

ERDEM AKAGÜNDÜZ, PHD

RESEARCH AREAS

I am professionally interested in deep learning, vision (multi-spectral, infra-red, cognitive, etc.), object/target/scene recognition/tracking and 3D modelling.

PERSONAL INFORMATION

email : akagunduz@ieee.org, akagunduz@cankaya.edu.tr
born : 02/September/1979
member : IEEE (*Signal Processing Soc., Computer Soc., Power & Energy Soc., Aerospace & El. Sys. Soc., Industry Applications Soc., Robotics & Automation Soc., Women in Eng. Soc., Communication Soc., Çankaya Uni. Student Branch Counsellor*)

PROFESSIONAL EXPERIENCE

Assistant Professor (02.2018 -) Çankaya Uni., EEE, Turkey

Teaching: (*undergraduate*) Microprocessors, Embedded Systems, Audio & Speech Proc.
Teaching: (*graduate*) Convolutional Neural Networks, Embedded Deep Learning

Administrative: Asst. Prof. Member of the Engineering Faculty Executive Board,

Research Scientist (10.2016 - 01.2018) ASELSAN Inc., Turkey

IR Target Signature Detection (DIRCM Project)

Post-Doctoral Research Assoc. (02.2016 - 09.2016) The Uni. of York, UK

Defining Image Memorability and Visual Schemas using Deep Learning Architectures

Research Scientist (08.2009 - 02.2016) ASELSAN Inc., Turkey

IR Extended Target Tracking (UMTAS/OMTAS Project)

IR Small Target Detection and Tracking (HİSAR Project)

IR Ship Signature Recognition (RECONSURVE TUBITAK-EU ITEA Project)

Research Associate (01.2008 - 01.2009) The University of York, UK

Detecting 3D Facial Features

Teaching & Research Assistant (09.2001 - 01.2008) METU EEE, Turkey

Research Assistant for METU EEE Computer Vision and Intelligent System Lab.

Teaching Assistant for EE441, EE442, EE445, EE446 (Computer Option Assistant)

Software Engineer (part-time) (01.2002 - 01.2003) ETA Inc. METU Turkey.

Sonar Screen Simulation (DUBM-20 Military Sonar Project)

FUNDED RESEARCH PROJECTS

1. as an **Academic Consultant** to "Embedded Vision Algorithms for Infrared Missile Seeker Head Systems", with **ASELSAN** Inc. 2019-2021
 2. as an **Academic Consultant** to TUBITAK 1507 ("TÜBİTAK - 1507 "Classification of Call Center Telephone Negotiations using Machine Learning and Automatic Detection of Call Frauds". with **AdresGezgini** Inc." 2018-2019
 3. as an **Academic Consultant** to TUBITAK 1507 ("TÜBİTAK - 1507 "Customer-Information Pairing, Billing and Barcoding with Image Processing of Post-Cutting Products in Customised Printing Products". with **bidolubaski.com** 2017-2018
 4. as a **Researcher** in : EUREKA/ITEA2 (RECONSURVE Pr.No.09036) / TUBITAK- TEYDEB (Pr.No.9100012). "A Reconfigurable Surveillance System with Communicating Smart Sensors" Project Manager: Dr. Cengiz Erbaş / **ASELSAN** 2010-2013,
 5. as a **Researcher** in : TÜBİTAK - 105E128 "Fusion of different imaging modalities for 3D human head modelling which includes characteristic hard and soft tissue information as well as realistic photographic view" Project Manager: Asst. Prof. Dr. İlkay Ulusoy / **METU-EEE** Jan 2006 - May 2008,
 6. as a **Researcher** in : BAP-2002-07-04-04 "Face Recognition and Modelling" Project Manager: Prof. Dr. Uğur Halıcı / **METU-EEE** September 2002 - Aug 2003.
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JOURNAL PAPERS

under review

1. Irem Ulku, **Erdem Akagündüz**, "A Survey on Deep Learning-based Architectures for Semantic Segmentation on 2D images" [[arXiv](#)] "submitted to Journal of Machine Vision and Applications" (SCI-E).

