

Fateme GHAYEM

	Research scientist
CONTACT INFORMATION	Email: fateme.ghayem@gmail.com ghayem@umbc.edu Homepage: https://ghayem.github.io
EDUCATION	Université Grenoble Alpes , Grenoble, France Ph.D. in Signal, Image, Parole, and Télécoms, GIPSA-lab, Oct 2017 – Nov 2020 - Thesis topic: <i>Optimal sensor placement for source extraction</i> - Advisor: Prof. Christian JUTTEN, Dr. Bertrand RIVET Sharif University of Technology , Tehran, Iran M.Sc., Electrical Engineering, Sept 2013 – Sept 2015 GPA: 17.06/20 - Thesis topic: <i>MR image reconstruction from highly partial Fourier samples</i> - Advisor: Prof. Farokh Marvasti Shiraz University , Shiraz, Iran B.Sc., Electrical Engineering, Sept 2009 – Sept 2013 GPA: 17.85/20 National Organization for Development of Exceptional Talents , Shiraz, Iran Diploma, Mathematics and Physics, Sept 2005 – Sept 2009 GPA: 19.60/20
RESEARCH INTERESTS	Statistical signal and image processing, Machine learning, Local/global optimization, Dictionary learning for sparse representation, Optimal sensor placement for source extraction, Independent component analysis (ICA) and independent vector analysis (IVA) for multi-subject resting-state fMRI study, Graph signal processing (GSP) and graph neural net (GNN).
RESEARCH EXPERIENCES	<ul style="list-style-type: none">• Postdoctoral researcher (August 2021–August 2022), MLSP-Lab, University of Maryland, Baltimore County (UMBC), Maryland, USA.<ul style="list-style-type: none">- Advisor: Prof. Tulay Adali- Research topic:<ul style="list-style-type: none">◦ Dictionary learning for the identification of new interpretable patterns and discriminative features from brain functional network connectivity (FNC) obtained from ICA decomposition of multi-subject resting state fMRI data - static and dynamic study◦ Brain graph neural net (Brain-GNN) for the classification of healthy control and patients with different brain disorders, <i>e.g.</i> Schizophrenia.◦ Constrained ICA and IVA for subgroup identification from multisubject fMRI Data◦ Reproducibility and replicability in neuroimaging data analysis• Research assistant (2015–2017), DSP-lab, EE department, Sharif University of Technology, Tehran, Iran.<ul style="list-style-type: none">- Advisor: Prof. Massoud Babaie-Zadeh- Research topics: Dictionary learning for sparse representation, convex/non-convex optimization.

SUMMER SCHOOL PRAIRIE artificial intelligence summer school (PAISS), July 2018, Grenoble, France.

Google Scholar profile

PREPRINTS

1. **F. Ghayem**, H. Yang, F. Kantar, S-J. Kim, V. D. Calhoun, T. Adali, “New Interpretable Patterns and Discriminative Features from Brain Functional Network Connectivity Using Dictionary Learning”, submitted to *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2023.
2. H. Yang, **F. Ghayem**, B. Gabrielson, M. A. B. S. Akhonda, V. D. Calhoun, T. Adali, “Constrained independent component analysis based on entropy bound minimization for subgroup identification from multisubject fMRI data”, submitted to *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2023.

REFEREED
JOURNAL
PUBLICATIONS

1. **F. Ghayem**, B. Rivet, Ch. Jutten, R. Cabral Farias, “Robust sensor placement for signal extraction”, *IEEE Transactions on Signal Processing*, vol. 69, pp. 4513-4528, 2021.
2. **F. Ghayem**, M. Sadeghi, M. Babaie-Zadeh, S. Chatterjee, M. Skoglund, and C. Jutten, “Sparse signal recovery using iterative proximal projection”, *IEEE Transactions on Signal Processing*, vol. 66, no. 4, pp. 879–894, February 2018.

