Effat Soleimani

Ph.D. in Medical Physics

Assistant Professor

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EDUCATION

Postdoctoral Fellow, Amirkabir University of Technology (Polytechnic), Department of Medical Engineering, (2018-2020).
Project: "Providing a novel model for contrast agent clearance from the brain glymphatic system based on its spacial distribution and MRI imaging".

PhD of Medical Physics: 2011/10-2017/7, Tarbiat Modares University, Tehran, IRAN
Dissertation: "Extracting the distributed stress on the carotid artery wall of atherosclerotic subjects based on consecutive ultrasonic images and viscoelastic finite element model to predict the regions susceptible to rupture".

MSc of Medical Physics: 2008/10-2011/6, Tarbiat Modares University, Tehran, IRAN
Thesis: "Evaluation of axial stress applied to the arterial wall in healthy and atherosclerotic subjects".

BSc of Applied Physics: 2004/10-2008/7, Alzahra University, Tehran, IRAN.

RESEARCH INTERESTS

- 3D modeling of human organs based on medical images
- Image processing
- Signal processing
- Ultrasound Imaging
- Biomechanics of cardiovascular system

RESEARCH PAPERS

- Soleimani E, Mokhtari-Dizaji M, Fatouraee N, Saberi H. Stress distribution analysis in healthy and stenosed carotid artery models reconstructed from in vivo ultrasonography. Ultrasonography 2021. 40 (3), 428
- Soleimani E, Saberi H. Optimized geometry of the carotid artery cross-section: Comparison between circular and elliptical approximations in B-mode ultrasound images. Discrete Mathematics, Algorithms and Applications 2021. 13 (02), 2150004

- Soleimani E, Mokhtari-Dizaji M, Fatouraee N. et al. Estimation of Biomechanical Properties of Normal and Atherosclerotic Common Carotid Arteries. Cardiovasc Eng Tech (2018). https://doi.org/10.1007/s13239-018-00389-9
- Soleimani E, Mokhtari-Dizaji M, Fatouraee N, Saberi H. Assessing the blood pressure waveform of the carotid artery using an ultrasound image processing method. Ultrasonography 2017, 36:144-152.
- Soleimani E, Mokhtari-Dizaji M, Saberi H, Sharif-Kashani S. A mathematical model for estimating the axial stress of the common carotid artery wall from ultrasound images. Med Biol Eng Comput. 2016; 54: 1205-1215.
- Soleimani E, Mokhtari-Dizaji M, Saberi H. A novel non-invasive ultrasonic method to assess total axial stress of the common carotid artery wall in healthy and atherosclerotic men. J Biomech. 2015 Jul 16; 48(10):1860-7.
- Soleimani E, Mokhtari Dizaji M, Fatouraee N, Saberi H. A finite element viscoelastic model based on consecutive transverse ultrasound images of carotid artery. IQBQ. 2017; 17 (7): 421-430. (In Persian).
- Safavi T.S, Soleimani E, Fatouraee N. Quantification of blood flow velocity of the internal carotid artery: a comparison between phase- Contrast MRI and Doppler Ultrasound. ICBME, IEEE 2017.
- Soleimani E, Mokhtari Dizaji M, Fatouraee N, Saberi H. Evaluating the effect of stenosis increase and pulsatile blood pressure on the effective stress distribution in finite element viscoelastic and wholly ultrasound based model of carotid artery, Acoust Eng Soc Iran, 2017, accepted. (in Persian)
- Saberi, H, Soleimani E, Mokhtari-Dizaji M. Extraction the axial stress of common carotid artery wall using consecutive ultrasonic image processing. Acoust Eng Soc Iran Jul 2014; 1 (2): 8-15. (in Persian)
- Soleimani E, Mokhtari-Dizaji M, Saberi,H, Shams Hakimi S, Raiesdana S. Kinematics parameter extraction of longitudinal movement of common carotid arterial wall in healthy and atherosclerotic subjects based on consecutive ultrasonic image processing. Physiol Pharmacol 2012; 16: 165-178. (in Persian)
- Soleimani E, Mokhtari-Dizaji M, Saberi,H, Shams Hakimi S. Radial motion of the carotid artery wall, a block matching algorithm approach. Koomesh 2012; 13: 465-473. (in Persian)
- E Soleimani, Mokhtari-Dizaji M, Saberi H. Carotid artery wall motion estimation from consecutive ultrasonic images: Comparison between block matching and maximum gradient algorithms. J Teh Univ Heart Ctr 2011; 6(2):72-78.
- Rafati M, Mokhtari-Dizaji M, Saberi H, Soleimani E. Extraction of the longitudinal movement of the carotid artery wall using consecutive ultrasonic images: A block matching algorithm. Iran J Med Phys 2011; 8: 49-59. (in Persian)

ORAL PRESENTATIONS IN CONFERENCES

- Diagnostic qualification improvement of vascular problems with automated processing of sequential ultrasound images. 4Th Iran Conf E-Health ICT Applicat Med Sci; March 2011, Mashhad Azad University.

- Comparing the internal diameter and longitudinal displacement changes of the common carotid artery in atherosclerotic stenosis initiation and its progression. 1st international Iranian congress of Physiology and Pharmacology, 23-27 Aug 2013. Tabriz, IRAN.

