

# Curriculum Vitae



Name Andrzej CICHOCKI (Ph.D. Dr.Sc.)

Affiliation till April 2018 Senior Team Leader (STL)  
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Systems Research Institute in Polish  
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Poland

Languages English, German, Russian, (Polish mother language)

## Education

- M.Sc. in Electrical Engineering with honors (Automatic Control and Electronics),
- Ph.D. in Electrical Engineering and Computer Science
- Dr. Sc. (habilitation) in Electrical Engineering and Computer Science 1982 (All from Warsaw University of Technology, Poland).
- Alexander von Humboldt Fellowship in Federal Republic in Germany 1984-1985.

## Professional Experience

- 2000- March 2018 Senior Team Leader Head of the Laboratory for Advanced Brain Signal Processing, Brain Science Institute, Riken, Japan
- 1998-2000 Head of the Laboratory for Open Information Systems, Brain Science Institute, Riken, Japan

- 1995-97 Head of the Laboratory for Artificial Brain Systems, Frontier Research Program, Riken, Japan
- 1993-94 Visiting Guest Professor, at University Erlangen-Nuernberg and Principal Investigator of several DFG research projects, Germany
- 1995 – 2012 Full Professor, at Department of EE, Warsaw University of Technology
- 1986-1992 Associate Professor (Docent), Department of Electrical Engineering Warsaw University of Technology
  - 1984–1985 Alexander von Humboldt Research Fellowship, Germany
  - 1976-86 Assistant Professor (Adjunkt), Department of Electrical Engineering Warsaw University of Technology in Institute of Theory of Electrical Engineering, Measurements and Information Systems, Warsaw University of Technology, Poland

### **Honors and Awards**

- M.Sc. Diploma with distinction (honors) , Ph.D. Diploma, Doctor of Science (habilitation)--1982.
- Alexander von Humboldt Research Fellowship, Germany, April 1984–Sept. 1985.
- Several Awards and Prizes by a Rector of the Warsaw University of Technology , a Minister of Higher Education and Research in Poland and the President of RIKEN, Japan for Scientific Achievements, awards for best books, for teaching excellence in the Universities and best papers published in Journal Neural Networks by Neural Network Society (1999) and in Journal Entropy in 2011 and 2014.

### **Professional Activities**

**Fellow of the IEEE since 2013.**

#### Journal Editorship

- Founding Editor-in-Chief of International Journal of Computational Intelligence and Neuroscience since 2006 till 2011.
- Associate Editor of IEEE Transaction on Neural Networks (1999-2006)
- Guest Co-editor of special issue of the IEEE Transactions on Neural Networks on Information Theoretic Learning, March 2004.
- Guest Co-editor of special issue of the IEEE Journal of Selected Topics in Signal Processing on fMRI Analysis for Human Brain Mapping (Dec. 2008).

- Guest Co-editors of four Special Issues in Journal of Computational Intelligence and Neuroscience.
- Associate Editor of IEEE Transaction on Cybernetics, IEEE Transactions on Neural Networks and Learning Systems, Journal Methods in Neuroscience.
- Associate Editor of Journal Big Data and Information Analytics (BigDIA).

#### Member of Program Technical Committees

- Chair of IEEE Circuits and Systems Technical Committee for Blind Signal Processing  
<http://cil.ece.uic.edu/BSP/> 2007-2008
- Member of IEEE Circuits and Systems Technical Committee for Blind Signal Processing  
<http://cil.ece.uic.edu/BSP/> since 2003
- Member of IEEE MLSP (Machine Learning for Signal Processing) Technical Committee, 1998-2000 and from 2008- till 2014

#### Conference Program Committees

- Co-chairman of the International Program Committee ICA-2003, Nara, Japan, April 2003
- Member of the International Program Committee ICASSP Conferences 1997-2003
- Member of the International Program Committee ICONIP Conferences 1998-2009
- Member of the International Program Committee MSLP Workshops 1998-2002, 2009
- Member of the International Program Committee ICA Conference 1999-2008.
- Member of the International Program Committee and International Liaison EUSIPCO 2002

