

AYKUT EKEN, PhD

ADDRESS

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EDUCATION

Ph.D. Medical Informatics, Middle East Technical University, Ankara, TR
September 2009 - October 2016

Research Topics : Neuroscience, Neuroimaging, Neural Signal Processing, Machine Learning Applications in Neuroscience
Member of Cognitive Neuroscience Research Group

Thesis Title : Investigating Pain Perception in Somatosensory Cortex for Healthy and Fibromyalgia Patient Populations by Using fNIRS
Thesis Advisor : Assist. Prof. Dr. Didem Gokcay, Co-Advisor: Assoc. Prof. Dr. Murat Kara

MSc. Biomedical Engineering, Baskent University, Ankara, TR
February 2007 - February 2009
Research Topics : Medical Imaging, Biomedical Image Processing

Thesis Title : Analyzing Echocardiographic Left Ventricle Images By Using Strain Rate Imaging Technique
Advisor : Dr. Kemal Serbetci, Co-Advisor : Prof. Dr. Bulent Yilmaz

BSc. Biomedical Engineering, Baskent University, Ankara, TR
September 2002 - July 2006
Research Topics : Biomedical Instrumentation, Medical Imaging, Biomedical Image and Signal Processing

Graduation Project : Peristaltic Heart Pump Design and Construction
Advisor : Prof. Dr. Mustafa Kocakulak

EXPERIENCE

Post Doctoral Researcher	Universidad Pompeu Fabra - Speech Acquisition and Perception Group (PI: Prof. Dr. Nuria Sebastian-Galles) Institute Ciencias de Fotoniques (ICFO) - Medical Optics Group (PI: Prof. Dr. Turgut Durduran) Barcelona, ES	September 2018 - March 2020
Assistant Professor	Duzce University Faculty of Engineering Biomedical Engineering Department Duzce, TR	November 2017 - September 2018
Research Assistant	Duzce University Faculty of Engineering Biomedical Engineering Department Duzce, TR	December 2015 - November 2017

Research Assistant Middle East Technical University
Informatics Institute
Medical Informatics Department September 2011- December 2015
Ankara, TR

Researcher Middle East Technical University February 2010- December 2015
Ankara, TR

Scientific Research Project in Event- Related Potentials in Turkish Language Processing , Advisor : Gulay Cedden (PhD), Co-Advisor : Suha Yagcioglu (MD,PhD)

Duties : Installation of laboratory, analyzing of various ERP data by using EEGLAB (MATLAB based software), analyzing solutions with SPSS.

Researcher Middle East Technical University June 2010 - December 2010
Ankara, TR

Duties : Installation of Skin Conductance Device, Analyzing of various ECG and Galvanic Skin Response data, Project Advisor : Didem Gokcay (PhD).

Sales Engineer Penta Electronic Medical Systems Co. December 2007- April 2008
Ankara, TR

Duties : Sales operations of Ultrasound, Echocardiography and Stress ECG devices. Operations of hospital projects.

Medical Lieutenant Turkish Armed Forces January 2007- December 2007
Ankara, TR

Duties : Preparing of technical specifications and controlling of medical devices bought by Turkish Armed Forces Health Commandership.

Product Specialist GST Medical Co. September 2006- December 2006
Ankara, TR

TECHNICAL SKILLS

Computer Skills

Operating Systems : Windows, OS X

Programming skills : Java, C, MATLAB, Python, R

Special Softwares : SPSS, Presentation Control Language, Latex

fMRI/ MRI Toolboxes: AFNI, SPM, FSL

EEG/MEG Toolboxes : EEGLAB, Fieldtrip, MNE-Python

fNIRS Toolboxes : NIRS-SPM, NAP (NIRS Analysis Package),POTATo

Hardware Skills

fNIRS data acquisition (Hitachi ETG-4000, NIRx systems, Artinis Oxymon), EEG data acquisition (Micromed, Neuroscan, Philips EGI SensorNet), Custom made Diffuse Correlation Spectroscopy system data acquisition, Arduino based Biosignal acquisition using biosensors such as ECG, GSR, PPG, also accelerometer and touch sensors.

