



Dr. Ersin Esen

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Education

PhD	Middle East Technical University, Electrical&Electronics Engineering <ul style="list-style-type: none">▪ Supervisor: Prof.Dr. A. Aydın ALATAN▪ Thesis: Quantization based data hiding strategies with visual applications▪ GPA: 3.56/4
MS	Bilkent University, Electrical&Electronics Engineering <ul style="list-style-type: none">▪ Supervisor: Prof.Dr. Levent ONURAL▪ Thesis: Semi-automatic video object segmentation▪ GPA: 3.34/4
BS	Bilkent University, Electrical&Electronics Engineering <ul style="list-style-type: none">▪ GPA: 3.17/4
High School	İstanbul Atatürk Science High School

Professional Experience

Tetra Bilişim

- Systems Engineer

Esen Information Technologies

- Founder

TÜBİTAK UZAY

- Image Processing Group Leader
- Chief Senior Researcher

Military Service

- Tank Lieutenant Team Commander at Gelibolu, Çanakkale

TÜBİTAK UZAY (BİLTEN)

- Image Processing Group Leader
- Chief Senior Researcher

Microsoft Research

- Intern

TÜBİTAK BİLTEN

- Senior Researcher

Bilkent University, Electrical&Electronics Engineering

- Research Assistant

Projects

İMGEDOK (Image Authentication Verification and Positioning)

- Technical Leader
- Topics: Image authentication, camera fingerprinting, image geolocation, object distance measurement with uncalibrated images.
- Tools: C++, Python, Docker, Kubernetes, PostgreSQL

İGS (Internet Monitoring System)

- Project Manager
- Topics: Image/video/audio/text indexing and retrieval, image labelling, object detection, author recognition, face recognition, scenetext recognition, adult content detection, language recognition, translation, internet crawling, live stream capturing with browser automation.
- Tools: C++, Python, Javascript, PHP, PostgreSQL, Redis, HDFS, nginx, HAProxy, Docker, Kubernetes, Gitlab, Ansible, Elasticsearch, Logstash, Kibana, Beats, Prometheus, Grafana, OpenCV, Tensorflow, Caffe, gensim, Faiss, ffmpeg, Selenium.

GÖKGÖZ

- Work Package Leader
- Topic: Precise attitude estimation using star positions.
- Tools: C++.

STEP (Steganalysis Project)

- Technical Leader
- Topics: Steganalysis, duplicate image detection.
- Tools: C++, MATLAB.

DETAP (Earthquake Prediction Project)

- Researcher
- Topic: Earthquake prediction using Total Electron Content in ionosphere.
- Tool: MATLAB.

AGS (Smart Surveillance Systems)

- Project Manager
- Topics: Audiovisual surveillance event recognition, intrusion detection.
- Tools: C++, OpenCV, ffmpeg.

KAVTAN (Semantic Concept Recognition for SKAAS)

- Project Manager
- Topic: Audiovisual concept recognition.

- Tools: C++, OpenCV, ffmpeg.

Balistika 2010 (Ballistic Analysis System)

- Researcher
- Topic: Feature extraction and matching.
- Tool: MATLAB.

RTÜK SKAAS (Digital Archiving and Analysis System of RTÜK)

- Technical Leader
- Topics: Logo detection, video similarity, audio keyword detection, videotext recognition.
- Tools: C++, OpenCV, ffmpeg.

Bilvms (BİLTEN Video Management System)

- Researcher
- Topics: Multimedia archives, indexing and retrieval.
- Tools: VC++.

Data Hiding

- Researcher
- Topic: Spatial and compressed domain data hiding in image and video.
- Tools: C++, ffmpeg.

