# Assoc. Prof. Gülşen Taşkın Kaya

## Personal Information

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## Education Information

Doctorate, Istanbul Technical University, Bilişim Enstitüsü, Hesaplamalı Bilim Ve Mühendislik Anabilim Dalı, Turkey 2003
- 2011
Postgraduate, Istanbul Technical University, Bilişim Enstitüsü, Hesaplamalı Bilim Ve Mühendislik Anabilim Dalı, Turkey
2001 - 2003
Undergraduate, Istanbul Technical University, İnşaat Fakültesi, Jeodezi Ve Fotogrametri Mühendisliği Bölümü, Turkey
1998 - 2001
Associate Degree, Yildiz Technical University, Technical Vacational School Of Higher Education, Harita Pr., Turkey 1996 -
1998

## Foreign Languages

English

## Dissertations

Doctorate, Support Vector Selection and Adaptation and Its Application to Earthquake Damage Assessment, İstanbul
Teknik Üniversitesi, Bilişim Enstitüsü, Hesaplamalı Bilim Ve Mühendislik Anabilim Dalı, 2011
Postgraduate, Fay değiştirgenlerinin belirlenmesinde gps tabanlı bir jeodezik ağ geometrisinin eniyilemesi, İstanbul
Teknik Üniversitesi, Bilişim Enstitüsü, Hesaplamalı Bilim Ve Mühendislik Anabilim Dalı, 2003

## Research Areas

Technical Sciences, Geotechnical Engineering, Remote sensing, Image Processing, Computer Sciences, Artificial
Intelligence, Computer Learning and Pattern Recognition, Pattern Recognition and Image Processing

## Academic Titles / Tasks

Assistant Professor, Istanbul Technical University, Deprem Mühendisliği Ve Afet Yönetimi Enstitüsü, 2018 - Continues
Assistant Professor, Istanbul Technical University, Deprem Mühendisliği Ve Afet Yönetimi Enstitüsü, 2012 - 2018
Lecturer PhD, Istanbul Technical University, Bilgisayar Ve Bilişim Fakültesi, Bilgisayar Mühendisliği Bölümü, 2011 - 2012

Research Assistant, Istanbul Technical University, Bilişim Enstitüsü, Hesaplamalı Bilim Ve Mühendislik Anabilim Dalı, 2001 - 2011

Research Assistant, Purdue University, School Of Electric And Computer Engineering, 2008 - 2009

# Published journal articles indexed by SCI, SSCI, and AHCI

I. **There Are No Data Like More Data: <italic>Datasets for deep learning in Earth observation</italic>**
Schmitt M., Ahmadi S. A., Xu Y., Taskin G., Verma U., Sica F., Haensch R.
IEEE Geoscience and Remote Sensing Magazine, vol.11, no.3, pp.63-97, 2023 (SCI-Expanded)

II. **Computer Vision for Earth Observation - The First IEEE GRSS Image Analysis and Data Fusion School [Technical Committees]**
Vivone G., Lunga D., Sica F., Taskin G., Verma U., Hansch R.
IEEE Geoscience and Remote Sensing Magazine, vol.11, no.2, pp.95-100, 2023 (SCI-Expanded)

III. **Machine learning-based predictive models for equivalent damping ratio of RC shear walls**
Yaghoubi S. T., Değer Z., Taşkın Kaya G., Sütcü F.
BULLETIN OF EARTHQUAKE ENGINEERING, vol.21, pp.293-318, 2023 (SCI-Expanded)

IV. **A Scalable Unsupervised Feature Selection with Orthogonal Graph Representation for Hyperspectral Images**
Taskin G., Fatih Yetkin E., Camps-Valls G.
IEEE Transactions on Geoscience and Remote Sensing, vol.61, 2023 (SCI-Expanded)

V. **Explainable Artificial Intelligence for Cotton Yield Prediction With Multisource Data**
Çelik M. F., Işık M. S., Taşkın G., Erten E., Camps-Valls G.
IEEE Geoscience and Remote Sensing Letters, vol.20, 2023 (SCI-Expanded)