published

1. Alper Kaplan, Erdem Akagündüz, "A Hybrid Framework for Matching Printing Design Files to Product Photos" **BAJECE 2020** (TR-Dizin) [[DergiPark](#)] [[arXiv](#)]
2. H. Seçkin Demir, **Erdem Akagündüz**, "Filter Design for Small Target Detection on Infrared Imagery Using Normalized-Cross-Correlation Layer" **TJEECS 2020** (SCI-E, TR-Dizin) [[TÜBİTAK](#)][[arXiv](#)]

(the rest of the journal publications in this list are outputs of my PhD study)

6. İlkay Ulusoy, **Erdem Akagündüz**, Murat Yirci, "Anatomical and Dynamic Volume Spline Model Applied to Facial Soft Tissue", *J. Computer Animation and Virtual Worlds (JCAVW)* vol. 22, no. 6, p. 542-554, 2011 (SCIE-E) [[Wiley](#)]
7. İlkay Ulusoy, **Erdem Akagündüz**, Fidan Sabucluoğlu, Serkan Görgülü, Özlem Üçok, "Use of Dynamic Volume Spline Method to Predict Facial Soft Tissue Changes Associated with Orthognathic Surgery", *J. Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology and Endodontology*, vol 110, no. 5, 2010 (SCI-E) [[ScienceDirect](#)]
8. **Erdem Akagündüz**, İlkay Ulusoy, "3D Object Recognition from Range Images Using Transform Invariant Object Representations" *J. IET Electronic Letters*, vol. 46, no. 22, 2010 (SCI-E) [[Xplore](#)]
9. **Erdem Akagündüz**, İlkay Ulusoy, "3D Face Detection Using Transform Invariant Features" *J. IET Electronic Letters*, vol. 46, no. 13, 2010 (SCI-E) [[Xplore](#)]
10. İlkay Ulusoy, **Erdem Akagündüz**, Gerhard-Wilhelm Weber "Inverse Solution for Parameter Estimation of a Dynamic Volume Spline Based Forehead Skin Model" *J. Inverse Problems In Science And Engineering*, vol 18, no.5, 2010 (SCI-E) [[Taylor&Francis](#)]
11. İlkay Ulusoy, **Erdem Akagündüz**, Gerhard-Wilhelm Weber "Estimation of Parameters for Dynamic Volume Spline Models" *J. Inverse Problems In Science And Engineering*, Taylor & Francis, (Special Issue Int. Conf. Engineering Optimization EngOpt2008) vol. 18, no. 4, 2010 (SCI-E) [[Taylor&Francis](#)]

INTERNATIONAL PATENTS AND UTILITY MODELS

1. **Erdem Akagündüz**, "System And Method For Identifying Scale Invariant Features Of Object Outlines On Images" Patent Granted for ASELSAN Inc. (TR/15, US/15, JP/15) [[Google Patents](#)]
2. **Erdem Akagündüz**, "System And Method For Estimating Target Size" Patent Granted for ASELSAN Inc. (TR/15, EP/16, JP/16, KR/16) [[Google Patents](#)]
3. **Erdem Akagündüz**, "Method for Updating Target Tracking Window Size" Patent Granted for ASELSAN Inc. (KR/15, US/17, JP/17) [[Google Patents](#)]
4. **Erdem Akagündüz**, "System And Method For Describing Image Outlines" Patent Granted for ASELSAN Inc. (KR/15, US/17, JP/17) [[Google Patents](#)]

