

## Assoc. Prof. ERDEM AKAGÜNDÜZ

### Personal Information

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### International Researcher IDs

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Publons / Web Of Science ResearcherID: W-1788-2018

ScopusID: 8331988500

Yoksis Researcher ID: 233834

### Education Information

Doctorate, Middle East Technical University, Graduate School of Natural and Applied Sciences, Elektrik Elektronik Mühendisliği, Turkey 2004 - 2011

Postgraduate, Middle East Technical University, Graduate School of Natural and Applied Sciences, Elektrik Elektronik Mühendisliği, Turkey 2001 - 2004

Undergraduate, Middle East Technical University, Faculty of Engineering, Department of Electrical and Electronics Engineering, Turkey 1997 - 2001

### Dissertations

Doctorate, 3D object recognition using scale-space of curvatures, Middle East Technical University, Graduate School of Natural and Applied Sciences, Elektrik Elektronik Mühendisliği Bölümü, 2011

Postgraduate, Simulation of Turkish lip motion and facial expressions in A 3D enviroment and synchronization with a Turkish speech engine, Middle East Technical University, Graduate School of Natural and Applied Sciences, Elektrik Elektronik Mühendisliği, 2004

### Research Areas

Information Systems, Communication and Control Engineering, Computer Sciences, Electrical and Electronics Engineering, Engineering and Technology

### Academic Titles / Tasks

Associate Professor, Middle East Technical University, Graduate School of Informatics, Modeling and Simulation, 2021 - Continues

Assistant Professor, Cankaya University, Faculty Of Engineering, Department Of Electrical And Electronics Engineering, 2018 - 2021

Research Assistant PhD, University of York, 2016 - 2017

Research Assistant, University of York, 2008 - 2009

Research Assistant, Middle East Technical University, Faculty of Engineering, Department of Electrical and Electronics Engineering, 2001 - 2008

## Courses

FOUNDATIONS OF DEEP LEARNING, Postgraduate, 2023 - 2024  
EMBEDDED SYSTEMS, Postgraduate, 2020 - 2021  
SEQUENCE MODELS IN MULTIMEDIA, Doctorate, 2021 - 2022  
FOUNDATIONS OF DEEP LEARNING, Doctorate, 2021 - 2022  
Image Processing Algorithms, Postgraduate, 2020 - 2021  
RECURRENT NEURAL NETWORKS, Postgraduate, 2020 - 2021  
MOTION CAPTURE, ANALYSIS AND SYNTHESIS, Postgraduate, 2020 - 2021  
CONVOLUTIONAL NEURAL NETWORKS, Postgraduate, 2020 - 2021  
MICROPROCESSORS, Undergraduate, 2020 - 2021

## Advising Theses

Sürer E., Akagündüz E., Deep Learning-Based Object Tracking System by Using Visual and Thermal Infrared Fusion, Postgraduate, A.TÜRKOĞLU(Student), 2023  
Sürer E., Akagündüz E., A Transformer-Based Approach for Fusing Infrared and Visible Band Images, Postgraduate, A.ERDOĞAN(Student), 2023  
Akagündüz E., Çifdalöz O., Machine learning applications in control systems, Postgraduate, D.EREN(Student), 2023  
Akagündüz E., Çifdalöz O., DEEP LEARNING-BASED APPLICATIONS OF CONTROL ENGINEERING, Postgraduate, S.MERAL(Student), 2023  
Akagündüz E., Derin öğrenme tabanlı kızıl ötesi hedef tespiti, Postgraduate, K.İREM(Student), 2023  
AKAGÜNDÜZ E., Machine learning of accelerogram data for analyses, modeling and prediction, Postgraduate, M.ÇIKIŞ(Student), 2022  
AKAGÜNDÜZ E., Detection of anomalous fund transfers between different banks, Postgraduate, A.MERT(Student), 2022  
AKAGÜNDÜZ E., Efficient implementation of convolutional neural networks on embedded devices, Postgraduate, B.YILMAZ(Student), 2022  
Akagündüz E., Uslu İ. B., A data collection system design for hand gestures, Postgraduate, E.AKAN(Student), 2019

