



## دکتر بابک محمدزاده اصل

دانشیار گروه مهندسی پزشکی

آزمایشگاه پردازش سیگنالهای پزشکی

دانشکده مهندسی برق و کامپیوتر

دانشگاه تربیت مدرس

تلفن: ۰۲۱-۸۲۸۸۳۳۷۰

فکس: ۰۲۱-۸۲۸۸۴۳۲۵

[babakmasl@modares.ac.ir](mailto:babakmasl@modares.ac.ir)

### زمینه های تحقیقاتی:

- پردازش سیگنال های پزشکی
- پردازش سیگنال اولتراسوند
- شکل دهی پرتو وفقی
- پردازش سیگنال آرایه ای
- شناسایی الگو

### دروس تدریس شده:

- مدار الکتريکی
- سیگنال و سیستم
- پردازش سیگنال دیجیتال (DSP)
- پردازش سیگنال پزشکی (BSP)
- اولتراسوند در پزشکی
- پردازش سیگنال آرایه ای در تصویربرداری اولتراسوند

## افتخارات:

- دانشمند پراستناد دو درصد برتر دنیا در سالهای ۲۰۲۱ و ۲۰۲۲ بر اساس لیست منتشر شده توسط دانشگاه استنفورد
- استاد شایسته تقدیر آموزشی دانشگاه تربیت مدرس در سال ۹۹
- استاد نمونه دانشگاه تربیت مدرس در سال ۹۸
- پژوهشگر برتر دانشگاه تربیت مدرس در سال ۹۶
- رتبه دوم چالش PICMUS در کنفرانس IEEE IUS 2016
- برنده گرت ویژه استادیاران جوان از بنیاد ملی نخبگان در سال ۹۱

## فعالیت‌های اجرایی:

- عضو کمیسیون ارزشیابی مدارک خارجی سازمان امور دانشجویان وزارت عتف از ۹۹/۰۱/۲۰ تاکنون
- معاون پژوهشی دانشکده مهندسی برق و کامپیوتر از ۹۷/۱۲/۱۴ تا کنون
- عضو کارگروه تخصصی مهندسی پزشکی وزارت عتف از ۹۷/۱۲/۱۳ تاکنون
- عضو شورای نظارت و ارزیابی دانشکده مهندسی برق و کامپیوتر از ۹۶/۷/۱۷ تاکنون
- مدیر گروه مهندسی پزشکی-بیوالکتریک از ۹۴/۳/۱۰ به مدت ۵ سال
- دبیر هیات مدیره انجمن مهندسی پزشکی ایران از تاریخ ۹۴/۹/۵ به مدت ۳ سال با حکم معاونت پژوهشی وزارت عتف
- عضو اصلی هیات مدیره انجمن مهندسی پزشکی ایران از تاریخ ۹۲/۹/۲۳ به مدت ۵ سال با حکم معاونت پژوهشی وزارت عتف

## کتابها و مقالات:

### Book

B. Mohammadzadeh Asl and R. Paridar, *Beamforming in Medical Ultrasound Imaging*, Springer, Dec 2023.

### Journal papers

(33 journal papers in Ultrasound signal processing highlighted by **green color** + 36 journal papers in Biomedical signal processing)

#### 2023

**69**- R. Paridar and B. Mohammadzadeh Asl, "Frame Rate Improvement in Ultrafast Coherent Plane Wave Compounding," *Ultrasonics*, Vol. 135, pp. 107136, Dec. 2023, DOI: 10.1016/j.ultras.2023.107136.

**68**- R. Paridar and B. Mohammadzadeh Asl, "Ultrafast Plane Wave Imaging Using Tensor Completion-Based Minimum Variance Algorithm," *Ultrasound in Medicine and Biology*, Vol. 49, No. 7, pp. 1627-1637, July 2023, DOI: 10.1016/j.ultrasmedbio.2023.03.015.

**67**- M. Sotoodeh Zikari and B. Mohammadzadeh Asl, "A Fast Beamforming Method for Plane-Wave Compounding Based on Beamspace Adaptive Beamformer and Delay-Multiply-and-Sum," *Ultrasound in Medicine and Biology*, Vol. 49, No. 5, pp. 1164-1172, May 2023, DOI: 10.1016/j.ultrasmedbio.2023.01.001.

