Hossein Rabbani

Senior Member, IEEE

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Department of Biomedical Engineering,
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&
Medical Image & Signal Processing
Research Centre

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Objective and Fields of Interest

Objective Research in multidimensional signal processing including biosignal analysis and modeling (especially medical image/volume), sparse transforms, noise reduction and estimation problem, image/video restoration, probability models of sparse domain's coefficients.

Fields of interest Biomedical signal analysis and processing including multidimensional data, time-frequency analysis tools including x-lets, denoising, statistical signal processing, applied mathematics (currently I am focusing on Statistical & Mathematical Modeling of Medical Signals and Systems).

Academic Qualifications

2013 –2014 **Postdoctoral Research Fellow, Duke Eye Center, Durham, United States.**
- Research topic: **"Automatic Analysis of Various Types of Leakages in Fluorescein Angiograms and Optical Coherence Tomography (OCT)"**
- Supervisor: Prof. Sina Farsiu

2011 **Postdoctoral Research Scholar, The University of Iowa, Iowa, United States.**
- Research topic: **"Optical Coherence Tomography (OCT) Image Analysis"**
- Supervisors: Prof. Milan Sonka & Prof. Michael Abramoff

2007 **Visiting Research Scholar, Electrical & Computer Engineering Department, Queen's University, Kingston, Ontario, Canada.**
- Research topic: **"Statistical modeling of sparse domain's coefficients and its application to medical image/volume denoising"**
- Supervisor: Prof. Saeed Gazor.

2002 – 2008   **Doctoral Researches, Bioelectrics** (1st rank in entrance exam)
Department of Biomedical Engineering (The Center of Excellence on Biomedical Engineering in Iran)**, Amirkabir University of Technology** (Tehran Polytechnic), **Tehran, Iran.**

- Dissertation research topic: **"Medical Image/Volume Noise Reduction in Multidimensional Complex Wavelet Transform Domain Using Bivariate Mixture Models"**
- Supervisor: Prof. Mansur Vafadust

- Passed Ph.D. courses: advanced digital signal processing, biomedical signal processing, advanced biomedical signal processing, advanced digital image processing, advanced digital communication, spread spectrum, system identification, advanced neural network.

- Passed the qualifying examination in Sept. 2004.

2000 – 2002   **Master of Science, Bioelectrics** (3rd rank)
Department of Biomedical Engineering (The Center of Excellence on Biomedical Engineering in Iran)**, Amirkabir University of Technology** (Tehran Polytechnic), **Tehran, Iran.**

- Dissertation research topic: "**Video Restoration based on Motion Estimation in Complex Wavelet Domain**"
- Supervisor: Prof. Mansur Vafadust
- Advisor: Prof. Shohreh Kasaei

- Passed M.Sc. courses: digital signal processing, biomedical signal processing, digital image processing**,** medical imaging systems, stochastic processes, statistical pattern recognition, digital control systems, bioinstrument, and neural network.

1997 – 2000   **Bachelor of Science, Communication** (1st rank)

Department of Electrical and Computer Engineering, Isfahan University of Technology, Isfahan, Iran.

- Dissertation research topic: "**Designing and Constructing of Laser Communication between Two Computers**"

Work Experience

2003-2016   **Teaching**

- **Undergraduate level courses**
(B.Sc. students, Amirkabir University of Technology):

- Statistics and probability
- Analog and digital communication systems

- **Graduate level courses**
(M.Sc. & Ph.D. students, Isfahan University of Medical Sciences):
  - Advanced Biomedical Signal Processing
  - Biological Signal & System Modeling
  - Biomedical Signal Processing
  - Digital Image Processing
  - Digital Signal Processing
  - Information Technology in Biomedicine
  - Medical Image Processing & Analysis
  - Neural Networks
  - Pattern Recognition
  - Stochastic Processes
  - Sparse Transforms and Their Applications in Signal Processing
  - System Identification
  - Advanced Biological Signal & System Modeling
  - Convex Optimization