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

- I. **A survey on infrared image & video sets**  
Danaci K. I., AKAGÜNDÜZ E.  
Multimedia Tools and Applications, vol.83, no.6, pp.16485-16523, 2024 (SCI-Expanded)
- II. **LoRA-NIR: Low-Rank Adaptation of Vision Transformers for Remote Sensing With Near-Infrared Imagery**  
ÜLKÜ İ., TANRIÖVER Ö. Ö., AKAGÜNDÜZ E.  
IEEE GEOSCIENCE AND REMOTE SENSING LETTERS, vol.21, 2024 (SCI-Expanded)
- III. **A Survey on Deep Learning-based Architectures for Semantic Segmentation on 2D Images**  
ÜLKÜ İ., AKAGÜNDÜZ E.  
APPLIED ARTIFICIAL INTELLIGENCE, vol.36, no.1, 2022 (SCI-Expanded)
- IV. **Deep Semantic Segmentation of Trees Using Multispectral Images**  
ÜLKÜ İ., AKAGÜNDÜZ E., Ghamisi P.  
IEEE JOURNAL OF SELECTED TOPICS IN APPLIED EARTH OBSERVATIONS AND REMOTE SENSING, vol.15, pp.7589-7604, 2022 (SCI-Expanded)
- V. **Dynamical system parameter identification using deep recurrent cell networks Which gated recurrent unit and when?**  
AKAGÜNDÜZ E., Cifdaloz O.  
NEURAL COMPUTING & APPLICATIONS, vol.33, no.23, pp.16745-16757, 2021 (SCI-Expanded)

- VI. **Defining Image Memorability Using the Visual Memory Schema**  
Akagunduz E., Bors A. G., Evans K. K.  
IEEE TRANSACTIONS ON PATTERN ANALYSIS AND MACHINE INTELLIGENCE, vol.42, no.9, pp.2165-2178, 2020  
(SCI-Expanded)
- VII. **Filter design for small target detection on infrared imagery using normalized-cross-correlation layer**  
Demir H. S., Akagunduz E.  
TURKISH JOURNAL OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCES, vol.28, no.1, pp.302-317, 2020  
(SCI-Expanded)
- VIII. **Silhouette Orientation Volumes for Efficient Fall Detection in Depth Videos**  
Akagunduz E., Aslan M., Sengur A., Wang H., Ince M. C.  
IEEE JOURNAL OF BIOMEDICAL AND HEALTH INFORMATICS, vol.21, no.3, pp.756-763, 2017 (SCI-Expanded)
- IX. **Shape recognition using orientational and morphological scale-spaces of curvatures**  
Akagunduz E.  
IET COMPUTER VISION, vol.9, no.5, pp.750-757, 2015 (SCI-Expanded)
- X. **Anatomical and dynamic volume spline model applied to facial soft tissue**  
ULUSOY İ., Akagunduz E., Yirci M.  
COMPUTER ANIMATION AND VIRTUAL WORLDS, vol.22, no.6, pp.543-554, 2011 (SCI-Expanded)
- XI. **Use of the dynamic volume spline method to predict facial soft tissue changes associated with orthognathic surgery**  
ULUSOY PARNAS İ., AKAGÜNDÜZ E., Sabuncuoglu F., GÖRGÜLÜ S., ÜÇOK C. Ö.  
ORAL SURGERY ORAL MEDICINE ORAL PATHOLOGY ORAL RADIOLOGY AND ENDODONTOLOGY, vol.110, no.5, 2010 (SCI-Expanded)
- XII. **3D object recognition from range images using transform invariant object representation**  
AKAGÜNDÜZ E., ULUSOY PARNAS İ.  
ELECTRONICS LETTERS, vol.46, no.22, pp.1499-1500, 2010 (SCI-Expanded)
- XIII. **3D face detection using transform invariant features**  
AKAGÜNDÜZ E., ULUSOY PARNAS İ.  
ELECTRONICS LETTERS, vol.46, no.13, pp.905-906, 2010 (SCI-Expanded)
- XIV. **Estimation of parameters for dynamic volume spline models**  
ULUSOY PARNAS İ., AKAGÜNDÜZ E., WEBER G. W.  
INVERSE PROBLEMS IN SCIENCE AND ENGINEERING, vol.18, no.4, pp.499-519, 2010 (SCI-Expanded)

