Ozan Sener

www.ozansener.net

Contact Information

142 Gates Hall, 353 Serra Mall
Stanford University, CA 94305

voice: +1 607 379 47 39
e-mail: ozan@cs.stanford.edu

Interest

Broadly, I am interested in designing machine learning algorithms which can process large-amount of multi-modal information with no/weak supervision. I have designed algorithms which scaled to tens of thousands of videos, point clouds with hundreds of millions of points and deployed them in smart houses and mobile devices (Nokia N9). I mostly worked on parsing/segmentation problems in robot perception and mobile multimedia using graphical models, metric learning and deep learning. However, I am interested in any problem related to machine learning and large-scale data.

Education

Cornell University, Ithaca, NY — August 2016 (expected)
PhD in Electrical and Computer Engineering — GPA: 4.06/4.00
Advisor(s): Ashutosh Saxena , Silvio Savarese (Stanford)
Thesis: Latent structured understanding for robot perception.

Middle East Technical University, Ankara, Turkey — June 2012
BS and MS in Electrical and Electronics Engineering — GPA: 3.93(MS), 3.88(BS)/4.00
Thesis Advisor: Aydın Alatan
An Efficient Graph-Theoretical Approach for Interactive Mobile Image & Video Segmentation

Honours and Awards

Jacobs Scholar Fellowship	2013
METU Best Thesis Award (Master of Science)	2012 – 2013
IEEE-eXtreme Programming Competition 5.0, 1st place Nationwide	2012
METU Electrical and Electronics Engineering Bachelor Thesis Award	2010
XPLORE New Automation Award (Top 17 projects worldwide in the category of recreation)	2009
IEEE Foundation Grant Recipient	2009
Chairperson, IEEE Computer Society METU Student Branch	2007 – 2008
Dr Bulent Kerim Altay Award (given by the METU EE Department to the student who ranks first in his/her class)	2006 – 2007
National Olympiad in Informatics (Regional degree - 1st place)	2004

Professional Experience

Artificial Intelligence Laboratory, Stanford University, CA — August 2014 – Present
Visiting Scholar

Advised by Prof. Silvio Savarese and Prof. Ashutosh Saxena.

Developed a transductive machine learning algorithm for unsupervised domain adaptation problem. The resulting algorithm enables machine learning models to be trained on one domain and used in other ones *(in submission)*.

Developed a structured parsing algorithm which can parse large point clouds of buildings into its semantic elements near real time. *(in CVPR 2016)*.

Developed a large-scale, unsupervised video understanding framework using category specific youtube videos. The resulting algorithm can parse large collection of videos by discovering the underlying activities. *(in ICCV 2015)*.

Designed a large-scale multi-modal processing and storage system which scales to millions of videos, images and text as a part of the RoboBrain (*www.robobrain.me*) project *(in ISRR 2015)*.

Robot Learning Research Group, Cornell University, Ithaca, NY August 2013 – Present
Research Assistant

Advised by Prof. Ashutosh Saxena.

Studied structured diversity and developed an efficient learning algorithm for graphical models with hidden nodes *(in the process of submission)*.

Developed an human activity anticipation algorithm using RGB-D data. Proposed a novel inference mechanism -rCRF- in order to efficiently and accurately represent a belief over any CRF model using structured diversity *(in RSS 2015 and invited talk at AAAI 2016)*.

Multimedia Research Group, METU, Ankara, Turkey February 2011 – August 2013
Research Assistant

Worked in collaboration with Nokia Research Center, Tampere.
Advised by Prof. Aydın Alatan (METU) and Dr. Kemal Ugur (Nokia Research Center, Tampere).

Developed an efficient interactive video segmentation algorithm via Markov random field energy propagation. Proposed a dynamic method to reuse residual-flows in filtering scenario for time efficiency *(in Transaction on Multimedia 2013)*.

Developed a method efficiently solving interactive image segmentation problem via dynamic and iterative graph-cuts. Furthermore, improved the robustness of the method via automatic correction of user interaction errors *(in ACM-MM-W 2012, ICIP 2012)*.

Involved in patent application and deployed part of the developed algorithms to production on Nokia N9.

Siemens Corporate Research, Princeton, NJ August 2010 – February 2011
Research Intern in Imaging, Analytics and Informatics Department
Advised by Dr. Bogdan Georgescu and Dr. Yang Wang

Contributed to the development of the LVA(Left Ventricle Anatomy) software. Developed a learning based method for automatic classification of volume contrast echocardiography data.

Signal Processing Laboratory 4, EPFL, Switzerland July 2009 – September 2009
Research Intern
Advised by Prof. Pascal Frossard

Worked on the similarity analysis of observations under affine projections. Developed a distance metric to be used in multi-view classification problems. Implemented and tested proposed distance metric in graph based multi-view object classification algorithm.

