

İtir Önal Ertuğrul

CONTACT INFORMATION	Robotics Institute Carnegie Mellon University 5000 Forbes Ave, EDSH 235, Pittsburgh, PA, USA	+1 (412) 273 0053 itironal@gmail.com itironal.github.io
RESEARCH INTERESTS	Machine learning, affective computing, multimodal interaction, biomedical signal processing, computer vision	
PERSONAL INFORMATION	Place and date of birth: Ankara, 11/01/1989 Nationality: Turkish Gender: Female Languages: English (Proficient), German (Elementary), Turkish (Native)	
EDUCATION	Middle East Technical University (METU) , Ankara, Turkey Ph.D., Computer Engineering, August 2017, 4.00/4.00 M.Sc., Computer Engineering, September 2013, 4.00/4.00 B.Sc., Computer Engineering, June 2011, 3.83/4.00 (3 rd place)	
ACADEMIC AND WORK EXPERIENCE	Postdoctoral Researcher Robotics Institute, Carnegie Mellon University	02/2018 - current
	Postdoctoral Researcher Affect Analysis Group, Department of Psychology, University of Pittsburgh	09/2017 - 01/2018
	Research and Teaching Assistant ImageLab, Department of Computer Engineering, Middle East Technical University	09/2011 - 09/2017
	Visiting Ph.D. Student Pattern Recognition and Bioinformatics Lab, Delft University of Technology	07/2016 - 09/2016
	Summer School Attendee Microsoft Summer School, Ankara, Turkey	07/2010 - 08/2010
	Exchange Student Department of Electrical Engineering, Czech Technical University	02/2010 - 06/2010
	Intern Software Research and Development Center (SRDC), Ankara, Turkey	06/2009 - 07/2009
	Student Teaching Assistant Department of Computer Engineering, Middle East Technical University	09/2008 - 05/2011
HONORS & AWARDS	Best Paper Award in 12 th IEEE International Conference on Cognitive Informatics and Cognitive Computing (ICCI*CC) 2013 High honor graduation, M.Sc. in Computer Engineering, METU 2013 High honor graduation (3 rd in ranking), B.Sc. Computer Engineering, METU 2011 Outstanding Achievement Award, Computer Engineering, METU 2008 - 2011 Ranked 1155 th among ~2M examinees in Turkish University Entrance Examination 2006 Graduation with distinction (3 rd in ranking), Ankara Atatürk Anatolian High School 2006	

RESEARCH
GRANTS

Adaptive DBS in Non-Motor Neuropsychiatric Disorders: Regulating Limbic Circuit Imbalance. 09/2016 - 06/2022

National Institute of Neurological Disorders and Stroke
Role: Co-investigator

I measure the intensity of affect in the faces of patients that have been treated with deep brain stimulation (DBS) for intractable obsessive-compulsive disorder (OCD) using deep networks and work on personalized facial affect detection.

Deep Brain Stimulation for Depression Using Directional Current Steering and Individualized Network Targeting. 10/2017 - 09/2022

National Institute of Neurological Disorders and Stroke
Role: Co-investigator

I aim to automatically measure the intensity of their facial affect to identify brain networks that are critical for treatment of depression and analyze the relationship between stimulation dose and response.

Automatic Multimodal Affect Detection for Research and Clinical Use. 08/2017 - 04/2022

National Institutes of Mental Health
Role: Co-investigator

I work on predicting depression severity of the mothers from their dyadic interaction with their children.

Modeling the Dynamics of Early Communication and Development. 08/2013 - 07/2018

National Institute of General Medical Sciences
Role: Researcher

I work on predicting the changes in facial actions of mothers and infants in different phases of the Still Face paradigm.

Multi-layered cognitive learning model. 09/2014 - 09/2016

The Scientific and Technological Research Council of Turkey (TUBITAK) (Project no: 114E045)
Role: Researcher

Local voxel networks for modeling and classification of brain activity during cognitive processing, using brain signals. 09/2013 - 09/2015

The Scientific and Technological Research Council of Turkey (TUBITAK) (Project no: 112E315)
Role: Researcher

Havelsan Video Analysis System 09/2011 - 09/2013

Industry Theses Program (SAN-TEZ)
Role: Researcher

REVIEWING

IEEE Transactions on Affective Computing, IEEE Transactions on Pattern Analysis and Machine Intelligence, Neurocomputing, Image and Vision Computing, IEEE Transactions on Cybernetics, Journal of Ambient Intelligence and Humanized Computing, IEEE International Conference on Automatic Face and Gesture Recognition, ACM Multimedia.

