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**CURRENT RESEARCH INTERESTS**

Brain connectivity analysis using functional magnetic resonance imaging (fMRI), magnetoencephalography (MEG), electroencephalography (EEG), and intracranial EEG (iEEG); Study of the brain's function, e.g. language and memory, using iEEG, fMRI, and EEG/MEG; Application of brain connectivity analysis in epilepsy, Alzheimer's disease, sleep disorder, and traumatic brain injury (TBI); Epilepsy seizure localization; Application of dynamic contrast enhancement MRI (DCE-MRI) in the diagnosis of cancer and monitoring of tumor response to treatment; Signal and image processing; Medical imaging;

**EDUCATION & PROFESSIONAL PREPARATION****Washington University School of Medicine, St. Louis, Missouri**

*Staff Scientist:* 2011-2013

Research Focus: Collecting and processing MEG, EEG, and fMRI datasets in Human Connectome Project (HCP)

**Henry Ford Health System, Detroit, Michigan**

*Postdoctoral Fellow/Instructor:* 2007-2011

Research Focus: Develop and evaluate integrated MEG/EEG and fMRI models for the brain connectivity analysis

**University of Tehran, Tehran, Iran**

*Ph.D. Biomedical (Electrical) Engineering:* February 12, 2006 (defense date)

Dissertation title: Activation detection using integrated modeling and analysis of MEG and fMRI

Advisor: Dr. Hamid Soltanian-Zadeh

**PROFESSIONAL EMPLOYMENT & RESEARCH EXPERIENCE**

2015 – Present, Assistant Professor, Department of Anatomy and Neurobiology, University of Tennessee Health Science Center, Memphis, Tennessee

2013 – Present, Assistant Professor, Department of Pediatrics, University of Tennessee Health Science Center, Memphis, Tennessee

2013 – Present, Assistant Professor, Neuroscience Institute, Le Bonheur Children's Hospital, Memphis, Tennessee

2011 – 2013, Staff Scientist, Washington University School of Medicine, St. Louis, Missouri

2007 – 2011, Postdoctoral Fellow/Instructor, Henry Ford Health System, Detroit, Michigan

1997 – 2007, Supervisor of the research & development (R&D) department, Tehran Padena Co., Tehran, Iran

1995 – 1997, Electronics Engineer, ITRC, Tehran, Iran

**HONORS AND AWARDS**

Nominee for the Best Research Faculty, Department of Pediatrics, The University of Tennessee Health Science Center, Memphis, TN, 2018

Young Investigator Award, Children's Foundation Research Institute and the Le Bonheur Associate Board, Memphis, TN, 2016

Research Award for Distinguished Ph.D. student, University of Tehran, Tehran, Iran, 2006

Ranked 2<sup>nd</sup> among 145 B.S. students of electronic engineering at University of Tehran, Tehran, Iran, 1995

Ranked 24<sup>th</sup> among over 200,000 participants in national university entrance exam for undergraduate study, Iran, 1991

Ranked 1<sup>st</sup> in the Mazandaran province, Physics and Mathematics diploma, 1991