VI. **An earthquake damage identification approach from VHR image using mathematical morphology and machine learning**
Alatas E. O., Taşkın Kaya G.
NEURAL COMPUTING & APPLICATIONS, vol.34, no.21, pp.18757-18771, 2022 (SCI-Expanded)

VII. **A novel GPR-based prediction model for cyclic backbone curves of reinforced concrete shear walls**
Değer Z., Taşkın Kaya G.
ENGINEERING STRUCTURES, vol.255, 2022 (SCI-Expanded)

VIII. **Extension to manifold learning methods via advanced regression methods**
Taşkın Kaya G.
JOURNAL OF THE FACULTY OF ENGINEERING AND ARCHITECTURE OF GAZI UNIVERSITY, vol.37, no.1, pp.485-495, 2022 (SCI-Expanded)

IX. **A Feature Selection Method via Graph Embedding and Global Sensitivity Analysis**
Taşkın Kaya G.
IEEE Geoscience and Remote Sensing Letters, vol.19, 2022 (SCI-Expanded)

X. **Graph Embedding via High Dimensional Model Representation for Hyperspectral Images**
Taşkın Kaya G., Camps-Valls G.
IEEE TRANSACTIONS ON GEOSCIENCE AND REMOTE SENSING, vol.60, 2022 (SCI-Expanded)

XI. **An Adaptive Affinity Matrix Optimization for Locality Preserving Projection via Heuristic Methods for Hyperspectral Image Analysis**
Taşkın Kaya G., Ceylan O.
IEEE JOURNAL OF SELECTED TOPICS IN APPLIED EARTH OBSERVATIONS AND REMOTE SENSING, vol.12, no.12, pp.4690-4697, 2019 (SCI-Expanded)

XII. **An Out-of-Sample Extension to Manifold Learning via Meta-Modeling**
Taşkın Kaya G., Crawford M. M.
IEEE TRANSACTIONS ON IMAGE PROCESSING, vol.28, no.10, pp.5227-5237, 2019 (SCI-Expanded)

XIII. **Selection of PolSAR Observables for Crop Biophysical Variable Estimation With Global Sensitivity**

Analysis

Erten E., Taşkın Kaya G., Lopez-Sanchez J. M.

IEEE GEOSCIENCE AND REMOTE SENSING LETTERS, vol.16, no.5, pp.766-770, 2019 (SCI-Expanded)

XIV.  **Feature Selection Based on High Dimensional Model Representation for Hyperspectral Images**

Taşkın Kaya G., Kaya H., Bruzzone L.

IEEE TRANSACTİONS ON IMAGE PROCESSİNG, vol.26, no.6, pp.2918-2928, 2017 (SCI-Expanded)

XV.  **The Second GRSS Turkey Chapter Summer School [Chapters]**

Taşkın Kaya G., Erten E., Ertürk A., Taşdemir K.

IEEE GEOSCİENCE AND REMOTE SENSİNG MAGAZİNE, vol.4, no.3, pp.76-78, 2016 (SCI-Expanded)

XVI.  **The Second GRSS Turkey Chapter Summer School**

Erten E., Taskin G., ERTÜRK A., TAŞDEMİR K.

IEEE GEOSCIENCE AND REMOTE SENSING MAGAZINE, vol.4, no.3, pp.76-78, 2016 (SCI-Expanded)

XVII.  **Paddy-Rice Phenology Classification Based on Machine-Learning Methods Using Multitemporal Co-Polar X-Band SAR Images**

Kucuk C., TASKIN G., Erten E.

IEEE JOURNAL OF SELECTED TOPICS IN APPLIED EARTH OBSERVATIONS AND REMOTE SENSING, vol.9, no.6, pp.2509-2519, 2016 (SCI-Expanded)

XVIII.  **Earthquake-induced damage classification from postearthquake satellite image using spectral and spatial features with support vector selection and adaptation**

Taskin G., Ersoy O. K., Kamaşak M. E.

JOURNAL OF APPLIED REMOTE SENSING, vol.9, 2015 (SCI-Expanded)

XIX.  **A Hybrid Model for Classification of Remote Sensing Images With Linear SVM and Support Vector Selection and Adaptation**

Kaya G.