CONFERENCE
PUBLICATIONS

1. H. Yang, MABS. Akhonda, **F. Ghayem**, Q. Long, V.D. Calhoun, T Adali, “Independent Vector Analysis Based Subgroup Identification from Multisubject fMRI Data”, in *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, May 2022.
2. **F. Ghayem**, B. Rivet, Ch. Jutten, R. Cabral Farias, “Gradient-based algorithm with spatial regularization for optimal sensor placement”, in *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, May 2020.
3. **F. Ghayem**, B. Rivet, Ch. Jutten, R. Cabral Farias, “Optimal sensor placement for signal extraction”, in *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, May 2019.
4. M. Sadeghi, **F. Ghayem**, M. Babaie-Zadeh, S. Chatterjee, M. Skoglund, and C. Jutten, “L0Soft: ℓ_0 Minimization via Soft Thresholding”, in *Proceedings of the 27th European Signal Processing Conference (EUSIPCO)*, 2-6 September 2019.
5. **F. Ghayem**, M. Sadeghi, M. Babaie-Zadeh, and C. Jutten, “Accelerated dictionary learning for sparse signal representation”, in *13th International Conference on Latent Variable Analysis and Signal Separation, LVA/ICA*, Grenoble, France, 2017.
6. **F. Ghayem** and F. Rassaie, “Helical antenna to measure radiated power density around a BTS; Design and implementation”, in *third Asia-Pacific Conference on Antennas and Propagation (APCAP)*, July 2014.

CO-SUPERVISION

I have been co-supervising three Ph.D. students in collaboration with Prof. Tulay Adali (University of Maryland, Baltimore County, USA), Prof. Jean-Christophe Pesquet (CentraleSupélec, Université Paris-Saclay, France), Prof. Vince D. Calhoun (Translational Research in Neuroimaging and Data Science, USA), and Dr. Seung-Jun Kim (University of Maryland, Baltimore County, USA) on the following projects:

	<ul style="list-style-type: none"> - Interpretable brain graph neural net (Brain-GNN) for the classification of healthy control and patients with different brain disorders, e.g. Schizophrenia. - ICA and IVA for subgroup identification from multisubject fMRI Data - Reproducibility and replicability in neuroimaging data analysis 	
TEACHING ASSISTANTSHIP	Signals and Systems - Responsible: Prof. M. Babaei-Zadeh, Sharif University of Technology Digital Signal Processing II - Responsible: Prof. F. Marvasti, Sharif University of Technology Signals and Systems - Responsible: Dr. M. Derakhtian, Shiraz University Electromagnetics - Responsible: Dr. M. Derakhtian, Shiraz University Electrical Circuit II - Responsible: Prof. M. A. Masnadi-Shirazi, Shiraz University	2015 2014 2013 2012 2011
HONORS & AWARDS	<ul style="list-style-type: none"> - Ph.D. scholarship (ranked 2), Université Grenoble Alpes, Grenoble, France. - Full travel grant (CHESS project), LVA/ICA workshop, Grenoble, France. - Bronze award in math competition among high school students, Sharif University of Technology. - Admitted to National Organization for Development of Exceptional Talents (NODET) as high school and pre-university school student. 	2017 2017 2008 2005
COMPUTER SKILLS	<ul style="list-style-type: none"> • <i>Programming Languages and Softwares:</i> MATLAB, Python • <i>Typesetting:</i> L^AT_EX • <i>Toolbox:</i> GIFT 	
COMMUNITY SERVICES	Reviewer for the following journals and conferences: <ul style="list-style-type: none"> - IEEE Transactions on Signal Processing - IEEE Signal Processing Letters - International Conf. on Acoustics, Speech, and Signal Proc. (ICASSP) - European Signal Processing Conference (EUSIPCO) - eNeuro - Machines 	2019–2022 2019 2023 2019–2021 2022 2022
LANGUAGE PROFICIENCY	<ul style="list-style-type: none"> - Persian (Native) - English (Fluent) - French (Intermediate) 	
HOBBIES AND INTERESTS	Playing the violin Running, hiking, biking	
REFERENCES	<ul style="list-style-type: none"> • Prof. Massoud Babaie-Zadeh • Prof. Christian Jutten • Dr. Bertrand Rivet • Prof. Tulay Adali 	mbzadeh@sharif.edu christian.jutten@gipsa-lab.grenoble-inp.fr bertrand.rivet@gipsa-lab.grenoble-inp.fr Adali@umbc.edu