Tsoy Mariya Olegovna

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Current position

August 2016 – present

Saratov state university named after N.G. Chernyshevsky, research fellow at the Department of Optics and Biophotonics, Institute of Physics

Education

October 2020

Saratov State University, qualification: "Researcher. Research teacher"

September 2012 - July 2014

Saratov state university, master's degree in physics

Participation in conferences/ projects

September 2012 – 2021

Annual conference SFM - Saratov Fall Meeting

November 2020

Annual All-Russian School-Seminar "Methods of Computer Diagnostics in Biology and Medicine - 2020"

October-December 2013

III All-Russian Youth Scientific Conference "Actual Issues of Biomedical Engineering" (1st degree diploma)

April 2017

International School-Conference of Young Scientists "Biology - Science of the XXI Century", Pushchino

2016 – 2018

Participation in the project «Development of a technology for monitoring of vascular barriers permeability: multiscale analysis of transients in optical imaging data»

Major skills

The main area of action - receiving and processing of biosignals (one-dimensional, two-dimensional, video), in particular: the development of methods and algorithms for analyzing the dynamics of the characteristics of the vascular bed.

The main methods used: correlation analysis, wavelet analysis, methods using spline-functions, statistical analysis

Digital data processing: creating algorithms using software packages C#, MatLab, Wolfram Mathematica

Publications

1. Postnikov E. B., Tsoy M.O., Timoshina P.A., Postnov D.E. Gaussian sliding window for robust processing laser speckle contrast images //International journal for numerical methods in biomedical engineering. – 2019. – Т. 35. – №. 4. – С. e3186.
2. Postnikov E. B., Tsoy M. O., Postnov D. E. MATLAB for laser speckle contrast analysis (LASCA): a practice-based approach //Saratov Fall Meeting 2017: Laser Physics and Photonics XVIII; and Computational Biophysics and Analysis of Biomedical Data IV. – International Society for Optics and Photonics, 2018. – Т. 10717. – С. 1071728.
3. Postnikov, E. B., Tsoy, M. O., Kurochkin, M. A., & Postnov, D. E. (2017, April). A fast method for the detection of vascular structure in images, based on the continuous wavelet transform with the Morlet wavelet having a low central frequency. In Saratov Fall Meeting 2016: Laser Physics and Photonics XVII; and Computational Biophysics and Analysis of Biomedical Data III (Vol. 10337, p. 103370X). International Society for Optics and Photonics.
4. Tsoy M. O., Stiukhina E. S., Postnov D. E. Application of cross-wavelet transform to pulse velocity data: seeking for inter-limb coherence //Saratov Fall Meeting 2015: Third International Symposium on Optics and Biophotonics and Seventh Finnish-Russian Photonics and Laser Symposium (PALS). – International Society for Optics and Photonics, 2016. – Т. 9917. – С. 991726.
5. Tsoy M. O. et al. The assessment of sympathetic activity using iPPG based inter-limb coherence measurements //Saratov Fall Meeting 2016: Laser Physics and Photonics XVII; and Computational Biophysics and Analysis of Biomedical Data III. – International Society for Optics and Photonics, 2017. – Т. 10337. – С. 1033718.
6. Avtomonov Y. N., Tsoy M. O., Postnov D. E. Non-contact method of search and analysis of pulsating vessels //Saratov Fall Meeting 2017: Laser Physics and Photonics XVIII; and Computational Biophysics and Analysis of Biomedical Data IV. – International Society for Opticsand Photonics, 2018. – Т. 10717. – С. 1071724.
7. Tsoy M. O. et al. Akima splines for minimization of breathing interference in aortic rheography data //Saratov Fall Meeting 2014: Optical Technologies in Biophysics and Medicine XVI; Laser Physics and Photonics XVI; and Computational Biophysics. – International Society for Optics and Photonics, 2015. – Т. 9448. – С. 94481L.
8. Tsoy M., Merkulova K., Postnov D. (2020). Distal Pulse Measurement Provides Statistical, but not Dynamical, Features of the Central Pulse //Izvestiya of Saratov University. New series. Series: Physics. 20. 164-170. 10.18500/1817-3020-2020-20-3-164-170.
9. Tsoy M. O., Postnov D. E. Method for determining significant components for assessing pulse wave shape variability //Izvestiya of Saratov University. New series. Series: Physics. – 2021. – Т. 21. – №. 1. - С.36-47
10. Tsoy M. O., Postnov D. E. An alternative method to quantify the pulse waveform //Saratov Fall Meeting 2020: Computations and Data Analysis: from Molecular Processes to Brain Functions. – International Society for Optics and Photonics, 2021. – Т. 11847. – С. 118470A.