LANGUAGE

- Turkish (Native)
- English (TOEFL Score: 83, June 2011, E-YDS : 85.00, July 2020)
- Spanish (A1 + A2 + B1 Spanish Course Completed in Active English)

HONORS AND AWARDS

- METU Best Thesis Award, 2018
- Baskent University, Biomedical Engineering, Bachelor of Science, two times honour student (2003-2004, 2005-2006)
- Republic of Turkey Ministry of National Education, 2011 Graduate Education Scholarship for foreign countries (Not used to continue PhD education in METU)

SEMINAR, COURSES AND CONFERENCE TALKS

- **Aykut Eken**, Sinem Burcu Erdogan, Functional Near Infrared Spectroscopy: Fundamentals and Technical Issues; Educational Course. National Neuroscience Congress 2018 (USK2018), 20 May 2018.
- **Aykut Eken**, Functional Near Infrared Spectroscopy, A General View and Applications, Yeditepe University, Istanbul, March 23rd 2018 (Invited Talk)
- Gulay Cedden ,**Aykut Eken**, A neurolinguistic exploitation of receptive language processing: an ERP study of Azeris understanding of Turkish, Toolkit for Transnational Communication in Europe, METU, Thursday, December 1st- Friday, December 2nd, 2011
- **Aykut Eken**, functional Near Infrared Spectroscopy, A General View and Applications, Ankara University Brain Research Center, Ankara, November 21st 2011 (Invited Talk)
- Gulay Cedden, **Aykut Eken**, Is there a difference in sentence processing in mono- and multilingual native speakers of Turkish? An ERP study, Cognitive Science Seminars, Psycholinguistics and Cognitive Science, 21-22 September 2010, Middle East Technical University Ankara / Turkey.

PUBLICATIONS

Book Chapters

- **Aykut Eken**, Functional Near Infrared Spectroscopy: Fundamentals and Technical Issues. Biomedical Engineering Fundamentals and Applications (Turkish). Turkish Chambers of Electrical Engineers, ISBN:978-605-01-322-9, February 2019.

Journal Articles (International)

- **Aykut Eken**, Damla Sayar-Akaslan, Bora Baskak. Diagnostic Classification of Schizophrenia and Bipolar Disorder by Using Mental State Judgement Based Dynamic Functional Connectivity: an fNIRS Study. (Under review)
- Burcin Colak, **Aykut Eken**, Adnan Kusman, Damla Sayar Akaslan, Selma Cilem Kzlpnar, Batuhan Cakmak, Nese Burcu Bal, Kerim Munir, Ozgur Oner, The Relationship of Cortical Activity Induced by Pain Stimulation With Clinical and Cognitive Features of Somatic Symptom Disorder: A Controlled Functional Near Infrared Spectroscopy Study, J Psychosom Res, 140, 110300. doi:<https://doi.org/10.1016/j.jpsychores.2020.110300>
- **Aykut Eken**, Burcin Colak, Burcu Bal, Adnan Kusman, Selma Cilem Kizilpinar, Damla Sayar Akaslan, Bora Baskak. Hyperparameter-tuned Prediction of Somatic Symptom Disorder By Using fNIRS Based Dynamic Functional Connectivity, J Neural Eng. 17 (016012), 2020, doi:10.1088/1741-2552/ab50b2.
- Didem Gokcay, **Aykut Eken**, Serdar Baltac. Binary Classification Using Neural and Clinical Features: An Application in Fibromyalgia with Likelihood based Decision Level Fusion in IEEE

Journal of Biomedical and Health Informatics. 23(4), 2019 doi: 10.1109/JBHI.2018.2844300

– **Aykut Eken**, Didem Gokcay, Cemre Yilmaz, Bora Baskak, Aysegul Baltaci, Murat Kara . Association of Fine Motor Loss and Allodynia in Fibromyalgia: An fNIRS Study. J Mot Behav, 50(6), 664-676. doi:10.1080/00222895.2017.1400947

– **Aykut Eken**, Murat Kara, Bora Baskak, Aysegul Baltaci, Didem Gokcay, Differential efficiency of transcutaneous electrical nerve stimulation in dominant versus nondominant hands in fibromyalgia : placebo-controlled functional near-infrared spectroscopy study, Neurophoton. 5(1), 011005 (2018), doi: 10.1117/1.NPh.5.1.011005.

Journal Articles (National)

– **Aykut Eken**, Soner Civilibal, Sevket Caliskan, Pinar Deniz Tosun, Prediction of smoking status by using multi-physiological measures and machine learning techniques (Accepted to Dokuz Eylul University Faculty of Engineering Journal of Science and Engineering)

– **Aykut Eken**. Interdisciplinary Approaches to Understand "Social Brain", PiVOLKA, 7(25), (2017), ISSN: 2587-022X (Turkish).