PROFESSIONAL
ACTIVITIES

Co-organizer, Multimodal Interaction in Psychopathology Workshop (in conjunction with International Conference on Multimodal Interaction) 2020
AI Program Committee Member, Grace Hopper Celebration 2020

SCHOLARSHIPS	TUBITAK 2211: National Scholarship for Ph.D. Students The Scientific and Technological Research Council of Turkey	2013 - 2017
	TUBITAK 2210: National Scholarship for M. Sc. Students The Scientific and Technological Research Council of Turkey	2011 - 2013
CERTIFICATES	<p>Course Certificate of online course Probabilistic Graphical Models 2: Inference by Prof. Dr. Daphne Koller</p> <p>Course Certificate of online course Probabilistic Graphical Models 1: Representation by Prof. Dr. Daphne Koller</p> <p>Course Certificate of online course Machine Learning by Andrew Ng.</p>	
JOURNAL PUBLICATIONS	<p>[1] I. Onal Ertugrul, J. F. Cohn, L. A. Jeni, Z. Zhang, L. Yin, and Q. Ji. Crossing domains for AU coding: perspectives, approaches, and measures. <i>IEEE Transactions on Biometrics, Behavior and Identity Science</i>. 2020.</p> <p>[2] I. Onal Ertugrul, L. Yang, L. A. Jeni, J. F. Cohn. D-PAttNet: Dynamic Patch-Attentive Deep Network for Action Unit Detection. <i>Frontiers in Computer Science</i>, 2019.</p> <p>[3] I. Onal Ertugrul, M. Ozay, F. T. Yarman Vural. Gender classification using mesh networks on multiresolution multitask fMRI data . <i>Brain Imaging and Behavior</i>, 2019.</p> <p>[4] I. Onal Ertugrul, L. A. Jeni, H. Dibeklioglu. Modeling and Synthesis of Kinship Patterns of Facial Expressions. <i>Image and Vision Computing</i>, 2018.</p> <p>[5] I. Onal Ertugrul, M. Ozay, F. T. Yarman Vural. Encoding the Local Connectivity Patterns of fMRI for Cognitive State Classification. <i>Brain Imaging and Behavior</i>, 2018.</p> <p>[6] I. Onal Ertugrul, M. Ozay, F. T. Yarman Vural. Hierarchical Multi-resolution Mesh Networks for Brain Decoding <i>Brain Imaging and Behavior</i>, 2017.</p> <p>[7] I. Onal, M. Ozay, E. Mizrak, I. Oztekin and F. T. Yarman Vural, A New Representation of fMRI Signal by a Set of Local Meshes for Brain Decoding. <i>IEEE Transactions on Signal and Information Processing over Networks</i>, 2017.</p> <p>[8] O. Firat, M. Ozay, I. Onal, I. Oztekin, F. T. Yarman Vural, Enhancing Local Linear Models Using Functional Connectivity for Brain State Decoding, <i>International Journal of Cognitive Informatics and Natural Intelligence</i>, 2014.</p>	
BOOK CHAPTERS	<p>[9] J. F. Cohn, I. Onal Ertugrul, W. S. Chu, J. M. Girard, L. A. Jeni, and Z. Hammal. Affective facial computing: Generalizability across domains. In <i>Multimodal Behavior Analysis in the Wild</i>, pp. 407-441. Academic Press, 2019.</p>	
CONFERENCE PUBLICATIONS	<p>[10] I. Onal Ertugrul, L. A. Jeni, and J. F. Cohn. PAttNet: Patch-attentive deep network for AU detection. <i>British Machine Vision Conference (BMVC)</i> 2019.</p> <p>[11] K. Niinuma, L. A. Jeni, I. Onal Ertugrul, and J. F. Cohn. Unmasking the devil in the details: What works for deep facial action coding? <i>British Machine Vision Conference (BMVC)</i> 2019.</p> <p>[12] L. Yang, I. Onal Ertugrul, J. F. Cohn, Z. Hammal, D. Jiang, and H. Sahli. FACS3D-Net: 3D convolution based spatiotemporal representation for action unit detection. <i>International Conference on Affective Computing and Intelligent Interaction (ACII)</i> 2019.</p> <p>[13] I. Onal Ertugrul, J. F. Cohn, L. A. Jeni, Z. Zhang, L. Yin, and Q. Ji. Cross-domain AU detection: domains, learning approaches, and measures. <i>IEEE International Conference on Automatic Face and Gesture Recognition (FG)</i> 2019, (oral presentation).</p>	