## Articles Published in Other Journals

- I. **A Hybrid Framework for Matching Printing Design Files to Product Photos**  
Kaplan A., Akagündüz E.  
Balkan Journal of Electrical and Computer Engineering, vol.8, no.2, pp.170-180, 2020 (Peer-Reviewed Journal)

## Refereed Congress / Symposium Publications in Proceedings

- I. **Enhancing Visual Question Answering through Question-Driven Image Captions as Prompts**  
ÖZDEMİR YILDIRIM Ö., AKAGÜNDÜZ E.  
2024 IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops, CVPRW 2024, Washington, United States Of America, 16 - 22 June 2024, pp.1562-1571
- II. **Enhancing Address Data Integrity using Transformer-Based Language Models Dönüştürücü Tabanlı Dil Modelleri Kullanarak Adres Veri Bütünlüğünün Geliştirilmesi**  
Kürklü Ö. F., AKAGÜNDÜZ E.  
32nd IEEE Conference on Signal Processing and Communications Applications, SIU 2024, Mersin, Turkey, 15 - 18 May 2024

- III. **EANet: Enhanced Attribute-Based RGBT Tracker Network**  
Türkoğlu A., AKAGÜNDÜZ E.  
The 16th International Conference on Machine Vision ICMV2023, ERİVAN, Armenia, 15 November 2023
- IV. **Sequence Models for Drone vs Bird Classification**  
Akyön F. Ç., Akagündüz E., Altınuç S. O., Temizel A.  
16th International Conference on Machine Vision (ICMV 2023), Yerevan, Armenia, 15 - 18 November 2023
- V. **Semantic Segmentation of Crop Areas in Remote Sensing Imagery using Spectral Indices and Multiple Channels**  
ÜLKÜ İ., AKAGÜNDÜZ E.  
15th International Conference on Machine Vision, ICMV 2022, Rome, Italy, 18 - 20 November 2022, vol.12701
- VI. **Detecting Driver Drowsiness as an Anomaly Using LSTM Autoencoders**  
Tüfekci G., Kayabaşı A., AKAGÜNDÜZ E., ULUSOY İ.  
17th European Conference on Computer Vision, ECCV 2022, Tel-Aviv-Yafo, Israel, 23 - 27 October 2022, vol.13806 LNCS, pp.549-559
- VII. **Augmentation of Atmospheric Turbulence Effects on Thermal Adapted Object Detection Models**  
Uzun E., Dursun A. A., Akagündüz E.  
2022 IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW), Louisiana, United States Of America, 19 - 20 June 2022, pp.240-247
- VIII. **A data collection system design for hand gestures**  
Akan E., AKAGÜNDÜZ E., Uslu I. B.  
2021 International Conference on INnovations in Intelligent SysTems and Applications, INISTA 2021, Kocaeli, Turkey, 25 - 27 August 2021
- IX. **Comparison of Single Channel Indices for U-Net Based Segmentation of Vegetation in Satellite Images**  
Ulku I., Barmpoutis P., Stathaki T., Akagunduz E.  
12th International Conference on Machine Vision (ICMV), Amsterdam, Netherlands, 16 - 18 November 2019, vol.11433
- X. **Representing Earthquake Accelerogram Records for CNN Utilization**  
Cikis M., Tileyoglu S., Akagunduz E.  
28th Signal Processing and Communications Applications Conference (SIU), ELECTR NETWORK, 5 - 07 October 2020
- XI. **Infrared Target Detection using Shallow CNNs**  
Uzun E., Aksoy T., Akagunduz E.  
28th Signal Processing and Communications Applications Conference (SIU), ELECTR NETWORK, 5 - 07 October 2020
- XII. **Machine Learning-based Silence Detection in Call Center Telephone Conversations**  
Iheme L. O., Ozan S., Akagunduz E.  
International Conference on Artificial Intelligence and Data Processing (IDAP), Malatya, Turkey, 21 - 22 September 2019
- XIII. **An Analysis on the Effect of Skip Connections in Fully Convolutional Networks for License Plate Localization**  
Uzun E., Akagunduz E.  
27th Signal Processing and Communications Applications Conference (SIU), Sivas, Turkey, 24 - 26 April 2019
- XIV. **Comparison of Infrared and Visible Imagery for Object Tracking: Toward Trackers with Superior IR Performance**  
Gundogdu E., Ozkan H., Demir H. S., Ergezer H., Akagunduz E., Pakin S. K.  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Massachusetts, United States Of America, 7 - 12 June 2015
- XV. **Vessel Classification on UAVs using Inertial Data and IR Imagery**  
Demir H. S., Akagunduz E., Pakin S. K.  
23rd Signal Processing and Communications Applications Conference (SIU), Malatya, Turkey, 16 - 19 May 2015,

