Journal Simulation Practice & Theory***, Vol. 7, Issue 2, pp. 107-123 (IF: 0.182).
28. K. Ćosić, **I. Kopriva**, T. Šikić. (1997). The methodology for digital real time simulation of dynamic systems using modern DSPs, ***Journal Simulation Practice & Theory***, Vol. 5, Issue 2, pp. 137-151 (IF: 0.182).
29. K. Ćosić, **I. Kopriva**. (1994). Some Improvements of The State Transition Method in Real Time Simulation of Linear Systems, ***Transactions of the SCS***, Vol. 11, No. 1, pp. 29-43 (IF: 0.176).
30. K. Ćosić, I. Miler, **I. Kopriva**. (1992). Workstation for Integrated System Design and Development, ***Simulation***, Vol. 58, No. 3, pp. 152-162 (IF: 0.32).

Papers in other journals:

31. **I. Kopriva**, A. Peršin, H. Zorc, J. Lipozencic, A. Pasic, K. Kostovic, M. Loncaric. (2007). Visualization of basal cell carcinoma by fluorescence diagnosis and independent component analysis, ***Photodiagnosis and Photodynamic Therapy*** 4 pp. 190-196.
32. Q. Du, **I. Kopriva**, and H.Szu (2004). Independent Component Analysis for Classifying Multispectral Images with Dimensionality Limitation, ***International Journal of Information Acquisition***, vol. 1, no. 3, pp.201-216, September 2004.
33. K. Cosic, **I. Kopriva**. (1987). Synthesis of time discrete models for digital real time simulations, ***Automatika*** 28, No. 5-6, pp.155-168.

Conference Papers:

34. **I. Kopriva**, A. Peršin (2010). 3D tensor-based blind multi-spectral image decomposition for tumor demarcation, accepted for *SPIE Medical Imaging-Image Processing*, San Diego, CA, USA, February 13-18, 2010.
35. Q. Du, **I. Kopriva** (2009. Dependent component analysis for hyperspectral image classification, *SPIE Image and Signal Processing for Remote Sensing XV*, Berlin, Germany, August 31-September 3, Proc. SPIE Vol. 7477, article number 74770G, DOI: 10.1117/12.830048, editors: Lorenzo Bruzzone, Claudia Notarnicola, Francesco Posa.
36. **I. Kopriva**, A. Peršin, N. Puizina-Ivić, L. Mirić (2009). Dependent component analysis-based approach to robust demarcation of the skin tumors, *SPIE Medical Imaging-Image Processing*, Orlando, FL, USA, February 7-12, Proc. SPIE Vol. 7259, pp. 72594Q1-72594Q8.

