

Prof. Zümray Ölmez



Personal Information

Office Phone: [+90 212 285 3649](tel:+902122853649)

Fax Phone: [+90 212 285 3679](tel:+902122853679)

Email: dokur@itu.edu.tr

Web: <https://web.itu.edu.tr/dokur/>

Address: İTÜ Elektrik-Elektronik Fakültesi, 34469 Maslak, İstanbul

International Researcher IDs

ORCID: 0000-0001-7660-3236

Publons / Web Of Science ResearcherID: ABF-5027-2020

ScopusID: 6603683998

Yoksis Researcher ID: 6988

Education Information

Doctorate, Istanbul Technical University, Fen Bilimleri Enstitüsü, Elektronik Ve Haberleşme Mühendisliği Anabilim Dalı, Turkey 1995 - 2000

Postgraduate, Istanbul Technical University, Fen Bilimleri Enstitüsü, Elektronik Ve Haberleşme Mühendisliği Anabilim Dalı, Turkey 1992 - 1995

Undergraduate, Istanbul Technical University, Elektrik-Elektronik Fakültesi, Elektronik Ve Haberleşme Mühendisliği Bölümü, Turkey 1988 - 1992

Foreign Languages

German

English, C1 Advanced

Certificates, Courses and Trainings

Other, Modulations of Neuronal Signaling: Implications for Visual Perception, NATO ASI Summer School, 2000

Dissertations

Doctorate, Yapay sinir ağları ve genetik algoritmalar kullanılarak EKG vurularının sınıflandırılması, İstanbul Teknik Üniversitesi, Fen Bilimleri Enstitüsü, Elektronik Ve Haberleşme Mühendisliği Anabilim Dalı, 2000

Postgraduate, Bulanık (Fuzzy) sınıflayıcılarla EKG şekil bozukluklarının belirlenmesi, İstanbul Teknik Üniversitesi, Fen Bilimleri Enstitüsü, Elektronik Ve Haberleşme Mühendisliği Anabilim Dalı, 1995

Research Areas

Technical Sciences, Computer Sciences, bioinformatics, Artificial Intelligence, Computer Learning and Pattern

Recognition, Biomedical Engineering, Biomedical Image Processing, Biosignal Processing

Academic Titles / Tasks

Professor, Istanbul Technical University, Elektrik-Elektronik, Elektronik Ve Haberleşme Mühendisliği, 2009 - Continues
Associate Professor, Istanbul Technical University, Elektrik-Elektronik, Elektronik Ve Haberleşme Mühendisliği, 2003 - 2009

Assistant Professor, Istanbul Technical University, Elektrik-Elektronik, Elektronik Ve Haberleşme Mühendisliği, 2001 - 2003

Research Assistant, Istanbul Technical University, Elektrik-Elektronik, Elektronik Ve Haberleşme Mühendisliği, 1992 - 2001

Academic and Administrative Experience

Fakülte Kurulu Üyesi, Istanbul Technical University, Elektrik-Elektronik, Elektronik Ve Haberleşme Mühendisliği, 2006 - 2009

Staj Başkanı, Istanbul Technical University, Elektrik-Elektronik, Elektronik Ve Haberleşme Mühendisliği, 2000 - 2004

Courses

Biyolojik İşaretlerin Oluşumu ve Algılama Yöntemleri, Undergraduate, 2016 - 2017

MEDICAL DECISION MAKING, Postgraduate, 2016 - 2017, 2015 - 2016

Jury Memberships

Doctoral Examination, Doktora Yeterlik Sınavı, Yıldız Teknik Üniversitesi - Elektronik ve Haberleşme Mühendisliği Bölümü, November, 2017

Doctoral Examination, Doktora Yeterlik Sınavı, Yıldız Teknik Üniversitesi - Elektronik ve Haberleşme Mühendisliği Bölümü, November, 2017

Doctoral Examination, Doktora Yeterlik Sınavı, Yıldız Teknik Üniversitesi - Elektronik ve Haberleşme Mühendisliği Bölümü, November, 2017