International Conferences (Poster Presentations)

– The P600 Potential Could Index Cognitive Costs in Sentence Processing, Gulay Cedden, **Aykut Eken**, Tuna Cakar, Organization of Human Brain Mapping 2017 Annual Meeting, 25-29 June 2017, Vancouver Convention Centre, Vancouver, Canada.

– Analyzing Hand Preference in Self-Guided Non-Painful Tactile Stimulation for FM patients: an fNIRS Study, **Aykut Eken**, Didem Gokcay, Cemre Topcu, Bora Baskak, Aysegul Baltaci, Murat Kara, Organization of Human Brain Mapping 2017 Annual Meeting, 25-29 June 2017, Vancouver Convention Centre, Vancouver, Canada.

– The effect of typology on ERPs during sentence processing: Evidence from Turkish, Gulay Cedden, **Aykut Eken**, Organization of Human Brain Mapping 2016 Annual Meeting, 26-30 June 2016, Palexpo Exhibition and Congress Centre, Geneva, Switzerland.

– Support Vector Classification of Fibromyalgia Syndrome using Hemodynamic Responses: an fNIRS Study, **Aykut Eken**, Didem Gokcay, Bora Baskak, Aysegul Baltaci, Murat Kara, Organization of Human Brain Mapping 2016 Annual Meeting, 26-30 June 2016, Palexpo Exhibition and Congress Centre, Geneva, Switzerland.

– Identification rate of Schizophrenia based on local brain volumes and dichotic listening scores. Nuri Karabay, Didem Gokcay, **Aykut Eken**, Umut Orcun Turgut, Adile Oniz, Koksall Alptekin, Serhat Taslica, Kenneth Hugdahl, Murat Ozgoren, Organization of Human Brain Mapping 2014 Annual Meeting, 8-12 June 2014, Congress Center Hamburg, Hamburg.

– Environmental Aesthetics and Human Prefrontal Cortex Activation Patterns During a Temporal Assessment Task : An fNIRS Study, Begum Erten, **Aykut Eken**, 8th FENS Forum of Neuroscience, 14-18 July 2012, Barcelona, Spain

International Conferences (Oral Presentations)

– Non-invasive estimation of intracranial pressure by fast diffuse correlation spectroscopy - a multi-center study, Jonas B. Fischer, Susanna Tagliabue, Federica Maruccia, Amelia Jimenez- Sanchez, Eashani Sathialingam, Wesley B. Baker, **Aykut Eken**, Ameer Ghouse, Anna Rey-Perez, Marcelino Baguena, Katiuska Rosas, Ofer Sadan, Prem A. Kandiah, Owen B. Samuels, Ramani Balu, Ricardo Zucca, Udo M. Weigel, David R. Busch, Erin M. Buckley, Arjun G. Yodh, Daniel J. Licht, W. Andrew Kofke, Maria A. Poca, Gemma Piella, Juan Sahuquillo, Turgut Durduran. Photonics West 2021, BIOS (Optical Tomography and Spectroscopy of Tissue XIV). 23-28 January 2021. San Francisco, California, USA.

- Investigating the Effect of Tens in Pain Perception: An fNIRS Study in Somatosensory Cortex. **Aykut Eken**, Didem Gokcay, Bora Baskak, Murat Kara. Mind, Brain and Body Symposium. 19-20 March 2015. Humboldt Graduate School. Berlin / Germany.
- Semantic and syntactic interaction in a morpho-syntactically complex language: Evidence from event-related potentials, Gulay Cedden **Aykut Eken**, KogWis 2012, 11th Biannual Meeting of the German Cognitive Science Society, 30th September 3rd October 2012, University of Bamberg, Germany.
- A Neurolinguistic exploitation of receptive language processing. Reactions from Azerian's understanding of Turkish : An Event Related Brain Potential (ERP) Study, Gulay Cedden, **Aykut Eken**, 16th International Conference on Turkish Linguistics, September 18-21, 2012 - Ankara, Turkey.

