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Education Information

Doctorate, Bogazici University, Institute Of Biomedical Engineering, Biyomedikal Mühendisliği, Turkey 2009 - 2014

Postgraduate, Bahcesehir University, Institute Of Science, Elektrik-Elektronik Mühendisliği, Turkey 2006 - 2009

Undergraduate, Bahcesehir University, Faculty Of Engineering, Elektrik-Elektronik Mühendisliği, Turkey 2002 - 2006

Research Areas

Biomedical Engineering, Biosignal Processing, Biosignal Processing, Engineering and Technology

Academic Titles / Tasks

Assistant Professor, Yildiz Technical University, Faculty Of Electrical & Electronics, Biomedical Engineering, 2015 - Continues

Published journal articles indexed by SCI, SSCI, and AHCI

- I. **Tunable Q-factor wavelet transform based lung signal decomposition and statistical feature extraction for effective lung disease classification**
Cansiz B., Kilinc C. U., SERBES G.
Computers in Biology and Medicine, vol.178, 2024 (SCI-Expanded)
- II. **The Evaluation of Nature-Inspired Optimization Techniques for Contrast Enhancement in Images: A Novel Software Tool**
İLHAN H. O., ELBİR A., SERBES G., AYDIN N.
Traitement du Signal, vol.40, no.4, pp.1305-1318, 2023 (SCI-Expanded)
- III. **Decision and feature level fusion of deep features extracted from public COVID-19 data-sets**
İlhan H. O., Serbes G., Aydın N.
APPLIED INTELLIGENCE, vol.52, no.8, pp.8551-8571, 2022 (SCI-Expanded)
- IV. **Sperm morphology analysis by using the fusion of two-stage fine-tuned deep networks**
İLHAN H. O., SERBES G.
Biomedical Signal Processing and Control, vol.71, 2022 (SCI-Expanded)
- V. **Emboli detection using a wrapper-based feature selection algorithm with multiple classifiers**
Sakar B. E., SERBES G., AYDIN N.

Biomedical Signal Processing and Control, vol.71, 2022 (SCI-Expanded)