#### Reviewer

- Proceedings Academy of Science (PNAS)
- IEEE Transactions on Signal Processing
- IEEE Transactions on Systems, Man and Cybernetics
- IEEE Transactions on Neural Networks
- IEEE Transactions on Circuits and Systems
- IEEE Signal Processing Letter
- Electronics Letters
- Signal Processing Journal
- Biomedical Cybernetics
- Neural Computation
- Neurocomputing
- Journal of Neural Networks
- NIPS (Neural Information Processing Systems) and many others

## Research Monographs (Books in English)

- 1) **A. Cichocki, A-H. Phan, Q. Zhao, N. Lee, I.V. Oseledets, M. Sugiyama, D. Mandic**, “Tensor Networks for Dimensionality Reduction and Large-Scale Optimization: Part 2 Potential Applications and Perspectives”, ***Foundation and Trends in Machine Learning*** 9.6 (2017): 431-673. (May 2017). <https://arxiv.org/pdf/1708.09165.pdf>
- 2) **A. Cichocki, N. Lee, I.V. Oseledets, A-H. Phan, Q. Zhao, D. Mandic**, “Tensor Networks for Dimensionality Reduction and Large-Scale Optimization: Part 1 Low-Rank Tensor Decompositions”, Vol. 9, No. 4-5, 249-429, ***Foundation and Trends in Machine Learning*** (January 2017). <https://arxiv.org/pdf/1609.00893.pdf>
- 3) **A. Cichocki, R. Zdunek, A.H. Phan and S. Amari**: ***Nonnegative Matrix and Tensor Factorizations: Applications to Exploratory Multi-way Data Analysis and Blind Source Separation***, Wiley, 470 pages, September 2009. [http://www.bsp.brain.riken.jp/%7Ecia/NMF\\_NTF\\_book/NMF-NTF-book-Chapter1\\_2-contents.pdf](http://www.bsp.brain.riken.jp/%7Ecia/NMF_NTF_book/NMF-NTF-book-Chapter1_2-contents.pdf)  
[http://eu.wiley.com/WileyCDA/Section/idWILEYEUROPE2\\_SEARCH\\_RESULT.html?query=Cichocki](http://eu.wiley.com/WileyCDA/Section/idWILEYEUROPE2_SEARCH_RESULT.html?query=Cichocki)
- 4) **A. Cichocki and S. Amari** ***Adaptive Blind Signal and Image Processing: Learning Algorithms and Applications*** (Wiley, April 2003). <http://www.bsp.brain.riken.go.jp/ICAbookPAGE/>  
<http://as.wiley.com/WileyCDA/Section/id302477.html?query=Andrzej+Cichocki>
- 5) **A. Cichocki and R. Unbehauen** ***Neural Networks for Optimizations and Signal Processing (Extended edition)***, New York: Wiley, Nov. 1994.

- 6) R. Unbehauen and **A. Cichocki**: CMOS Switched-Capacitor and Continuous-Time Integrated Circuits and Systems (Springer-Verlag, 1989).

### **Actual Research Interests**

- Multi-way analysis, tensor decompositions and factorizations, group and multi-block analysis in applications to processing and mining of biomedical and geophysical massive data, big data analytics in biomedical engineering, computational neuroscience and communication.
- Deep Learning
- Tensor Networks and their applications in big data analytics
- Early detection of Alzheimer's disease
- Blind source separation (BSS), especially ICA, SCA, NMF, multiway BSS, Linked multi-block, multilinear ICA, nonnegative tensor factorizations
- Intelligent signal processing and massive data analysis and their applications
- Learning theories and optimization techniques
- Inverse problems and their biomedical applications
- Brain computer interface (BCI), Brain Robot Interface and noninvasive recording and visualization of brain signals (EEG/MEG, fMRI)
- Neural computation and nonlinear adaptive systems
- Optimization and operations research and their biomedical applications.
- Neuroinformatics and bioinformatics.