National Conferences (Oral Presentations)

- Classification of Somatic Symptom Disorder Using fNIRS Based Dynamic Functional Connectivity, **Aykut Eken**, Burcin Colak, Nese Burcu Bal, Adnan Kusman, Selma Cilem Kizilpinar, Damla Sayar Akaslan, Bora Baskak, 18th National Neuroscience Congress, 6-9 November 2020, Ankara, Turkey.
- The Utility of fNIRS Signals versus Self-Report for Classification of Fibromyalgia Syndrome, **Aykut Eken**, Didem Gokcay, Bora Baskak, Aysegul Baltaci, Murat Kara, XXV. Signal Processing and Communications Applications Conference, 15-18 May 2017, Antalya, Turkey.
- Classification of Fibromyalgia Syndrome by Using NIRS Signals, **Aykut Eken**, Didem Gokcay, Cemre Topcu, Aysegul Baltaci, Bora Baskak, Murat Kara, 2015 Medical Technologies National Conference, 15-18 October 2015, Bodrum, Turkey.
- Does language typology have an impact on Event-related Brain Potentials in sentence processing? Evidence from Turkish, Gulay Cedden, **Aykut Eken**, 2nd International Symposium on Brain and Cognitive Science (ISBCS), 19 April 2015. Middle East Technical University, Ankara, Turkey.
- Filtering of Functional Near Infrared Spectroscopy Signals By Eigenvalue Based Methods, **Aykut Eken**, XXII. IEEE Signal Processing and Communications Applications Conference, Karadeniz Technical University, Trabzon, 23-25 April 2014.
- Representation of Pain in Somatosensory Cortex: Preliminary Results from fNIRS, Didem Gokcay, **Aykut Eken**, Igor Mapelli, Oyku Cobanoglu, Gulhan Saracaydin, Alper Kayalar, Ekin Kantar, XXI. IEEE Signal Processing and Communications Applications Conference, Kyrenia, Northern Cyprus, 24-26 April 2013.
- Is there any difference in Event Related Brain Potentials between monolinguals and bilinguals during native language processing? Gulay Cedden, **Aykut Eken**, 25th National Linguistic Conference, 5-7 May 2011, Cukurova University, Adana, Turkey.
- Measurement of Event Related Brain Potentials in Turkish Sentence Comprehension, Gulay Cedden, **Aykut Eken**, Suha Yagcioglu, 24th National Linguistics Conference, 17-18 May 2010, Middle East Technical University Ankara / Turkey

National Conferences (Poster Presentations)

- Multiple Choice vs. Open-Ended Questions: Does it make a difference? An ERP study. Gulay Cedden, **Aykut Eken**, Giray Berberoglu, 18th National Neuroscience Congress, 6-9 November 2020, Ankara, Turkey.
- Anlamsal ve Sozdizimsel bozulmalarda beyin tepkileri : Turkce'de farklilik nerede?, Gulay Cedden, **Aykut Eken**, Tuna Cakar, Anatomy, 10 (1) 2016. Special Issue for abstracts for the 14th National Congress of Neuroscience, 26-29 May 2016, Ankara, Turkey.
- Analyzing Strain Rate in Echocardiographic Images by Using MATLAB, **Aykut Eken**, Kemal Serbetci, Omac Tufekcioglu, Bulent Yilmaz, IEEE Explore Conference Proceedings, BIYOMUT 2009, 14th National Biomedical Engineering Conference, Digital Object Identifier: 10.1109 / BIYOMUT. 2009. 5130359, pp 1-4 20-23 May 2009 Izmir / Turkey.
- Peristaltic Heart Pump Design and Construction Onur Kocak, **Aykut Eken**, Cengiz Kocum,

Mustafa Kocakulak BIYOMUT 2006 National Biomedical Engineering Conference 25-27 May 2006
Bosphorus University / Istanbul / Turkey

REVIEWER

- IEEE Journal of Biomedical and Health Informatics
- JoVE (Journal of Visualized Experiments)
- Frontiers in Human Neuroscience
- Turkish Journal of Electrical Engineering and Computer Science
- Applied Soft Computing
- Computational Intelligence and Neuroscience
- Journal of Neural Engineering
- Journal of Neuroscience Methods
- Organization for Human Brain Mapping (OHBM) Conference 23-29 June 2017, Vancouver, Canada
- Signal Processing and Communications Applications Conference

EDITORIAL BOARD

Frontiers in Human Neuroscience
Frontiers in Neuroergonomics

ATTENDED SEMINARS, COURSES AND CERTIFICATES

- Functional Magnetic Resonance Imaging Course, 9 Eylül University Faculty of Medicine Hall, 20 May 2009 A1+A2 Spanish Language, Certificate, Active English 1 October 2009.
- Java Programming Training, Middle East Technical University Continuing Education Center, 15 September 2010, 40 Hour Education. Trainer : Erman Yukselturk(PhD)
- Institute of Theoretical and Applied Physics International Summer School of Brain Dynamics, 23-28 July 2012, ITAP Dereozu Campus, Marmaris, Turkey.
- Institute of Theoretical and Applied Physics International Summer School of Brain Dynamics : Connectivity and Cognition, 1-6 July 2013, ITAP Dereozu Campus, Marmaris, Turkey
- EIBIR Summer School of Neurology Imaging, 26th 30th August 2013, University of Zagreb, Center for Advanced Academic Studies (CAAS)Dubrovnik, Croatia