Supervising and Advising

- **Supervisor:**

  Postdoc projects (in progress):
  - CS-based Hardware/Software development of OCT (A-scan, B-scan, C-scan)
  - Designing a combinatory method (DL-based, Statistical-based, Sparse representation-based) for classification of DR
  - Modeling of ocular images using optimum basis functions (DL & MCA)
  - Intra-retinal layer and fluid segmentation of 3D OCT images by deep learning
  - Quantitative analysis of hemorrhages in colour Fundus images
  - Cyst detection in OCT images using mathematical models
  - OCT modeling: statistical modeling vs. geometrical modeling vs. energy-based modeling
  - Synchronized analysis of EEG, MRI images, and SPECT images of patients suffering from seizure

  PhD dissertation researches:
  - Combination of graph-based algorithms and time-frequency methods for processing of OCTs
  - Seeking an appropriate feature extraction method for breast cancer recurrence prediction based on microarray gene expression data

- A new model based on Gaussianization of OCT data
- Automatic analysis of features of AMD in OCT images using 3D curvelet transform
- Automatic detection of acute myeloid leukemia in microscopic images using dictionary learning
- Automatic diagnosis of Mild Cognitive Impairment (MCI) by dictionary learning -based analysis of EEG signals
- 3D OCT Classification by Deep Learning
- Fully automated segmentation of fluid/cyst regions in OCT images using neutrosophic sets and graph algorithms
- 3D Sparse Reconstruction of Cone-beam CT
- Multivariate Statistical Modeling of OCT Images
- Energy-based Modeling of OCT Images
- Introducing a Novel System for Persian Signature Recognition (Offline and Online) and Its Verification Based on x-let Transforms
- Study on the Application of the Markov Model for Breast Cancer Modeling Using Gene Expression Data

PhD dissertation researches (in progress):
- Sparse Representation of PH Monitoring Signals
- Sparse Representation of OCT Images
- Obtaining Optimum Basis Functions for Modeling of OCT Images in Sparse Domains to Classify Abnormal and Normal Samples
- Modeling of Retinal OCT Based on Mixture of Stochastic Differential Equations

M.Sc. dissertation researches:
- Detection of cystoid B-Scans in OCT Images using hidden Markov model and AlexNet
- Image restoration using Gaussian mixture models with neighborhood nonlocal clustering
- Evaluation of the symmetricity of cup to disk ratio in left and right eyes of normal subjects
- Mosaicing macula OCT images and OCT optical disk
- Designing a dictionary for OCT images based on K-SVD algorithm using texture characteristics of retinal layers for image segmentation
- Automatic segmentation of corneal layer boundaries in OCT images and obtaining 3D thickness maps of the cornea and inner layers
- Automatic detection of leishman bodies in bone marrow samples from patients with visceral leishmaniasis using level set method
- Evaluation of asymmetricity of right and left eyes of normal subjects using extracted features from OCT and color fundus images

- Automatic diagnosis of malaria based on complete circle-ellipse fitting search algorithm
- Automatic segmentation and recognition of lung nodules in thoracic CT images using active contour modeling and convex hull
- Segmentation of EDI-OCT images using graph cut algorithm based on Gaussian mixture model of wavelet features
- Forming projection images from retinal layers on the 3D OCT data and fusion of them using curvelet transform to form an optimal projection image
- Evaluation of image pre-compensation methods for enhancing visual efficiency in the presence of higher order ocular optical aberrations
- Extraction of 15-lead ECG signal from vectorcardiogram (VCG) signal using partial linear transformation for providing information from posterior side of the heart
- Detection of foveal avascular zone (FAZ) based on curvelet transform for grading of diabetic retinopathy
- Extraction of nucleolus candidate zone in white blood cells of peripheral blood smear images using curvelet transform
- A comparison between hp version of finite element method with EIDORS for electrical impedance tomography
- A comparison between ECG and VCG signals for detection of ischemia location
- Estimation of somatosensory evoked potentials with multi-adaptive filters
- A contourlet-based watermarking method for medical images
- Automatic detection of diabetic retinopathy by extraction of retinal image features in curvelet domain
- Estimating depth of anesthesia based on wavelet transform and neuro-fuzzy systems
- Microcalcification detection in mammographic images using fractal model in wavelet domain
- Persian script character recognition using PCA
- A comparison between ECG and VCG for detection of ischemia
- Automatic detection and recognition of lung nodule in CT image based on active contour
- Complexity analysis of EEG signals for Mild Cognitive Impairment (MCI) diagnosis
- 3D segmentation of proximal enamel lesions in micro-ct images
- Automatic analysis of tracheal acoustic signals for apnea detection and introducing new clinical indices of depth of sedation
- Statistical modeling of 3D OCT data by mixture model