pp.499-502

**XVI. Scale Invariant Sillhouette Features**

AKAGÜNDÜZ E.

21st Signal Processing and Communications Applications Conference (SIU), CYPRUS, 24 - 26 April 2013

**XVII. Open and Interoperable Maritime Surveillance Framework Set to Improve Sea-Borders Control**

Erbas C., Cetin F. T., Yilmaz B., Akagunduz E., Kabak Y., Bulca A.

7th Security Research Conference Future Security, Bonn, Germany, 4 - 06 September 2012, vol.318, pp.359-360

**XVIII. Comparison of HK and SC Curvature Descriptions in a Scale-Space for the Purpose of 3D Object Recognition**

AKAGÜNDÜZ E., ULUSOY İ.

IEEE 17th Signal Processing and Communications Applications Conference, Antalya, Turkey, 9 - 11 April 2009, pp.218-221

**XIX. 3D Data Processing for Enhancement of Face Scanner Data**

BOZKURT N., HALICI U., ULUSOY PARNAS İ., AKAGUNDUZ E.

IEEE 17th Signal Processing and Communications Applications Conference, Antalya, Turkey, 9 - 11 April 2009, pp.690-693

**XX. SCALE-SPACE APPROACH FOR THE COMPARISON OF HK AND SC CURVATURE DESCRIPTIONS AS APPLIED TO OBJECT RECOGNITION**

Akagunduz E., Eskizara O., ULUSOY İ.

16th IEEE International Conference on Image Processing, Cairo, Egypt, 7 - 10 November 2009, pp.413-416

**XXI. 3D Object Recognition by Geometric Hashing**

Eskizara O., AKAGÜNDÜZ E., ULUSOY İ.

IEEE 17th Signal Processing and Communications Applications Conference, Antalya, Turkey, 9 - 11 April 2009, pp.214-217

**XXII. 3D Face Representation Using Scale and Transform Invariant Features**

Akaguenduez E., ULUSOY İ.

IEEE 16th Signal Processing and Communications Applications Conference, Aydın, Turkey, 20 - 22 April 2008, pp.14-17

**XXIII. 3D Face Reconstruction Using Stereo Images and Structured Light**

OZTURK A. O., HALICI U., ULUSOY PARNAS İ., AKAGUNDUZ E.

IEEE 16th Signal Processing and Communications Applications Conference, Aydın, Turkey, 20 - 22 April 2008, pp.878-881

**XXIV. A physically-based facial skin model to simulate facial expressions on digitally scanned 3D models**

AKAGUNDUZ E., ULUSOY PARNAS İ., BOZKURT N., HALICI U.

22nd International Symposium on Computer and Information Sciences, Ankara, Turkey, 7 - 09 November 2007, pp.152-156

**XXV. Scale invariant representation of 2.5D data**

AKAGUNDUZ E., ULUSOY PARNAS İ., BOZKURT N., HALICI U.