INTERNATIONAL CONFERENCE PAPERS

Oral Presentations

1. Irem Ulku, Panagiotis Barmpoutis, Tania Stathaki, **Erdem Akagündüz**, "Comparison of Single Channel Indices for U-Net Based Segmentation of Vegetation in Satellite Images", **ICMV 2019** [[SPIE](#)]
2. Erhan Gündoğdu, Hüseyin Özkan, H. Seçkin Demir, Hamza Ergezer, **Erdem Akagündüz**, S. Kubilay Pakin, "Comparison of Infrared and Visible Imagery for Object Tracking: Toward Trackers with Superior IR Performance", **CVPR-W 2015** [[Xplore](#)]
3. Fulya Tuncer Çetin, Burcu Yılmaz, Yıldırıay Kabak, J.H. Lee, Cengiz Erbaş, **Erdem Akagündüz**, S.J. Lee, "Increasing Maritime Situational Awareness with Interoperating Distributed Information Sources", **ICCRTS 2013** [[DTIC](#)]
4. Cengiz Erbaş, Fulya Tuncer Çetin, Burcu Yılmaz, **Erdem Akagündüz**, Yıldırıay Kabak, Aykut Bulca, "Open and Interoperable Maritime Surveillance Framework Set to Improve Sea-Borders Control", International Future Security Conf. **FutSec 2012** [[Springer](#)]
5. **Erdem Akagündüz**, İlkay Ulusoy, "Scale and Orientation Invariant 3D Interest Point Extraction Using HK Curvatures" **ICCV-W 2009** [[Xplore](#)]
6. **Erdem Akagündüz**, Arzu Erener, İlkay Ulusoy, H. Şebnem B. Düzgün, "Delination of Slope Units Based On Scale And Resolution Invariant 3D Curvature Extraction", IEEE International Geoscience & Remote Sensing Symposium, July 6-11, **IGARSS 2008** [[Xplore](#)]
7. **Erdem Akagündüz**, İlkay ulusoy, "3D Object Representation Using Transform and Scale Invariant 3D Features" **ICCV-W 2007** [[Xplore](#)]
8. **Erdem Akagündüz**, İlkay Ulusoy, "Extraction of 3D Transform and Scale Invariant Patches from Range Scans" **CVPR-W 2007** [[Xplore](#)]
9. **Erdem Akagündüz**, İlkay Ulusoy, Nesli Bozkurt, Uğur Halıcı, "A Physically-based Facial Skin Model to Simulate Facial Expressions on Digitally Scanned 3D Models" 22nd International Symposium on Computer and Information Sciences, **ISCIS 2007** [[Xplore](#)]

Posters

1. **Erdem Akagündüz**, "Silhouette Orientation Images for Shape Recognition" 22nd Int. Conf. on Pattern Recognition **ICPR-W 2014** [[FEAST2014](#)]
2. **Erdem Akagündüz**, Ömer Eskizara, İlkay Ulusoy, "Scale-Space Approach For The Comparison Of HK And SC Curvature Descriptions as Applied to Object Recognition" IEEE