B.Sc. dissertation research entitled:
- Angle detection for biomaterial based on image processing

- **Advisor:**

PhD dissertation researches:
- Retinal Image Registration of 3D OCT Volumes and Fluorescein Angiography Images
- Sparse Representation and Dictionary Learning for Super-resolution of OCT Images

M.Sc. dissertation researches:
- Investigation and simulation of optical systems for Fundus photography of human eye by Cell phone camera
- Optimization of visual stimulus sequence in a Brain-Computer Interface based on code modulated visual evoked potentials
- Automatic detection of microaneurysms in OCT images
- Polyp detection/segmentation in video colonoscopy by convolutional neural network
- Transform based ellipse detection in microscopic images using elliptical basis functions
- Automatic extraction and recognition of myeloma cell in microscopic bone marrow aspiration images
- Extraction of candida fungus from pap smear images based on ridgelet transform for vulvovaginal candidiasis diagnosis
- Extraction of vessels, optic disc and fovea avascular zone from fundus fluorescein angiogram based on Hessian analysis of directional curvelet subbands
- Medical image compression with multi-wavelet
- A new adaptive technique for fast and accurate estimation of SSAEP

Honors

- I was really interested in studying mathematics before entering university and all of my grades in this field were excellent. I participated in the entrance exam of universities.
    - My grades in this exam were:
        - ✓ Mathematics: **98/100**
        - ✓ Physics: **86.7/100**
        - ✓ Chemistry: **91.2/100**
    - I had this opportunity to choose **all of the best universities** in Iran.
- B.Sc. Degree with the honor of the **1ˢᵗ rank** from Isfahan University of Technology.
- M.Sc. Degree with the honor of the **3ʳᵈ rank** from Amirkabir University of Technology.
- **1ˢᵗ rank** in the Ph.D. entrance exam of Amirkabir University of Technology in bioelectrics.

- **1ˢᵗ rank** in the Ph.D. entrance exam of Isfahan University of Technology in communication engineering.
- **Outstanding selected Ph.D. thesis** by Iranian Society for Biomedical Engineering.
- **The winner of national prize of "Young Assistant Professors".**
- **IEEE, Elected Senior Member, 2013**

Membership

✓ IEEE Senior Member
Signal Processing Society, Engineering in Medicine and Biology Society