Doctoral Examination, Doktora Yeterlik Sınavı Jürisi, Gebze Teknik Üniversitesi - Elektronik Mühendisliği, June, 2017

Associate Professor Exam, Doçentlik Sınav Jürisi, Üniversitelerarası Kurul, April, 2017

Post Graduate, Tez Savunma (Y. Lisans), Sabancı Üniversitesi - Elektronik Mühendisliği, August, 2016

Associate Professor Exam, Doçentlik Sınav Jürisi, Üniversitelerarası Kurul, April, 2016

Doctorate, Tez Savunma (Doktora), Sabancı Üniversitesi - Elektronik Mühendisliği, February, 2014

Designed Lessons

Ölmez Z., Medical Decision Making, Postgraduate, 2015 - 2016

Ölmez Z., Pattern Recognition by Neural Networks, Postgraduate, 2002 - 2003

Published journal articles indexed by SCI, SSCI, and AHCI

1. **Generating ten BCI commands using four simple motor imageries and classification by divergence-based DNN**

Korhan N., Ölmez T., Dokur Z.

NEURAL COMPUTING & APPLICATIONS, vol.35, pp.1303-1322, 2023 (SCI-Expanded)

- II. **Brain tumor classification by using a novel convolutional neural network structure**
POLAT Ö., Dokur Z., Ölmez T.
INTERNATIONAL JOURNAL OF IMAGING SYSTEMS AND TECHNOLOGY, vol.32, no.5, pp.1646-1660, 2022 (SCI-Expanded)
- III. **Neurological effects of long-term diet on obese and overweight individuals: An electroencephalogram and event-related potential study**
Ammar Ali M., ozogur-Akyuz S., DURU A. D., Caliskan M., Demir C., Bostanci T., Elsallak F., Shkokani M., Dokur Z., Ölmez T., et al.
COMPUTATIONAL INTELLIGENCE, vol.38, no.3, pp.1163-1182, 2022 (SCI-Expanded)
- IV. **Classification of motor imagery electroencephalogram signals by using a divergence based convolutional neural network**
Dokur Z., Ölmez T.
APPLIED SOFT COMPUTING, vol.113, 2021 (SCI-Expanded)
- V. **Deep learning based classification of unsegmented phonocardiogram spectrograms leveraging transfer learning**
Khan K. N., Khan F. A., Abid A., Ölmez T., Dokur Z., Khandakar A., Chowdhury M. E. H., Khan M. S.
PHYSIOLOGICAL MEASUREMENT, vol.42, no.9, 2021 (SCI-Expanded)
- VI. **Determination of Pneumonia in X-ray Chest Images by Using Convolutional Neural Network**
POLAT Ö., Dokur Z., Ölmez T.
TURKISH JOURNAL OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCES, vol.29, no.3, pp.1615-1627, 2021 (SCI-Expanded)
- VII. **Heartbeat classification by using a convolutional neural network trained with Walsh functions**
Dokur Z., Ölmez T.
NEURAL COMPUTING & APPLICATIONS, vol.32, no.16, pp.12515-12534, 2020 (SCI-Expanded)
- VIII. **Detection of BGA solder defects from X-ray images using deep neural network**
Akdeniz C. T., Dokur Z., Ölmez T.
TURKISH JOURNAL OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCES, vol.28, no.4, pp.2020-2029, 2020 (SCI-Expanded)
- IX. **Comparative analysis of MABC with KNN, SOM, and ACO algorithms for ECG heartbeat classification**
DİLMAÇ S., DOKUR Z., Ölmez T.
TURKISH JOURNAL OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCES, vol.26, no.6, pp.2819-2830, 2018 (SCI-Expanded)
- X. **Protein fold classification with Grow-and-Learn network**
Polat O., Dokur Z.
TURKISH JOURNAL OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCES, vol.25, no.2, pp.1184-1196, 2017 (SCI-Expanded)
- XI. **Protein Fold Recognition Using Self-Organizing Map Neural Network**
Polat O., Dokur Z.
CURRENT BIOINFORMATICS, vol.11, no.4, pp.451-458, 2016 (SCI-Expanded)
- XII. **A novel steady-state visually evoked potential-based brain-computer interface design: Character Plotter**
Iscan Z., DOKUR Z.
BIOMEDICAL SIGNAL PROCESSING AND CONTROL, vol.10, pp.145-152, 2014 (SCI-Expanded)
- XIII. **Classification of electroencephalogram signals with combined time and frequency features**
Iscan Z., DOKUR Z., DEMIRALP T.
EXPERT SYSTEMS WITH APPLICATIONS, vol.38, no.8, pp.10499-10505, 2011 (SCI-Expanded)
- XIV. **Dimension reduction by a novel unified scheme using divergence analysis and genetic search**
Korurek M., YUKSEL A., DOKUR Z., Ölmez T.
DIGITAL SIGNAL PROCESSING, vol.20, no.6, pp.1535-1546, 2010 (SCI-Expanded)