### **Teaching Experience**

- Supervisor of more than 15 Ph.D. thesis (including):
  1. Zbigniew Waclawek, "Estimation in Real Time Parameters of Transient Signals in Power Systems", Technical University Wroclaw, 1995.
  2. Leszek Moszczyński, "Applications of Adaptive Systems for Blind Source Separation" - Warsaw University of Technology, 1996.
  3. Sławomir Stepniowski: "Applications of Genetic Algorithms for Design of Architecture of Feed-Forward Neural Networks" - Warsaw University of Technology, 1998.
  4. Ireneusz Sabala: "Multichannel Deconvolution and Separation of Statistically Independent Signals for Unknown Dynamic Systems" - Warsaw University of Technology, 1999.

5. Ryszard Szupiluk: "Methods for Reduction and Estimation of Noise in Blind Signal Processing" - Warsaw University of Technology, 2000.
6. Tomasz Rutkowski "Reducing Environmental and Transmission Interference to Improve Automatic Speaker Recognition", Technical University Wroclaw, Institute of Telecommunication and Acoustic, 2001.
7. Anh Huy Phan "Tensor Decompositions: Algorithms and Applications" Kitakyushu Institute of Technology, Japan, July 2011.
8. Yu Zhang "Brain Computer Interface" Jao Tong University, Shanghai, China, June 2013.

- Supervisor of more than 25 M.Sc. and Diploma Engineer thesis at University Erlangen Nuernberg, Germany and Warsaw University of Technology Poland Adjunct Professor in Kyushu University of Technology (since 2008)
- Reviewer and examiner of 10 Ph.D. thesis in several Universities worldwide
- Lecturer at Warsaw University of Technology - Poland, University Erlangen Nuernberg - Germany, Higher Institute of Electronics – Malta, Kita-Kyushu University.
- Courses taught and developed: Nonlinear Adaptive Systems, Adaptive Blind Signal and Image Processing, Neural Networks, Optimization Methods, Electronic Circuits, Circuits and Systems, Biomedical Signal Processing.

### **Invited Plenary or Key-Note speaker**

- (O1) Cichocki A: "***Era of Big Data: New Approach via Tensor Networks and Tensor Decompositions***" - 2013 International Workshop on Smart Info-Media Systems in Asia (SISA2013) (Nagoya, Japan September 2013).
- (O2) Cichocki A.: "***Extraction of Hidden Variables, Factors and Features Using Tensor Decompositions – Data Fusion***" -7-th International Symposium on Neural Networks (Shanghai June 2010).
- (O3) Cichocki A.: "***Multi-way Array (Tensor) Factorizations and Decompositions and their Potential Applications***". 8<sup>th</sup> International Conference on Independent Component Analysis and Signal Separation, Brazil (invited talk 2009.3).
- (O4) Cichocki A. "***Sparse and Nonnegative Tensor Factorization/Decompositions and their Applications in Analysis of Multimodal, Multiblock Biomedical Signals, especially in Brain Computer Interface***". 15<sup>th</sup> International Conference

on Neural Information Processing of the Asia-Pacific Neural Network Assembly, New Zealand (invited talk 2008.11).

(O5) Cichocki A. “*Multi-way Blind Source Separation Using Nonnegative Matrix Factorization and Sparse Component Analysis*”. 15<sup>th</sup> European Signal Processing Conference (EUSIPCO), Poland (invited talk 2007.9).

(O6) Cichocki A. “*Blind Information Processing: New Tools for Analysis of Multi-sensory, Multimodal Data*”. 3<sup>rd</sup> International Conference on Computational Intelligence, Robotics and Autonomous Systems, Singapore (invited talk 2005.12).