Article Reviewer

✓ IEEE Trans. on Image Processing

✓ IEEE Trans. on Signal Processing

✓ IEEE Trans. on Medical Imaging

✓ IEEE Trans. on Biomedical Engineering

✓ IEEE Trans. On Pattern Analysis & Machine Intelligence

✓ IEEE Signal Processing Letters

✓ IEEE Reviews in Biomedical Engineering

✓ IEEE Trans. on Geoscience & Remote Sensing

✓ IEEE Trans. on Circuits & Systems for Video Technology

✓ IEEE Trans. on Multimedia

✓ IEEE Trans. on Systems, Man, and Cybernetics-Part B: Cybernetics

✓ IEEE Trans. on Biomedical Circuits and Systems

✓ IEEE Journal of Biomedical and Health Informatics

✓ IEEE Access

✓ IEEE Trans. on Instrumentation & Measurement

✓ SIAM Journal on Control and Optimization

✓ IET Image Processing Journal

✓ IET Signal Processing Journal

✓ IET Computer Vision

✓ Pattern Recognition

✓ Signal Processing

✓ Computers in Biology & Medicine

✓ Digital Signal Processing

✓ Biomedical Signal Processing & Control

✓ Pattern Recognition Letters

✓ Ultrasonics

✓ Journal of Biophotonics

✓ Journal of Biomedical Optics

✓ Measurement

✓ Computer Methods and Programs in Biomedicine,

✓ Journal of Visual Image Communication & Representation

✓ Applied Optics

✓ Optics Letters

✓ Journal of Optical Society of America A

✓ Applied Soft Computing

✓ Biomedical Optics Express

✓ PLOS ONE

✓ Journal of Medical Systems

✓ The Computer Journal

✓ Medical & Biological Engineering & Computing

✓ Neural Computing & Applications

- ✓ Journal of Applied Mathematics
- ✓ EURASIP Journal on Image and Video Processing
- ✓ Signal, Image and Video Processing
- ✓ Multidimensional Systems & Signal Processing
- ✓ Circuits, Systems & Signal Processing
- ✓ Current Medical Imaging Reviews
- ✓ International Journal of Pattern Recognition and Artificial Intelligence
- ✓ Journal of Innovative Optical Health Sciences
- ✓ Medical Principles & Practice
- ✓ Measurement Science Review
- ✓ Electronics Letters
- ✓ SPIE Journal of Medical Imaging
- ✓ Complexity
- ✓ Progress in Electromagnetic Research (PIER)
- ✓ BMC Open
- ✓ BMC Medical Imaging
- ✓ Biomedical Engineering OnLine
- ✓ International Journal of Imaging Systems and Technology
- ✓ Mathematical Problems in Engineering
- ✓ Cognitive Neurodynamics
- ✓ Journal on Modern Optics
- ✓ Optik
- ✓ Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization
- ✓ Journal of Research in Medical Sciences
- ✓ Iranian Journal of Biomedical Engineering
- ✓ Iranian Journal on Electrical & Computer Engineering
- ✓ Iranian Journal of Physics Research
- ✓ Several International IEEE Conferences and National Conferences

Editorial Board Member:

- ✓ Journal of Medical Signals and Sensors (Editor-in-Chief)

Publications

International Journal Papers

1. A. Rasouli, **H. Rabbani***, S. Kermani, M. Raisi, M. Soheilipour and P. Adibi, "A Multichannel Intraluminal Impedance Gastroesophageal Reflux Characterization Algorithm Based on Sparse Representation," IEEE Journal of Biomedical and Health Informatics. 2021. doi: 10.1109/JBHI.2021.3076212

2. M. Tajmirriahi, Z. Amini*, A. Hamidi, A. Zam and **H. Rabbani**, "Modeling of Retinal Optical Coherence Tomography Based on Stochastic Differential Equations: Application to Denoising," IEEE Transactions on Medical Imaging. 2021. doi: 10.1109/TMI.2021.3073174

3. E. Golkar, **H. Rabbani***, and A. Dehghani, "Hybrid registration of retinal fluorescein angiography and optical coherence tomography images of patients with diabetic retinopathy," Biomed. Opt. Express, vol. 12, pp. 1707-1724, 2021.

4. M. Samieinasab, Z. Amini and **H. Rabbani***, "Multivariate Statistical Modeling of Retinal Optical Coherence Tomography," IEEE Transactions on Medical Imaging, vol. 39, no. 11, pp. 3475-3487, Nov. 2020.

5. Z. Amini, **H. Rabbani*** and I. Selesnick, "Sparse Domain Gaussianization for Multi-Variate Statistical Modeling of Retinal OCT Images," IEEE Transactions on Image Processing, vol. 29, pp. 6873-6884, 2020.