SCIENTIFIC RESEARCH PROJECTS

- UNDER CONTROL : Neuro-cognitive development in infants using Functional Diffuse Correlation Spectroscopy (fDCS) with EEG recording ERC Research Project FP7-IDEAS-ERC - 323961. Project Supervisors : Prof. Dr. Nuria Sebastian-Galles (UPF), Prof. Dr. Turgut Durduran (ICFO). Position : **Post Doctoral Researcher**
- Prediction of Smoking Addiction Using Physiological Measures and Machine Learning Techniques, Duzce University Scientific Research Project, Project Number: 2018.06.07.810. Project Budget : 41.901,80 TL. Position : **Project Supervisor**
- Comparison Brain Responses of Speakers in Turkey and Germany during Turkish Language Processing by using Event - Related Potentials. Project Supervisor : Assoc. Prof. Dr. Gulay Cedden, Middle East Technical University, Scientific Research Project, Project Number : BAP-05-03-2017-002, Position : **Researcher**
- Determination of Relationship Between Neural Activations and Thinking Processes During Reading and Answering Questions Period : An Interdisciplinary Study, Project Supervisor : Assoc. Prof. Dr. Gulay Cedden, Middle East Technical University, Scientific Research Project, Project Number : BAP-05-03-2015-002, Position : **Researcher**
- Investigating Comprehension Processes of Semantic and World Knowledge in English and Turkish, Project Supervisor : Assoc. Prof. Dr. Gulay Cedden, Middle East Technical University, Scientific Research Project, Project Number : BAP-05-03-2014-002, Position : **Researcher**
- Normal ve major depresyonlu hasta populusyonlarında duygusal celiski cozumlemenin beyindeki fonksiyonel lokalizasyonu ve etken noroanatomik morfolojik faktorlerin incelenmesi, TUBITAK EEEAG Proje No: 109E081, 2012: 1-65, Position : **Scholar**
- Processing of Turkish as Native Language and Event-Related Potentials Processing of English as

Foreign Language in Turkish Native Speakers, Project Supervisor : Assoc. Prof. Dr. Gulay Cedden, Middle East Technical University, Scientific Research Project, Project Number : BAP-05-03-2011-002, Position : **Researcher**

– Electrophysiological Measurement of Language Functions, Project Supervisor : Assoc. Prof. Dr. Gulay Cedden, Middle East Technical University, Scientific Research Project, Project Number : BAP-05-03-2010-004, Position : **Researcher**

– Language Comprehension Processes in Our Brain, Project Supervisor : Assoc. Prof. Dr. Gulay Cedden, Middle East Technical University, Scientific Research Project, Project Number : BAP-05-03-2009-001, Position : **Researcher**

REFERENCES

- Prof. Dr. Turgut Durduran, Medical Optics Research Group, The Institute of Photonic Sciences (ICFO), Barcelona, Spain
- Assoc. Prof. Dr. Bora Baskak, Ankara University, Faculty of Medicine, Department of Psychiatry, Ankara, Turkey
- Assoc. Prof. Dr. Gulay Cedden, Middle East Technical University, Faculty of Education, Ankara, Turkey
- Assoc. Prof. Dr. Murat Kara, Hacettepe University, Faculty of Medicine, Physical Treatment and Rehabilitation Department, Ankara, Turkey

SOCIAL ACTIVITIES

- 2016 - 2018 Academic Consultant of Biomedical Engineering Community of Duzce University
- 2011-2012 Turkish Dance Sport Federation D Class Licenced Salsa Dance Sportsman Licence Number : 2884
- 12-19 September 2009 Our traditions under the twelve stars Youth Exchange Program Participant, Lednice, Breclav / Czech Republic
- 2003- 2006 Baskent University Biomedical Engineering Community Member
- 2005-2006 Baskent University Student Council Biomedical Engineering Department Student Representative
- 2001-2002 Baskent University Folk Dances Community Member

MEMBERSHIP

- Member of Organization for Human Brain Mapping 2014 -
- Member of Society for Functional Near Infrared Spectroscopy 2016-