- VI. **Resonance based separation and energy based classification of lung sounds using tunable wavelet transform**
Ulukaya S., Serbes G., Kahya Y. P.
COMPUTERS IN BIOLOGY AND MEDICINE, vol.131, 2021 (SCI-Expanded)
- VII. **Estimation of Parkinson's disease severity using speech features and extreme gradient boosting**
Tunc H. C., Sakar C. O., Apaydin H., SERBES G., Gunduz A., Tutuncu M., Gurgen F.
MEDICAL & BIOLOGICAL ENGINEERING & COMPUTING, vol.58, no.11, pp.2757-2773, 2020 (SCI-Expanded)
- VIII. **Automated sperm morphology analysis approach using a directional masking technique**
İLHAN H. O., SERBES G., AYDIN N.
Computers in Biology and Medicine, vol.122, 2020 (SCI-Expanded)
- IX. **A fully automated hybrid human sperm detection and classification system based on mobile-net and the performance comparison with conventional methods**
Ilhan H. O., Sigirci I., Serbes G., Aydin N.
MEDICAL & BIOLOGICAL ENGINEERING & COMPUTING, vol.58, no.5, pp.1047-1068, 2020 (SCI-Expanded)
- X. **Automatic directional masking technique for better sperm morphology segmentation and classification analysis**
İlhan H. O., Serbes G., Aydın N.
ELECTRONICS LETTERS, vol.55, no.5, pp.256-257, 2019 (SCI-Expanded)
- XI. **An open access database for the evaluation of respiratory sound classification algorithms**
Rocha B., Filos D., Mendes L., Serbes G., Ulukaya S., Kahya Y., Jakovljevic N., Turukalo T., Vogiatzis I., Perantonì E., et al.
PHYSIOLOGICAL MEASUREMENT, vol.40, no.3, 2019 (SCI-Expanded)
- XII. **Wheeze type classification using non-dyadic wavelet transform based optimal energy ratio technique**
Ulukaya S., SERBES G., Kahya Y. P.
COMPUTERS IN BIOLOGY AND MEDICINE, vol.104, pp.175-182, 2019 (SCI-Expanded)
- XIII. **A comparative analysis of speech signal processing algorithms for Parkinson's disease classification and the use of the tunable Q-factor wavelet transform**
Sakar C. O., SERBES G., Gunduz A., Tunc H. C., Nizam H., Sakar B. E., Tutuncu M., Aydin T., Isenkul M. E., Apaydin H.
APPLIED SOFT COMPUTING, vol.74, pp.255-263, 2019 (SCI-Expanded)
- XIV. **Overcomplete discrete wavelet transform based respiratory sound discrimination with feature and decision level fusion**
Ulukaya S., SERBES G., Kahya Y. P.
BIOMEDICAL SIGNAL PROCESSING AND CONTROL, vol.38, pp.322-336, 2017 (SCI-Expanded)
- XV. **Analyzing the effectiveness of vocal features in early telediagnosis of Parkinson's disease**
Sakar B. E., SERBES G., Sakar C. O.
PLOS ONE, vol.12, no.8, 2017 (SCI-Expanded)
- XVI. **Directional dual-tree complex wavelet packet transforms for processing quadrature signals**
Serbes G., Gulcur H. O., AYDIN N.
MEDICAL & BIOLOGICAL ENGINEERING & COMPUTING, vol.54, pp.295-313, 2016 (SCI-Expanded)
- XVII. **An emboli detection system based on Dual Tree Complex Wavelet Transform and ensemble learning**
SERBES G., Sakar B. E., Gulcur H. O., AYDIN N.
APPLIED SOFT COMPUTING, vol.37, pp.87-94, 2015 (SCI-Expanded)
- XVIII. **Denoising performance of modified dual-tree complex wavelet transform for processing quadrature embolic Doppler signals**
Serbes G., Aydın N.
MEDICAL & BIOLOGICAL ENGINEERING & COMPUTING, vol.52, no.1, pp.29-43, 2014 (SCI-Expanded)
- XIX. **Pulmonary crackle detection using time-frequency and time-scale analysis**
Serbes G., Sakar C. O., Kahya Y. P., AYDIN N.
DIGITAL SIGNAL PROCESSING, vol.23, no.3, pp.1012-1021, 2013 (SCI-Expanded)
- XX. **Modified dual tree complex wavelet transform for processing quadrature signals**

Serbes G., AYDIN N.

BIOMEDICAL SIGNAL PROCESSING AND CONTROL, vol.6, no.3, pp.301-306, 2011 (SCI-Expanded)

Articles Published in Other Journals

- I. **Detection of Wheeze Sounds in Respiratory Disorders: A Deep Learning Approach**
Hakki L., Serbes G.
International Advanced Researches and Engineering Journal, vol.8, no.1, pp.20-32, 2024 (Peer-Reviewed Journal)
- II. **Akciğer Solunum Seslerinin Spektral Öznitelikler ile Sınıflandırılması**
ULUKAYA S., SERBES G., SEN I., KAHYA Y. P.
SÜLEYMAN DEMİREL ÜNİVERSİTESİ FEN BİLİMLERİ ENSTİTÜSÜ DERGİSİ, vol.22, no.2, pp.711-716, 2018 (Peer-Reviewed Journal)
- III. **Code generator for implementing dual tree complex wavelet transform on reconfigurable architectures for mobile applications**
CANBAY F., LEVENT V., Serbes G., UGURDAG H., GOREN S., AYDIN N.
Healthcare Technology Letters, vol.3, no.3, pp.184-188, 2016 (ESCI)

Books & Book Chapters

- I. **Medikal Görüntü İşleme ve Makine Öğrenmesi**
İlhan H. O., Serbes G.
in: Biyomedikal Mühendisliğinin Temelleri, İsmail Devocioğlu, Editor, Nobel Yayın Dağıtım, İstanbul, pp.303-337, 2022
- II. **Biyomedikal İşaret İşleme**
Serbes G., İlhan H. O.
in: Biyomedikal Mühendisliğinin Temelleri, İsmail Devocioğlu, Editor, Nobel Yayın Dağıtım, İstanbul, pp.141-220, 2022
- III. **Medikal Görüntü İşleme ve Makine Öğrenmesi**
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in: Biyomedikal Mühendisliğinin Temelleri, İsmail Devocioğlu, Editor, Nobel Akademi, Ankara, pp.303-339, 2022
- IV. **Biyomedikal İşaret İşleme**
SERBES G., İLHAN H. O.
in: Biyomedikal Mühendisliğinin Temelleri, İsmail Devocioğlu, Editor, Nobel Akademi, pp.141-221, 2022
- V. **Effect of Different Window and Wavelet Types on the Performance of a Novel Crackle Detection Algorithm**
Serbes G., Şakar C. O., Aydın N., Kahya Z. Y.
in: Lecture Notes in Computer Science, Volume 6935, Convergence and Hybrid Information Technology, Lee Geuk, Howard Daniel, Ślęzak Dominik, Editor, Springer, London/Berlin, Berlin, pp.575-581, 2011