- XV. **Tumor detection by using Zernike moments on segmented magnetic resonance brain images**
Iscan Z., DOKUR Z., OELMEZ T.
EXPERT SYSTEMS WITH APPLICATIONS, vol.37, no.3, pp.2540-2549, 2010 (SCI-Expanded)
- XVI. **Retrospective correction of near field effect of X-ray source in radiographic images by using genetic algorithms**
Koruerek M., YUEKSEL A., ISCAN Z., DOKUR Z., OELMEZ T.
EXPERT SYSTEMS WITH APPLICATIONS, vol.37, no.3, pp.1946-1954, 2010 (SCI-Expanded)
- XVII. **Respiratory sound classification by using an incremental supervised neural network**
Dokur Z.
PATTERN ANALYSIS AND APPLICATIONS, vol.12, no.4, pp.309-319, 2009 (SCI-Expanded)
- XVIII. **Medical image segmentation with transform and moment based features and incremental supervised neural network**
Iscan Z., YUKSEL A., DOKUR Z., KORUREK M., Ölmez T.
DIGITAL SIGNAL PROCESSING, vol.19, no.5, pp.890-901, 2009 (SCI-Expanded)
- XIX. **Feature determination for heart sounds based on divergence analysis**
Dokur Z., Ölmez T.
DIGITAL SIGNAL PROCESSING, vol.19, no.3, pp.521-531, 2009 (SCI-Expanded)
- XX. **Heart sound classification using wavelet transform and incremental self-organizing map**
Dokur Z., OLMER T.
DIGITAL SIGNAL PROCESSING, vol.18, no.6, pp.951-959, 2008 (SCI-Expanded)
- XXI. **Tissue segmentation in ultrasound images by using genetic algorithms**
Dokur Z., Ölmez T.
EXPERT SYSTEMS WITH APPLICATIONS, vol.34, no.4, pp.2739-2746, 2008 (SCI-Expanded)
- XXII. **A unified framework for image compression and segmentation by using an incremental neural network**
Dokur Z.
EXPERT SYSTEMS WITH APPLICATIONS, vol.34, no.1, pp.611-619, 2008 (SCI-Expanded)
- XXIII. **An incremental neural network for tissue segmentation in ultrasound images**
Kurnaz M. N., DOKUR Z., Olmez T.
COMPUTER METHODS AND PROGRAMS IN BIOMEDICINE, vol.85, no.3, pp.187-195, 2007 (SCI-Expanded)
- XXIV. **Segmentation of remote-sensing images by incremental neural network**
Kurnaz M., DOKUR Z., Olmez T.
PATTERN RECOGNITION LETTERS, vol.26, no.8, pp.1096-1104, 2005 (SCI-Expanded)
- XXV. **Classification of respiratory sounds by using an artificial neural network**
Dokur Z., Olmez T.
INTERNATIONAL JOURNAL OF PATTERN RECOGNITION AND ARTIFICIAL INTELLIGENCE, vol.17, no.4, pp.567-580, 2003 (SCI-Expanded)
- XXVI. **Application of InP neural network to ECG beat classification**
Olmez T., Dokur Z.
NEURAL COMPUTING & APPLICATIONS, vol.11, pp.144-155, 2003 (SCI-Expanded)
- XXVII. **Segmentation of MR and CT images by using a quantiser neural network**
Dokur Z., Olmez T.
NEURAL COMPUTING & APPLICATIONS, vol.11, pp.168-177, 2003 (SCI-Expanded)
- XXVIII. **Classification of heart sounds using an artificial neural network**
Olmez T., DOKUR Z.
PATTERN RECOGNITION LETTERS, vol.24, pp.617-629, 2003 (SCI-Expanded)
- XXIX. **Segmentation of MR and CT images using a hybrid neural network trained by genetic algorithms**
Dokur Z.
NEURAL PROCESSING LETTERS, vol.16, no.3, pp.211-225, 2002 (SCI-Expanded)
- XXX. **Segmentation of ultrasound images by using a hybrid neural network**
Dokur Z., Olmez T.