6. N. Teyfouri, **H. Rabbani***, R. Kafieh and I. Jabbari, "An Exact and Fast CBCT Reconstruction via Pseudo-Polar Fourier Transform-Based Discrete Grangeat's Formula," IEEE Transactions on Image Processing, vol. 29, pp. 5832-5847, 2020.

7. P. G. Daneshmand, **H. Rabbani*** and A. Mehridehnavi, "Super-Resolution of Optical Coherence Tomography Images by Scale Mixture Models," IEEE Transactions on Image Processing, vol. 29, pp. 5662-5676, 2020.

8. M. Tajmirriahi, R. Kafieh*, Z. Amini and **H. Rabbani**, "A Lightweight Mimic Convolutional Auto-Encoder for Denoising Retinal Optical Coherence Tomography Images," IEEE Transactions on Instrumentation and Measurement, vol. 70, pp. 1-8, 2021, Art no. 4503908.

9. P. G. Daneshmand, A. Mehridehnavi* and **H. Rabbani***, "Reconstruction of Optical Coherence Tomography Images Using Mixed Low Rank Approximation and Second Order Tensor Based Total Variation Method," IEEE Transactions on Medical Imaging, vol. 40, no. 3, pp. 865-878, March 2021.

10. M. Monemian and **H. Rabbani***, "Analysis of a Novel Segmentation Algorithm for Optical Coherence Tomography Images Based on Pixels Intensity Correlations," IEEE Transactions on Instrumentation and Measurement, vol. 70, pp. 1-12, 2021, Art no. 5002012.

11. M. Behboodi, A. Mahnam*, H. Marateb and **H. Rabbani**, "Optimization of Visual Stimulus Sequence in a Brain-Computer Interface Based on Code Modulated Visual Evoked Potentials," IEEE Transactions on Neural Systems and Rehabilitation Engineering, vol. 28, no. 12, pp. 2762-2772, Dec. 2020.

12. M. Momenzadeh, M. Sehhati*, **H. Rabbani**, "Using hidden Markov model to predict recurrence of breast cancer based on sequential patterns in gene expression profiles," Journal of Biomedical Informatics, vol. 111, 2020, Article no. 103570.

13. M. Monemian, **Hossein Rabbani***, "Mathematical analysis of texture indicators for the segmentation of optical coherence tomography images," Optik, vol. 219, 2020, Article no. 165227.

14. X. He, L. Fang*, **H. Rabbani**, X. Chen, Z. Liu, "Retinal optical coherence tomography image classification with label smoothing generative adversarial network," Neurocomputing, vol. 405, pp. 37-47, 2020.

15. R. Almasi, A. Vafaei*, Z. Ghasemi, M. R. Ommani, A. R. Dehghani, and **Hossein Rabbani***, "Registration of fluorescein angiography and optical coherence tomography images of curved retina via scanning laser ophthalmoscopy photographs," Biomed. Opt. Express, vol. 11, pp. 3455-3476, 2020.

16. O. Sarrafzadeh, **H. Rabbani***, A. Mehri Dehnavi, A. Talebi, "Circlet transform in cell and tissue microscopy," Optics & Laser Technology, vol. 124, 2020, Article no. 106000.

17. E. Mousavi, R. Kafieh*, **H. Rabbani**, "Classification of dry age-related macular degeneration and diabetic macular oedema from optical coherence tomography images using dictionary learning", IET Image Processing, vol. 14, no. 8, pp. 1571-1579, 2020.

18. M. Esmaeili, A. Mehridehnavi, F. Hajizadeh, and **H. Rabbani***, "Three-dimensional curvelet-based dictionary learning for speckle noise removal of optical coherence tomography," Biomed. Opt. Express, vol. 11, pp. 586-608, 2020.

19. M. Mokhtari, **H. Rabbani***, A. Mehridehnavi, R. Kafieh, M. Akhlaghi, M. Pourazizi, L. Fang, "Local comparison of cup to disc ratio in right and left eyes based on fusion of color fundus images and OCT B-scans", Information Fusion, vol. 51, pp. 30-41, 2019.