### **Selected List of Peer-Reviewed Journal Publications published in high-impact factors scientific journals**

#### **2018**

1. Lee, N., & **Cichocki, A.** (2018). “Fundamental tensor operations for large-scale data analysis using tensor network formats”. *Multidimensional Systems and Signal Processing*, 29(3), 921-960.
2. Jiao, Y., Zhang, Y., Chen, X., Yin, E., Jin, J., Wang, X., & **Cichocki, A.** (2018). “Sparse group representation model for motor imagery EEG classification”. *IEEE Journal of Biomedical and Health Informatics*. Journal impact factor: 3.45.
3. Lotte, F., Bougrain, L., **Cichocki, A.**, Clerc, M., Congedo, M., Rakotomamonjy, A., & Yger, F. (2018). “A review of classification algorithms for EEG-based brain-computer interfaces: a 10 year update”. *Journal of Neural Engineering*, 15(3), 031005. Journal impact factor: 2.94.
4. Zhang, Y., Wang, Y., Zhou, G., Jin, J., Wang, B., Wang, X., & **Cichocki, A.** (2018). “Multi-kernel extreme learning machine for EEG classification in brain-computer interfaces”. *Expert Systems with Applications*, 96, 302-310. Journal impact factor: 4.68.
5. Xu, X., Wu, Q., Wang, S., Liu, J., Sun, J., & **Cichocki, A.** (2018). “Whole brain fMRI pattern analysis based on tensor neural network”. *IEEE Access*. Journal impact factor: 4.02.

6. Zheng, W. L., Liu, W., Lu, Y., Lu, B. L., & **Cichocki, A.** (2018). "EmotionMeter: A multimodal framework for recognizing human emotions". *IEEE Transactions on Cybernetics*, (99), 1-13. Journal impact factor: 2.91.
7. Martín-Clemente, R., Olias, J., Thiyam, D. B., **Cichocki, A.**, & Cruces, S. (2018)." Information theoretic approaches for motor-imagery BCI systems: Review and experimental comparison". *Entropy*, 20(1), 7.
8. Elgendi, M., Kumar, P., Barbic, S., Howard, N., Abbott, D., & **Cichocki, A.** (2018). "Subliminal Priming--state of the art and future perspectives". *Behavioral sciences (Basel, Switzerland)*, 8(6). Journal impact factor: 2.61
9. Y. Qiu, G.Zhou, Q. Zhao, **A. Cichocki**, "Comparative study on the classification methods for breast cancer diagnosis", Bulletin Pol. Ac.: Tech. 66(4), (2018). (accepted)
10. Sole-Casals, J., Caiafa, C. F., Zhao, Q., & **Cichocki, A.** "Brain-Computer Interface with corrupted EEG data: A Tensor Completion Approach". *Cognitive Computation* (2018) (accepted) <https://doi.org/10.1007/s12559-018-9574-9>*arXiv preprint arXiv:1806.05017*.
11. **E. Burnaev, A. Cichocki** V. Osin, "Fast Multispectral Deep Fusion Networks", Bulletin Pol. Ac.: Tech. 66(4), (2018). (accepted).

## 2017

12. **Cichocki, A.**, Phan, A. H., Zhao, Q., Lee, N., Oseledets, I., Sugiyama, M., & Mandic, D. P. (2017). Tensor Networks for Dimensionality Reduction and Large-scale Optimization: Part 2 Applications and Future Perspectives. *Foundations and Trends® in Machine Learning*, 9(6), 431-673.
13. Li, Y., Wang, F., Chen, Y., **Cichocki, A.**, & Sejnowski, T. (2017). The Effects of Audiovisual Inputs on Solving the Cocktail Party Problem in the Human Brain: An fMRI Study. *Cerebral Cortex*, 1-15.



14. J. Jin, H. Zhang, I. Daly, X. Wang, **A. Cichocki** , “An improved P300 pattern in BCI to catch user's attention”. *Journal of Neural Engineering* , Vol. 14, No. 3, (2017)
15. *J. Li, C. Li, A. Cichocki*, “Canonical Polyadic decomposition with auxiliary information for Brain-Computer Interface”, *IEEE J Biomed Health Information* 2017, 21(1):263-271.
16. Zhang, Y., Zhou, G., Jin, J., Zhang, Y., Wang, X., & **Cichocki, A.** (2017). Sparse Bayesian multiway canonical correlation analysis for EEG pattern recognition. *Neurocomputing*, 225, 103-110.
17. Deshpande, G., Rangaprakash, D., Oeding, L., **Cichocki, A.**, & Hu, X. P. (2017). A new generation of brain-computer interfaces driven by discovery of latent EEG-fMRI linkages using tensor decomposition. *Frontiers in Neuroscience*, 11, 246.
18. Yokota, T., Lee, N., & **Cichocki, A.** (2017). Robust multilinear tensor rank estimation using higher order singular value decomposition and information criteria. *IEEE Transactions on Signal Processing*, 65(5), 1196-1206.
19. Che, M., **Cichocki, A.**, & Wei, Y. (2017). Neural Networks for Computing Best Rank-One Approximations of Tensors and its Applications. *Neurocomputing*.
20. Tichavský, P., Phan, A. H., & **Cichocki, A.** (2017). Non-orthogonal tensor diagonalization. *Signal Processing*, 138, 313-320.
21. Xie, K., He, Z., **Cichocki, A.**, & Fang, X. (2017). Rate of Convergence of the FOCUSS Algorithm. *IEEE Transactions on Neural Networks and Learning Systems*, 28(6), 1276-1289.