66- S. Ramezani Moghadam and B. Mohammadzadeh Asl, "Automatic diagnosis and localization of myocardial infarction using morphological features of ECG signal," *Biomedical Signal Processing and Control*, Vol. 83, pp. 104671, May 2023, DOI: 10.1016/j.bspc.2023.104671.

65- H. Shayeste and B. Mohammadzadeh Asl, "Heterogeneous recurrence analysis of imaged-EEG for spatio-temporal epileptic seizure detection," *IEEE Journal of Biomedical and Health Informatics*, Jan. 2023, DOI: 10.1109/JBHI.2022.3208598.

64- R. Paridar and B. Mohammadzadeh Asl, "Plane wave ultrasound imaging using compressive sensing and minimum variance beamforming," *Ultrasonics*, Vol. 127, pp. 106838, Jan. 2023, DOI: 10.1016/j.ultras.2022.106838.

63- H. Shayeste and B. Mohammadzadeh Asl, "Automatic seizure detection based on Gray Level Co-occurrence Matrix of STFT imaged-EEG," *Biomedical Signal Processing and Control*, Vol. 79, Part 1, pp. 104109, Jan. 2023, DOI: 10.1016/j.bspc.2022.104109.

## **2022**

62- A. T. Jafadideh and B. Mohammadzadeh Asl, "Structural filtering of functional data offered discriminative features for autism spectrum disorder," *PLoS ONE*, Vol. 17, No. 12, pp. e0277989, Dec. 2022, DOI: 10.1371/journal.pone.0277989.

61- L. Eslami and B. Mohammadzadeh Asl, "Adaptive subarray coherence based post-filter using array gain in medical ultrasound imaging," *Ultrasonics*, Vol. 126, pp. 106808, Dec. 2022, DOI: 10.1016/j.ultras.2022.106808.

60- K. Esmailian and B. Mohammadzadeh Asl, "Correlation-based modified delay-multiply-and-sum beamforming applied to medical ultrasound imaging," *Computer Methods and Programs in Biomedicine*, Vol. 226, pp. 107171, Nov. 2022, DOI: 10.1016/j.cmpb.2022.107171.

59- A. T. Jafadideh and B. Mohammadzadeh Asl, "Topological analysis of brain dynamics in autism based on graph and persistent homology," *Computers in Biology and Medicine*, Vol. 150, Issue C, Nov. 2022, DOI: 10.1016/j.compbimed.2022.106202.

58- A. Zarei and B. Mohammadzadeh Asl, "Automatic detection of code-modulated visual evoked potentials using novel covariance estimators and short-time EEG signals," *Computers in Biology and Medicine*, Vol. 147, pp. 105771, Aug. 2022, DOI: 10.1016/j.compbimed.2022.105771.

57- A. T. Jafadideh and B. Mohammadzadeh Asl, "Rest-fMRI based comparison study between autism spectrum disorder and typically control using graph frequency bands," *Computers in Biology and Medicine*, Vol. 146, pp. 105643, Jul. 2022, DOI: 10.1016/j.compbimed.2022.105643.

56- A. Zarei and B. Mohammadzadeh Asl, "Classification of code-modulated visual evoked potentials using adaptive modified covariance beamformer and EEG signals," *Computer Methods and Programs in Biomedicine*, Vol. 221, pp. 106859, Jun. 2022, DOI: 10.1016/j.cmpb.2022.106859.

55- A. T. Jafadideh and B. Mohammadzadeh Asl, "A new data covariance matrix estimation for improving minimum variance brain source localization," *Computers in Biology and Medicine*, Vol. 143, pp. 105324, Apr. 2022, DOI: 10.1016/j.compbimed.2022.105324.

54- S. A. Shah Karam, D. O'Loughlin, and B. Mohammadzadeh Asl, "A novel sophisticated form of DMAS beamformer: Application to breast cancer detection," *Biomedical Signal Processing and Control*, Vol. 74, pp. 103516, Apr. 2022, DOI: 10.1016/j.bspc.2022.103516.