Skills and Abilities

Programming

- C/C++, Python, MATLAB, bash, SQL
- Basic level: Javascript, PHP, Elixir

Library

- Deep Learning: PyTorch, PyTorch Lightning, TorchServe
- Image Processing: OpenCV
- Codec: ffmpeg
- Language Processing: gensim, NLTK
- Indexing: Faiss
- Browser Automation: Selenium

Database

- PostgreSQL, Sqlite, Redis

Monitoring

- Prometheus, Grafana

Logging

- Elasticsearch, Logstash, Kibana, Beats

Container and Orchestration

- Docker, Kubernetes, Gitlab

Job Scheduler

- Gearman

Web Server and Reverse Proxy

- Node.js, Nginx, HAProxy

Distributed Storage

- HDFS, Ceph

System Installation and Management

- Ansible

Honours and Fellowships

- Ranked 73th in the University Entrance Exam (over 1 million participants) in Turkey, in 1994.
- Received Bilkent University Fellowship from 1994 to 1998.
- Ranked 23th in the Graduate Education Entrance Exam (LES, May 1998).

Publications

Journal

- [1] E. Esen and A. A. Alatan, "Robust Video Data Hiding Using Forbidden Zone Data Hiding and Selective Embedding", IEEE Transactions on Circuits and Systems for Video Technology, vol. 21, pp.1130-1138, Aug. 2011.
- [2] E. Esen and A. A. Alatan, "Comparison of Forbidden Zone Data Hiding and Quantization Index Modulation", Digital Signal Processing, vol. 22, pp.181-189, Jan. 2012.
- [3] Medeni Soysal, K Berker Loğoğlu, Mashar Tekin, Ersin Esen, Ahmet Saracoğlu, Banu Oskay Acar, Ezgi Can Ozan, Tuğrul K Ateş, Hakan Sevimli, Müge Sevinç, İlkay Atıl, Savaş Özkan, Mehmet Ali Arabacı, Seda Tankız, Talha Karadeniz, Duygu Önür, Sezin Selçuk, A Aydın Alatan, Tolga Çiloğlu, "Multimodal concept detection in broadcast media: KavTan", Multimedia Tools and Applications, pp.1-46, July 2013.
- [4] Ozkan, S., Ates, T., Tola, E., Soysal, M. and Esen, E., "Performance Analysis of State-of-the-Art Representation Methods for Geographical Image Retrieval and Categorization", IEEE Geoscience and Remote Sensing Letters (GRSL), pp. 1996-2000, 2014.
- [5] E. Esen, "Electrokinesis hypothesis of neuron selection for synapse formation and pruning", Medical Hypotheses, Volume 157, pp.110701, Dec 2021.

Conference

- [1] E. Esen and L. Onural, "Supervised Segmentation for Video Applications", Proc. of 16th International Symposium on Computer and Information Sciences, Nov.5-7, 2001, Antalya Turkey, pp.576-583.
- [2] E. Esen ve A. Alatan, "Nicemleme Dizin Modulasyonu ile Bilgi Saklama", SIU 2002, Denizli Turkiye.
- [3] Ersin Esen, Ozgur Onur, Medeni Soysal, Yagiz Yasaroglu, Serhat Tekinalp, and A. Aydın Alatan, "A Mpeg-7 compliant Video Management System: BiVMS", WIAMIS 2003, London, UK.
- [4] A. Yilmaz, E. Esen and A. A. Alatan, "Combined Concealment, Synchronzation, and Error Detection Using Data Hiding," WIAMIS

'2003, London, UK.

[5] Esen, E., Yaşaroğlu, Y., Önür, Ö., Soysal, M., Tekinalp, S. ve Alatan, A.A., "MPEG-7 Uyumlu Video Yönetim Sistemi", Sinyal İşleme ve İletişim Uygulamaları Kurultayı, 18-20 Haziran 2003, Koç Üniversitesi, İstanbul.

[6] E. Esen, A. A. Alatan, and M. Askar, "Trellis Coded Quantization for Data Hiding," EUROCON 2003, September 22-24 2003, Ljubljana, Slovenia.

[7] E. Esen ve A. A. Alatan, "Kafes Kodlamalı Nicemleme ile Bilgi Saklama", IEEE SIU , Kusadasi Turkiye, 28-30.04.2004.

[8] E. Esen and A. A. Alatan, "Data Hiding Using Trellis Coded Quantization", IEEE ICIP 2004, 24-27 October 2004, Singapore.

[9] E. Esen and A. A. Alatan, "A Practical Lattice QIM Method: TCQ-IS", EUSIPCO 2005, 4-8 September 2005, Antalya Turkey.