## 2016

22. Zhou G, **Cichocki A**, Zhang Y, Mandic D. Group Component Analysis for Multi-block Data: Common and Individual Feature Extraction. *IEEE Transactions on Neural Networks and Learning Systems*, (2)104, pp.310-331 (2016), (*highly cited paper*).
23. Zhou G, Zhao Q, Zhang Y, Adali T, Xie S, **Cichocki A**. Linked Component Analysis from Matrices to High Order Tensors: Applications to Biomedical Data. *Proceedings of the IEEE* . 104(2): 310-331 (2016), (*highly cited paper*).
24. . Zhao Q, Zhou G, Zhang L, **Cichocki A**, Amari S. Bayesian robust tensor factorization for incomplete multiway data. *IEEE Trans. on Neural Networks and Learning Systems* 27(4): 736-748 (2016).
25. Chen, L., Jin, J., Daly, I., Zhang, Y., Wang, X., and **Cichocki, A.** (2016). Exploring Combinations of Different Color and Facial Expression Stimuli for Gaze-Independent BCIs. *Frontiers in Computational Neuroscience*, 10 (2016).
26. Y. Zhang, G. Zhou, Q. Zhao, **A. Cichocki**, X. Wang Fast nonnegative tensor factorization based on accelerated proximal gradient and low-rank approximation *Neurocomputing*.
27. Nam Y., Koo B, **Cichocki A.**, Choi S. Glossokinetic Potentials for Tongue-Machine Interface. *IEEE SMC Magazine*.
28. Z. Zeng, **A. Cichocki**, L. Cheng, Y. Xia, X. Hu: Guest Editorial Special Issue on Neurodynamic Systems for Optimization and Applications. *IEEE Trans. Neural Networks Learning Systems* 27(2): 210-213 (2016).
29. M. Baumert, A.Porta, **A. Cichocki**: Biomedical Signal Processing: From a Conceptual Framework to Clinical Applications [Scanning the Issue]. *Proceedings of the IEEE* 104(2): 220-222 (2016).

## 2015

30. **Cichocki A**, Mandic D, Caiafa C, Phan A-H, Zhou G, Zhao Q, De Lathauwer L. Tensor Decompositions for Signal Processing Applications. From Two-way to Multiway Component Analysis. *IEEE Signal Processing Magazine* 32(2), 145-163 (2015) (*highly cited paper*)
31. **Cichocki A**, S Cruces S, Amari S Log-Determinant Divergences Revisited: Alpha-Beta and Gamma Log-Det Divergences. *Entropy*, 17 (5), 2988-3034 (2015).
32. Lee N., A **Cichocki A**. Estimating a Few Extreme Singular Values and Vectors for Large-Scale Matrices in Tensor Train Format. *SIAM Journal on Matrix Analysis and Applications* 36 (3), 994-1014 (2015)
33. Gallego-Jutglà E, Solé-Casals J, Vialatte F-B, Elgendi M, **Cichocki A**, Dauwels J. A hybrid feature selection approach for the early diagnosis of Alzheimer's disease. *Journal of Neural Engineering* 12 (1), 016018 (16pages) (2015).
34. Jurica P, Valenzi S, Struzik Z, **Cichocki A**. Methods for Transition: Toward Computer Assisted Cognitive Examination. *Methods of Information in Medicine* , 54 (3):256-61. doi: 10.3414/ME14-01-0080. Mar 12. (2015).
35. Li B, Zhou G, **Cichocki A**. Two Efficient Algorithms for Approximately Orthogonal Nonnegative Matrix Factorization. *Signal Processing Letters, IEEE* 22 (7), 843-846 (2015).
36. Ma J, Zhang Y, **Cichocki A**, Matsuno F. A Novel EOG/EEG Hybrid Human-Machine Interface Adopting Eye Movements and ERPs: Application to Robot Control. *IEEE Trans. Biomedical Engineering* , 62 (3), 876-889 (2015).
37. Xie K, He Z, **Cichocki A**. Convergence Analysis of the FOCUSS Algorithm. *IEEE Trans. Neural Networks and Learning Systems*, 26 (3), 601-613 (2015).