37. Q. Du and **I. Kopriva**. (2008). Dependent Component Analysis for Multi-frame Image Restoration and Enhacement, *9'th IEEE International Conference on Signal Processing (ICSP'08)*, pp.761-764, Beijing, China, October 26-29, 2008.
38. **I. Kopriva** and D. Seršić. (2007). Robust Blind Separation of Statistically Dependent Sources Using Dual Tree Wavelets," *ICIP2007 - 2007 IEEE Conference on Image Processing*, Vol. I, pp. 433-436, San Antonio, TX, USA, September 16-19, 2007**.**
39. **I. Kopriva**, (2007). Blind Signal Deconvolution as an Instantaneous Blind Separation of Statistically Dependent Sources, ***Lecture Notes in Computer Science* 4666**, pp. 504-511, Springer-Verlag, Proceedings of the Seventh International Conference on Independent Component Analysis and Blind Source Separation, eds. M.E. Davies et al., London, UK, September 9-12, (IF: 0.513).
40. **I. Kopriva**, A. Peršin, H. Zorc, J. Lipozenčić, A. Pašić, K. Kostovć, M. Lončarić (2006). Comparative study of PDD fluorescent excitation and image processing methods, *6th International Symposium on Photodynamic Diagnosis and Therapy in Clinical Practice,* Bressanone, Italy, October 10-14.
41. **I. Kopriva** and D. Nuzillard (2006). Non-Negative Matrix Factorization Approach to Blind Image Deconvolution, ***Lecture Notes in Computer Science 3889***, pp. 966-973, Springer-Verlag, Proceedings of the Sixth International Conference on Independent Component Analysis and Blind Signal Separation, eds. J. Rosca and J. Principe, Charleston, SC, USA, March 5-8 (IF: 0.513).
42. Q. Du, **I. Kopriva**, and H. Szu. (2005). Investigation on constrained matrix factorization for hyperspectral image analysis, *Proceedings of 2005 IEEE International Geoscience and Remote Sensing Symposium*, vol., 6, pp. 4304-4306, Seoul, Korea, July 2005.
43. W. Wasylkiwskyj and **I. Kopriva**. (2005). A Modified Root Polynomial Algorithm, 18th IEEE International Conference on Applied Electromagnetics and Communications, Dubrovnik, Croatia, October 12-14, 2005, pp. 71-73.
44. **I. Kopriva** and W. Wasylkiwskyj. (2005). Estimating Number of Sub-Gaussian Emitters in a Narrowband DOA Estimation Problem by Using Independent Component Analysis, 2005 IEEE Symposium on Antennas and Propagation, Washington DC, USA, July 3-8, pp. 97-100.
45. **I. Kopriva**, W. Wasylkiwskyj and H. Abdallah. (2005). Performance Evaluation of the Second Order and Fourth Order Statistics Based Root MUSIC Algorithms in the Presence of Mutual Coupling, 2005 IEEE Symposium on Antennas and Propagation, Washington DC, USA, July 3-8, pp. 89-92.
46. Q. Du, **I. Kopriva** and H. Szu. (2005). Classifying Hyperspectral Remote Sensing Imagery With Independent Component Analysis," ***Invited Paper***, SPIE Defence and Security Symposium, Independent Component Analysis, Wavelets and Neural Networks, Orlando, FL, March 28 - April 1, Proc. SPIE Vol. 5818, pp. 50-58.
47. H. Abdallah, W. Wasylkiwskyj and **I. Kopriva**. (2005). Equalization of Numerically Calculated Patterns for Root-Based Direction Finding Algorithms, ACES Conference, Honolulu, Hawaii, USA, April 3-7.
48. **I. Kopriva** and H. Szu. (2004). Space-time Variant Blind Sources Separation with Additive Noise, ***Lecture Notes in Computer Science 3195***, pp. 240-247, Springer Verlag, Proceedings of the Fifth International Conference on Independent Component Analysis and Blind Signal Separation, eds. C.G. Puntonet and A. Prieto, Granada, Spain, September 22-24 (IF: 0.513).
49. W. Wasylkiwskyj, **I. Kopriva**. (2004). Equalization of the Element Radiation Patterns for Root Based Direction Finding Algorithms, 2004 URSI International Symposium on Electromagnetic Theory, Vol. I, pp.364-366,Pisa, Italy, May 23-27.
50. **I.Kopriva**, M. Doroslovacki, W. Wasylkiwskyj and A. Zaghluol. (2004). Performance Evaluation of Root Based Direction Finding Algorithms Using Hardware Emulation of the

Antenna Array, 2004 URSI International Symposium on Electromagnetic Theory, Vol. I, pp. 352-354,Pisa, Italy, May 23-27.

51. **I. Kopriva**, Q. Du and H. Szu. (2004). Image Sharpening Using Image Sequence and Independent Component Analysis, ***Invited Paper***, SPIE Defense and Security Symposium, Independent Component Analysis, Wavelets and Neural Networks, Vol. 5439, pp. 63-73,Orlando, FL, April 12-16.
52. Q. Du, **I. Kopriva**, H. Szu and J. Buss. (2004). Independent Component Analysis for Remotely Sensed Image Classification with Limited Data Dimensionality, ***Invited Paper***, SPIE Defense and Security Symposium, Independent Component Analysis, Wavelets and Neural Networks, Vol. 5439, pp.84-91,Orlando, FL, April 12-16.
53. H. Szu, **I. Kopriva**, Ph. Hoekstra, N. Diakides, M. Diakides, J. Buss, and J. Lupo. (2003). "Early Tumor Detection by Multiple Infrared Unsupervised Neural Nets Fusion", IEEE 25th Annual International Conference of the Engineering in Medicine and Biology Society, pp. 1133-1136, Cancun, Mexico, September 17-21.
54. H. Szu and **I. Kopriva**. (2003). Cauchy Machine for Blind Inversion in Linear Space-Variant Imaging, Proc. of the 2003 IEEE International Joint Conference on Neural Networks, Portland, OR, July 20-24, Vol. I, pp. 747-752.
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