Vestel Electronics R&D Corporation, Ankara, Turkey July 2008 – September 2008
Summer Intern
Worked on the frame rate conversion project. Implemented a computationally efficient true motion estimation system by combining block-based and optical-flow based techniques.

Publications

O. Sener, H. O. Song, A. Saxena, S. Savarese. Unsupervised Transductive Domain Adaptation. In *submission*.

I. Armeni, O. Sener, A. Zamir, S. Savarese. 3D Semantic Parsing of Large-Scale Indoor Spaces In *Computer Vision and Pattern Recognition, CVPR 2016 (oral)*.

O. Sener, A. Zamir, S. Savarese, A. Saxena. Unsupervised Semantic Parsing of Video Collections. In *International Conference on Computer Vision, ICCV 2015*.

O. Sener, A. Saxena. rCRF: Recursive Estimation of the Beliefs over CRFs for Activity Analysis in RGB-D Videos. In *Robotics Science and Systems, RSS 2015*.

A. Saxena, A. Jain, O. Sener, A. Jami, DK. Misra, HS. Koppula. RoboBrain: Large-Scale Knowledge Engine for Robots. In *International Symposium on Robotics Research, ISRR 2015*.

O. Sener, K. Ugur, and A. A. Alatan. Efficient MRF Energy Propagation for Video Segmentation via Bilateral Filters. In *Multimedia, IEEE Transactions on*, vol. 16, no. 5, pp. 1292–1302, Aug 2014.

Y. Aksoy. O. Sener, A. A. Alatan and K. Ugur. Interactive 2d-3d image conversion for mobile devices. In *IEEE International Conference on Image Processing*, 2012.

O. Sener, K. Ugur, and A. A. Alatan. Error-tolerant interactive image segmentation using dynamic and iterated graph-cuts. In *Proceedings of the 2nd international workshop on Interactive multimedia on mobile and portable devices*, ACM Multimedia Workshop.

O. Sener, K. Ugur, and A. A. Alatan. Robust interactive segmentation via coloring. In *Proceedings of the 1st International Workshop on Visual Interfaces for Ground Truth Collection in Computer Vision Applications*, ACM AVI 2012 Workshop.

Patents

K. Ugur, O. Sener, E. Gundogdu, and A. Alatan. Interactive Image/Video Segmentation For Mobile 2D/3D Conversion. International Patent Application, WO 2013144418 A1

Teaching Experience

Cornell University, Ithaca, NY — January 2014 – May 2014
Department of Electrical and Computer Engineering

Teaching Assistant for Embedded Systems

Anonymous Student Evaluations (AverageRating: 4.33/5.0)
"Great attitude, clear command over material. Carefully and clearly explains concepts."

"Ozan is very attentive to students who come to his office hours. He is quick to identify problems and guide students to the right solution. He knows when there are a lot of students waiting for help and does his best to attend to as many as he can."

"Explained lab-related concepts well. Friendly and personable guy."

"A very effective communicator and is able to explain things very clearly."

Middle East Technical University, Ankara, Turkey — January 2012 – June 2013
Department of Electrical and Electronics Engineering

Teaching Assistant for Digital Signal Processing, Computer Architecture and Data Structures

Related Coursework

Machine Learning: Advanced Topics in Machine Learning ^{c}, Algorithmic Perspective on Machine Learning ^{s}, Pattern Recognition ^{m}, Artificial Intelligence ^{m}, Statistical Techniques in Mobile Robotics ^{m}
Probability and Stochastic Processes: Measure Theoretic Probability ^{c}, Applied Stochastic Processes ^{c}, Signal Analysis and Processing ^{m}, Adaptive Signal Processing ^{m}, Information Theory ^{m}
Analysis and Algebra: Analysis ^{c}, Matrix Computations ^{c}, Linear System Theory ^{m}, Functional Analysis and Operator Theory with App. ^{m}
Offered by ^{s}Stanford University, ^{c}Cornell University and ^{m}Middle East Technical University.

Professional Activities

Service: Reviewer for ICCV, CVPR, ICRA, WACV, Signal Processing Letters, Transactions on Multimedia
Memberships: Student member of IEEE (since 2006) and ACM (since 2008)
Leadership: Chairperson of IEEE Computer Society METU Student Branch (2007-2008)

Skills

Python (proficient packages: Tensorflow and Numpy), C/C++ (proficient libraries: OpenCV and Boost), Matlab, LaTeX, Git, GNU/Linux (personal usage and system administration on Debian based distros).

Interests

Juggling (performed at METU Juggling Convention 2011&2012, attended European Juggling Convention 2011&2012), **Math Puzzles & Games** (game designer for EU Youth Action Project - Puzzle Puzzle 2007, finalist for World Puzzle Federation - Turkey Competition).

Citizenship: Turkish — Language: English and Turkish — Date of Birth: September 07, 1988