38. Yokota T, Zdunek R, **Cichocki A**, Yamashita Y. Smooth Nonnegative and Tensor Factorizations for Robust Multi-way Data Analysis. *Signal Processing* 113, 234-249 (2015).
39. Zdunek R, Phan AH, **Cichocki A**. Image Classification with Nonnegative Matrix Factorization Based on Spectral Projected Gradient. *Artificial Neural Networks*, 31-50 (2015).

## 2014

40. Cong F, Zhou G, Astikainen P, Zhao Q, Wu Q, Nandi A, Hietanen J, Ristaniemi T., **Cichocki A**.: Low-Rank Approximation Based Non-Negative Multi-Way Array Decomposition On Event-Related Potentials. *International Journal of Neural Systems*, 24 (8), 1440005 (19 pages) (2014).
41. Hiyoshi-Taniguchi K, Oishi N, Namiki C, Miyata J, Murai T, **Cichocki A**, Fukuyama H.: The Uncinate Fasciculus as a Predictor of Conversion from aMCI to Alzheimer Disease. *Journal of Neuroimaging* 10 DEC 2014 DOI: 10.1111/jon.12196 (2014)
42. Jin J, Daly I, Zhang Y, Wang X, **Cichocki A**. An optimized ERP Brain-computer interface based on facial expression changes. *Journal of Neural Engineering*, 11, 036004 (11pp) (2014).
43. Jin J, Allison B, Zhang Y, Wang X, **Cichocki A**.: An ERP-Based BCI Using an Oddball Paradigm with Different Faces and Reduced Errors in Critical Functions. *International Journal of Neural Systems* , 24 (8), 1450027 (14 pages) (2014).
44. Lee N, **Cichocki A**. Big Data Matrix Singular Value Decomposition Based on Low-Rank Tensor Train Decomposition. *Lecture Notes in Computer Science* 8866 (Advances in Neural Networks - ISSN 2014), 121-130 (2014).
45. Li J, Semenyuk R, Ratmanova P, Napalkov D, **Cichocki A**. Source localization and synchronization analysis on EEG recorded from professional shooters and novices: A comparison study. *International Journal of Psychophysiology*, 94 (2), 256-257 (2014).

46. Nam Y, Koo B, **Cichocki A**, Choi S.: GOM-Face: GKP, EOG, and EMG-Based Multimodal Interface with Application to Humanoid Robot Control. *IEEE Transactions on Biomedical Engineering*, 61 (2), 453-462 (2014).
47. Tomita Y, Vialatte F, Dreyfus G, Mitsukura, Bakardjian H, **Cichocki A**. Biomedical BCI using simultaneously NIRS and EEG. *IEEE Transactions on Biomedical Engineering*, 61(4) 1274-1284 (2014.4).
48. Valenzi S, Islam T, Jurica P, **Cichocki A**. Individual Classification of Emotions Using EEG. *Journal of Biomedical Science and Engineering* 7(8), 604-620 (2014.6).
49. Wu C, Zhang L, **Cichocki A**. Multifactor Sparse Feature Extraction Using Convolutional Nonnegative Tucker Decomposition. *Neurocomputing* 129, 17-24 (2014).
50. Wu Z, Pan G, Principe J, **Cichocki A**. Cyborg Intelligence: Towards Bio-Machine Intelligent Systems. *IEEE Intelligent Systems*, 29 (6), 2-4 (2014).
51. Yokota T, **Cichocki A**.: Linked Tucker2 Decomposition for Flexible Multi-block Data Analysis. *Lecture Notes in Computer Science* 8836 (ICONIP2014, Part III), 111-118 (2014).
52. Zdunek R, **Cichocki A**, Yokota T. B-Spline Smoothing of Feature Vectors in Nonnegative Matrix Factorization. *Lecture Notes in Computer Science* 8468 (ICAISC2014, Part II), 72-81 (2014).
53. Zhang Y, Zhou G, Jin J, Zhao Q, Wang X, **Cichocki A**. Aggregation Of Sparse Linear Discriminant Analyses For Event-Related Potential Classification In Brain-Computer Interface. *International Journal of Neural Systems* 24(1), 1450003 (15 pages) (2014).
54. Zhang Y, Zhou G, Jin J, Wang X, **Cichocki A**. Frequency recognition in

