



**Arman
Afrasiyabi**

Email : arman.afrafiyabi.1@ulaval.ca
Email : afrasiyabi.arman@metu.edu.tr
Personal web-page : user.ceng.metu.edu.tr/~e1891068/
Group web-page : neuro.ceng.metu.edu.tr/fmri_prj/projects.html
Tel : +90 312 210 5552
Mobile : +90 538 013 5485
Address : Middle East Technical University, Ankara, Turkey

Education

- 2017(May) - **Ph.D Electrical Engineering and Computer Engineering Department (newly admitted),**
Université Laval, Quebec City (Quebec), Canada.
- 2015 - **Ph.D Computer Engineering Department (two years of course load),**
2017(May) *Middle East Technical University, Ankara, Turkey.*
- 2013 - 2015 **MSc. Biomedical Engineering Department, Bioelectric Track,**
Middle East Technical University, Ankara, Turkey.
Thesis : NEW DIMENSION REDUCTION TECHNIQUE FOR BRAIN DECODING
Advisor : Professor Fatos T. Yarman Vural
- 2012-2013 **Sci.Prep.Biomedical Engineering Department,**
Middle East Technical University, Ankara, Turkey.
- 2004 - 2009 **B.Sc.Computer Engineering,**
Azad University-Shabestar, Tabriz, Iran.

Research Interests

- » *Machine Learning, Deep Learning and Pattern Recognition*
- » *Data Science*
- » *Representation Learning*
- » *Computer Vision*
- » *Transfer Learning*

Academic Experience : Research Assistants

- 2016-current **Hierarchical Representation and Transfer Learning using Deep Learning Methods on Brain Images,** .
- 2015-current **Multi-layered Cognitive Learning Model.**
- 2013/8-2015 **Local Voxel Networks for Modeling and Classification of Brain Activity During Cognitive Processing.**
- 2013-2013/7 **Object Detection and Tracking.**

About the projects Please see the last page.

Academic Experience : Teaching Assistant

- 2016/Fall **Deep Learning, (CENG 783).**
Teaching assistant of Assist.Prof. Emre Akbas in graduate course "Deep Learning" at Computer Engineering Dept., METU.

2016/Fall **Pattern Recognition**, (CENG 564).

Teaching assistant of Professor Fatos T. Yarman Vural in graduate course "Pattern Recognition" at Computer Engineering Dept., METU.

2016/Fall **Data Structures and Algorithms**, (CENG 707).

Teaching assistant of Assist.Prof. Yusuf Sahillioglu in graduate course "Data Structures and Algorithms" at Computer Engineering Dept. METU.

Programming Skills

- » Python
- » Matlab
- » Machine Learning (Tensorflow, Theano, Scikit Learning)
- » CUDA C++ (newly started)

Publications

- 2017 A. Afrasiyabi, O. Yildiz, B. Nasir, F. T. Yarman Vural, , A. E. Cetin. "Energy Saving Additive Neural Network", arXiv:1702.02676, 2017.
- 2017 A. Afrasiyabi and F. T. Yarman Vural. "Deep Neural Network for Neural Decoding (D3ND)", This paper is under preparation to submit, and the preliminary results are achieved.
- 2016 A. Afrasiyabi, I. Onal and F. T. Yarman Vural. "A Sparse Temporal Mesh Model for Brain Decoding", 15 th IEEE International Conference on Cognitive Informatics and Cognitive Computing, 2016.
- 2016 A. Afrasiyabi, I. Onal and F. T. Yarman Vural. "Effect of Voxel Selection on Temporal Mesh Model for Brain Decoding", International Workshop on Machine Learning for Understanding the Brain, 2016.
- 2015 A. Afrasiyabi, F. T. Yarman Vural. "fMRG Verilerine Temel Bilesenser Analizi ve Ozyinelemeli Boyut Eliminasyonu Kullanarak Boyut Kucultme", 23rd IEEE Conference on Signal Processing and Communications Applications (SIU), 2015.