- PATTERN RECOGNITION LETTERS, vol.23, no.14, pp.1825-1836, 2002 (SCI-Expanded)
- XXXI. **Recursive form of the discrete Fourier transform for two-dimensional signals**
Dokur Z., Olmez T.
INTELLIGENT DATA ENGINEERING AND AUTOMATED LEARNING - IDEAL 2002, vol.2412, pp.551-556, 2002 (SCI-Expanded)
- XXXII. **ECG beat classification by a novel hybrid neural network**
Dokur Z., Olmez T.
COMPUTER METHODS AND PROGRAMS IN BIOMEDICINE, vol.66, pp.167-181, 2001 (SCI-Expanded)
- XXXIII. **Comparison of discrete wavelet and Fourier transforms for ECG beat classification**
Dokur Z., Olmez T., YAZGAN E.
ELECTRONICS LETTERS, vol.35, no.18, pp.1502-1504, 1999 (SCI-Expanded)
- XXXIV. **Detection of ECG waveforms by neural networks**
Dokur Z., OLMEZ T., YAZGAN E., ERSOY O.
MEDICAL ENGINEERING & PHYSICS, vol.19, no.8, pp.738-741, 1997 (SCI-Expanded)

Articles Published in Other Journals

- I. **Classification of left and right hand motor imagery EEG signals by using deep neural networks**
Korhan N., Abilzade L., Ölmez T., Ölmez Z.
International Journal of Applied Mathematics Electronics and Computers, vol.9, no.4, pp.85-90, 2021 (Peer-Reviewed Journal)
- II. **Pneumonia Detection and Classification Using Deep Learning on Chest X-Ray Images**
DARICI M. B., DOKUR Z., ÖLMEZ T.
International Journal of Intelligent Systems and Applications in Engineering, vol.8, no.4, pp.177-183, 2020 (Scopus)
- III. **Classification of steady state visual evoked potentials by Multi Class T Weight Method**
İŞCAN Z., DOKUR Z.
Pattern Recognition and Image Analysis, vol.25, no.2, pp.321-326, 2015 (Scopus)
- IV. **Hough Dönüşümü Kullanılarak Protein Yapısal Bloklarının Karşılaştırılması Protein Structural Block Comparison by using Hough Transform**
ÖZBUDAK Ö., DOKUR Z., CANTONI V.
EMO Bilimsel Dergi - The Journal of Electrical, Electronics, Computer and Biomedical Engineering, vol.3, no.6, pp.91-97, 2013 (Peer-Reviewed Journal)

Books & Book Chapters

- I. **Improved incremental self-organizing map for the segmentation of ultrasound images**
ZAFER İ., DOKUR Z., ÖLMEZ T.
in: Mathematical Methods in Engineering, Kenan Tas, J.A. Tenreiro Machado, Dumitru Baleanu, Editor, Springer, Dordrecht, pp.293-302, 2007

Refereed Congress / Symposium Publications in Proceedings

- I. **Comparison of small-sized deep neural network models for hyperspectral image classification**
Karan E. T., Ölmez Z., Ölmez T.
International Conference on Computing, Intelligence and Data Analytics, Kocaeli, Turkey, 16 September 2022, no.3857, pp.1-13
- II. **Voice Command Recognition for Drone Control by Deep Neural Networks on Embedded System**
Yapicioglu C., Dokur Z., Ölmez T.