Refereed Congress / Symposium Publications in Proceedings

- I. **The Effect of Differently Optimized Histogram Stretching Techniques on the Classification Performance of Sperm Morphology**
Eyyubova G., SERBES G., İLHAN H. O.
2023 14th International Conference on Electrical and Electronics Engineering (ELECO), Bursa, Turkey, 02 December 2023
- II. **FISC-Net: Classification of Auscultation Sounds on an Edge Device**
Mutlu E., Hüseyin V., SERBES G.

1st International Conference of Intelligent Methods, Systems and Applications, IMSA 2023, Giza, Egypt, 15 - 16 July 2023, pp.174-180

- III. **Investigating the Effect of Spatial Fusion of Different Color Spaces on Deep Learning-Based Sperm Image Classification Performance Farkli Renk Uzaylarinin Uzamsal Birlesiminin Derin Ogrenme Tabanli Sperm GoruntuSiniflandirma Performansina Etkisinin Incelenmesi**
CEBECİ M., SERBES G., İLHAN H. O.
8th International Conference on Computer Science and Engineering, UBMK 2023, Burdur, Turkey, 13 - 15 September 2023, pp.521-525
- IV. **Breast Cancer Detection Using Transformer and BiLSTM Based Ensemble Learning Dönüştürücü ve BiLSTM Tabanlı Topluluk Öğrenmesi Kullanılarak Meme Kanseri Tespiti**
Yılmaz R. E., SERBES G.
31st IEEE Conference on Signal Processing and Communications Applications, SIU 2023, İstanbul, Turkey, 5 - 08 July 2023
- V. **The Performance Analysis of Convolutional Neural Networks and Vision Transformers in the Classification of Sperm Morphology Sperm Morfolojisinin Siniflandırilmasında Evrimsel Sinir Ağ ve Görü Donusturucu Modellerin Performans Analizi**
AKTAŞ A., SERBES G., Osman İlhan H. O.
8th International Conference on Computer Science and Engineering, UBMK 2023, Burdur, Turkey, 13 - 15 September 2023, pp.330-335
- VI. **Wheeze Events Detection Using Convolutional Recurrent Neural Network**
Hakki L., SERBES G.
2023 Innovations in Intelligent Systems and Applications Conference, ASYU 2023, Sivas, Turkey, 11 - 13 October 2023
- VII. **Performance Comparison of Oral, Laryngeal and Thoracic Sounds in the Detection of COVID-19 by Employing Machine Learning Techniques Oral, Larengeal ve Torakal Konuşma Seslerinin COVID-19 Tespitindeki Performanslarının Yapay Öğrenme Yöntemleriyle Karşılaştırılması**
Gozuacik N., SERBES G., Kara E., Atas E., Okan Sakar C., Murat Yener H., BÖREKÇİ Ş., KORKMAZER B., KARAALİ R., Kara H., et al.
30th Signal Processing and Communications Applications Conference, SIU 2022, Safranbolu, Turkey, 15 - 18 May 2022
- VIII. **The Effect of Nonlinear Wavelet Transform Based De-noising in Sperm Abnormality Classification**
İLHAN H. O., SIĞIRCI İ. O., SERBES G., AYDIN N.
2018 3rd International Conference on Computer Science and Engineering (UBMK), Sarajevo, Bosnia and Herzegovina, 20 - 23 September 2018
- IX. **The Effects of the Modified Overlapping Group Shrinkage Technique on the Sperm Segmentation in the Stained Images**
İLHAN H. O., SERBES G., AYDIN N.
2018 41st International Conference on Telecommunications and Signal Processing (TSP), Athens, Greece, 4 - 06 July 2018
- X. **Dual Tree Complex Wavelet Transform Based Sperm Abnormality Classification**
İLHAN H. O., SERBES G., AYDIN N.
2018 41st International Conference on Telecommunications and Signal Processing (TSP), Athens, Greece, 4 - 06 July 2018
- XI. **Short Time Fourier Transform based music genre classification**
ELBİR A., İLHAN H. O., SERBES G., AYDIN N.
2018 Electric Electronics, Computer Science, Biomedical Engineerings'xx Meeting (EBBT), İstanbul, Turkey, 18 - 19 April 2018
- XII. **An automated lung sound preprocessing and classification system based on spectral analysis methods**
SERBES G., Ulukaya S., Kahya Y. P.
3rd International Conference on Biomedical and Health Informatics, ICBHI 2017, Thessaloniki, Greece, 18 - 21