[10] E. Esen ve A. A. Alatan, "Bilgi Saklamada Yeni Bir Kavram: Yasak Bölge", SİU 2006, Antalya Turkey.

[11] E. Esen and A. A. Alatan, "Forbidden Zone Data Hiding", IEEE ICIP 2006, 8-11 October 2006, Atlanta, GA, USA.

[12] E. Esen ve Y. Kemal Alp, "Özyineli En Kısa Kapsayan Ağaç Algoritmasında Bölgesel ve Sınırsal Bilginin Birleştirimi ile İmge Bölütleme", IEEE SIU 2007, Eskişehir, Türkiye.

[13] T. K. Ateş, E. Esen, A. Saraçoğlu ve A. A. Alatan, "Sınır Eşlemeye Dayalı Yarı-Saydam TV Logosu Tespiti", IEEE SIU 2008, Antalya, Türkiye.

[14] E. Esen, M. Soysal, T. K. Ateş, A. Saraçoğlu and A. A. Alatan, "A Fast Method For Animated TV Logo Detection", CBMI 2008, London, England.

[15] Esen, E., Doğan, Z., Ates, T.K., Alatan, A.A., "Sıkıştırılmış Videolarda Bilgi Saklama için Nicemleme Dizin Modülasyonu ile Yasak Bölgesi Bilgi Saklamanın Karşılaştırılması," IEEE 17. Sinyal İşleme, İletişim ve Uygulamaları Kurultayı, SIU 2009, 9-11 Nisan 2009, Antalya, Türkiye.

[16] Esen, E., Saracoğlu, A., Ates, T.K., Oskay Acar, B., Zubari, U., Alatan, A.A., "Kaba Öznitelikler ile İçerik Tabanlı Video Kopya Sezimi," IEEE 17. Sinyal İşleme, İletişim ve Uygulamaları Kurultayı, SIU 2009, 9-11 Nisan 2009, Antalya, Türkiye.

[17] B. Oskay Acar , Ü. Zubari, E. C. Ozan, A. Saracoğlu, E. Esen, T. Çiloğlu, "Voting System Based Robust and Efficient Audio Copy Detection", SIU 2009 IEEE 17th Signal Processing and Communications Applications Conference, Antalya, Turkey.

[18] A. Saracoglu, E. Esen, T. K. Ates, B. Oskay Acar, U. Zubari, E. C. Ozan, E. Ozalp, A. A. Alatan, T. Ciloglu, "Content Based Copy Detection with Coarse Audio Visual Fingerprints", CBMI 2009, Chania in Crete Island, Greece.

[19] Öztürk A O, Birgül Ö, Esen E, Sakarya U, "Fotometrik Stereo Yönteminde Fotoğraflardaki Gürültülerin Geriçatılmış Kovan Yükseklik Haritasına Etkileri," SİU 2009 IEEE 17. Sinyal İşleme ve İletişim Uygulamaları Kurultayı, Antalya, Nisan 2009.

[20] Ersin Esen, "Feature Recognition of Audiovisual Data of Radio/TV Broadcasts in Turkey", eChallenges e-2009 Conference, İstanbul, Turkey, 21-23 October 2009.

[21] E. Esen and A. Aydın Alatan, "Block Based Video Data Hiding using Repeat Accumulate Codes and Forbidden Zone Data Hiding," IEEE Pacific-Rim Conference on Multimedia, December 15-18, 2009, Bangkok, Thailand.

[22] K. Berker Loğoğlu, A. Saracoğlu, Ersin Esen, A. Aydın Alatan, "Gender Classification via Gradientfaces", 25th International

Symposium on Computer and Information Sciences, ISCIS 2010, London, UK.

[23] H. Sevimli, E. Esen, T. K. Ateş, E. C. Ozan, M. Tekin, K. B. Loğođlu, A. M. Sevinç, A. Saracođlu, A. Yazıcı, A. A. Alatan, "Adult Image Content Classification Using Global Features and Skin Region Detection", 25th International Symposium on Computer and Information Sciences, ISCIS 2010, London, UK.