## PUBLICATIONS

**Journal articles (peer-reviewed)**

- J42. S. H. Hojjati, A. Ebrahimzadeh, A. Khazae, and **A. Babajani-Feremi**, “Predicting conversion from MCI to AD by integrating rs-fMRI and structural MRI,” *Computers in Biology and Medicine*, vol. 102(1), pp. 30-39, 2018.
- J41. A. Moharramipour, P. Mostame, G. Hossein-Zadeh, James W. Wheless, and **A. Babajani-Feremi**, “Comparison of statistical tests in effective connectivity analysis of ECoG data,” *Journal of Neuroscience Methods*, In Press.
- J40. **A. Babajani-Feremi**, N. Noorzadeh, B. Mudigoudar, and James W. Wheless, “Predicting seizure outcome of vagus nerve stimulation using MEG-based network topology,” *NeuroImage: Clinical*, vol. 19, pp. 990-999, 2018.
- J39. S. H. Hojjati, A. Ebrahimzadeh, A. Khazae, and **A. Babajani-Feremi**, “Predicting Alzheimer’s disease using DCA fusion algorithm based on rs-fMRI and sMRI,” *Iranian Journal of Biomedical Engineering*, In Press.
- J38. **A. Babajani-Feremi**, C.M. Holder, S. Narayana, S.P. Fulton, A.F. Choudhri, F.A. Boop, and J.W. Wheless, “Predicting postoperative language outcome using presurgical fMRI, MEG, TMS, and high gamma ECoG,” *Clinical Neurophysiology*, vol. 129, pp. 560-571, 2018.
- J37. S. Narayana, B. Mudigoudar, **A. Babajani-Feremi**, A.F. Choudhri, and F.A. Boop “Successful motor mapping with transcranial magnetic stimulation in an infant: A case report,” *Neurology*, vol. 89(20), pp. 2115-2117, 2018.
- J36. C. Papanicolaou, R. Rezaie, S. Narayana, A. F. Choudhri, **A. Babajani-Feremi**, and F. A. Boop, and J. W. Wheless, “On the relative merits of invasive and non-invasive pre-surgical brain mapping: New tools in ablative epilepsy surgery,” *Epilepsy Research*, vol. 142, pp.153-155, 2018.
- J35. C. Papanicolaou, J. W. Wheless, **A. Babajani-Feremi**, S. Narayana, R. Rezaie, A. F. Choudhri, and F. A. Boop, “On the uses of fMRI,” *Neurology*, Published online, March 13, 2017.
- J34. B. Elahian, M. Yeasin, B. Mudigoudar, J.W. Wheless, and **A. Babajani-Feremi**, “Identifying seizure onset zone from electrocorticographic recordings: A machine learning approach based on phase locking value,” *Seizure*, vol. 51, pp. 35-42, 2017.
- J33. A.C. Papanicolaou, Marina Kilintari, R. Rezaie, S. Narayana, and **A. Babajani-Feremi**, “The role of the primary sensory cortices in early language processing,” *Journal of Cognitive Neuroscience*, vol. 29, pp. 1755-1765, 2017.
- J32. **Babajani-Feremi**, “Neural mechanism underling comprehension of narrative speech and its heritability: study in a large population,” *Brain Topography*, vol. 30, pp. 592-60, 2017.
- J31. S. H. Hojjati, A. Ebrahimzadeh, A. Khazae, and **A. Babajani-Feremi**, “Predicting conversion from MCI to AD using resting-state fMRI, graph theoretical approach and SVM,” *Journal of Neuroscience Methods*, Vol. 282, pp. 69–80, 2017.
- J30. A. Khazae, A. Ebrahimzadeh, and **A. Babajani-Feremi**, “Classification of patients with MCI and AD from healthy controls using directed graph measures of resting-state fMRI,” *Behavioural Brain Research*, vol. 322, pp. 339-350, 2017.
- J29. D. H. Heck, S. McAfee, Yu Liu, **A. Babajani-Feremi**, R. Rezaie, W. J. Fremann, J. W. Wheless, A.C.Papanicolaou, and R. Kozma, “Breathing as a fundamental rhythm of brain function,” *Frontiers in Neural Circuits*, Vol. 10, p. 115, 2017.
- J28. A. Chan, A. Trefler, and **A. Babajani-Feremi**, “Verifying Face Selectivity in the Human Prefrontal Cortex: Data from~500 Participants,” *Journal of Vision*, Vol. 16, No. 12, pp. 718-718, 2016.
- J27. **A. Babajani-Feremi**, J. W. Wheless, A. C. Papanicolaou, Y. J. Wang, M. S. Fifer, A. Flinker, A. Korzeniewska, M. C. Cervenka, W. S. Anderson, D. F. Boatman-Reich, and N. E. Crone, "Spatial-temporal functional mapping of language at the bedside with electrocorticography," *Neurology*, vol. 87, pp. 2604-2604, 2016.
- J26. M. Kilintari, S. Narayana, **A. Babajani-Feremi**, R. Rezaie, and A.C. Papanicolaou, “Brain activation profiles during kinesthetic and visual imagery: an fMRI study,” *Brain Research*, vol. 1646, pp. 249-261, 2016.
- J25. M. Antonakakis, S. I. Dimitriadis, M. Zervakis, S. Micheloyannis, R. Rezaie, **A. Babajani-Feremi**, G. Zouridakis, and A. C. Papanicolaou “Altered Cross-frequency Coupling in Resting-State MEG after Mild Traumatic Brain Injury,” *International Journal of Psychophysiology*, vol. 102, pp. 1–11, April 2016.
- J24. **A. Babajani-Feremi**, S. Narayana, R. Rezaie, A.F. Choudhri, S.P. Fulton, F.A. Boop, J.W. Wheless, and A.C. Papanicolaou, “Language mapping using high gamma electrocorticography, fMRI, and TMS versus electrocortical stimulation,” *Clinical Neurophysiology*, vol. 127, no. 3, pp. 1822-1836, 2016.
- J23. A. Khazae, A. Ebrahimzadeh, and **A. Babajani-Feremi**, “Application of statistical analysis and advanced machine learning methods on resting-state fMRI network for identification of mild cognitive impairment and Alzheimer's disease,” *Brain Imaging and Behavior*, vol. 10, pp. 799-817, 2016.