November 2017, vol.66, pp.45-49

- XIII. **Performance comparison of wavelet based denoising methods on discontinuous adventitious lung sounds**
Ulukaya S., SERBES G., Kahya Y. P.
39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBC 2017, Jeju Island, South Korea, 11 - 15 July 2017, pp.2928-2931
- XIV. **Resonance Based Pre-processing Method for Eliminating Artifacts in Doppler Ultrasound Signals**
SERBES G., AYDIN N.
2017 25TH SIGNAL PROCESSING AND COMMUNICATIONS APPLICATIONS CONFERENCE (SIU), Antalya, Turkey, 15 - 18 May 2017
- XV. **Resonance based pre-processing method for eliminating artifacts in Doppler ultrasound signals**
Doppler Ultrason İşaretlerinde Artifaktların Giderilmesi İçin Rezonans Temelli Ön-işleme Yöntemi
SERBES G., AYDIN N.
25th Signal Processing and Communications Applications Conference, SIU 2017, Antalya, Turkey, 15 - 18 May 2017
- XVI. **An Adaptive and Automatic Parameter Selection Method based on Rational Dilation Wavelet Transform for Wheeze Type Classification**
ULUKAYA S., SERBES G., KAHYA Y. P.
Proceedings of the 8th International Workshop on Biosignal Interpretation (BSI2016), Osaka, Japan, 01 November 2016, pp.163-166
- XVII. **A Lung Sound Classification System based on the Rational Dilation Wavelet Transform**
Ulukaya S., SERBES G., SEN I., Kahya Y. P.
38th Annual International Conference of the IEEE-Engineering-in-Medicine-and-Biology-Society (EMBC), Florida, United States Of America, 16 - 20 August 2016, pp.3745-3748
- XVIII. **Impact of Car Arrival/Departure Patterns on EV Parking Lot Energy Storage Capacity**
Guner S., Özdemir A., SERBES G.
International Conference on Probabilistic Methods Applied to Power Systems (PMAPS), Beijing, China, 16 - 20 October 2016
- XIX. **Resonance based Respiratory Sound Decomposition Aiming at Localization of Crackles in Noisy Measurements**
Ulukaya S., SERBES G., Kahya Y. P.
38th Annual International Conference of the IEEE-Engineering-in-Medicine-and-Biology-Society (EMBC), Florida, United States Of America, 16 - 20 August 2016, pp.3688-3691
- XX. **Analysis of Embolic Signals with Directional Dual Tree Rational Dilation Wavelet Transform**
SERBES G., AYDIN N.
38th Annual International Conference of the IEEE-Engineering-in-Medicine-and-Biology-Society (EMBC), Florida, United States Of America, 16 - 20 August 2016, pp.3821-3824
- XXI. **A Multi-channel Real Time Implementation of Dual Tree Complex Wavelet Transform in Field Programmable Gate Arrays**
CANBAY F., Levent V. E., SERBES G., Ugurdag H. F., Goren S., AYDIN N.
14th Mediterranean Conference on Medical and Biological Engineering and Computing (MEDICON), Paphos, CYPRUS, 31 March - 02 April 2016, vol.57, pp.114-118
- XXII. **An area efficient real time implementation of dual tree complex wavelet transform in field programmable gate arrays**
CANBAY F., Levent V. E., SERBES G., Ugurdag H. F., Goren S., AYDIN N.
15th IEEE International Conference on Bioinformatics and Bioengineering, BIBE 2015, Belgrade, Serbia And Montenegro, 2 - 04 November 2015
- XXIII. **A micro emboli vs non-emboli classification system based on the directional dual tree rational dilation wavelet transform**
SERBES G., Sakar B. E., AYDIN N.
15th IEEE International Conference on Bioinformatics and Bioengineering, BIBE 2015, Belgrade, Serbia And Montenegro, 2 - 04 November 2015