20. M. Kashefpoor, **H. Rabbani***, M. Barekatain, "Supervised dictionary learning of EEG signals for mild cognitive impairment diagnosis", Biomedical Signal Processing & Control, vol. 53, pp. 101559, 2019.

21. Z. Khodabandeh, **H. Rabbani**, AM Dehnavi*, O. Sarrafzadeh, "The Ellipselet Transform," J Med Signals Sens. vol.9, no. 3, pp. 145-157, 2019.

22. M. Momenzadeh, M. Sehhati*, **H. Rabbani**, "A novel feature selection method for microarray data classification based on hidden Markov model", Journal of Biomedical Informatics, vol. 95, pp. 103213, 2019.

23. L. Huang, X. He, L. Fang*, **H. Rabbani** and X. Chen, "Automatic Classification of Retinal Optical Coherence Tomography Images with Layer Guided Convolutional Neural Network," IEEE Signal Processing Letters, vol. 26, no. 7, pp. 1026-1030, July 2019.

24. A. Abbasi, A Monadjemi*, L Fang*, **H Rabbani**, Yi Zhang, "Three-dimensional optical coherence tomography image denoising through multi-input fully-convolutional networks", Computers in Biology and Medicine, vol. 108, pp. 1-8, May 2019.

25. R. Kafieh, **H. Rabbani** and G. Unal*, "Bandlets on Oriented Graphs: Application to Medical Image Enhancement," IEEE Access, vol. 7, pp. 32589-32601, 2019.

26. M. Aghanouri, A. Ghaffari, N.Dadashi*, H. Rabbani, P. Adibi, "New image-guided method for localisation of an active capsule endoscope in the stomach", IET Image Processing, vol. 13, no. 12, pp. 2321-2327, 2019.

27. R. Sharbati, H. R. Ramazi, F. Khoshnoudian, H. R. Amindavar & **H. Rabbani**, "Stochastic Model for Simulation of Ground-Motion Sequences Using Kernel-Based Smoothed Wavelet Transform and Gaussian Mixture Distribution", Journal of Earthquake Engineering, 2019. DOI: 10.1080/13632469.2019.1605948.

28. L. Fang, C. Wang, S. Li, **H. Rabbani**, X. Chen and Z. Liu, "Attention to Lesion: Lesion-Aware Convolutional Neural Network for Retinal Optical Coherence Tomography Image Classification," IEEE Transactions on Medical Imaging, vol. 38, no. 8, pp. 1959-1970, 2019.

29. M. Lashgari, M. Shahmoradi, **H. Rabbani***, M. Swain, "Missing Surface Estimation Based on Modified Tikhonov Regularization: Application for Destructed Dental Tissue," IEEE Transactions on Image Processing, vol. 27, no.5, pp. 2433-2446, 2018.

30. A. Rashno, D. D. Koozekanani, P. M. Drayna, B. Nazari, S. Sadri, **H. Rabbani**, K. K. Parhi*, "Fully-Automated Segmentation of Fluid/Cyst Regions in Optical Coherence Tomography Images with Diabetic Macular Edema using Neutrosophic Sets and Graph Algorithms," IEEE Transactions on Biomedical Engineering, vol. 65, no. 5, pp. 989-1001,

May 2018.

31. R. Rasti, **H. Rabbani***, A. Mehridehnavi and F. Hajizadeh, "Macular OCT Classification using a Multi-Scale Convolutional Neural Network Ensemble," IEEE Transactions on Medical Imaging, vol. 37, no. 4, pp. 1024-1034, 2018.

21. A. Abbasi, A.H. Monadjemi*, L. Fang, **H. Rabbani**, "Optical Coherence Tomography Retinal Image Reconstruction via Nonlocal Weighted Sparse Representation", Journal of Biomedical Optics, vol. 23, no. 3, 036011, 2018.