- SSVEP-based BCI using multiset canonical correlation analysis. *International Journal of Neural Systems* 24 (3), 1450013 (14 pages) (2014).
55. Zhao Q, Zhang L, **Cichocki A**, Multilinear and Nonlinear Generalizations of Partial Least Squares: An Overview of Recent Advances. *WIREs Data Mining and Knowledge Discovery*, 4, 104-115 (2014.4).
56. Zhou G, **Cichocki A**, Zhao Q, Xie S. Nonnegative matrix and tensor factorizations: An algorithmic perspective. *IEEE Signal Processing Magazine* 31(3), 54-65 (2014.5).
57. Zhou G, Zhao Q, Zhang Y, **Cichocki A**. Fast Nonnegative Tensor Factorization by Using Accelerated Proximal Gradient. *Lecture Notes in Computer Science 8866 (Advances in Neural Networks - ISNN 2014)*, 459-468 (2014).

### **2013**

58. Cong F, He Z, Hämäläinen J, Leppänen P, Lyytinen H, **Cichocki A**, Ristaniemi T. Validating Rationale of Group-level Component Analysis based on Estimating Number of Sources in EEG through Model Order Selection. *Journal of Neuroscience Methods* 212(1), 165–172 (2013).
59. Cong F, Phan A-H, Astikainen P, Zhao Q, Wu Q, Hietanen J, Ristaniemi T, **Cichocki A**. Multi-domain Feature Extraction for Small Event-related Potentials through Nonnegative Multi-way Array Decomposition from Low Dense Array EEG. *International Journal of Neural Systems* 23(2): 1350006 (18 pages) (2013).
60. Hiyoshi-Taniguchi K, Kawasaki M, Yokota T, Bakardjian H, Fukuyama H, **Cichocki A**, Vialatte F. EEG Correlates of Voice and Face Emotional Judgments in the Human Brain. *Cognitive Computation* 5 (2) online (2013).
61. Jin J, Sellers E, Zhang Y, Daly I, Wang X, **Cichocki A**. Whether generic model works for rapid ERP-based BCI calibration. *Journal of Neuroscience Methods*

212 (1), 94-99 (2013).

62. Mandal A, **Cichocki A**. Non-Linear Canonical Correlation Analysis Using Alpha-Beta Divergence. *Entropy* 15, 2788-2804 (2013).
63. Phan A-H, Tichavsky P, **Cichocki A**. Low Complexity Damped Gauss-Newton Algorithms for CANDECOMP/PARAFAC. *SIAM Journal on Matrix Analysis and Applications* 34 (1), 126-147 (2013).
64. Phan A-H, Tichavsky P, **Cichocki A**. CANDECOMP/PARAFAC Decomposition of High-order Tensors through Tensor Reshaping. *IEEE Trans. on Signal Processing* 61 (19), 4847-4860, Oct. (2013).
65. Phan A-H, Tichavsky P, **Cichocki A**. Fast Alternating LS Algorithms for High Order CANDECOMP/PARAFAC Tensor Factorizations *IEEE Trans. on Signal Processing*, 61 (19), 4834-4846, Oct. (2013).
66. Zhao Q, Caiafa C, Mandic D, Chao Z, Nagasaka Y, Fujii N, Zhang L, **Cichocki A**. Higher-Order Partial Least Squares (HOPLS): A Generalized Multi-linear Regression Method, *IEEE Transactions on Pattern Analysis and Machine Intelligence* 35 (7), 1660-1673 (2013).
67. Zhao Q, Zhou G, Adali T, Zhang L, Cichocki A. Kernelization of Tensor-Based Models for Multiway Data Analysis. *IEEE Signal Processing Magazine*, July 2013, 137-148 (2013).
68. Zhang Y, Zhou G, Zhao Q, Jin J, Wang X, **Cichocki A**. Spatial-temporal discriminant analysis for ERP-based brain-computer interface, *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 21(2): 233-243 (2013).