53- A. Zarei, H. Beheshti, and B. Mohammadzadeh Asl, "Detection of sleep apnea using deep neural networks and single-lead ECG signals," *Biomedical Signal Processing and Control*, Vol. 71, pp. 103125, Jan. 2022, DOI: 10.1016/j.bspc.2021.103125.

## **2021**

52- A. Shariat, A. Zarei, S. Ahmadi Karvigh, and B. Mohammadzadeh Asl, "Automatic detection of epileptic seizures using Riemannian geometry from scalp EEG recordings," *Medical & Biological Engineering & Computing*, Vol. 59, pp. 1431-1445, Aug. 2021, DOI: 10.1007/s11517-021-02385-z.

51- A. Salari and B. Mohammadzadeh Asl, "User Parameter-Free Minimum Variance Beamformer in Medical Ultrasound Imaging," *IEEE Trans. Ultrason., Ferroelect., Freq. Contr.*, Vol. 68, No. 7, pp. 2397-2406, July 2021, DOI: 10.1109/TUFFC.2021.3065876.

50- E. Khalili and B. Mohammadzadeh Asl, "Automatic Sleep Stage Classification Using Temporal Convolutional Neural Network and New Data Augmentation Technique from Raw Single-Channel EEG," *Computer Methods and Programs in Biomedicine*, Vol. 204, pp. 106063, June 2021, DOI: 10.1016/j.cmpb.2021.106063.

49- S. A. Shah Karam, D. O'Loughlin, B. L. Oliveira, M. O'Halloran, and B. Mohammadzadeh Asl, "Weighted delay-and-sum beamformer for breast cancer detection using microwave imaging," *Measurement*, Vol. 177, pp. 109283, June 2021, DOI: 10.1016/j.measurement.2021.109283.

48- S. M. M. Tabatabaei Majd and B. Mohammadzadeh Asl, "Adaptive Spectral Doppler Estimation Based on the Modified Amplitude Spectrum Capon," *IEEE Trans. Ultrason., Ferroelect., Freq. Contr.*, Vol. 68, No. 5, pp. 1664-1675, May 2021, DOI: 10.1109/TUFFC.2020.3044774.

47- M. Sotoodeh Ziksari and B. Mohammadzadeh Asl, "Minimum Variance Combined With Modified Delay Multiply-and-Sum Beamforming for Plane-Wave Compounding," *IEEE Trans. Ultrason., Ferroelect., Freq. Contr.*, Vol. 68, No. 5, pp. 1641-1652, May 2021, DOI: 10.1109/TUFFC.2020.3043795.

46- A. Zarei and B. Mohammadzadeh Asl, "Automatic seizure detection using orthogonal matching pursuit, discrete wavelet transform, and entropy based features of EEG signals," *Computers in Biology and Medicine*, Vol. 131, pp. 104250, Apr. 2021, DOI: 10.1016/j.combiomed.2021.104250.

45- J. Karimi and B. Mohammadzadeh Asl, "Automatic detection of non-apneic sleep arousal regions from polysomnographic recordings," *Biomedical Signal Processing and Control*, Vol. 66, pp. 102394, Apr. 2021, DOI: 10.1016/j.bspc.2020.102394.

44- R. Hamavar and B. Mohammadzadeh Asl, "Seizure onset detection based on detection of changes in brain activity quantified by evolutionary game theory model," *Computer Methods and Programs in Biomedicine*, Vol. 199, pp. 105899, Feb. 2021, DOI: 10.1016/j.cmpb.2020.105899.

## **2020**

43- F. Makouei and B. Mohammadzadeh Asl, "Adaptive Transverse Blood Velocity Estimation in Medical Ultrasound: A Simulation Study," *Ultrasonics*, Vol. 108, pp. 106209, Dec. 2020, DOI: 10.1016/j.ultras.2020.106209.

42- S. Shamekhi, V. Periyasamy, M. Pramanik, M. Mehrmohammadi, and B. Mohammadzadeh Asl, "Eigenspace-based Minimum Variance Beamformer Combined with Sign Coherence Factor: Application to Linear-array Photoacoustic Imaging," *Ultrasonics*, Vol. 108, pp. 106174, Dec. 2020, DOI: 10.1016/j.ultras.2020.106174.

