



HACER YALIM KELEŞ

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Personal Information

Date of Birth

1979

Marital Status

Married and have a daughter

Research Interests

My research interests lie predominantly in the area of machine learning and its applications on various computer vision problems. I am particularly interested in the development and optimization of deep learning models in the areas of foreground segmentation, semantic segmentation, cell segmentation and tracking from video streams. I am also interested in aerial image analysis.

Recently, I and one of my PhD students published interesting empirical observations in the latent space of deep generative models in Neurocomputing Journal. This is the most exciting work that I have been working so far in this domain.

We have also recently completed one of the largest video datasets that contains isolated Turkish Sign Language samples. We are planning to share this dataset with the academic community soon. It's completed as a product of my TUBITAK-3501 Project.

Keywords:

Deep Learning, Computer Vision, Pattern Recognition

Degrees

Assoc. Prof. Dr.

In Computer Science and Engineering (July, 2020)

Application term

October, 2019

By

The Council of Higher Education (CoHE) of Turkey.

Ph.D.

In Computer Engineering (July, 2010)

University

Middle East Technical University

Advisors

Prof. Dr. Sibel Tarı, Prof. Dr. Mine Özkar

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| <i>Thesis Title</i> | Part Embedding for Shape Grammars |
| AWARDS | Thesis of the Year 2010 Award by METU Prof. Dr. Mustafa Parlar Education and Research Foundation. |
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| M.Sc. | <i>In Computer Engineering (June, 2005)</i> |
| <i>University</i> | Middle East Technical University |
| <i>Advisor</i> | Assoc. Prof. Dr. Veysi İşler |
| <i>Thesis Title</i> | Acceleration of Direct Volume Rendering with Programmable Graphics Hardware. |
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| B.Sc. | <i>In Computer Engineering (July, 2002)</i> |
| <i>University</i> | Middle East Technical University |
| R&D Experience | |
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| EXETER UNIVERSITY (UK) | 1 March 2020 – 17 April 2020. Department of Computer Science |
| <i>Position</i> | Visiting Researcher |
| | The joint research on the domain adaptation problem was initiated for 6 months , in collaboration with Dr. Nicolas Pugeault in the Department of Computer Science in Exeter University. Due to the unexpected coronavirus outbreak on all over the world, all the Universities in UK was closed and we had to suspend my visit there until an unknown future date where everything becomes normal again |
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| ANKARA UNIVERSITY | February 2013 – Department of Computer Engineering |
| <i>Position</i> | Vice Chair (since November 2019) |
| <i>Title</i> | Assist. Prof. Dr. |
| <i>Courses</i> | Deep Learning Pattern Recognition Machine Learning Computer Vision |
| | Computer Programming I-II (C and C++ languages, respectively) Data Structures Computer Graphics Research Techniques I-II (Graduation Projects) |
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| KOLEKTİF Information Technologies | April 2011 – February 2013 |
| <i>Position</i> | Co-founder/ Chief Science Officer |

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| <i>SOYA Project</i> | September 2011-February 2013 |
| <i>Definition</i> | Funded by TÜBİTAK 1507 Program. It is an <u>award winning project</u> which is funded by TÜBİTAK for Silicon Valley, (San Francisco, USA) for seeking venture investment opportunities during November-December 2012. |
| <i>OrtakTEST Project</i> | April 2010 – April 2011 |
| <i>Position</i> | Project Manager |
| <i>Definition</i> | A platform independent co-creation and development framework for defense technologies and game development industry which improves the effectiveness in communication between the developer and the expert/user during software development and testing based on high technology. |
| <i>TÜBİTAK-UZAY¹</i> | 2002-2007 |
| <i>Position</i> | Senior Researcher |
| <i>Projects</i> | <p><i>RTÜK-SKAAS Project (2006-2007)</i> Large scale digital media archiving and content management system for Radio and Television Supreme Council of Turkey (RTÜK).</p> <p><i>TIBBİ-DİKTE Project:</i> A Speech Recognition System for Medical Industry.</p> <p><i>BİLMMS Project:</i> MPEG-7 Compatible Digital Video Management System-Development of MPEG-7 Low Level Audio Features Library.</p> |
| <i>TÜBİTAK-UZAY ITA Group</i> | 2000 – 2002 |
| <i>Position</i> | Part-time Researcher |
| Certifications | |
| <i>Project Management Certificate</i> | December 2005– March 2006 By MENTOR |

¹ Space Technologies Research Institute of the Scientific and Technological Research Council of Turkey.