- [14] **I. Onal Ertugrul**, L. A. Jeni, W. Ding, and J. F. Cohn. AFAR: A Deep learning based tool for automated facial affect recognition. *IEEE International Conference on Automatic Face and Gesture Recognition (FG)*, 2019.
- [15] J. F. Cohn, L. A. Jeni, **I. Onal Ertugrul**, D. Malone, M. S. Okun, D. Borton, and W. K. Goodman. Automated Affect Detection in Deep Brain Stimulation for Obsessive-Compulsive Disorder: A Pilot Study. *International Conference on Multimodal Interaction (ICMI)*, 2018.
- [16] **I. Onal Ertugrul**, L. A. Jeni and J. F. Cohn, FACSCaps: Pose-Independent Facial Action Coding with Capsules *IEEE International Conference on Computer Vision and Pattern Recognition Workshops (CVPRW)*, 2018.
- [17] **I. Onal Ertugrul** and H. Dibeklioglu, What will Your Future Child Look Like? Modeling and Synthesis of Hereditary Patterns of Facial Dynamics. *IEEE International Conference on Automatic Face and Gesture Recognition (FG)*, 2017, (oral presentation).
- [18] A. M. Ertugrul, **I. Onal**, C. Acarturk, Does the Strength of Sentiment Matter? A Regression Based Approach on Turkish Social Media, *International Conference on Applications of Natural Language to Information Systems (NLDB)*, 2017.
- [19] A. Afrasiyabi, **I. Onal**, F. T. Yarman Vural, A Sparse Temporal Mesh Model for Brain Decoding, *15th IEEE International Conference on Cognitive Informatics and Cognitive Computing (ICCI*CC)*, 2016.
- [20] **I. Onal**, M. Ozay, F. T. Yarman Vural, Functional Mesh Model with Temporal Measurements for Brain Decoding, *37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, 2015.
- [21] **I. Onal**, M. Ozay, F. T. Yarman Vural, Modeling Voxel Connectivity for Brain Decoding, *International Workshop on Pattern Recognition in Neuroimaging (PRNI)* 2015, (oral presentation)
- [22] **I. Onal**, A. Temizel, F. T. Yarman Vural, Spatial and Temporal Feature Extraction for Brain Decoding using CUDA, *GPU Technology Conference (GTC)*, 2015.
- [23] **I. Onal**, E. Aksan, B. Velioglu, O. Firat, M. Ozay, I. Oztekin, F. T. Yarman Vural, Modeling the Brain Connectivity for Pattern Analysis, *22nd International Conference on Pattern Recognition (ICPR)*, 2014
- [24] O. Firat, **I. Onal**, E. Aksan, B. Velioglu, I. Oztekin, F. T. Yarman Vural, Large Scale Functional Connectivity For Brain Decoding, *11th IASTED International Conference on Biomedical Engineering (BioMed)*, 2014.
- [25] B. Velioglu, E. Aksan, **I. Onal**, O. Firat, M. Ozay, F. T. Yarman Vural, Functional Networks of Anatomic Brain Regions, *13th IEEE International Conference on Cognitive Informatics and Cognitive Computing (ICCI*CC)*, 2014.
- [26] **I. Onal**, A. M. Ertugrul, R. Cakici, Effect of Using Regression on Class Confidence Scores in Sentiment Analysis of Twitter Data, *5th ACL Workshop on Computational Approaches to Subjectivity, Sentiment and Social Media Analysis (WASSA)*, 2014.
- [27] A. M. Ertugrul, **I. Onal**, RemindMe: An Enhanced Mobile Location-Based Reminder Application, *International Conference on Future Internet of Things and Cloud (FiCloud)*, 2014.
- [28] **I. Onal**, M. Ozay, O. Firat, I. Oztekin, F. T. Yarman Vural, An Information Theoretic Approach to Classify Cognitive States Using fMRI, *13th IEEE International Conference on BioInformatics and BioEngineering (BIBE)*, 2013.