IEEE JOURNAL OF SELECTED TOPICS IN APPLIED EARTH OBSERVATIONS AND REMOTE SENSING, vol.6, no.4, pp.1988-1997, 2013 (SCI-Expanded)

## Articles Published in Other Journals

I.  **Manifold Öğrenme Yöntemleri ile Hiperspektral Verilerin Sınıflandırmasında Karşılaşılan Zorluklar ve Çözüm Yöntemleri**

TAŞKIN KAYA G.

Harita Dergisi, 2018 (Peer-Reviewed Journal)

II.  **Relations Between the Matrix Algebraic Factorized Type Solutions at Different Singular Points for Generalized Hypergeometric Functions of Type p 1Fp**

METİN D., TAŞKIN KAYA G.

Applied Numerical Analysis Computational Mathematics, vol.2, no.2, pp.227-237, 2005 (Peer-Reviewed Journal)

## Books & Book Chapters

I.  **A Review on Multi-temporal Earthquake Damage Assessment Using Satellite Images**

TAŞKIN KAYA G., ERTEN E., Alataş E. O.

in: Change Detection and Image Time Series Analysis 2: Supervised Methods, Abdourrahmane M. atto, Francesca Bovolo, Lorenzo Bruzzone, Editor, WILEY, pp.155-205, 2021

## Refereed Congress / Symposium Publications in Proceedings

I.  **Evaluation of Modern Deep Learning Architectures in Remote Sensing Scene Classification**

Taskin G., Kaya H.

10th International Conference on Recent Advances in Air and Space Technologies, RAST 2023, İstanbul, Turkey, 7 - 09 June 2023

II. **Informative Earth Observation Variables for Cotton Yield Prediction Using Explainable Boosting Machine**

Çelik M. F., Serkan Isik M., Erten E., Taskin G.

2023 IEEE International Geoscience and Remote Sensing Symposium, IGARSS 2023, California, United States Of America, 16 - 21 July 2023, vol.2023-July, pp.3542-3545

III. **An explainable meta-modeling approach to investigate the energy behavior of reinforced concrete structural walls**

DEĞER Z., TAŞKIN KAYA G.

12th US National Conference on Earthquake Engineering, Salt Lake City, United States Of America, 27 June - 01 July 2022

IV. **Fully Unsupervised Binary Change Detection for Hyperspectral Images Using Laplacian Eigenmaps and Clustering**

Taşkın Kaya G., ERTÜRK A.

2022 IEEE Mediterranean and Middle-East Geoscience and Remote Sensing Symposium, M2GARSS 2022, Virtual, Online, Turkey, 7 - 09 March 2022, pp.37-40

V. **A Model Distillation Approach for Explaining Black-Box Models for Hyperspectral Image Classification**

Taşkın Kaya G.

2022 IEEE International Geoscience and Remote Sensing Symposium, IGARSS 2022, Kuala-Lumpur, Malaysia, 17 - 22 July 2022, vol.2022-July, pp.3592-3595

VI. **Investigation of Influential Parameters on Energy Dissipation Capacity of RC Shear Walls Based on Machine Learning Methods**

Topaloğlu B., TAŞKIN KAYA G., SÜTCÜ F., DEĞER Z.

6th International Earthquake Engineering and Seismology Conference – 6ICEES, Kocaeli, Turkey, 13 October 2021

VII. **An interpretable model to predict seismic failure mode of reinforced concrete shear walls**

DEĞER Z., TAŞKIN KAYA G.

EERI Annual Meeting 2021, United States Of America, 23 - 25 March 2021

VIII. **Optimization of Graph Affinity Matrix with Heuristic Methods in Dimensionality Reduction of Hypespectral Images**

CEYLAN O., TAŞKIN KAYA G.

2019 27th Signal Processing and Communications Applications Conference (SIU), Sivas, Turkey, Turkey, 24 - 26 April 2019

IX. **GRAPH OPTIMIZED LOCALITY PRESERVING PROJECTION VIA HEURISTIC OPTIMIZATION ALGORITHMS**

CEYLAN O., TAŞKIN KAYA G.

IEEE Geoscience and Remote Sensing Symposium, 28 July - 02 August 2019

X. **Attribute Profiles in Earthquake Damage Identification from Very High Resolution Post Event Image**

Alatas E. O., TAŞKIN KAYA G.

