Curriculum Vitae (C.V.)
(Updated October 2023)

Farnaz Sedighin

Birth date: 20 September 1985
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Current Status

Research Assistant Professor, Medical Image and Signal Processing Research Center, Isfahan University of Medical Sciences, Isfahan, Iran

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Education

8/2023–10/2023 **Visiting Scientist**, *RIKEN Center for Advanced Intelligence Projects (AIP), Tensor Learning Team*, Tokyo, Japan.

7/2019–3/2021 **Postdoc on Tensor Analysis**, *Skolkovo Institute of Science and Technology (Skoltech)*, Moscow, Russia.

9/2012–2/2018 **Ph.D. on Signal Processing**, *Sharif University of Technology*, Tehran, IRAN, GPA: **18.10/20**.

9/2007–2/2010 **M.Sc. on Electrical Engineering (Communication Systems)**, *Isfahan University of Technology*, Isfahan, IRAN, GPA: **17.46/20**.

9/2003–9/2007 **B.Sc. on Electrical Engineering (Communication)**, *Isfahan University of Technology*, Isfahan, IRAN, GPA: **17.30/20**.

9/1999–9/2003 **Diploma in the field of mathematics**, *Farzanegan Amin highschool (A National Organization for Development of Exceptional Talents (NODET))*, Isfahan, IRAN, GPA: **19.60/20**.

My B.Sc. Project

Title	*Implementation of CIC filters by FPGA*
Supervisor	DR. Mohammad Javad Omidi, *Isfahan University of Technology*

My M.Sc. Thesis

Title	*ISAR rotational motion compensation using entropy metric*
Supervisor	Prof. Mahmoud Modarres Hashemi, *Isfahan University of Technology*

My Ph.D. Thesis

Title	*Multimodal blind source separation*
Supervisor	Prof. Massoud Babaie-Zadeh, *Sharif University of Technology*

My Postdoc Research Area

Title	*Tensor analysis and completion using tensor netwroks*
Supervisor	Prof. Andrzej Cichocki, *Skolkovo Institute of Science and Technology (Skoltech)*

Work Experiences

I became an Assistant Professor of Medical Image and Signal Processing Research Center of Isfahan University of Medical Sciences on January 2021:

Prior to my Ph.D, I was working for a company in Iran (Fika). It is a small company mainly focuses on the maintenance of the mobile systems.

Academic experiences during my M.S and Ph.D. studies

2010–2017 **Student academic works**, Teacher Assistant (TA) of courses: "Signals&Systems" (17 hours, 2015), "Image Processing" (17 hours, 2010), "Numerical optimization" (17 hours, 2013 and 17 hours 2015), "Circuite II" (17 hours 2016), "Electrical basics I" (17 hours 2016).

Teaching

I have thought the following courses in Islamic Azad University of Khomeinishahr.
- "Signals&Systems" (9×45 hours), *undergraduate*.
- "Circuits I" (6×45 hours), *undergraduate*.

I have thought the following courses in Islamic Azad University of Najafabad.
- "C programming" (1×45 hours), *undergraduate*.

Reviewer

I was a reviewer of the following journals: Signal Processing (Elsevier), IEEE Transactions on Signal Processing, IEEE Signal Processing Letters, Scientia Iranica, IEEE wireless communication letters and IET Radar Sonar Navigation, Journal of Medical Signals and Sensors. I have also been a reviewer of conferences including IEEE Global conference on Signal and Information processing (GlobalSIP), Iranian Conference on Electrical Engineering (ICEE).

Honors and Awards

2003 Rank 373 (in the region 1) among 134,467 participants and rank 578 (in the whole country) among 399,321 participants in the national university entrance exam in Iran (konkoor) in the field of Mathematics.

2012 Rank 16 among 939 participants in the national Ph.D entrance exam.

2015 National Elites foundation academic award.

2016 National Elites foundation academic award.

Research Interests

- **Tensor decomposition and its applications**.

- **Tensor networks**.