- J22. S. Dimitriadis, G. Zouridakis, R. Rezaie, **A. Babajani-Feremi**, and A.C. Papanicolaou, "Functional connectivity changes detected with magnetoencephalography after mild traumatic brain injury," *NeuroImage Clinical*, vol. 9, pp. 519-531, 2015.
- J21. A. Khazaei, A. Ebrahimzadeh, and **A. Babajani-Feremi**, "Identifying patients with Alzheimer's disease using resting-state fMRI and graph theory," *Clinical Neurophysiology*, vol. 126, no. 11, pp. 2132-2141, 2015.
- J20. A. Khazaei, A. Ebrahimzadeh, and **A. Babajani-Feremi**, "Application of pattern recognition and graph theoretical approaches to analysis of brain network in Alzheimer's disease," *Journal of Medical Imaging and Health Informatics* vol. 5, no. 6, pp. 1145-1155, 2015.
- J19. M.S. Hadi, M. Siadat, and **A. Babajani-Feremi**, "Validation of brain connectivity analysis using fMRI simulation," *The International Journal of Engineering Systems Modelling and Simulation*, vol. 7, no. 4, pp. 279-293, 2015.
- J18. S. Narayana, R. Rezaie, S. S. McAfee, A. F. Choudhri, **A. Babajani-Feremi**, S. Fulton, F. B. Boop, J. W. Wheless, and A. C. Papanicolaou, "Assessing motor function in young children with transcranial magnetic stimulation," *Pediatric Neurology*, vol. 52, no. 1, pp. 94-103, Jan 2015.
- J17. **A. Babajani-Feremi**, R. Rezaie, S. Narayana, A. F. Choudhri, S. P. Fulton, F. A. Boop, J. W. Wheless, and A. C. Papanicolaou, "Variation in the topography of the speech production cortex verified by cortical stimulation and high gamma activity," *Neuroreport*, vol. 25, no. 18, pp. 1411-7, Dec 17, 2014.
- J16. M.M. Ali, S. Kumar, A. Shankar, N.R. Varma, A.S. Iskander, B. Janic, W.B. Chwang, R. Jain, **A. Babajani-Feremi**, T.F. Borin, H. Bagher-Ebadian, S.L. Brown, J.R. Ewing, and A.S. Arbab, "Effects of tyrosine kinase inhibitors and CXCR4 antagonist on tumor growth and angiogenesis in rat glioma model: MRI and protein analysis study," *Translational Oncology* vol. 6, pp. 660-9, 2013.
- J15. L.J. Larson-Prior, R. Oostenveld, S. Della Penna, G. Michalareas, F. Prior, **A. Babajani-Feremi** et al., "Adding dynamics to the Human Connectome Project with MEG," *Neuroimage*, vol. 80, pp. 190-201, 2013.
- J14. D. C. Van Essen, S. M. Smith, D. M. Barch, T. E. J. Behrens, E. Yacoub, K. Ugurbil, et al., "The WU-Minn Human Connectome Project: An overview," *Neuroimage*, vol. 80, pp. 62-79, Oct 15 2013.