22. R. Rasti, A. Mehri Dehnavi*, **H. Rabbani**, F. Hajizadeh, "Automatic Diagnosis of Abnormal Macula in Retinal OCT Images Using Wavelet-Based Convolutional Neural Network Features and Random Forests Classifier", Journal of Biomedical Optics, vol. 23, no. 3, 036011,035005, 2018.

23. S. Momeni, O. Sarrafzadeh, **H. Rabbani***, "Automatic Brain Aneurysm Extraction in Angiography Videos Using Circlet Transform and a Modified Level Set Model", Current Medical Imaging Reviews, vol. 14, no. 6, pp. 923-932, 2018.

24. M. Momenzadeh, A. Vard*, A. Talebi, A. M. Dehnavi, **H. Rabbani**, "Computer-Aided Diagnosis Software for Vulvovaginal Candidiasis Detection from Pap Smear Images", Microscopy Research & Technique, vol. 81, no. 1, pp. 13-21, 2018.

25. A. Ahdi, **H. Rabbani***, A. Vard, "A Hybrid Method for 3D Mosaicing of OCT Images of Macula and Optic Nerve Head," Computers in Biology and Medicine, vol. 91, pp. 277-290, 2017.

26. L. Fang *, Ch. Wang, Sh. Li, J. Yan, X. Chen, **H. Rabbani**, "Automatic Classification of Retinal 3D OCT Images Using Principle Component Analysis Network with Composite Kernels", Journal of Biomedical Optics, vol. 22, no. 11, 116011, 2017.

27. A. Rashno, B. Nazari, D. D. Koozekanani, P.M. Drayna, S. Sadri, **H. Rabbani** and K.K. Parhi*, "Fully-Automated 2D and 3D Segmentation of Fluid Regions in Exudative Age-Related Macular Degeneration Subjects: Kernel Graph Cut in Neutrosophic Domain," PLOS ONE, vol. 12, no. 10, e0186949, 2017.

28. Z. Amini, **H. Rabbani***, "Optical Coherence Tomography Image Denoising Using Gaussianization Transform", Journal of Biomedical Optics, vol. 22, no. 8, pp. 1-12, 2017.

29. M. Momenzadeh, M.R. Sehhati*, A. Mehri Dehnavi, A. Talebi, **H. Rabbani**, "Automatic Diagnosis of Vulvovaginal Candidiasis from Pap smear Images", Journal of Microscopy, vol. 267, no. 3, pp. 299-308, 2017.

30. L. Fang* , L. Yang , Shutao Li , **H. Rabbani** , Zh. Liu, X. Chen, Q. Peng, "Automatic Detection and Recognition of Multiple Macular Lesions in Retinal OCT Images with Multi-instance Multi-label Learning", Journal of Biomedical Optics, vol. 22, no. 6, 066014, 2017.

31. M.J. Allingham*, D. Mukherjee, E.B. Lally, **H. Rabbani**, P.S. Mettu, S.W. Cousins, S. Farsiu, "A Quantitative Approach to Predict Differential Effects of Anti-VEGF Treatment on Diffuse and Focal Leakage in Patients with Diabetic Macular Edema - A Pilot Study", Translational Vision Science & Technology, vol. 7, no. 6, 2017.

32. 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. 2076-2078, 2017.

33. M. Esmaeili, A. Mehri-Dehnavi, and **H. Rabbani***, "3D Curvelet-Based Segmentation and Quantification of Drusen in Optical Coherence Tomography Images", Journal of Electrical and Computer Engineering, vol. 2017 (2017), Article ID 4362603, 12 pages.

34. Z. Amini, **H. Rabbani***, "Statistical Modeling of Retinal Optical Coherence Tomography", IEEE Transactions on Medical Imaging, vol. 35, no. 6, pp. 1544-1554, 2016.

35. O. Sarrafzadeh, **H. Rabbani**, A. Mehri Dehnavi*, A. Talebi, "Analyzing Features by SWLDA for the Cassification of HEp-2 Cell Images Using GMM", Pattern Recognition Letters, vol. 82, part 1, pp. 44-85, Oct. 2016.