## 2012

69. Cong F, Phan A-H, Astikainen P, Zhao Q, Hietanen J, Ristaniemi T, **Cichocki A**. Multi-domain Feature of Event-Related Potential Extracted by Nonnegative

- Tensor Factorization: 5 vs. 14 Electrodes EEG Data. *Lecture Notes in Computer Science* 7191, 502-510 (2012).
70. Cong F, Phan A-H, Zhao Q, Huttunen-Scott T, Kaartinen J, Ristaniemi T, Lyytinen H, **Cichocki A**. Benefits of Multi-domain Feature of Mismatch Negativity Extracted by Nonnegative Tensor Factorization from EEG Collected by Low-Density Array. *International Journal of Neural Systems* 22 (6), 1250025 (19pages) (2012).
  71. Cong F, Phan A-H, Zhao Q, Wu Q, Ristaniemi T, **Cichocki A**. Feature Extraction by Nonnegative Tucker Decomposition from EEG Data Including Testing and Training Observations. *Lecture Notes in Computer Science* 7665, 166–173 (2012).
  72. Dauwels J, Weber T, Vialatte F, Musha T, and **Cichocki A**. Quantifying Statistical Interdependence, Part III:  $N > 2$  Point Processes. *Neural Computation* 24, 408-454 (2012).
  73. Jin J, Allison B, Kaufmann T, Kubler A, Zhang Y, Wang X, **Cichocki A**. The Changing Face of P300 BCIs: A Comparison of Stimulus Changes in a P300 BCI Involving Faces, Emotion, and Movement. *PLoS One* 7(11), 1-10 (2012).
  74. Latchoumane C, Vialatte F, Sole-Casals J, Maurice M, Wimalaratna S, Hudson N, Jeong J, **Cichocki A**. Multiway array decomposition analysis of EEGs in Alzheimer's disease. *Journal of Neuroscience Methods* 207 (1), 41-50 (2012).
  75. Nam Y, Zhao Q, **Cichocki A**. Tongue-Rudder: A Glossokinetic-Potential-Based tongue-Machine Interface. *IEEE Trans. on Biomedical Engineering* 59 (1), 290-299 (2012).
  76. Phan A-H, **Cichocki A**, Tichavsky P, Koldovsky Z. On Connection between the Convolutional and Ordinary Nonnegative Matrix Factorizations. *Lecture Notes in Computer Science*, 7, 191, 288-296 (2012).
  77. Phan A-H, Cichocki A, Tichavsky P, Mandic D, Matsuoka K. On Revealing Replicating Structures in Multiway Data: A Novel Tensor Decomposition



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### **Selected List of Conference Papers in International Conference Proceedings**

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#### **Developed software and toolboxes available free to scientific community**

A. Cichocki, S. Amari, K. Siwek A.H Phan et al., ICALAB Toolboxes, (ICA-Independent Component Analysis <http://www.bsp.brain.riken.go.jp/ICALAB>  
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A. Cichocki and R. Zdunek NTFLAB (NTF-Nonnegative Tensor Factorization)  
<http://www.bsp.brain.riken.jp/ICALAB/NTFLABSignalProcDownload.php>

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**Dr Cichocki has been invited to the Council of Canadian Academies Survey of Science and Technology Strengths as an author of one of the top 1% most highly cited papers in his field worldwide.**

His profile is available at Google Scholar

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**Cichocki Andrzej h-index = 83 (i10-index 400). Total number of citations 36,000.**