Research Projects

Tübitak 3501
June 2018-June 2020

Derin Öğrenme Yöntemleri Kullanılarak Geniş Dağarcıklı Türkçe İşaret Dili Tanıma Sisteminin Modellenmesi
Principle Investigator

A.Ü BAP Project
(18L0443010)
May 2018-May 2020

Üretken Çekişmeli Ağlarda Gizli Unsur Kodlayıcı ile Çıktı İmgesi Arasındaki İlişkinin Hesaplamalı Modellenmesi
Principle Investigator

A.Ü. BAP Project
(15H0443009)
02.11.2015-02.11.2016

Eskizlerde Parça Gömme Probleminin CUDA Mimarisinde Optimizasyon Yoluyla Çözümü.
Principle Investigator

Tübitak 1000
01.09.2014-05.01.2017

Ankara Üniversitesi'nde Nitelikli Araştırma Projesi Üretim Altyapısının Geliştirilmesi.
Researcher

Tübitak-TEYDEB 1507
01.09.2011 – 28.02.2013

SOYA: Simulasyon Ortak Yaratım Aracı.
Researcher

T.C. Sanayi ve Ticaret
Bakanlığı (0272.TGSD.2010)
05.04.2010-05.04.2011

Ortak Test
Principle Investigator

Tübitak-ARDEB 1001
01.06.2008 - 01.06.2010

İki Boyutlu Desenlerde Görsel Düşünme Ve Tasarlama Süreçlerinin Şekil Cebiri Kullanarak Hesaplamalı Modellemesi.
Researcher as a Ph.D. Student.

Publications

Journal publications

Özlem Şen and **Hacer Yalım Keleş**, "On the Evaluation of CNN models in Remote Sensing Scene Classification Domain", *Journal of Photogrammetry, Remote Sensing and Geoinformation Science*, 2020, (currently in review after major revision). (SCI-Expanded)

Yahya Doğan and **Hacer Yalım Keleş**, "Semi-supervised Image Attribute Editing using Generative Adversarial Networks", *Neurocomputing Journal*, vol. 401, pp. 338-352, 2020. (Preprint: arXiv:1907.01841). (SCI-Expanded)

Hacer Yalım Keleş, Jan Rozhon, H. Gokhan İlk, Miroslav Vosnak, "DeepVoCoder: A CNN model for compression and coding of narrow band speech", *IEEE Access*, June 2019, DOI: 10.1109/ACCESS.2019.2920663. (SCI-Expanded)

Long Ang Lim and **Hacer Yalım Keleş**, "Learning Multi-scale Features for Foreground Segmentation", *Pattern Analysis and Applications* (2019), DOI: 10.1007/s10044-019-00845-9. (Preprint of this paper is available on ArXiv; arXiv:1808.01477). (SCI-Expanded)

Long Ang Lim and **Hacer Yalım Keleş**, "Learning Dense Contextual Features for Semantic Segmentation", *Commun. Fac. Sci. Univ. Ank. Series A2-A3*, vol. 62(1), pp. 26-34, 2020. (TR Index)

Long Ang Lim and **Hacer Yalım Keleş**, "Foreground Segmentation using Convolutional Neural Networks for Multiscale Feature Encoding", *Pattern Recognition Letters*, 112, pp. 256-262, 2018. (SCI-Expanded)

Long Ang Lim and **Hacer Yalım Keleş**, "Foreground Segmentation using a Triplet Convolutional Neural Network for Multiscale Feature Encoding", arXiv:1801.02225, 2018.

Hacer Yalım Keleş, "Embedding Parts in Shape Grammars Using a Parallel Particle Swarm Optimization Method on GPUs", *Artificial Intelligence for Engineering Design, Analysis and Manufacturing (AI-EDAM)*, vol. 32(3), pp. 256-268, 2018 (SCI-Expanded).

Özge Mercanoğulu Sincan, **Hacer Yalım Keleş**, Yağmur Kır, Adnan Kusman, Bora Başkac "Person Identification Using Functional Near-Infrared Spectroscopy Signals Using a Fully Connected Deep Neural Network", *Commun. Fac. Sci. Univ. Ank. Series A2-A3*, 59(2), pp. 57-65, 2017. (TR Index)

Nergis Pervan, **Hacer Yalım Keleş**, "Sentiment Analysis Using a Random Forest Classifier on Turkish Web Comments", *Commun. Fac. Sci. Univ. Ank. Series A2-A3*, 59(2), pp. 69-79, 2017. (TR Index)

Hacer Yalım Keleş, "Acceleration of the Edge Strength Function on GPU Using CUDA", *Commun. Fac. Sci. Univ. Ank. Series A2-A3*, 58(2), pp. 49-68, 2016. (TR Index)

Hacer Yalım Keleş, Sibel Tarı, "A Robust Method for Scale Independent Detection of Curvature-based Criticalities and Intersections in Line Drawings", *Pattern Recognition*, 48(1), pp. 140-155, 2015 (SCI).

Hacer Yalım Keleş, Mine Özkar, Sibel Tarı, "Weighted Shapes for Embedding Perceived Wholes", *Environment and Planning: B.*, Volume 39, Issue 2, pp 360-375, 2012 (SSCI).