NATIONAL CONFERENCE PAPERS

Oral Presentations

1. Melis Çıkış, Salih Tileylioğlu, **Erdem Akagündüz**, "Evrişimsel Ağ Kullanımı için Deprem İvmeölçer Kayıtlarının Gösterimi" **SIU 2020**
2. Engin Uzun, Tolga Aksoy, **Erdem Akagündüz**, "Sığ Evrişimli Ağlar ile Kızıl Ötesi Hedef Tespiti" **SIU 2020**
3. Leonardo O. Iheme, Şükrü Ozan, **Erdem Akagündüz**, "Machine Learning-based Silence Detection in Call Center Telephone Conversations" **IDAP 2019** [[Xplore](#)]
4. Engin Uzun, **Erdem Akagündüz** "Tam Evrişimli Ağlardaki Atlama Bağlantılarının Plaka Konumu Bulmaya Etkisi Üzerine bir İnceleme" **SIU 2019** [[Xplore](#)]
5. Hüseyin Seçkin Demir, **Erdem Akagündüz**, S. Kubilay Pakin, "Ataletsel Veri ve Kızılıtesi Görüntü ile İnsansız Uçan Sistemlerde Gemi Tanıma" **SIU 2015** [[Xplore](#)]
6. Burcu Yılmaz, Fulya Tuncer, Yıldırıay Kabak, **Erdem Akagündüz**, Cengiz Erbaş, "Dağıtık Veri Kaynaklarının Birlikte Çalışabırılığının Sağlanması ile Denizde Durumsal Farkındalıkın Arttırılması" **SAVTEK 2014**
7. **Erdem Akagündüz**, "Ölçekten Bağımsız Öz nitelik Resimleri" **SIU 2013** [[Xplore](#)]
(2nd Best Application Paper Award.)
8. Lütfi Murat Gevrekci, Mehmet Umut Demirçin, **Erdem Akagündüz**, "Gerçek Zamanlı Görüntü Çakıştırma" **SIU 2012** [[Xplore](#)]
9. **Erdem Akagündüz**, İlkay Ulusoy "HK ve SC Eğrilik Tanımlarının 3B Nesne Tanıma Amacıyla Ölçek Uzaylarında Karşılaştırılması" **SIU 2009** [[Xplore](#)]
10. Ömer Eskizara, **Erdem Akagündüz**, İlkay Ulusoy "Geometrik Kıyım Yöntemi ile 3B Nesne Tanıma" **SIU 2009** [[Xplore](#)]
11. Nesli Bozurt, Uğur Halıcı, İlkay Ulusoy, **Erdem Akagündüz**, "Yüz Tarayıcısı Verilerinin Dyiştirilmesi için 3B Veri İşleme" **SIU 2009** [[Xplore](#)]
12. **Erdem Akagündüz**, İlkay Ulusoy "3B Yüzlerin Ölçek ve Dönüşümden Bağımsız Öz nitelikler ile Gösterilmesi" **SIU 2008** [[Xplore](#)]
13. Ahmet Oğuz Öztürk, Uğur Halıcı, İlkay Ulusoy, **Erdem Akagündüz**, "Stereo Görüntü ve Yapısal Işık Kaynağı Kullanarak 3B Yüz Geriçatımı" **SIU 2008** [[Xplore](#)]
14. **Erdem Akagündüz**, İlkay Ulusoy, Nesli Bozkurt, Uğur Halıcı, "2.5B Verinin Ölçekten

17. **Erdem Akagündüz**, Uğur Halıcı, "Simulation and Synchronization of Human Facial Expressions and Lip Motion for Turkish Syllables", **TAINN 2003**.

Posters

1. Leonardo Iheme, **Erdem Akagündüz**, Şükrü Ozan "Ses Etkinliği Tespiti için Müşteri-Operator Görüşmelerinin Makine Öğrenimi Tabanlı İşaretlenmesi" **SIU 2019**.
 2. Erhan Akan, **Erdem Akagündüz**, İ. Baran Uslu, "Ataletsel ve EMG Sensörlerin Kaynaşımını Kullanan Akıllı Eldiven Sistemi Tasarımı" **SIU 2019**
 3. Soner Büyükkatalay, **Erdem Akagündüz**, Uğur Halıcı, İlkay Ulusoy, Kemal Leblebicioğlu, "3B Yüz Modeli Oluşturma ve Yüz İfadesi İçeren Konuşma Canlandırması", *Polis Bilişim Konferansı*, **Polis Bilişim 2005**.
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INTERNATIONAL WORKSHOP REPORTS

1. Savran A., O. Çeliktutan, A. Akyol, J. Trojanova, H. Dibeklioğlu, S. Esenlik, N. Bozkurt, C. Demirkir, **Erdem Akagündüz**, K. Çalışkan, N. Alyüz, B. Sankur, İ. Ulusoy, L. Akarun, T. M. Sezgin, "3D face recognition performance under adversarial conditions," in Proc. Workshop on Multimodal Interfaces, Istanbul, Turkey, **eINTERFACE'2007** [[SemanticScholar](#)]