Curriculum Vitae

Saideh Ferdowsi PhD, MSc, BSc, IEEE Member

Contact Information

Faculty of Electrical Engineering
Shahrood University, Shahrood, IRAN

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Research Interests

My main research interests include biomedical signal and image processing and blind source separation. I have been exploring the application of signal processing methods for analysis of joint EEG and fMRI data of the human brain. The main focus in my research has been in developing and applying new BSS techniques for better understanding of human brain functioning when simultaneous recordings of both EEG and fMRI data of the brain are available. This is an ongoing research topic which can significantly increase our understanding of the brain function and help to diagnose many diseases and abnormalities in patients with brain disorders

Education

PhD in EEG-fMRI Multimodal Analysis
University of Surrey,
Guildford, UK, November 2012

- Majored in Computer and Electronic Engineering
- Subject: Analysis of Simultaneously Recorded EEG-fMRI by Constrained Source Separation

Journal Publications

1. V. Abolghasemi, M. Chen, A. Alameer, S. Ferdowsi, J. Chambers, K. Nazarpour, "Incoherent dictionary pair learning: Application to a novel open-source database of Chinese numbers", IEEE Signal Processing Letters, vol.25, no.4, pp.472-476,2018.
2. **S. Ferdowsi**, V. Abolghasemi, "Multi-Layer Spectral Decomposition technique for ERD Estimation in EEG μ Rhythms: An EEG-fMRI Study", Neurocomputing,vol.275,pp.1836-1845, 2017.
3. **S. Ferdowsi**, V. Abolghasemi, "Semi-Blind Spectral Factorization Approach for Magnetic Resonance Spectroscopy Quantification", IEEE Trans. on Biomedical Engineering, 2017.
4. **S. Ferdowsi**, V. Abolghasemi, "Simultaneous BOLD detection and incomplete fMRI data reconstruction", Journal of Medical & Biological Engineering & Computing, 2017.
5. **S. Ferdowsi**, V. Abolghasemi, and S. Sanei, "A Partially Constrained Tensor Factorization approach for EEG-fMRI fusion", Journal of neuroscience methods, vol. 254, pp. 27-35, 2015.
6. V. Abolghasemi, **S. Ferdowsi**, "A block-wise random sampling approach: Compressed sensing problem", Journal of AI and Data Mining, vol. 3, no. 1, pp.93-100, 2015.
7. V. Abolghasemi, **S. Ferdowsi**, "EEG–fMRI: dictionary learning for removal of ballistocardiogram artifact from EEG", Journal of Biomedical Signal Processing and Control, vol. 18, pp. 186-194, 2015.
8. V. Abolghasemi, **S. Ferdowsi**, and S. Sanei, "Fast and incoherent dictionary learning algorithms with application to fMRI," Springer-Verlag, Journal of Signal. Image, and Video Processing, vol. 9, no. 1, pp. 147-158, 2015.
9. **S. Ferdowsi**, S. Sanei, and V. Abolghasemi, "A predictive modeling approach to analyze data in EEG-fMRI experiments," International Journal of Neural Systems, vol. 25, no. 1, pp. 1440008, 2015.
10. **S. Ferdowsi**, V. Abolghasemi, and S. Sanei, "Removing balistocardiogram artifact from EEG using Short-and-long-term linear predictor," IEEE Trans. on Biomedical Engineering, vol. 60, no. 7, pp. 1900-1911, April 2013.
11. S. Sanei, **S. Ferdowsi**, K. Nazarpour, and A. Cichocki, "Advances in Electroencephalography Signal Processing," IEEE Signal Processing Magazine, vol. 30, no. 1, pp. 170 – 176, 2013 (INVITED COLUMN PAPER).
12. V. Abolghasemi, **S. Ferdowsi**, and S. Sanei, "Blind Separation of Image Sources via Adaptive Dictionary Learning", IEEE Transactions on Image Processing, No. 6, vol. 21, pp. 2921 – 2930, 2012.
13. V. Abolghasemi, **S. Ferdowsi**, and S. Sanei, "A gradient-based alternating minimization approach for optimization of the measurement matrix in compressive sensing", Signal Processing, No. 4, vol. 92, pp. 999-1009, 2012.

Conference Publications

1. V. Abolghasemi**, S. Ferdowsi**, H. Shen, Y. Shen, and L. Gan,"Spatio-Spectral Data Reconstruction In Terahertz Imaging", Accepted in International Symposium on Telecommunications (IST2014), Tehran, Iran, 2014.
2. **S. Ferdowsi,** V. Abolghasemi, S. Sanei, EEG-FMRI INTEGRATION USING A PARTIALLY CONSTRAINED TENSOR FACTORIZATION, ICASSP 2013, May 26-31, Vancouver, Canada. Accepted.
3. **S. Ferdowsi,** V. Abolghasemi, S. Sanei, Blind Separation of Ballistocardiogram From EEG Via Short And Long-Term Linear Prediction Filtering, IEEE International Workshop on Machine Learning for Signal Processing (MLSP), Santander, Spain, pp.1-6, 23-26 September 2012.
4. **S. Ferdowsi,** S. Sanei, J. Nottage, O. O'Daly, and V. Abolghasemi, A Hybrid ICA-Hermite Transform for Removal of Ballistocardiogram From EEG, 20th European Signal Processing Conference, Bucharest, Romania, pp. 484-488, 2012.