- [29] **I. Onal**, M. Ozay, O. Firat, I. Oztekin, F. T. Yarman Vural, Analyzing the Information Distribution in the fMRI measurements by estimating the degree of locality, *35th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, 2013.
- [30] O. Firat, M. Ozay, **I. Onal**, I. Oztekin, F. T. Yarman Vural, Functional Mesh Learning for Pattern Analysis of Cognitive Processes, *12th IEEE International Conference on Cognitive Informatics and Cognitive Computing (ICCI*CC)*, 2013. **(Best Paper Award)**
- [31] O. Firat, M. Ozay, **I. Onal**, I. Oztekin, F. T. Yarman Vural, Representation of Cognitive Processes Using the Minimum Spanning Tree of Local Meshes, *35th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, 2013.
- [32] **I. Onal**, K. Kardas, Y. Rezaeitabar, U. Bayram, M. Bal, I. Ulusoy, N. Kesim Cicekli, A framework for Detecting Complex Events in Surveillance Videos, *3rd IEEE International Workshop on Advances in Automated Multimedia Surveillance for Public Safety (AAMS-PS)*, 2013.
- NATIONAL
CONFERENCE
PUBLICATIONS
- [33] A. Afrasiyabi, **I. Onal**, F. T. Yarman Vural. Effect of voxel selection on temporal mesh model for brain decoding. *24th IEEE Signal Processing and Communication Applications Conference (SIU)*, 2016. (in Turkish)
- [34] **I. Onal**, E. Aksan, B. Velioglu, O. Firat, M. Ozay, I. Oztekin, F. T. Yarman Vural, A Brain Network for Cognitive State Analysis. *23rd IEEE Conference on Signal Processing and Communications Applications (SIU)*, 2015. (in Turkish)
- [35] **I. Onal**, E. Aksan, B. Velioglu, O. Firat, M. Ozay, I. Oztekin, F. T. Yarman Vural, Estimating Brain Connectivity for Pattern Analysis, *22nd IEEE Conference on Signal Processing and Communications Applications (SIU)*, 2014. (in Turkish)
- [36] **I. Onal**, A. M. Ertugrul, Effect of Using Regression in Sentiment Analysis, *22nd IEEE Conference on Signal Processing and Communications Applications (SIU)*, 2014. (in Turkish)
- [37] A. M. Ertugrul, **I. Onal**, Çeşitli Konum Etiketleme Opsiyonlarıyla Zenginleştirilmiş Yeni Bir Konum Bazlı Hatırlatma Uygulaması, 8. *Ulusal Yazılım Mühendisliği Sempozyumu (UYMS)*, 2014. (in Turkish)
- [38] **I. Onal**, M. Ozay, O. Firat, I. Oztekin, F. T. Yarman Vural, Information Distribution Analysis in the fMRI measurements with Degree of Locality Estimation, *21th IEEE Conference on Signal Processing and Communications Applications (SIU)*, 2013 (in Turkish)
- [39] O. Firat, M. Ozay, **I. Onal**, I. Oztekin, F. T. Yarman Vural, Cognitive Processes Representation Using Minimum Spanning Tree of Local Meshes, *21th IEEE Conference on Signal Processing and Communications Applications (SIU)*, 2013 (in Turkish)
- [40] O. Firat, M. Ozay, **I. Onal**, I. Oztekin, F. T. Yarman Vural, A Mesh Learning Approach for Brain Data Modeling, *20th IEEE Conference on Signal Processing and Communications Applications (SIU)*, 2012. (in Turkish)
- THESES
- [41] **I. Onal Ertugrul**, Representation of Human Brain by Mesh Networks. *Ph.D. Thesis, Middle East Technical University, Department of Computer Engineering*, 2017.
- [42] **I. Onal**, An Information Theoretic Representation of Brain Connectivity for Cognitive State Classification Using Functional Magnetic Resonance Imaging. *M.Sc. Thesis, Middle East Technical University, Department of Computer Engineering*, 2013.