41- A. Zarei and B. Mohammadzadeh Asl, "Performance Evaluation of the Spectral Autocorrelation Function and Autoregressive Models for Automated Sleep Apnea Detection Using Single-lead ECG Signal," *Computer Methods and Programs in Biomedicine*, Vol. 195, pp. 105626, Oct. 2020, DOI: 10.1016/j.cmpb.2020.105626.

40- F. Makouei and B. Mohammadzadeh Asl, "Subspace-Based Blood Power Spectral Capon Combined with Wiener Postfilter to Provide a High-Quality Velocity Waveform with Low Mathematical Complexity," *Ultrasound in Medicine & Biology*, Vol. 46, No. 7, pp. 1783-1801, July 2020, DOI: 10.1016/j.ultrasmedbio.2020.03.015.

39- A. Zarei and B. Mohammadzadeh Asl, "Automatic Classification of Apnea and Normal Subjects Using New Features Extracted from HRV and ECG-derived Respiration Signals," *Biomedical Signal Processing and Control*, Vol. 59, pp. 101927, May 2020, DOI: 10.1016/j.bspc.2020.101927.

38- S. S. KaramFard and B. Mohammadzadeh Asl, "Fast Delay-Multiply-And-Sum Beamformer: Application to Confocal Microwave Imaging," *IEEE Antennas and Wireless Propagation Letters*, Vol. 19, No. 1, pp. 14-18, Jan. 2020, DOI: 10.1109/LAWP.2019.2951575.

## **2019**

37- A. M. Deylami and B. Mohammadzadeh Asl, "High Resolution Minimum Variance Beamformer with Low Complexity in Medical Ultrasound Imaging," *Ultrasound in Medicine and Biology*, Vol. 45, No. 10, pp. 2805-2818, Oct. 2019, DOI: 10.1016/j.ultrasmedbio.2019.05.034

36- A. T. Jafadideh and B. Mohammadzadeh Asl, "Modified Dominant Mode Rejection Beamformer for Localizing Brain Activities When Data Covariance Matrix is Rank Deficient," *IEEE Transactions on Biomedical Engineering*, Vol. 66, No. 8, pp. 2241-2252, Aug. 2019, DOI: 10.1109/TBME.2018.2886251.

35- M. Haji Heidari and B. Mohammadzadeh Asl, "Minimum Variance Based Fusion of Fundamental and Second Harmonic Ultrasound Imaging: Simulation and Experimental Study," *Ultrasonics*, Vol. 96, pp. 203-213, July 2019, DOI: 10.1016/j.ultras.2019.01.005.

34- A. Zarei and B. Mohammadzadeh Asl, "Automatic Detection of Obstructive Sleep Apnea Using Wavelet Transform and Entropy based Features from Single-Lead ECG Signal," *IEEE Journal of Biomedical and Health Informatics*, Vol. 23, No. 3, pp. 1011-1021, May 2019, DOI: 10.1109/JBHI.2018.2842919.

33- M. Jahanifar, N. Zamani Tajeddin, B. Mohammadzadeh Asl, and A. Gooya, "Supervised Saliency Map Driven Segmentation of the Lesions in Dermoscopic Images," *IEEE Journal of Biomedical and Health Informatics*, Vol. 23, No. 2, pp. 509-518, Mar. 2019, DOI: 10.1109/JBHI.2018.2839647.

## **2018**

32- Z. Rezaei Khavas and B. Mohammadzadeh Asl, "Robust Heartbeat Detection Using Multimodal Recordings and ECG Quality Assessment With Signal Amplitudes Dispersion," *Computer Methods and Programs in Biomedicine*, Vol. 163, pp. 169-182, Sep. 2018, DOI: 10.1016/j.cmpb.2018.05.005.

31- N. Zamani Tajeddin and B. Mohammadzadeh Asl, "Melanoma Recognition in Dermoscopy Images Using Lesion's Peripheral Region Information," *Computer Methods and Programs in Biomedicine*, Vol. 163, pp. 143-153, Sep. 2018, DOI: 10.1016/j.cmpb.2018.05.005.

30- A. M. Deylami and B. Mohammadzadeh Asl, "Iterative Minimum Variance Beamformer with Low Complexity for Medical Ultrasound Imaging," *Ultrasound in Medicine and Biology*, Vol. 44, No. 8, pp. 1882-1890, Aug. 2018.