IGARSS 2019 - 2019 IEEE International Geoscience and Remote Sensing Symposium, Yokohama, Japan, 28 July - 02 August 2019

XI. **Multi-Output Regressions For Estimating Canola Biophysical Parameters From PolSAR Data**

Şahin Z. M., ERTEN E., TAŞKIN KAYA G.

2019 8th International Conference on Agro-Geoinformatics (Agro-Geoinformatics), Istanbul, Turkey, 16 - 19 July 2019

XII. **Detection of Shallow Water Area with Machine Learning Algorithms**

YAĞMUR N., TAŞKIN KAYA G., MUSAOĞLU N.

ISPRS GEOSPATIAL WEEK, 10 - 14 June 2019

XIII. **COMPARISON OF OBJECT BASED MACHINE LEARNING CLASSIFICATIONS OF PLANETSCOPE AND**

WORLDVIEW-3 SATELLITE IMAGES FOR LAND USE / COVER
Tuzcu A., Taşkın Kaya G., Musaoğlu N.
ISPRS Geospatial Week 2019, Enschede, Netherlands, 10 June - 14 July 2019, pp.1887-1892

XIV. GLOBAL SENSITIVITY ANALYSIS OF POLARIMETRIC DATA TO RETRIEVE BIOPHYSICAL PARAMETERS OF CANOLA AND BARLEY CROPS
Erten E., Taskin G., Lopez-Sanchez J. M.
38th IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Valencia, Spain, 22 - 27 July 2018, pp.3836-3839

XV. ACTIVE MANIFOLD LEARNING FOR HYPERSPECTRAL IMAGE CLASSIFICATION
Zhang Z., Taşkın Kaya G., Crawford M. M.
38th IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Valencia, Spain, 22 - 27 July 2018, pp.2587-2590

XVI. Using single-and multi-target regression to estimate biophysical parameters of crops
Şahin Z. M., ERTEN E., MUSAOĞLU N., CANBAY D. E., TAŞKIN KAYA G.
2018 26th Signal Processing and Communications Applications Conference (SIU), İzmir, Turkey, 2 - 05 May 2018

XVII. EXTENDING OUT-OF-SAMPLE MANIFOLD LEARNING VIA META-MODELLING TECHNIQUES
Taşkın Kaya G., Crawford M.
IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Texas, United States Of America, 23 - 28 July 2017, pp.562-565

XVIII. A COMPARISON OF DIFFERENTIAL EVOLUTION AND HARMONY SEARCH METHODS FOR SVM MODEL SELECTION IN HYPERSPECTRAL IMAGE CLASSIFICATION
Ceylan O., Taskin G.
36th IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Beijing, China, 10 - 15 July 2016, pp.485-488

XIX. A COMPREHENSIVE EVALUATION OF FEATURE SELECTION ALGORITHMS IN HYPERSPECTRAL IMAGE CLASSIFICATION
Vijouyeh H. G., Taskin G.
36th IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Beijing, China, 10 - 15 July 2016, pp.489-492

XX. SVM Parameter Selection Based on Harmony Search with an Application to Hyperspectral Image Classification
Ceylan O., Taşkın Kaya G.
24th Signal Processing and Communication Application Conference (SIU), Zonguldak, Turkey, 16 - 19 May 2016, pp.657-660

XXI. Use of High Dimensional Model Representation in Dimensionality Reduction: Application to Hyperspectral Image Classification
Taşkın Kaya G.
22nd SPIE Conference on Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XXII, Maryland, United States Of America, 18 - 21 April 2016, vol.9840

XXII. SVM Model Selection by High Dimensional Model Representation
KAYA H., TAŞKIN KAYA G., OKAN K E.
IEEE International Geosciences andRemote Sensing Symposium (IGARSS'13), 21 - 26 July 2013

XXIII. Approximation Scheme for Multivariate Hypersurface Fitting Problems
TAŞKIN KAYA G., SAYGIN H., Metin D.
International Symposium on GeographicInformation Systems, İstanbul, Turkey, 23 - 26 September 2002

XXIV. Least Squares Curve Fitting via High Dimensional Model Representation for Digitial Elevation Model
TAŞKIN KAYA G., SAYGIN H., Metin D., YANALAK M.
International Symposium on Geographic Information Systems, İstanbul, Turkey, 23 - 26 September 2002

XXV. Change detection in very high resolution imagery based on dynamic time warping An implementation for Haiti earthquake damage assessment
TAŞKIN KAYA G., Huseyin K., Okan K E.