- **Blind Source Separation (BSS) and Independent Component Analysis (ICA)**.

- **Multimodal signal processing**: with application to source separation, source enhancement,... .

- **Biological signal processing**.

Languages

Persian Native language

English Excellent, reading, writing, speaking (TOEFL IBT 97/120)

Publications

Journals

[1] F. Sedighin, M. Babaie-Zadeh, B. Rivet and C. Jutten, "Multimodal Soft Nonnegative Matrix Co-Factorization for Convolutive Source Separation" *IEEE Transactions on Signal Processing*, vol. 65, no. 12, pp. 3179-3190, 2017. https://ieeexplore.ieee.org/abstract/document/7874217/

[2] F. Sedighin, A. Cichocki, T.Yokota and Q.Shi, "Matrix and Tensor Completion in Multiway Delay Embedded Transform Using Tensor Train, with Application to Signal Reconstruction" *IEEE Signal Processing Letters*, pp. 810–814, Apr. 2020. https://ieeexplore.ieee.org/abstract/document/9078764

[3] F. Sedighin, A. Cichocki, A-H. Phan, "Adaptive Rank Selection for Tensor Ring Decomposition", *IEEE Journal of Selected Topics in Signal Processing*, vol.15, pp.454–463,2021.

[4] F. Sedighin, A. Cichocki "Image Completion in Embedded Space Using Multistage Tensor Ring Decomposition", *Frontiers in Artificial Intelligence*, vol.4, 2021.

[5] F. Sedighin "Tensor Ring Based Image Enhancement", *Journal of Medical Signals and Sensors*, 2024.

[6] F. Sedighin "Tensor Methods in biomedical image analysis", *to be appeared Journal of Medical Signals and Sensors*, 2024.

Conferences

[1] F. Sedighin, M. Modarres Hashemi "ISAR rotational motion compensation using entropy metric." in *Iranian Conference on Electrical Engineering (ICEE 2010)*, Isfahan (IRAN), 2010. https://ieeexplore.ieee.org/abstract/document/5507058/

[2] F. Sedighin, M. Babaie-Zadeh, B. Rivet and C. Jutten, "Two multimodal approaches for single microphone source separation" in *24th Europian Signal Processing Conference (EUSIPCO),* , Budapest (Hungary), 2016, pp. 110-114. https://ieeexplore.ieee.org/abstract/document/7760220/

[3] F. Sedighin, M. Babaie-Zadeh, B. Rivet and C. Jutten, "A new algorithm for multimodal soft coupling" in *International conference on Latent Variable Analysis and Signal Separation*, Grenoble (France), 2017, pp. 162-171. https://link.springer.com/chapter/10.1007/978-3-319-53547-0_16

[4] F. Sedighin, A. Cichocki, A-H. Phan, "Adaptive Rank Selection for Tensor Ring Decomposition" Journal presentation in ICASSP 2022, Singapore.

References

1. Professor Andrzej Cichocki (my Postdoc supervisor, IEEE Life fellow)

- Address: Systems Research Institute PAS, 00-847 Warsaw, Poland
- Email: `a.cichocki@riken.jp`

2. Professor Christian Jutten (my Ph.D. thesis' advisor, IEEE fellow, member of Institut Universitaire de France)

- Address: GIPSA-LAB, Institute National Polytechnique of Grenoble, France.
- Email: `christian.jutten@gipsa-lab.grenoble-inp.fr`
- Phone: +33 (0)4 76 57 43 51
- Fax: +33 (0)4 76 57 47 90

3. Professor Massoud Babaie-Zadeh (my Ph.D. thesis' supervisor, IEEE Senior member)

- Address: Electrical Engineering Department, Sharif University of Technology, Tehran, Iran.
- Email: `mbzadeh@yahoo.com`
- Phone: +98 (21)66 16 59 25

4. Professor Mahmoud Modarres Hashemi (my M.sc thesis' supervisor)

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- Fax: +98 (31) 33 91 24 51