[24] Ünal Zubari, Ezgi Can Ozan, Banu Oskay Acar, Tolga Ciloglu, Ersin Esen, Tuđrul K. Ateş and Duygu Oskay Önür, "Speech Detection on Broadcast Audio," 2010 European Signal Processing Conference (EUSIPCO-2010), August 23-27 2010, Aalborg, Denmark.

[25] Saracođlu A., Tekin M., Esen E., Soysal M., Loğođlu K. B., Ateş T. K., Sevinç A. M., Sevimli H., Acar B. O. , Zubari U, Ozan E. C., Alatan A. A. "Genelleştirilmiş Görsel Kavram Tanıma," SİU 2010, Diyarbakır, Türkiye, 22 Nisan 2010.

[26] Ateş, T. K., Esen, E., Saracođlu, A., Soysal, M., Turgut, Y., Oktay, O., Alatan, A.A., "Yerel Tanımlayıcılar ile İçerik Tabanlı Video Kopya Sezimi", SİU 2010, Diyarbakır, Türkiye, 22 Nisan 2010.

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[28] Ersin Esen ve Mehmet Ali Arabacı, "Hareket Birliktelik Özniteliđi Kullanarak Kavga Sezimi," IEEE Signal Processing and Communications Applications Conference (SIU), 2013 21th , North Cyprus, 24-26 April 2013.

[29] Osman Topçu ve Ersin Esen, "Hareketli Kamerada Arka Plan Çıkarma," IEEE Signal Processing and Communications Applications Conference (SIU), 2013 21th , North Cyprus, 24-26 April 2013.

[30] Savaş Özkan, Ersin Esen ve Gözde Bozdađı Akar, "Geometrik Tutarlılık ile Geliştirilmiş Görsel Resim Arama," IEEE Signal Processing and Communications Applications Conference (SIU), 2013 21th , North Cyprus, 24-26 April 2013.

[31] Savaş Özkan, İlkay Atıl, Ersin Esen ve Medeni Soysal, "Video Poster Oluşturma," IEEE Signal Processing and Communications Applications Conference (SIU), 2013 21th , North Cyprus, 24-26 April 2013.

[32] Ersin Esen, Mehmet Ali Arabacı and Medeni Soysal, "Fight Detection in Surveillance Videos," Content-Based Multimedia Indexing (CBMI), 2013 11th International Workshop on, pp.131-135, 2013.

[33] Esen, Ersin, Savas Ozkan, Ilkay Atil, Mehmet Ali Arabaci, and Seda Tankiz "Image community detection" Signal Processing and Communications Applications Conference (SIU), 2014 22nd. IEEE, 2014.

[34] Ozkan, S., Ates, T., Tola, E., Soysal, M. and Esen, E., "Feature Encoding Models for Geographic Image Retrieval and Categorization", Signal Processing and Communication Application Conference (SIU), 2014.

[35] Ozkan, S., Esen, E. and Akar, G.B., "Performance Analysis of Local Indexing Methods for Video Copy Detection.", Signal Processing and Communication Application Conference (SIU), 2014.

