

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, Bayesian modeling, Machine learning, Numerical optimization, Dictionary learning, Optimal sensor placement for source extraction, Independent component analysis (ICA) and independent vector analysis (IVA) for multi-subject resting-state fMRI study, and Graph neural networks (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 topics:<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 studies◦ Brain graph neural networks (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, VD. 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"> - Brain graph neural networks (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 resting state 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"> - English (Fluent) - French (Intermediate) - Persian (Native) 	
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