Hacer Yalım Keleş, Mine Özkar, Sibel Tarı, "Embedding Shapes without Predefined Parts", *Environment and Planning: B*, Volume 37, Issue 4, pp 664-681, 2010 (SSCI).

Hacer Yalım Keleş, Alphan Es, Veysi İşler, "Acceleration of Direct Volume Rendering with Programmable Graphics Hardware", *The Visual Computer: International Journal of Computer Graphics*, Volume 23, Issue 1, pp 15-24, November, 2006 (SCI-Expanded).

Sinan Gençoğlu, **Hacer Yalım Keleş**, "Sign Language Video Synthesis using Skeleton Sequence", *28th IEEE Conference on Signal Processing and Applications*, 5-7 October 2020, Gaziantep, Turkey.

Yahya Doğan, **Hacer Yalım Keleş**, "Stability and Diversity in Generative Adversarial Networks", *27th IEEE Conference on Signal Processing and Applications*, 24-26 April 2019, Sivas, Turkey.

Anıl Osman Tur, **Hacer Yalım Keleş**, "Isolated Sign Recognition with a Siamese Neural Network of RGB and Depth Streams", *IEEE EUROCON 2019*, 01-07 July 2019, Novi Sad, Serbia.

Özge Mercanoğlu Sincan, Anıl Osman Tur, **Hacer Yalım Keleş**, "Isolated Sign Language Recognition with Multi-scale Features using LSTM", *27th IEEE Conference on Signal Processing and Applications*, 24-26 April 2019, Sivas, Turkey.

Özlem Şen, **Hacer Yalım Keleş**, "Scene Recognition with Deep Learning Methods using Aerial Images", *27th IEEE Conference on Signal Processing and Applications*, 24-26 April 2019, Sivas, Turkey.

Özge Mercanoğlu Sincan, Sinan Gencoglu, Mert Bacak, **Hacer Yalım Keleş**, "Hand and Face Segmentation with Deep Convolutional Networks using Limited Labelled Data", 3rd International Symposium on Multidisciplinary Studies and Innovative Technologies (*ISMSIT*), *IEEE*, Ankara, Turkey, 11-13 October 2019.

Nergis Pervan, **Hacer Yalım Keleş**, "A Dilated CNN Based Sentiment Analysis Using a Novel Corpus of Customer Product Reviews in Turkish Language", In *DTSS 2018*, Ankara, October 24-26, 2018.

Elit Cenk Alp, **Hacer Yalım Keleş**, "A Comparative Study of HMMs and LSTMs on Action Classification with Limited Training Data", *IntelliSys 2018*, pp. 564-570, London, 2018.

Hacer Yalım Keleş, (Invited Speaker), "Utilization of Deep Learning Methods in Computer Graphics Domain", *Eurasiagraphics 2017*, November 4-5, 2017.

Hacer Yalım Keleş, (Keynote Speaker), "Recent Trends in Machine Learning and Computer Vision", *ICTACSE 2017*, November 10-11, 2017.

Elit C. Alp, **Hacer Yalım Keleş**, "Action Recognition Using MHI Based Hu Moments with HMMs", *17th EUROCON 2017*, 6-8 July 2017, Ohrid, Macedonia.

Hacer Yalım Keleş, "Embedding Parts in Sketches Using a Parallel Evolutionary Approach", *33rd Education and Research in Computer Aided Architectural Design in Europe (eCAADe) Conference*, 2015, Vienna, Austria.

Özge Mercanoglu Sincan, Vahid Babaei Ajabshir, **Hacer Yalım**

Keleş, Suleyman Tosun, "Moving Object Detection by a Mounted Moving Camera", *EUROCON 2015*, Salamanca, Spain.

Hacer Yalım Keleş, Erkin Tunca, Yücel Doğan, Fatih Keleş, Halit Oğuztüzün, "SOYA: Simülasyon Ortak Yaratım Aracı", *6'th Defence Technologies Congress*, June 2012, Ankara, Turkey.

Hacer Yalım Keleş, Mine Özkar, Sibel Tarı, "Revisiting Shape Embedding", *27'th Education and Research in Computer Aided Architectural Design in Europe (eCAADe) Conference*, 16-19, September 2009, İstanbul, Turkey.

Gökçe Yıldırım, **Hacer Yalım Keleş**, Veysi İşler, "Three Dimensional Smoke Simulation on Programmable Graphics Hardware", *International Conference on Parallel Computational Fluid Dynamics*, 21-24, May 2007, Turkey.

Alphan Es, **Hacer Yalım Keleş**, Veysi İşler, "Accelerated Volume Rendering with Homogeneous Region Encoding using EACD on GPU", *6'th Eurographics Symposium on Parallel Graphics and Visualization*, 11-12, May 2006, Braga.