36. M. Shahmoradi, M. Lashgari, **H. Rabbani***, J. Qin, M. Swain, "A comparative study of new and current methods for dental micro-CT image denoising", Dentomaxillofacial Radiology, vol. 45, no. 3, 2016.

37. Z. Amini, **H. Rabbani***, "Classification of Medical Image Modeling Methods: A Review", Current Medical Imaging Reviews, vol. 12, no. 2, pp. 130-148, 2016.

38. **H. Rabbani**, R. Kafieh*, M. Kazemian Jahromi, et al., "Obtaining Thickness Maps of Corneal Layers Using the Optimal Algorithm for Intracorneal Layer Segmentation," International Journal of Biomedical Imaging, vol. 2016, Article ID 1420230, 11 pages, 2016.

39. M. Niknejad, **H. Rabbani***, M. Babaei-Zadeh, "Image Restoration Using Gaussian Mixture Models with Spatially Constrained Patch Clustering," IEEE Transactions on Image Processing, vol. 24, no. 11, pp. 3624-3636, Nov. 2015.

40. R. Kafieh, **H. Rabbani***, I. Selesnick, "Three-Dimensional Data-Driven Multi Scale Atomic Representation of Optical Coherence Tomography", IEEE Transactions on Medical Imaging, vol. 34, no. 5, pp. 1042-1062, 2015.

41. **H. Rabbani***, M.J. Allingham, P.S. Mettu, S.W. Cousins, S. Farsiu, "Fully Automatic Segmentation of Fluorescein Leakage in Subjects with Diabetic Macular Edema", Investigative Ophthalmology and Visual Science, vol. 56, no. 3, pp. 1482-1492, 2015.

42. MR. Sehhati*, A. Mehri, **H. Rabbani**, M. Pourhossein, "Stable Gene Signature Selection for Prediction of Breast Cancer Recurrence Using Joint Mutual Information", IEEE/ACM Transactions on Computational Biology and Bioinformatics, vol. 12, no. 6, pp. 1440-1448, 2015.

43. Z. Saeedizadeh, A. Mehri*, A. Talebi, **H. Rabbani**, O. Sarrafzadeh, A. Vard, "Automatic Recognition of Myeloma Cells in Microscopic Images using Bottleneck algorithm, Modified Watershed and SVM Classifier", Journal of Microscopy, vol. 261, no. 1, pp. 46-56, 2015.

44. R. Kafieh, **H. Rabbani***, F. Hajizadeh, M. D. Abramoff and M. Sonka, "Thickness Mapping of Eleven Retinal Layers in Normal Eyes Using Spectral Domain Optical Coherence Tomography", Journal of Ophthalmology, Article ID 259123, 14 pages, 2015.

45. A. Soltanipour, S. Sadri, **H. Rabbani***, MR Akhlaghi, "Analysis of Fundus Fluorescein Angiogram Based on the Hessian Matrix of Directional Curvelet Sub-bands and Distance Regularized Level Set Evolution", Journal of Medical Signals and Sensors, vol. 5, no.3, pp. 141-155, 2015.

46. **H. Rabbani*** and S. Gazor, "Local Probability Distribution of Natural Signals in Sparse

Domains," Int. J. Adaptive Control & Signal Processing, vol. 28, no. 1, pp. 52-62, Jan. 2014.

47. SH. Hajeb, **H. Rabbani***, MR. Akhlaghi, "A New Combined Method Based on Curvelet Transform and Morphological Operators for Automatic Detection of Foveal Avascular Zone", Signal, Image & Video Processing, vol. 8, no. 2, pp. 205-222, Feb. 2014.

48. H. Danesh, R. Kafieh, **H. Rabbani***, F. Hajizadeh, "Segmentation of Choroidal Boundary in Enhanced Depth Imaging OCTs Using a Multiresolution Texture Based Modeling in Graph Cuts", Computational & Mathematical Methods in Medicine, vol. 2014, Article ID 479268, 9 pages.

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