29- A. T. Jafadideh and B. Mohammadzadeh Asl, "Spatio-Temporal Reconstruction of Neural Sources Using Indirect Dominant Mode Rejection," *Brain Topography*, Vol. 31, pp. 591-607, July 2018, DOI: 10.1007/s10548-018-0645-8.

28- M. Haji Heidari, B. Mohammadzadeh Asl, and S. Faridsoltani, "An Adaptive Synthetic Aperture Method Applied to Ultrasound Tissue Harmonic Imaging," *IEEE Trans. Ultrason., Ferroelect., Freq. Contr.*, Vol. 65, No. 4, pp. 557-569, Apr. 2018, DOI: 10.1109/TUFFC.2018.2799870.

27- B. Mohammadzadeh Asl and A. M. Deylami, "A Low Complexity Minimum Variance Beamformer for Ultrasound Imaging Using Dominant Mode Rejection," *Ultrasonics*, Vol. 85, No. 4, pp. 49-60, Apr. 2018, DOI: 10.1016/j.ultras.2017.12.012.

26- M. Rahbaripour and B. Mohammadzadeh Asl, "Premature Ventricular Contraction Arrhythmia Detection in ECG Signals via Combined Classifiers," *Journal of Signal and Data Processing*, Vol. 15, No. 1, pp. 55-70, 2018. (In Persian).

## **2017**

25- S. Faridsoltani and B. Mohammadzadeh Asl, "Resolution and Contrast Enhancement of Synthetic Aperture Ultrasound Imaging Using Dual Stage Beamforming," *Journal of Acoustical Society of Iran*, 2017. (In Persian)- Accepted for publication.

24- A. T. Jafadideh and B. Mohammadzadeh Asl, "Enhanced Fast Fully Adaptive Beamformer for Localizing Brain Short Time Activities," *Iranian Journal of Biomedical Engineering*, Vol. 10, No. 4, pp. 347-359, 2017, DOI: 10.22041/IJBME.2017.72842.1269. (In Persian).

23- A. M. Deylami and B. Mohammadzadeh Asl, "A Fast and Robust Beamspace Adaptive Beamformer for Medical Ultrasound Imaging," *IEEE Trans. Ultrason., Ferroelect., Freq. Contr.*, Vol. 64, No. 6, pp. 947-958, Jun. 2017, DOI: 10.1109/TUFFC.2017.2685525.

22- H. Ahmadiéh and B. Mohammadzadeh Asl, "Fetal ECG Extraction via Type-2 Adaptive Neuro-fuzzy Inference Systems," *Computer Methods and Programs in Biomedicine*, Vol. 142, pp. 101-108, Apr. 2017, DOI: 10.1016/j.cmpb.2017.02.009.

21- M. Sotoodeh and B. Mohammadzadeh Asl, "Combined Phase Screen Aberration Correction and Minimum Variance Beamforming in Medical Ultrasound," *Ultrasonics*, Vol. 75, pp. 71-79, March 2017, DOI: 10.1016/j.ultras.2016.11.015.

20- A. D. Dolatabadi, S. E. Z. Khadem, and B. Mohammadzadeh Asl, "Automated Diagnosis of Coronary Artery Disease (CAD) Patients Using Optimized SVM," *Computer Methods and Programs in Biomedicine*, Vol. 138, pp. 117-126, Jan. 2017, DOI: 10.1016/j.cmpb.2016.10.011.

## **2016**

19- E. Moghimirad, C. A. V. Hoyos, A. Mahloojifar, B. Mohammadzadeh Asl, J. A. Jensen, "Synthetic Aperture Ultrasound Fourier Beamformation Using Virtual Sources," *IEEE Trans. Ultrason., Ferroelect., Freq. Contr.*, Vol. 63, No. 12, pp. 2018-2030, Dec. 2016, DOI: 10.1109/TUFFC.2016.2606878.

18- M. Rahimpour and B. Mohammadzadeh Asl, "P Wave Detection in ECG Signals Using an Extended Kalman Filter: An Evaluation in Different Arrhythmia Contexts," *Physiological Measurement*, Vol. 37, pp. 1089-1104, July 2016, DOI: 10.1088/0967-3334/37/7/1089.