IEEE 15th Signal Processing and Communications Applications Conference, Eskişehir, Turkey, 11 - 13 June 2007, pp.438-441

**XXVI. 3D object representation using transform and scale invariant 3D features**

AKAGÜNDÜZ E., ULUSOY İ.

11th IEEE International Conference on Computer Vision, Rio de Janeiro, Brazil, 14 - 21 October 2007, pp.55-62

## Supported Projects

AKAGÜNDÜZ E., TÜRKÖĞLU A., Project Supported by Higher Education Institutions, Kızılötesi ve Görünür Bant

Kaynaştırma Kullanarak Derin Öğrenme Tabanlı ve Gerçek Zamanlı Görsel Takip Sistemi, 2022 - 2024

Tileylioğlu S., Akagündüz E., TUBİTAK Project, Kuvvetli Yer Hareketi İstasyonu Kayıtları Kullanarak Derin Öğrenme ve

Makine Öğrenme Tabanlı Dinamik Zemin ve Deprem Parametresi Kestirimi (TUBİTAK 1001 - Araştırmacı), 2021 - 2024

Erbař C., Akagündüz E., TUBITAK Project, Developing a Machine Reasoning Engine for Artificial General Intelligence (TUBITAK 2232 - Arařtırmacı), 2020 - 2022

Aselsan A.ř. , Akagündüz E., EU Supported Other Project, A Reconfigurable Surveillance System with Communicating Smart Sensors "RECONSURVE" (EUREKA ITEA2 - Arařtırmacı) , 2010 - 2013

Ulusoy İ., TUBITAK Project, Fusion of different imaging modalities for 3D human head modeling which includes characteristic hard and soft tissue information as well as realistic photographic view (TUBİTAK 1001 - Doktora Öğrencisi Bursiyer), 2006 - 2008

Halıcı U., Akagündüz E., Project Supported by Higher Education Institutions, Face Recognition and Modelling (Y. Lisans Öğrencisi Bursiyer), 2002 - 2003

## Scientific Refereeing

TUBITAK Project, 1501 - Industry R & D Projects Support Program, MDSOFT BİLİřİM MÜHENDİSLİK ARGE MÜřAVİRLİK VE TİC. LTD. řTİ. (ANKARA), Turkey, December 2023

TUBITAK Project, 1501 - Industry R & D Projects Support Program, JTR MÜCEVHER TEKNOLOJİLERİ ARAřTIRMA MERKEZİ ANONİM řİRKETİ (İSTANBUL), Turkey, July 2023

TUBITAK Project, 1501 - Industry R & D Projects Support Program, HAMLE MÜHENDİSLİK OTOMASYON ELEKTRİK MAKİNE İNřAAT SANAYİ TİCARET LİMİTED řİRKETİ (KOCAELİ), Turkey, July 2023

TUBITAK Project, 1507 - TUBİTAK SME R&D Start Support Program, TEKNO KURGU TARIM TEKNOLOJİLERİ VE DİJİTAL ÇÖZÜMLER ANONİM řİRKETİ (KOCAELİ), Turkey, July 2023

TUBITAK Project, 1501 - Industry R & D Projects Support Program, DİGİNOVA BİLİřİM TEKNOLOJİLERİ ARAřTIRMA GELİřTİRME SANAYİ VE TİCARET ANONİM řİRKETİ (KOCAELİ), Turkey, July 2023

TUBITAK Project, 1501 - Industry R & D Projects Support Program, DATABOSS BİLİřİM VE ENERJİ ARGE MÜHENDİSLİK TİCARET SANAYİ ANONİM řİRKETİ (ANKARA), Turkey, July 2023

## Metrics

Publication: 42

Citation (WoS): 134

Citation (Scopus): 334

H-Index (WoS): 7

H-Index (Scopus): 8

## Non Academic Experience

ASELSAN A.ř.

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ETA ELEKTRONİK SAN. TİC. A.ř.