- J13. **A. Babajani-Feremi**, V. Gumenyuk, T. Roth, C. L. Drake, and H. Soltanian-Zadeh, "Connectivity analysis of novelty process in habitual short sleepers," *Neuroimage*, vol. 63, pp. 1001-1010, Aug. 2012.
- J12. J. M. Zempel, D. G. Polite, M. Kelsey, R. Verner, T. S. Nolan, **A. Babajani-Feremi**, F. Prior, and L. J. Larson-Prior, "Characterization of scale-free properties of human electrocorticography in awake and slow wave sleep States," *Front. Neurol.*, vol. 3, p. 76, 2012.
- J11. B. Janic, K. Jafari-Khouzani, **A. Babajani-Feremi**, A. S. Iskander, N. R. Varma, M. M. Ali, R. A. Knight, and A. S. Arbab, "MRI tracking of FePro labeled fresh and cryopreserved long term in vitro expanded human cord blood AC133+ endothelial progenitor cells in rat glioma," *PLoS One*, vol. 7, p. e37577, 2012.
- J10. M.R. Nazem-Zadeh, S. Saksena, **A. Babajani-Feremi**, Q. Jiang, H. Soltanian-Zadeh, M. Rosenblum, T. Mikkelsen, and R. Jain, "Segmentation of corpus callosum using diffusion tensor imaging: validation in patients with glioblastoma," *BMC Medical Imaging*, vol. 12, no. 10, pp. 1-16, 2012.
- J9. J. Narang, R. Jain, A.S. Arbab, T. Mikkelsen, L. Scarpace, M.L. Rosenblum, D. Hearshen, and **A. Babajani-Feremi**, "Differentiating Treatment Induced Necrosis from Recurrent/Progressive Brain Tumor using Non-model Based 'Semi-quantitative' Indices Derived from Dynamic Contrast Enhanced T1-weighted MR Perfusion," *Neuro-Oncology*, vol. 13, no. 9, pp. 1037-46, Sep. 2011.
- J8. **A. Babajani-Feremi** and H. Soltanian-Zadeh, "Development of a variational scheme for model inversion of multi-area model of brain. Part II: VBEM method," *Mathematical Biosciences*, vol. 229, pp. 76-92, 2011.
- J7. **A. Babajani-Feremi** and H. Soltanian-Zadeh, "Development of a variational scheme for model inversion of multi-area model of brain. Part I: Simulation evaluation," *Mathematical Biosciences*, vol. 229, pp. 64-75, 2011.
- J6. **A. Babajani-Feremi** and H. Soltanian-Zadeh, "Multi-Area Neural Mass Modeling of EEG and MEG Signals," *NeuroImage*, vol. 52, no. 3, pp. 793-811, 2010.
- J5. M.M. Ali, B. Janic, **A. Babajani-Feremi**, N.R.S. Varma, A.S.M Iskander, J. Anagli, and A.S. Arbab, "Changes in Vascular Permeability and Expression of Different Angiogenic Factors Following Anti-Angiogenic Treatment in Rat Glioma," *PLoS ONE*, vol. 5, no. 1, pp. 1-11, 2010 (e8727).
- J4. **A. Babajani-Feremi**, H. Soltanian-Zadeh, and John E. Moran, "Integrated MEG/fMRI Model Validated Using Real Auditory Data," *Brain Topography*, vol. 21, pp. 61-74, 2008.