PAPERS PRESENTED IN NATIONAL AND INTERNATIONAL CONGRESSES

- Soleimani E, Mokhtari Dizaji M, Saberi H, Shams Hakimi S. Longitudinal movement of the carotid artery wall in healthy and atherosclerotic subjects: A first report. 5rd Middle East (Iran-Arab) Cardiovascular Congress, Feb 23-25, 2011, Kish- Iran: ID 661.
- E Soleimani, M Mokhtari-Dizaji, N Fatouraee, H Saberi. Computerized analysis of Doppler pulse spectrum in healthy and atherosclerotic subjects. The 6th Razavi international cardiovascular congress, Mashhad. 2013; 197-198.
- E Soleimani, M Mokhtari-Dizaji, N Fatouraee, H Saberi. A purely ultrasonic method to extract the arterial blood pressure waveform. International congress on cardiac emergencies.1st international congress on Cardic emergencies 2014. Bandar Abbas, Feb 19-21: 69.
- E Soleimani, M Mokhtari-Dizaji, N Fatouraee, H Saberi. An ultrasonic-based mathematical model for assessing the viscoelastic properties of the arterial wall. The 5th Iranian conference on bioinformatics Tehran. May 2014.
- E Soleimani, M Mokhtari-Dizaji, N Fatouraee, H Saberi. Comparing the viscus and elastic parameters of healthy and atherosclerotic carotid arteries. 4th international preventive cardiology congress 2015. 30 september-2 octtober, Shiraz, IRAN.
- E Soleimani, M Mokhtari-Dizaji, N Fatouraee, H Saberi. Evaluating the stress distribution applied to the carotid artery having severe atherosclerotic stenosis using a voscoelastic finite element mode. 2nd congress of clinical cases in complex cardiovascular therapeutics (CCCCT2) 2017, April 19-21, Shiraz, IRAN; 85-86.
- Effat Soleimani, Manijhe Mokhtari-Dizaji, Nasser Fatouraee and Hazhir Saberi. Role of fibrotic cap thickness on the stress distribution of the carotid plaque. 10th Middle East Cardiovascular Congress. 6-8 December 2017; Kish Island-Iran (***Rewarded poster***).
- Zahra Taheri, Nasser Fatouraee, Malike Nabaei, Effat Soleimani. Measuring the nitroglycerine-induced changes of blood velocity in carotid arteries. 12th Iranian Congress of Medical Physics (Iran J Med Phys. 2018);
- Zahra Taheri, Nasser Fatouraee, Malike Nabaei, Effat Soleimani. Numerical Modeling of the Nitroglycerine-Induced Vasodilation in Carotid Arteries. Accepted for oral presentation in 2018 25th national and 3rd International Iranian Conference on Biomedical Engineering (ICBME 2018).

NATIONAL PATENT

Effat Soleimani, Manijhe Mokhtari-Dizaji, Nasser Fatouraee, Hazhir Saberi, Hamid Movahedian-Attar and Tarbiat modares university. Retentive and moving system of ultarsound probe in order to costruct the free-hand 3D geometry of carotid artery (Patent No. 91516).

BOOK TRANSLATIONS

1. Mokhtari-Dizaji M, Soleimani E. Ultrasound and elastic waves. Tarbiat Modares University Publications. 2015 (Awarded as yearbook of University).

2. Mokhtari-Dizaji M, Soleimani E. Ultrasound Physics and instrumentation (Hedrick). Etminan Publications 2015.

3. Soleimani E. Mobasheri M. Mehrnia S.S. The essential physics of medical imaging (Bushberg). Edition3. part1. Etminan Publications, 2016.

4. Soleimani E. Mobasheri M. The essential physics of medical imaging (Bushberg). Edition3. part2. Etminan Publications 2018.

4. Soleimani E. Mobasheri M. The safe use of ultrasound in medical diagnosis. With corporation of Iranian Association of Medical Physicists, 2018.

RESEARCH PROJECT

Ayoobi-Yazdi N, Soleimani E. Evaluation of the motion pattern variations of the central elastic and peripheral muscular artery walls during the cardiac cycle using consecutive ultrasound image processing. Research center for New Sciences and Technologies, Tehran University of medical sciences, 2018-2019 (Project No.45587-159-3-98)

TEACHING

- Biophysics (Department of medical engineering, Islamic Azad University, Science and Research Branch, Tehran)
- Practical medical physics (Department of Medicine, Azad University of Medical Sciences, Tehran)
- The effects of radiation on tissues (Department of New Sciences and Technologies, Azad University of Medical Sciences, Tehran)
- Radiobiology (Department of New Sciences and Technologies, Azad University of Medical Sciences, Tehran)
- Biophysics (Department of New Sciences and Technologies, Azad University of Medical Sciences, Tehran)

REFEREE FOR JOURNAL ARTICLES SUBMITTED TO

- Journal of Medical Engineering and Physics
- Iranian Journal of Medical Physics, Iranian Association of Medical Physics.
- Journal of Acoustical Engineering Society of Iran
- Iranian Journal of Biomedical Engineering
- 25th national and 3rd international Iranian Conference on Biomedical Engineering (ICBME 2018)

MEMBERSHIP OF SCIENTIFIC SOCIETIES

1. Medical Physics Society of I.R. IRAN, Since 2009.

2. Medical Engineering Society of I. R. IRAN, Since 2013
3. Iranian Society of Bioinformatics, since 2013
4. Acoustical Engineering Society of IRAN, since 2012