

Curriculum Vitae

(Updated, May, 2020)

Zahra Amini

Assistant Professor
Isfahan University of Medical Sciences (MUI)

School of Advanced Technologies in Medicine
Isfahan University of Medical Sciences
Iran, Isfahan, 81745-313
Email Address1: zahraamini64@yahoo.com.au
Email Address2: zahra.amini@med.mui.ac.ir
Tel : +98 3137923866



Education

- **PhD in Biomedical Engineering- Bioelectrics, 2016**
School of Advanced Technologies in Medicine, Isfahan University of Medical Sciences, Isfahan, Iran. GPA=19.44/20, thesis grade =19.92/20 (ranked first)
PhD Thesis Title: “A new model based on multivariate Gaussianization of Optical Coherence Tomography (OCT)”
Supervisor: Dr. Hossein Rabbani
- **M.Sc. in Electrical Engineering – Communications**
University of Yazd (UY), Yazd, Iran, 2008, GPA=18.06/20 (ranked first)
M.Sc. Thesis Title: “Development of Pattern Recognition Methods in P300 Detection.”
Supervisor: Dr. Vahid Abutalebi
Advisor: Dr. Mohammad Taghi Sadeghi
- **B.Sc. in Electrical Engineering -Communications**
Isfahan University of Technology (IUT), Isfahan, Iran, 2003 - 2007, GPA=16.58/20
B.Sc. Thesis Title: “Design and implementation of a Wide Band Signal Generator based on Frequency Synthesizers.”
Supervisor: Dr. Saeid Sadri

Academic Employment

- **Assistant Professor, Vice dean Educational Affairs, Department of Advanced Medical Technologies, Isfahan University of Medical Sciences, Isfahan, Iran, (Dec. 2018- present)**
- **Assistant Professor, Head of student research center, Department of Advanced Medical Technologies, Isfahan University of Medical Sciences, Isfahan, Iran, (May 2017- Dec. 2018)**
- **Assistant Professor, Department of Advanced Medical Technologies, Isfahan University of Medical Sciences, Isfahan, Iran, (Feb. 2017- present)**

- **Graduate Teaching Assistant/Assistant Instructor**, *Isfahan University of Medical Sciences, Isfahan, Iran*, (Feb. 2012- Dec.2016)

Research Interests

- Biomedical Signal and Image Processing
- Statistical modeling
- OCT image modeling and processing
- Brain Computer Interface (BCI)
- Brain Signal Analysis
- Statistical Pattern Recognition (SPR)

Publications

Journal Papers:

- **Z. Amini**, H. Rabbani, I. Selesnick, "Sparse Domain Gaussianization for Multivariate Statistical Modeling of Retinal OCT Images," *IEEE Transactions on Image Processing*, 2020, *Accepted*. [ISI, Q1- 1%]
- R. Kafieh, **Z. Amini**, H. Rabbani, B. Kaviani Baghbaderani, B. Salafian, F. Mazaheri, M. Mokhtari, "Automatic Multifaceted Matlab Package for Analysis of Ocular Images (AMPAO)", *SoftwareX*, vol. 10, pp. 100339, 2019. [Q1-1%]
- M. Samieinasab, **Z. Amini**, "Annual Congress of the School of Advanced Technologies in Medicine, 2018", *Journal of Medical Signals and Sensors*, vol.8, no. 4, pp 263-264, 2018. [Pubmed, Scopus]
- **Z. Amini**, H. Rabbani, "Optical coherence tomography image denoising using Gaussianization transform," *Journal of Biomedical Optics*, vol. 22, no.8, pp. 086011, 2017. [ISI]
- M. Miri, **Z. Amini**, H. Rabbani, R. Kafieh, "A Comprehensive Study of Retinal Vessel Classification Methods in Fundus Images," *Journal of medical signals and sensors* 7 (2), 59, 2017. [Pubmed, Scopus]
- **Z. Amini**, H. Rabbani, Letter to the Editor: Correction to "The Normal-Laplace Distribution and its Relatives", *Communications in Statistics-Theory and Methods*, vol. 46, no. 4, pp. 2076-78,2017.[ISI]
- **Z. Amini**, H. Rabbani, "Statistical Modeling of Retinal Optical Coherence Tomography," *IEEE Transactions on Medical Imaging*, vol. 35, no. 6, pp. 1544-1554, June 2016.[ISI- Q1-5%]
- **Z. Amini**, H. Rabbani, "Classification of Medical Image Modeling Methods: A Review". *Current Medical Imaging Reviews*, 2016, vol. 12, No. 2.pp:130-148.[ISI]
- M Jamshidi, H Rabbani, **Z Amini**, R Kafieh, A Ommani, V Lakshminarayanan, " Automatic Detection of the Optic Disc of the Retina: A Fast Method", *Journal of medical signals and sensors* 6 (1), 57, 2016. [Pubmed, Scopus]
- R. Kafieh, **Z. Amini**, H. Rabbani, "Interdisciplinary Researches in Iran IV: The Road Map of Ocular Image Analysis Research Group", *Journal of medical signals and sensors* 6 (2), 67, 2016. [Pubmed, Scopus]