2011 6th International Workshop on the Analysis of Multi-temporal Remote Sensing Images (Multi-Temp), Trento, Italy, 12 - 14 July 2011, pp.13-16

XXVI. **Spectral and spatial classification of earthquake images by support vector selection and adaptation**
TAŞKIN KAYA G., Okan K E., KAMAŞAK M. E.
2010 International Conference of Soft Computing and Pattern Recognition, Cergy-Pontoise, France, France, 7 - 10 December 2010, vol.194

XXVII. **Random Data Partitioning via Generalized High Dimensional Model Representation for Digital Elevation Models by Using Cubic Spline Interpolation**
TAŞKIN KAYA G., Metin D.
International Conference of Numerical Analysis and AppliedMathematics (ICNAAM 2005), 16 - 18 September 2005

XXVIII. **Support Vector Selection and Adaptation**
TAŞKIN KAYA G., Ersoy O. K., KAMAŞAK M. E.
International Symposium on Innovations in IntelligentSystems and Applications, 29 June - 01 July 2009

XXIX. **Relations Between the Matrix Algebraic Factorized Type Solutions at Different Singular Points for Generalized Hypergeometric Functions of Type p 1Fp**
Metin D., TAŞKIN KAYA G.
International Conference of Numerical Analysis and AppliedMathematics (ICNAAM 2004), Chalkis, Greece, 10 - 14 September 2004

XXX. **Bilişim Türkçesi**
Sevda Ü., TAŞKIN KAYA G.
Akademik Bilişim, Trabzon, Turkey, 11 - 13 February 2004

XXXI. **Optimization of GPS Observation Strategy for Improvement of Tectonic Measurements**
TAŞKIN KAYA G., Sevda Ü., ERGİNTAV S., SAYGIN H.
The IASTED International Conference on Applied Simulation and Modelling, Marbella, Spain, 3 - 05 September 2003

XXXII. **İstanbul Teknik Üniversitesi nde Temel Bilişim Eğitimi**
TAŞKIN KAYA G., Sevda Ü., Metin D.
Akademik Bilişim, Adana, Turkey, 3 - 05 February 2003

## Supported Projects

Taşkın Kaya G., Project Supported by Higher Education Institutions, A COMPARISON OF DIFFERENTIAL EVOLUTION AND HARMONY SEARCH METHODS FOR SVM MODEL SELECTION IN HYPERSPECTRAL IMAGE CLASSIFICATION, 2016 - 2018
Taşkın Kaya G., Project Supported by Higher Education Institutions, A NOVEL METHOD FOR FEATURE SELECTİON WİTH RANDOM SAMPLİNG HDMR AND ITS APPLİCATİON TO HYPERSPECTRAL IMAGE CLASSIFİCATİON, 2015 - 2018
Taşkın Kaya G., Project Supported by Higher Education Institutions, Recursive Feature Selection Based on Non-parallel SVMs and Its Application to Hyperspectral Image Classification, 2014 - 2018
Taşkın Kaya G., Project Supported by Higher Education Institutions, Yüksek Boyutlu Model Gösterimi ile DVM Yöntemi Model Seçimi, 2013 - 2018
Taşkın Kaya G., Project Supported by Higher Education Institutions, fEATURE sELECTİON BY hİGH dİMENSİONAL mODEL rEPRESENTATİON AND ITS APPLİCATİON TO REMOTE SENSİNG, 2012 - 2018

## Scientific Refereeing

IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, SCI Journal, January 2012
IEEE Transactions on Geoscience and Remote Sensing, SCI Journal, January 2011

## Metrics

Publication: 56
Citation (WoS): 84
Citation (Scopus): 114
H-Index (WoS): 4
H-Index (Scopus): 5