

## Fateme GHAYEM

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Research scientist

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INFORMATION                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: *Optimal sensor placement for source extraction*
- 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: *MR image reconstruction from highly partial Fourier samples*
- 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                Statistical signal and image processing, Machine learning, Local/global optimization,  
INTERESTS                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

- **Postdoctoral researcher** (August 2021–August 2022), **MLSP-Lab**, University of Maryland, Baltimore County (UMBC), Maryland, USA.
  - Advisor: Prof. Tulay Adali
  - Research topic:
    - 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
    - Interpretable brain graph neural net (Brain-GNN) for the classification of healthy control and patients with different brain disorders e.g. Schizophrenia.
    - Constrained ICA and IVA for subgroup identification from multisubject fMRI Data
    - Reproducibility and replicability in neuroimaging data analysis
- **Summer School** (July 2018), **PRAIRIE** artificial intelligence summer school (PAISS'18), Grenoble, France.
- **Research assistant** (2015–2017), DSP-lab, EE department, Sharif University of Technology, Tehran, Iran.
  - Advisor: Prof. Massoud Babaie-Zadeh
  - Research topics: Dictionary learning for sparse representation, convex/non-convex optimization.

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: L0 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.

TEACHING  
ASSISTANTSHIP

<b>Signals and Systems</b>	2015
- Responsible: Prof. M. Babaie-Zadeh, Sharif University of Technology	
<b>Digital Signal Proccessing II</b>	2014
- Responsible: Prof. F. Marvasti, Sharif University of Technology	
<b>Signals and Systems</b>	2013
- Responsible: Dr. M. Derakhtian, Shiraz University	
<b>Electromagnetics</b>	2012
Responsible: Dr. M. Derakhtian, Shiraz University	
<b>Electrical Circuit I</b>	2011
Responsible: Prof. M. A. Masnadi-Shirazi, Shiraz University	

HONORS &  
AWARDS

- Ph.D. scholarship (ranked 2), Université Grenoble Alpes, Grenoble, France. 2017
- Full travel grant (CHESS project), LVA/ICA workshop, Grenoble, France. 2017
- Bronze award in math competition among high school students, Sharif University of Technology. 2008
- Admitted to National Organization for Development of Exceptional Talents 2005 (NODET) as high school and pre-university school student.

COMPUTER SKILLS • *Programming Languages and Softwares:* MATLAB, Python  
 • *Typesetting:* L<sup>A</sup>T<sub>E</sub>X  
 • *Toolbox:* GIFT

COMMUNITY SERVICES **Reviewer for the following journals:**

- IEEE Transactions on Signal Processing	2019–2022
- IEEE Signal Processing Letters	2019
- European Signal Processing Conference (EUSIPCO)	2019–2021
- eNeuro	2022
- Machines	2022

LANGUAGE PROFICIENCY

- Persian (Native)
- English (Fluent)
- French (A2)

HOBBIES AND INTERESTS

Playing the violin  
 Running, hiking, biking