Presentations & Technical Reports

- 2016 Deep Learning and Visualization Techniques, Image Lab. presentation.
- 2016 Presentation at MLUB in June 29, 2016.
- 2016 Voxel Selection using Constraint Satisfaction, Report.
- 2015 Effective Connectivity of EEG data via Dynamic Bayesian Network, Report.
- 2014 Dynamic Casual Modeling (Report Voumes I, II and III).

Languages

- » Azerbaijani (Native Speaker)
- » Persian (Native Speaker)
- » English (Near Native)
- » Turkish (Near Native)

References

- » **Prof. Dr.Fatos T.Yarman.Vural** *email: vural@ceng.metu.edu.tr*
- » **Assist.Prof. Sinan Kalkan** *email: sinankalkan@gmail.com*
- » **Assist.Prof. Emre Akbas** *email: emre@ceng.metu.edu.tr*
- » **Assoc.Prof. Ilkay Ulusoy** *email: iulusoy06@gmail.com*

List of Projects

Arman Afrasiyabi

2016-current **Hierarchical Representation and Transfer Learning using Deep Learning Methods on Brain Images.**

Our group at the Image Laboratory of computer engineering department just started a new project on representation transfer learning. This project is funding by National Research Council of Turkey (TUBITAK). My position as a researcher of the project is to continue my research on deep learning and more generally on machine learning. I am working from both theoretical and practical perspectives in the project. From theoretical point of view, I am working on a new scoring function in order to reduce the computational cost in the learning processes which is very important in some applications of deep learning methods. Meanwhile, I am also working on representation and transfer learning on brain images in the order of big data. I am working under the supervision of Prof. Dr. Fatos T.Y. Vural at Image Processing and Pattern Recognition Laboratory, Computer Engineering Department, Middle East Technical University, Ankara.

2015-current **Multi-layered Cognitive Learning Model.**

In this project, our goal is to develop a model on functional magnetic resonance imaging (fMRI) recordings to decode the cognitive states. In order to reach our goal, our plane is to build a hierarchical model with different levels using machine learning techniques. This project is funding by TUBITAK 1003 - 114E045 under the supervision of Prof. Dr. Fatos T.Y. Vural at Image Processing and Pattern Recognition Laboratory, Computer Engineering Department, Middle East Technical University, Ankara. Please visit http://neuro.ceng.metu.edu.tr/fmri_prj/projects.html for more information. As a researcher of this project, I am developed a multi-layer brain decoding model based on deep learning techniques. More specifically, the first part of the model is similar to Stacked denoising Autoencoder in order to extract discriminative features and then use Convolutional Neural Networks to build a model with better generalization performance compared to classical machine learning methods.

2013/8-2015 **Local Voxel Networks for Modeling and Classification of Brain Activity During Cognitive Processing, Using Brain Signals.**

In this research, we developed a model based on the relationships between the measured fMRI recording in the voxel (volumetric pixel) level. As a researcher of the project, I develop a new architecture, called Sparse Temporal Mesh Model (STMM), which reduces the dimension of the feature space by combining the voxel selection methods with the mesh learning method. We tested STMM architecture on a visual object recognition experiment. Our results show that forming meshes around the selected voxels leads to a substantial increase in the classification accuracy. This project was founded by TUBITAK Project 112E315 under the supervision of Prof. Dr. Fatos T.Y. Vural at Image Processing and Pattern Recognition Laboratory, Computer Engineering Department, Middle East Technical University, Ankara. For more information, please visit http://neuro.ceng.metu.edu.tr/fmri_prj/projects.html for more information.

2013-2013/7 **Object Detection and Tracking.**

Before joining to the Image Lab. at the Computer Engineering Department, I was researcher at Computer Vision and Intelligent Systems Research Laboratory of Electrical and Electronics Engineering Department under the supervision of Assoc.Prof. Ilkay Ulusoy. During my research, I was trying to detect and track objects in the predefined region.