- XXIV. **Field Programmable Gate Arrays Implementation of Dual Tree Complex Wavelet Transform**
CANBAY F., Levent V. E., SERBES G., Goren S., AYDIN N.
37th Annual International Conference of the IEEE-Engineering-in-Medicine-and-Biology-Society (EMBC), Milan, Italy, 25 - 29 August 2015, pp.6026-6029
- XXV. **Directional Dual-Tree Rational-Dilation Complex Wavelet Transform**
Serbes G., Gulcur H. O., AYDIN N.
36th Annual International Conference of the IEEE-Engineering-in-Medicine-and-Biology-Society (EMBC), Illinois, United States Of America, 26 - 30 August 2014, pp.1465-1468
- XXVI. **Directional dual-tree complex wavelet packet transform implementation using band-limited synthetic signals**
Serbes G., AYDIN N., Gulcur H.
International Conference on Health Informatics, ICHI 2013, Vilamoura, Portugal, 7 - 09 November 2013, vol.42, pp.9-12
- XXVII. **Symmetrical Directional Dual-Tree Complex Wavelet Packet Transform**
Serbes G., Gulcur H. O., AYDIN N.
36th Annual International Conference of the IEEE-Engineering-in-Medicine-and-Biology-Society (EMBC), Illinois, United States Of America, 26 - 30 August 2014, pp.820-823
- XXVIII. **An Emboli Detection System Based on Dual Tree Complex Wavelet Transform**
Serbes G., Sakar B. E., AYDIN N., Gulcur H.
13th Mediterranean Conference on Medical and Biological Engineering and Computing 2013, MEDICON 2013, Sevilla, Spain, 25 - 28 September 2013, vol.41, pp.819-822
- XXIX. **Directional Dual-Tree Complex Wavelet Packet Transform**
Serbes G., AYDIN N., Gulcur H. O.
35th Annual International Conference of the IEEE-Engineering-in-Medicine-and-Biology-Society (EMBC), Osaka, Japan, 3 - 07 July 2013, pp.3046-3049
- XXX. **Embolitic Doppler ultrasound signal detection using modified dual tree complex wavelet transform**
Serbes G., AYDIN N.
IEEE-EMBS International Conference on Biomedical and Health Informatics, BHI 2012. In Conj. with the 8th Int. Symp. on Medical Devices and Biosensors and the 7th Int. Symp. on Biomedical and Health Engineering, Hong Kong and Shenzhen, China, 2 - 07 January 2012, pp.945-947
- XXXI. **Extracellular spike detection with resonance based signal decomposition Rezonans esasli işaret ayırtirmasi kullanilarak hücre dişi sinirsel iğnecik tespiti**
Serbes G., Kocatürk M., Gülçür H. Ö., AYDIN N.
2012 20th Signal Processing and Communications Applications Conference, SIU 2012, Fethiye, Mugla, Turkey, 18 - 20 April 2012
- XXXII. **Pulmonary crackle detection using time-frequency analysis Zaman-frekans analizi kullanarak pulmoner çitirti tespiti**
Serbes G., Şakar C. O., Kahya Y., AYDIN N.
2012 20th Signal Processing and Communications Applications Conference, SIU 2012, Fethiye, Mugla, Turkey, 18 - 20 April 2012
- XXXIII. **Effect of different window and wavelet types on the performance of a novel crackle detection algorithm**
Serbes G., Sakar C. O., Kahya Y. P., AYDIN N.
5th International Conference on Convergence and Hybrid Information Technology, ICHIT 2011, Daejeon, South Korea, 22 - 24 September 2011, pp.575-581
- XXXIV. **Denosing embolic doppler signals using modified complex discrete wavelet transform Embolik doppler işaretlerinin modifiye edilmiş karmaşık ayrik dalgacık dönüş ümü ile gürültüden arindirilmesi**
Serbes G., AYDIN N.
2011 IEEE 19th Signal Processing and Communications Applications Conference, SIU 2011, Antalya, Turkey, 20 - 22 April 2011, pp.566-569