- **Z. Amini**, V. Abootalebi, M. T. Sadeghi, “Comparison of Performance of Different Feature Extraction Methods in Detection of P300”, *Biocybernetics and Biomedical Engineering Journal*, Volume 33, Number 1, pp. 3–20, 2013.[ISI]
- **Z. Amini**, A. Mehridehnavi, "Comparison of Different Classifiers for Prediction of Breast Cancer Metastasis in Micro Array Analysis", *Journal of Isfahan Medical School* 32 (292), 2014. [Scopus]
- **Z. Amini**, H. Rabbani, "Seizure Diagnosis in Children based on the Electroencephalogram Modeling by Gaussian Process Model.", *Journal of Isfahan Medical School* 31 (243), 2013.[Scopus]
- **Z. Amini**, V. Abootalebi, M. T. Sadeghi, "Development of P300 Detection by a Combination of Time, Frequency and Spatial Feature Extraction Methods", *Iranian Journal of Biomedical Engineering*, vol.4Issue4, 2011. [ISC]
- **Z. Amini**, V. Abootalebi, M. T. Sadeghi, "Evaluation and Comparison of Common Spatial Patterns (CSP) And Intelligent Segmentation In P300 Detection", *Intelligent Systems In Electrical Engineering Journal*, 2 (2), pp. 37-54, 2011. [ISC]

Confrance Papers:

- R. Afrah , **Z. Amini**, R. Kafieh, A. Vard, “A Simple Deep Neural Network for Accurate P300 Detection in Brain Computer Interface”, *Iranian conference on Biomedical Engineering (ICBME)* , 2019.
- S. Jorjandi, H. Rabbani, **Z. Amini**, R. Kafieh, “OCT Image Denoising Based on Asymmetric Normal Laplace Mixture Model”, *Engineering in Medicine and Biology Society (EMBC), 2019 41st Annual International Conference of the IEEE*, 2019.
- S. Jorjandi, H. Rabbani, R. Kafieh, **Z. Amini**, “Statistical modeling of Optical Coherence Tomography images by asymmetric Normal Laplace mixture model,” *Engineering in Medicine and Biology Society (EMBC), 2017 39th Annual International Conference of the IEEE*, 2017.
- **Z. Amini**, H Rabbani, Sh Haghjooye Javanmard, “Prediction of Breast Cancer Metastasis Based on Pattern Recognition Methods in Micro Array Analysis”, *Systems, Control Engineering and Biological Sciences Symposium, Dec. 2012, School of Electrical & Computer Eng., Tarbiat Modares University*.
- **Z. Amini**, V. Abootalebi, M. T. Sadeghi , “A Comparative Study of Feature Extraction Methods in P300 Detection”, *17th Iranian Conference of Biomedical Engineering (ICBME2010)*, 3-4 November 2010.
- E. Mohammadi, M. Niroomand, M. Rezaeian, **Z. Amini**, “Partial Discharge Localization and Classification Using Acoustic Emission Analysis in Power Transformer”, *International Telecommunications Energy Conferences, INTELEC2009, October 2009*.

Invited Book Chapters:

- **Z. Amini**, R. Kafieh, E. Mousavi, H. Rabbani,” Diabetic retinopathy detection in ocular images by dictionary learning”, *Book chapter: Diabetes and Fundus OCT, Elsevier*, 2020.
- **Z. Amini**, R. Kafieh, H. Rabbani,” Speckle Noise Reduction and Enhancement for OCT Images”, *Book chapter: Retinal Optical Coherence Tomography Image Analysis, Springer Singapore*, 2019.