8th International Conference on Electrical and Electronics Engineering (ICEEE), Antalya, Turkey, 9 - 11 April 2021, pp.65-72

- III. **Motor Imagery Based EEG Classification by Using Common Spatial Patterns and Convolutional Neural Networks**
Korhan N., Dokur Z., Ölmez T.
International Scientific Meeting on Electrical-Electronics and Biomedical Engineering and Computer Science (EBBT), İstanbul, Turkey, 24 - 26 April 2019
- IV. **Fuzzy Local Information C-means Algorithm for Histopathological Image Segmentation**
Cetin M., Dokur Z., Ölmez T.
International Scientific Meeting on Electrical-Electronics and Biomedical Engineering and Computer Science (EBBT), İstanbul, Turkey, 24 - 26 April 2019
- V. **X-Ray Chest Image Classification by A Small-Sized Convolutional Neural Network**
Kesim E., Dokur Z., Ölmez T.
International Scientific Meeting on Electrical-Electronics and Biomedical Engineering and Computer Science (EBBT), İstanbul, Turkey, 24 - 26 April 2019
- VI. **Protein Fold Classification using Kohonen's Self-Organizing Map**
OZBUDAK O., Dokur Z.
2nd International Work-Conference on Bioinformatics and Biomedical Engineering (IWBBIO), Granada, Nicaragua, 7 - 09 April 2014, pp.903-911
- VII. **Classification of EEG in a steady state visual evoked potential based brain computer interface experiment**
İşcan Z., Özkaya Ö., Dokur Z.
10th International Conference on Adaptive and Natural Computing Algorithms, ICANNGA 2011, Ljubljana, Slovenia, 14 - 16 April 2011, pp.81-88
- VIII. **Modeling of Inhomogeneous Intensity Distribution of X-Ray Source in Radiographic Images**
YUKSEL A., Dokur Z., KORUREK M., Ölmez T.
23rd International Symposium on Computer and Information Sciences, İstanbul, Turkey, 27 - 29 October 2008, pp.515-519
- IX. **Segmentation of S1-S2 Sounds in Phonocardiogram Records Using Wavelet Energies**
YAMACLI M., Dokur Z., Ölmez T.
23rd International Symposium on Computer and Information Sciences (ISCIS), İstanbul, Turkey, 27 - 29 October 2008, pp.582-587
- X. **Segmentation of medical images by using wavelet transform and incremental self-organizing map**
Dokur Z., Iscan Z., Ölmez T.
5th Mexican International Conference on Artificial Intelligence (MICAI 2006), Apizaco, Mexico, 13 - 17 November 2006, vol.4293, pp.800-802
- XI. **Classification of heart sounds by using wavelet transform**
SAY O., Dokur Z., Ölmez T.
24th Annual International Conference of the Engineering-in-Medicine-and-Biology-Society/Annual Fall Meeting of the Biomedical-Engineering-Society (EMBS 2002 BMES), Texas, United States Of America, 23 - 26 October 2002, pp.128-129
- XII. **Classification of tissues in MR images by using discrete cosine transform**
Dokur Z., KURNAZ M., Ölmez T.
24th Annual International Conference of the Engineering-in-Medicine-and-Biology-Society/Annual Fall Meeting of the Biomedical-Engineering-Society (EMBS 2002 BMES), Texas, United States Of America, 23 - 26 October 2002, pp.1101-1102
- XIII. **Classification of MR and CT images using genetic algorithms**
Dokur Z., OLMEZ T., YAZGAN E.
10th Annual International Conference of the IEEE-Engineering-in-Medicine-and-Biology-Society, HONG KONG, PEOPLES R CHINA, 29 October - 01 November 1998, vol.20, pp.1418-1421
- XIV. **Classification of ECG waveforms using a novel neural network**

OLMEZ T., Dokur Z., YAZGAN E.