- XXXV. **Denoising embolic doppler signals using modified complex discrete wavelet transform**
SERBES G., AYDIN N.
2011 IEEE 19th Signal Processing and Communications Applications Conference (SIU), Antalya, Turkey, 20 - 22 April 2011
- XXXVI. **Symmetrical Modified Dual Tree Complex Wavelet Transform for Processing Quadrature Doppler Ultrasound Signals**
Serbes G., AYDIN N.
33rd Annual International Conference of the IEEE Engineering-in-Medicine-and-Biology-Society (EMBS), Massachusetts, United States Of America, 30 August - 03 September 2011, pp.4816-4819
- XXXVII. **Feature Extraction using Time-Frequency/Scale Analysis and Ensemble of Feature Sets for Crackle Detection**
Serbes G., Sakar C. O., Kahya Y. P., AYDIN N.
33rd Annual International Conference of the IEEE Engineering-in-Medicine-and-Biology-Society (EMBS), Massachusetts, United States Of America, 30 August - 03 September 2011, pp.3314-3317
- XXXVIII. **Denoising performance of modified dual tree complex wavelet transform**
Serbes G., AYDIN N.
10th International Conference on Information Technology and Applications in Biomedicine: Emerging Technologies for Patient Specific Healthcare, ITAB 2010, Corfu, Greece, 2 - 05 November 2010
- XXXIX. **Denoising Embolic Doppler Ultrasound Signals Using Dual Tree Complex Discrete Wavelet Transform**
Serbes G., AYDIN N.
32nd Annual International Conference of the IEEE Engineering-in-Medicine-and-Biology-Society (EMBC 10), Buenos Aires, Argentina, 30 August - 04 September 2010, pp.1840-1843
- XL. **A Complex Discrete Wavelet Transform for Processing Quadrature Doppler Ultrasound Signals**
Serbes G., Aydin N.
9th International Conference on Information Technology and Applications in Biomedicine, Larnaka, Cyprus (Gkry), 4 - 07 November 2009, pp.258-259
- XLI. **A New Wavelet Transform Method for Processing Doppler Signals**
Serbes G., Aydin N.
14th National Biomedical Engineering Meeting, İzmir, Turkey, 20 - 22 May 2009, pp.120-121

Supported Projects

GÜNAY O., ERSOY Ş., CANTÜRK İ., SERBES G., Project Supported by Higher Education Institutions, Kuzey Anadolu Fay Hattının İstanbulAvcılar Segmenti Civarında Radon Gaz Konsantrasyonları ile Sismik Aktiviteler Arasındaki İlişkinin Yapay Zeka İle Belirlenmesi, 2023 - Continues

İlhan H. O., Serbes G., Ekşi Altan M., TUBITAK Project, Derin Öğrenme Tabanlı Yöntemler ile Kişiyi Özel Kraniyal İmplantlar İçin Tasarım Sürecinin Geliştirilmesi Ve 3boyutlu Yazıcıda Üretimi, 2024 - 2026

İlhan H. O., Serbes G., Research Project of the Presidency of Turkey Health Institutes (TÜSEB), Cep Telefonu Tabanlı Sperm Hareket Analiz ve Raporlama Sistemi, 2023 - 2025

Serbes G., İlhan H. O., Aydın N., TUBITAK Project, Deep Learning Based Computer Aided System Design for Sperm Morphology Analysis, 2022 - 2024

Serbes G., Mutlu E., TUBITAK Project, Tiny Machine Learning Based Digital Stethoscope Design, 2022 - 2023

SERBES G., TUBITAK Project, Parkinson Hastalığı Tetkiklerinde Kortikal Motor Ve Algı Sistemi Ölçümlerinin Makine Öğrenmesi Yöntemleri İle Birleştirilmesi, 2016 - 2019

Metrics

Publication: 70

Citation (WoS): 487

Citation (Scopus): 761

H-Index (WoS): 12

H-Index (Scopus): 14

Non Academic Experience

Bahçeşehir Üniversitesi