17- E. Moghimirad, A. Mahloojifar, and B. Mohammadzadeh Asl, "Computational Complexity Reduction of Synthetic Aperture Focus in Ultrasound Imaging Using Frequency-Domain Reconstruction," *Ultrasonic Imaging*, Vol. 38, No. 3, pp. 175-193, May 2016, DOI: 10.1177/0161734615583461.

16- A. M. Deylami and B. Mohammadzadeh Asl, "Low Complex Subspace Minimum Variance Beamformer for Medical Ultrasound Imaging," *Ultrasonics*, Vol. 66, No. 3, pp. 43-53, March 2016, DOI: 10.1016/j.ultras.2015.11.012.

15- A. M. Deylami and B. Mohammadzadeh Asl, "Amplitude and Phase Estimator Combined with the Wiener Postfilter for Medical Ultrasound Imaging," *Journal of Medical Ultrasonics*, Vol. 43, No. 1, pp. 11-18, Jan. 2016, DOI: 10.1007/s10396-015-0671-z.

## **2015**

14- F. Shahbazi and B. Mohammadzadeh Asl, "Generalized Discriminant Analysis for Congestive Heart Failure Risk Assessment based on Long-Term Heart Rate Variability," *Computer Methods and Programs in Biomedicine*, Vol. 122, No. 2, pp. 191-198, Nov. 2015, DOI: 10.1016/j.cmpb.2015.08.007.

13- B. Mohammadzadeh Asl, "Combining the APES and Minimum Variance Beamformers for Adaptive Ultrasound Imaging," *Ultrasonic Imaging*, Vol. 38, No. 4, pp. 239-253, 2015, DOI: 10.1177/0161734615600167.

12- S. A. Izadi, A. Mahloojifar, and B. Mohammadzadeh Asl, "Weighted Capon Beamformer Combined with Coded Excitation in Ultrasound Imaging," *Journal of Medical Ultrasonics*, Vol. 42, No. 4, pp. 477-488, Oct. 2015, DOI: 10.1007/s10396-015-0640-6.

11- M. Sattarpour and B. Mohammadzadeh Asl, "Detection and Estimation of T Wave Alternans Using Multi-Lead ECG Signal Analysis," *Journal of Signal and Data Processing*, Vol. 12, No. 3, pp. 69-80, 2015. (In Persian)

## **2014**

10- A. M. Deylami and B. Mohammadzadeh Asl, "Reducing the Computational Complexity of Minimum Variance Beamformer in Beamspace," *Journal of Acoustical Society of Iran*, Vol. 1, No. 2, pp. 24-30, Apr. 2014. (In Persian)

## **2013**

9- Y. Fathi, A. Mahloojifar, and B. Mohammadzadeh Asl, "Real Time Implementation of Adaptive Beamformer in Medical Ultrasound Imaging Based on Parallel Processing with Graphical Processing Units," *Journal of Acoustical Society of Iran*, Vol. 1, No. 1, pp. 47-56, Oct. 2013. (In Persian)

## **2012**

8- B. Mohammadzadeh Asl, A. R. Sharafat, and S. K. Setarehdan, "An Adaptive Backpropagation Neural Network for Arrhythmia Classification Using R-R Interval Signal," *Neural Network World*, Vol. 22, No. 6, pp. 535-548, Dec. 2012.

7- B. Mohammadzadeh Asl and A. Mahloojifar, "A Low-Complexity Adaptive Beamformer for Ultrasound Imaging Using Structured Covariance Matrix," *IEEE Trans. Ultrason., Ferroelect., Freq. Contr.*, Vol. 59, No. 4, pp. 660-667, Apr. 2012.

## **2011**

6- M. Mohebbi, H. Ghassemian, and B. Mohammadzadeh Asl, "Structures of the Recurrence Plot of Heart Rate Variability Signal as a Tool for Predicting the Onset of Paroxysmal Atrial Fibrillation," *Journal of Medical Signals & Sensors*, Vol. 1, No. 2, pp. 113-121, May 2011.

5- B. Mohammadzadeh Asl and A. Mahloojifar, "Contrast Enhancement and Robustness Improvement of Adaptive Ultrasound Imaging Using Forward-Backward Minimum Variance Beamforming," *IEEE Trans. Ultrason., Ferroelect., Freq. Contr.*, Vol. 58, No. 4, pp. 858-867, Apr. 2011.