- H. Rabbani, R. Kafieh, **Z. Amini**,” Optical Coherence Tomography Image Analysis”, *Book chapter: Wiley Encyclopedia of Electrical and Electronics Engineering, 1-16, John Wiley & Sons, Inc., 2016.*

Research Experience

Research Grants successfully applied:

- Predicting the outbreak of COVID- 19 disease according to various factors using time delay dynamic systems, (Role: PI), *Supported by Vice-Chancellery for Research and Technology, Isfahan University of Medical Sciences, started in 2020.*
- Design & develop an OCT-based ocular health kiosk to diagnose Diabetic Retinopathy, (Role: Co-PI), *Avicenna Grant, Isfahan University of Medical Sciences, started in 2019.*
- Automatic analysis of MRI and OCT Data for discrimination of Multiple Sclerosis (MS) and neuromyelitis optica (NMO) in presence of Isolated Optic Neuritis (Role: Co-PI), *Supported by National Institute for Medical Research Development (NIMAD), 2018.*
- Multivariate Statistical Modeling of Retinal Optical Coherence Tomography, (Role: PI) *Supported by medical image and signal processing research center of Isfahan University of Medical Sciences, started in Feb. 2019.*
- Automatic Multifaceted Matlab Package for Analysis of Ocular Images, (Role: PI) *Supported by medical image and signal processing research center of Isfahan University of Medical Sciences, 2019.*
- Design of Semi-automatic software for segmentation of retinal layers and abnormalities in OCT images, (Role: Co-PI) *Supported by medical image and signal processing research center of Isfahan University of Medical Sciences, 2019.*
- Classification of retinal arteries and veins in fundus images using sparse methods, (Role: PI) *Supported by student research center of Isfahan University of Medical Sciences, 2017.*

Honors and Certificates

- The first rank among PhD students in Biomedical Engineering, Isfahan University of Medical Sciences, Iran, 2016.
- Distinguished elected student, Awarded by Isfahan University of Medical Sciences, 2016.
- The first rank among M.Sc. students graduated in Electronic Engineering, Yazd University, Iran, 2011.
- The third rank in the “first Iranian BCI competitions”, NBML, Iran, 2017.
- Distinguished with Shahid Motahari Educational Festival, 2014. (as a first rank student in School of Advanced Technologies in Medicine)

Teaching Experience

- “Advanced Biomedical Signal Modeling”, PhD. level, *Isfahan University of Medical Sciences.*
- “Statistical analysis of fMRI data”, PhD. level, *Isfahan University of Medical Sciences.*

- “Brain Computer Interface”, PhD. level, *Isfahan University of Medical Sciences*.
- “Research Methods”, PhD. Level, *Isfahan University of Medical Sciences*.
- “Biomedical Signal Processing”, MSc. Level, *Isfahan University of Medical Sciences*.
- “Principles of Biomedical Signal Processing”, MSc. Level, *Isfahan University of Medical Sciences*.
- “Digital Signal Processing”, MSc. Level, *Isfahan University of Medical Sciences*.
- “Statistical Pattern Recognition Systems”, MSc. Level, *Isfahan University of Medical Sciences*.
- “Digital Image Processing”, MSc. Level, *Isfahan University of Medical Sciences*.
- “Engineering Mathematics”, MSc. Level, *Isfahan University of Medical Sciences*.
- “Signals and Systems”, MSc. Level, *Isfahan University of Medical Sciences*.
- Teaching Assistant of “Advanced Biomedical System Modeling”, *Isfahan University of Medical Sciences*.
- Teaching Assistant of “Stochastic Processes”, *Isfahan University of Medical Sciences*.
- Teaching Assistant of “Advanced Biological Signal Processing”, *Isfahan University of Medical Sciences*.
- Teaching Assistant of “Biological Signal Processing”, *Isfahan University of Medical Sciences*.
- Teaching Assistant of “Biological Signal Processing”, *University of Isfahan*.
- Teaching Assistant of “Logic Circuits”, *Yazd University*.

Professional and Scientific Activities

- Student Head of student research center in School of Advanced Technologies in Medicine, Isfahan University of Medical Sciences, 2015-2016.
- Cooperation with Medical student research center as a workshop lecturer, 2013-2015.
- Cooperation with Second Annual Research Day, School of Advanced Technologies in Medicine, Isfahan University of Medical Sciences, 2016.
- Cooperation with Iranian Student Conference on Electrical Engineering, ISCEE, Isfahan University of Technology, Isfahan, Iran, 2009.
- Cooperation with Iranian Conference on Electrical Engineering, ICEE, Isfahan University of Technology, Isfahan, Iran, 2010.
- Cooperation in publication Feedback Magazine, Isfahan University of Technology, Isfahan, Iran, 2010.
- Reviewer of Journals: IEEE Transaction of Signal Processing, IEEE Transaction on Biomedical Engineering, IET Signal Processing, Biomedical signal processing and control, Advanced biomedical research, Journal of Medical Signals and Sensors
- Reviewer of Iranian Conference on Electrical Engineering, ICEE, Yazd University, Iran, 2019.
- Reviewer of Iranian Student Conference on Electrical Engineering, ISCEE, Tabriz University, Iran, 2009.

Softwares

- MatLab
- OrCAD
- SPSS
- Microsoft Office (Word, Power Point, Excel, ...)
- Code Composer (DSP Programmer)
- TEX