10th Annual International Conference of the IEEE-Engineering-in-Medicine-and-Biology-Society, HONG KONG, PEOPLES R CHINA, 29 October - 01 November 1998, vol.20, pp.1616-1619

XV. Classification of magnetic resonance images by using genetic algorithms

Dokur Z., OLMEZ T., YAZGAN E.

International Conference of the IEEE Engineering-in-Medicine-and-Biology-Society, Illinois, United States Of America, 30 October - 02 November 1997, vol.19, pp.1391-1393

XVI. Classification of ECG waveforms by using genetic algorithms

OLMEZ T., Dokur Z., YAZGAN E.

International Conference of the IEEE Engineering-in-Medicine-and-Biology-Society, Illinois, United States Of America, 30 October - 02 November 1997, vol.19, pp.92-94

XVII. MR image classification by the neural network and the genetic algorithms

OLMEZ T., Dokur Z., YAZGAN E.

18th Annual International Conference of IEEE Engineering-in-Medicine-and-Biology-Society, Amsterdam, Netherlands, 31 October - 03 November 1996, vol.18, pp.1140-1141

Supported Projects

Ölmez Z., Türer C., Project Supported by Higher Education Institutions, BGA MALZEMELERİN X-IŞINI GÖRÜNTÜLERİNDEKİ LEHİM HATALARININ DERİN SİNİR AĞI KULLANARAK TESPİTİ, 2019 - 2020

Ölmez Z., Project Supported by Higher Education Institutions, Protein Fold Classification Using Kokonen's Self-Organizing Map, 2014 - 2018

Ölmez Z., Project Supported by Higher Education Institutions, Makro ve Mikro Protein Yapıları Kullanılarak Proteinlerin Analiz Edilmesi ve Sınıflandırılması, 2013 - 2015

Ölmez Z., Project Supported by Higher Education Institutions, Beyin Bilgisayar Arayüzleri Tasarımına Uygun Algoritmaların Geliştirilmesi, 2010 - 2013

Ölmez Z., Project Supported by Higher Education Institutions, İnsan EEG(elektroensefelogram) Verilerini İstatistiksel Yöntemler ve Yapay Sinir Ağları Kullanarak Analiz Eden,Yorumlayan Sistemler, 2009 - 2011

Ölmez Z., Project Supported by Higher Education Institutions, Biyomedikal Görüntülerde Doku Analizi, 2004 - 2005

Activities in Scientific Journals

Neural Processing Letters, Committee Member, 2008 - Continues

Scientific Refereeing

Turkish Journal of Electrical Engineering and Computer Sciences, SCI Journal, December 2017

Turkish Journal of Electrical Engineering and Computer Sciences, SCI Journal, December 2017

Turkish Journal of Electrical Engineering and Computer Sciences, SCI Journal, November 2017
November 2017

Simulation: Transactions of the Society for Modeling and Simulation International, SCI Journal, July 2017

Turkish Journal of Electrical Engineering and Computer Sciences, SCI Journal, February 2017

Scientific Research / Working Group Memberships

Tıbbi Bilişim ve Sistemler Çalışma Grubu, İSTANBUL TEKNİK ÜNİVERSİTESİ, Turkey, <https://calismagruplari.itu.edu.tr/>,
2009 - Continues

Metrics

Publication: 58

Citation (WoS): 986

Citation (Scopus): 1196

H-Index (WoS): 16

H-Index (Scopus): 18

Non Academic Experience

Other Public Institution, TRT İstanbul Radyosu

TRT İstanbul Radyosu

Business Establishment Private

META Elektronik A.Ş.

Business Establishment Private, IBM International Business Machines Turkey

IBM Türk A.Ş.