## **2010**

4- B. Mohammadzadeh Asl and A. Mahloojifar, "Eigenspace-Based Minimum Variance Beamforming Applied to Medical Ultrasound Imaging," *IEEE Trans. Ultrason., Ferroelect., Freq. Contr.*, Vol. 57, No. 11, pp. 2381-2390, Nov. 2010.

## **2009**

3- B. Mohammadzadeh Asl and A. Mahloojifar, "Minimum Variance Beamforming Combined with Adaptive Coherence Weighting Applied to Medical Ultrasound Imaging," *IEEE Trans. Ultrason., Ferroelect., Freq. Contr.*, Vol. 56, No. 9, pp. 1923-1931, Sep. 2009. (238 Citations until now)

2- B. Mohammadzadeh Asl and A. Mahloojifar, "An Efficient Adaptive Beamforming Method for Simultaneous Improvement of the Resolution and Contrast of Ultrasound Imaging," *Iranian Journal of Biomedical Engineering*, Vol. 3, No. 1, pp. 33-46, Mar. 2009. (In Persian)

## **2008**

1- B. Mohammadzadeh Asl, S. K. Setarehdan, and M. Mohebbi, "Support Vector Machine-Based Arrhythmia Classification Using Reduced Features of Heart Rate Variability Signal," *Artificial Intelligence in Medicine*, Vol. 44, No. 1, pp. 51-64, Sep. 2008. (417 Citations until now)

## **Selected Conference Presentations**

- M. Sotoodeh Ziksari, B. Mohammadzadeh Asl, M. Ingram, and J. D'hooge, "A New Adaptive Imaging Technique Using Generalized Delay Multiply and Sum Factor," in Proc. IEEE International Ultrasonics Symposium (IUS), Venice, Italy, Oct. 2022.
- L. Eslami, F. Makouei, M. Sotoodeh Ziksari, S. A. Shah Karam, and B. Mohammadzadeh Asl, "A new extension of DMAS ultrasound nonlinear beamformer using the third degree terms with low computational complexity," in Proc. IEEE International Ultrasonics Symposium (IUS), Xi'an, China, Sep. 2021.
- R. Tasbaz and B. Mohammadzadeh Asl, "Super-Resolution Ultrasound Imaging with Low Number of Frames Enhanced by Adaptive Beamforming," in Proc. IEEE International Ultrasonics Symposium (IUS), Xi'an, China, Sep. 2021.
- R. Tasbaz and B. Mohammadzadeh Asl, "Improvement of Microbubbles Localization Using Adaptive Beamforming in Super-Resolution Ultrasound Imaging," in Proc. IEEE International Ultrasonics Symposium (IUS), Xi'an, China, Sep. 2021.
- F. Makouei, B. Mohammadzadeh Asl, L. T. Jorgensen; B. G. Tomov, M. B. Stuart, and J. A. Jensen, "3-D Synthetic Aperture High Volume Rate Tensor Velocity Imaging Using 1024 Element Matrix Probe," in Proc. IEEE International Ultrasonics Symposium (IUS), Las Vegas, NV, USA, Sep. 2020.
- F. Makouei and B. Mohammadzadeh Asl, "Transverse Spectral Analysis in Stenosis Diagnosis Using Transversely Oscillating Acoustic Field," in Proc. 26<sup>th</sup> National and 4<sup>th</sup> International Iranian Conference on Biomedical Engineering (ICBME), Tehran, Iran, Nov. 2019.
- A. Salari and B. Mohammadzadeh Asl, "Adaptive beamforming with automatic diagonal loading in medical ultrasound imaging," in Proc. 25<sup>th</sup> National and 3<sup>rd</sup> International Iranian Conference on Biomedical Engineering (ICBME), Qom, Iran, Nov. 2018.
- S. A. Shah Karam and B. Mohammadzadeh Asl, "2-stage Delay-Multiply-And-Sum beamforming for breast cancer detection using Microwave Imaging," in Proc. Iranian Conference on Electrical Engineering (ICEE), Tehran, Iran, May 2017.
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