5. V. Abolghasemi, **S. Ferdowsi**, B. Makkiabadi, S. Sanei, "Adaptive fusion of dictionary learning and multichannel BSS," IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), pp.2421-2424, 25-30 March 2012.
6. **S. Ferdowsi**, V. Abolghasemi, B. Makkiabadi, and S. Sanei, "A new spatially constrained NMF with application to fMRI", In Proc. Annual International IEEE EMBS Conference, pp. 5052-5055, Boston, USA, 2011.
7. **S. Ferdowsi**, V. Abolghasemi, and S. Sanei, "A Comparative Study of alpha-Divergence Based NMF Techniques for fMRI Analysis", In Proc. European Signal Processing Conference EUSIPCO'11, pp. 71-75, Barcelona, Spain, 2011.
8. V. Abolghasemi, **S. Ferdowsi**, and S. Sanei, "Sparse multichannel source separation using incoherent K-SVD method", In Proc. IEEE Statistical Signal Processing Workshop, SSP'11, pp. 477-480, Nice, France, 2011.
9. V. Abolghasemi, **S. Ferdowsi**, B. Makkiabadi, and S. Sanei, "On optimization of the measurement matrix for compressive sensing", In Proc. European Signal Processing Conference EUSIPCO'10, pp. 427-431, Aalborg, Denmark, 2010.
10. **S. Ferdowsi**, V. Abolghasemi, and S. Sanei, "A constrained NMF algorithm for Bold detection in fMRI", In Proc. IEEE International Workshop on Machine Learning for Signal Processing MLSP, pp. 77-82, Kittila, Finland, 2010.
11. V. Abolghasemi, S. Sanei, **S. Ferdowsi**, F. Ghaderi, and A. Belcher "Segmented compressive sensing", In Proc. IEEE Statistical Signal Processing Workshop, SSP'09, pp. 630-633, Cardiff, UK, 2009.
12. **S. Ferdowsi**, V. Abolghasemi, A. Ahmadyfard and S. Sanei "An improved eye detection method based on statistical moments", In Proc. IEEE Statistical Signal Processing Workshop, SSP'09, pp. 345-348, Cardiff, UK, 2011.
13. **S. Ferdowsi**, and A. Ahmadyfard, "Using statistical moments as invariants for eye detection", In Proc. European Signal Processing Conference EUSIPCO'08, Lausanne, Switzerland, 2008.
14. **S. Ferdowsi**, and A. Ahmadyfard, "A novel approach for eye detection using 2D wavelet transform", In Proc. National Student Conference on Electrical Engineering, Isfahan, Iran, 2007.
15. **S. Ferdowsi**, and A. Dastfan, "A Novel Method for Interactive Teaching of Industrial Electronics", In Proc. Iranian Conference in Electrical Engineering ICEE, Zanjan, Iran, 2005.
16. A. Dastfan, and **S. Ferdowsi**, "Web-Based Interactive Teaching of Power Electronics", In Proc. Australasian Universities Power Engineering Conference AUPEC2004, Brisbane, Australia, 2004.

Professional Experience

Shahrood University of Technology, Shahrood, IRAN
Assistant professor, 2013 up to now.
Teaching assistant, 2006 - 2008
Teaching assistant for undergraduate courses in computer science and electrical engineering, including computer architecture, analogue and digital electronic circuits, C++ programming.

University of Surrey, Guildford, UK, 2010-2012 & **Cardiff University**, Cardiff, UK, 2008-2010
Teaching Assistant
Teaching assistant for undergraduate courses in computer engineering, including MATLAB and C++ programming.

Shahrood Islamic Azad University, Shahrood, IRAN
Lecturer, 2005 - 2008
Teaching for undergraduate courses in computer science and electrical engineering, including analogue and digital electronic circuits, C++ programming.

Honors

- Funded PhD by the Leverhulme Trust from July 2009 to June 2012.
- Funded by Faculty of Engineering and Physical Sciences at University of Surrey, from January 2011 to June 2012.
- Postgraduate research student of 2012 award. Faculty of Engineering and Physical Sciences, University of Surrey, UK.

Software Skills

Biomedical signal processing toolboxes: Statistical Parametric Mapping (SPM), EEGLab, MRIcro, Brainstorm, MATLAB, Java applet, C++, Assembly language, Microcontroller programming;
General Software: Latex, Word, Excel, etc. Programming

Memberships

IEEE Member;

Served as reviewer for:

• IEEE Transactions on Biomedical Engineering
• IEEE Transactions on Signal Processing
• IEEE Transactions on Neural Systems and Rehabilitation Engineering
• The Journal of Signal Processing Systems-Springer
• Biomedical Signal processing and Control Journal- Elsevier
• IET signal Processing
• International Journal of Engineering
• Journal of AI and Data Mining