- [36] Esen, E., Ozkan, S., Atil, I., Arabaci, M.A. and Tankiz, S., "Detecting Image Communities", International Workshop on Content-Based Multimedia Indexing (CBMI), 2014.
- [37] Ozkan, S., Esen, E. and Akar, G.B., "Enhanced Spatio-Temporal Video Copy Detection by Combining Trajectory and Spatial Consistency", International Conference on Image Processing (ICIP), 2014.
- [38] Ozkan, S., Esen, E. and Akar, G.B., "Visual Group Binary Signature for Video Copy Detection", International Conference on Pattern Recognition (ICPR), 2014.
- [39] Esen, E., Ozkan, S., Atil, I., Arabaci, M.A. and Tankiz, S., "An Image Community Detection Method for Hierarchical Visualization", International Conference on Multimedia Expo Workshop (ICMEW), 2014.
- [40] M. A. Arabaci and E. Esen, "Video copy detection using motion co-occurrence feature," Signal Processing and Communications Applications Conference (SIU), 2015 23th, Malatya, 2015, pp. 1946-1949.
- [41] S. Ozkan, M. Soysal, E. Esen and G. Bozdagi Akar, "Represent, reduce, classify: The essential stages for scene recognition," Signal Processing and Communications Applications Conference (SIU), 2015 23th, Malatya, 2015, pp. 1672-1675.
- [42] E. Esen and I. Atil, "Effects of standard image processing methods on steganalysis," Signal Processing and Communications Applications Conference (SIU), 2015 23th, Malatya, 2015, pp. 1933-1936.
- [43] S. Ozkan, E. Esen, M. Soysal and M. S. Atar, "Fingerprint recognition with geometric relation of minutiae points," Signal Processing and Communications Applications Conference (SIU), 2015 23th, Malatya, 2015, pp. 875-878.
- [44] E. Esen, S. Özkan and İ. Atil, "Fast video search on recurring segments," 2016 24th Signal Processing and Communication Application Conference (SIU), Zonguldak, 2016, pp. 1585-1588.
- [45] S. Özkan, E. Esen and G. B. Akar, "Feasible local content representation for image-in-video search on large-video collection," 2016 24th Signal Processing and Communication Application Conference (SIU), Zonguldak, 2016, pp. 1417-1420.
- [46] S. Özkan, E. Esen, İ. Atil and G. B. Akar, "Scene nudity level detection with deep nets," 2016 24th Signal Processing and Communication Application Conference (SIU), Zonguldak, 2016, pp. 2069-2072.
- [47] İ. Atil and E. Esen, "Comparison of decision fusion methods for steganalysis," 2016 24th Signal Processing and Communication Application Conference (SIU), Zonguldak, 2016, pp. 1933-1936.
- [48] E. Esen and S. Özkan, "Analysis of Turkish parliament records in terms of party coherence," 2017 25th Signal Processing and Communications Applications Conference (SIU), Antalya, 2017, pp. 1-4.
- [49] M. S. Atar, E. Esen and M. A. Arabaci, "Supervised author recognition with aggregated word embeddings," 2018 26th Signal Processing and Communications Applications Conference (SIU), Izmir, 2018, pp. 1-4.
- [50] M. A. Arabaci, E. Esen, M. S. Atar, E. Yilmaz and B. Kaltalıoğlu, "Detecting similar sentences using word embedding," 2018 26th Signal Processing and Communications Applications Conference (SIU), Izmir, 2018, pp. 1-4.

Workshop

- [1] Q. Zhang, A. Alatan, E. Esen et. al. "The COST292 experimental framework for TRECVID 2007," 4th TRECVID Workshop, Gaithersburg, USA, November 2007.
- [2] Q. Zhang, A. Saracoglu, A. Alatan, E. Esen et. al. "The COST292 experimental framework for TRECVID 2008," 5th TRECVID Workshop, Gaithersburg, USA, November 2008.
- [3] Ahmet Saracoğlu, Ersin Esen, Medeni Soysal, Tuğrul K. Ateş, Berker Loğoğlu, Mashar Tekin, Talha Karadeniz, Müge Sevinç, Hakan Sevimli, Banu Oskay Acar, Ünal Zubari, Ezgi C. Ozan, Egemen Özalp, Duygu Oskay Onur, Sezin Selçuk, A. Aydın Alatan, Tolga Çiloğlu, "TÜBİTAK UZAY at TRECVID 2009: High-Level Feature Extraction and Content-Based Copy Detection," 6th TRECVID Workshop, Gaithersburg, USA, November 2009.
- [4] Ahmet Saracoğlu, Ersin Esen, Medeni Soysal, Tuğrul K. Ateş, Berker Loğoğlu, Mashar Tekin, Talha Karadeniz, Müge Sevinç, Hakan Sevimli, Banu Oskay Acar, Ünal Zubari, Ezgi C. Ozan, Duygu Oskay Onur, Sezin Selçuk, A. Aydın Alatan, Tolga Çiloğlu, "TÜBİTAK UZAY at TRECVID 2010: Content-Based Copy Detection and Semantic Indexing," 7th TRECVID Workshop, Gaithersburg, USA, November 2010.
- [5] E. Esen, S. Özkan, İ. Atıl, "TUZ at TRECVID 2015: Video Hyperlinking Task ," TRECVID 2015 Workshop, Gaithersburg, USA, November 2015.