- J3. **A. Babajani-Feremi**, and H. Soltanian-Zadeh, "Combined MEG and fMRI model," *Journal of Iranian Association of Electrical and Electronics Engineers*, vol. 2, no. 2, pp. 1-17, 2006.
- J2. **A. Babajani** and H. Soltanian-Zadeh, "Integrated MEG/EEG and fMRI model based on neural masses," *IEEE Trans. Biomedical Engineering*, vol. 53, pp. 1794-1801, 2006.
- J1. **A. Babajani**, M. H. Nekooei, and H. Soltanian-Zadeh, "Integrated MEG and fMRI model: synthesis and analysis," *Brain Topography*, vol. 18, pp. 101-113, 2005.

### **Conferences papers and abstracts- Refereed Proceedings**

- C99 H. Pourmotabbed, L. Birg, J. W. Wheless, and **A. Babajani-Feremi**, "Lateralizing epilepsy using a MEG-based brain network topology," *31<sup>st</sup> Annual Student Research Forum*, University of Memphis, Memphis, TN, USA, March 25, 2019.
- C98 J. Uh, T.E. Merchant, H.M. Conklin, Y. Li, Y. Han, **A. Babajani-Feremi**, R.J. Ogg, N.D. Sabin, D.J. Indelicato, C. Hua, "Connectome-based analysis of neurocognitive function in pediatric craniopharyngioma patients treated with proton therapy," *Annual Meeting of the American Society for Radiation Oncology*, Chicago, USA, September 15-18, 2019.
- C97. **A. Babajani-Feremi**<sup>\*4</sup>, C. M. Holder, A. Siddiqui, and A. F. Choudhri, "Predicting postoperative language outcome using DWI, fMRI, and MEG," *72<sup>nd</sup> Annual Meeting of the American Epilepsy Society*, New Orleans, Louisiana, USA, Nov. 30- Dec. 5, 2018.
- C96. V. Yousofzadeh, F. Salami, and **A. Babajani-Feremi**, " Mapping critical hubs of receptive and expressive language cortices by MEG: a validation against fMRI," *72<sup>nd</sup> Annual Meeting of the American Epilepsy Society*, New Orleans, Louisiana, USA, Nov. 30- Dec. 5, 2018.
- C95. **A. Babajani-Feremi**, N. Noorizadeh, B. Mudigoudar, and James W. Wheless, "Using magnetoencephalography (MEG) to predict seizure outcome of vagus nerve stimulation," *21<sup>st</sup> International Conference On Biomagnetism (BIOMAG 2018)*, Philadelphia, Pennsylvania, August 26-30, 2018.
- C94. N. Abyari, M. Nazem-Zadeh, H. Saligheh Rad, A. F. Choudhri , and **A. Babajani-Feremi**, "Prediction of Seizure Outcome Using Presurgical DTI Structural Connectivity," *10<sup>th</sup> Le Bonheur Children's Hospital Pediatric Research Day*, Memphis, Tennessee, March 28, 2018.
- C93. **A. Babajani-Feremi**, N. Noorizadeh, B. Mudigoudar, and James W. Wheless, "Predicting seizure outcome of vagus nerve stimulation using magnetoencephalography (MEG)," *10<sup>th</sup> Le Bonheur Children's Hospital Pediatric Research Day*, Memphis, Tennessee, March 28, 2018.
- C92. N. Noorizadeh, James W. Wheless, and **A. Babajani-Feremi**, "Alteration of the Brain Network Caused by Sedation in Patients with Epilepsy: A Magnetoencephalography Study," *10<sup>th</sup> Le Bonheur Children's Hospital Pediatric Research Day*, Memphis, Tennessee, March 28, 2018.
- C91. M. Nahvi, G. Ardeshir, M. Ezoji, James W. Wheless, and **A. Babajani-Feremi**, "Analysis of electrocorticographic recordings by empirical mode decomposition to detect seizure onset zone," *10<sup>th</sup> Le Bonheur Children's Hospital Pediatric Research Day*, Memphis, Tennessee, March 28, 2018.
- C90. P. Mostame, A. Moharramipour, G. Hossein-Zadeh, James W. Wheless, and **A. Babajani-Feremi**, "Functional connectivity in high beta band during object naming," *10<sup>th</sup> Le Bonheur Children's Hospital Pediatric Research Day*, Memphis, Tennessee, March 28, 2018.
- C89. A. Moharramipour, AP. Mostame, G. Hossein-Zadeh, James W. Wheless, and **A. Babajani-Feremi**, "Investigating role of superior temporal gyrus in speech using ECoG data," *10<sup>th</sup> Le Bonheur Children's Hospital Pediatric Research Day*, Memphis, Tennessee, March 28, 2018.
- C88. S. H. Hojjati, A. Ebrahimzadeh, A. Khazaei, and **A. Babajani-Feremi**, "Application of pattern recognition in four group classification of Alzheimer's disease by integrating sMRI and rs-fMRI," *10<sup>th</sup> Le Bonheur Children's Hospital Pediatric Research Day*, Memphis, Tennessee, March 28, 2018.
- C87. M. Nahvi, G. Ardeshir, M. Ezoji, James W. Wheless, and **A. Babajani-Feremi**, "Localization of seizure onset zone using empirical mode decomposition of electrocorticographic recordings," *24<sup>th</sup> Annual Meeting of the Organization for Human Brain Mapping*, Singapore, June 17-21, 2018.
- C86. P. Mostame, A. Moharramipour, G. Hossein-Zadeh, James W. Wheless, and **A. Babajani-Feremi**, "Comparison of functional connectivity methods in ECoG data," *10<sup>th</sup> Le Bonheur Children's Hospital Pediatric Research Day*, Memphis, Tennessee, March 28, 2018.

- C85. A. Moharramipour, AP. Mostame, G. Hossein-Zadeh, James W. Wheless, and **A. Babajani-Feremi**, “Evaluation of statistical significance of effective connectivity measures in ECoG signals,” *24<sup>th</sup> Annual Meeting of the Organization for Human Brain Mapping*, Singapore, June 17-21, 2018.
- C84. S. H. Hojjati, A. Ebrahimzadeh, A. Khazaei, and **A. Babajani-Feremi**, “Identification of the early stage of Alzheimer’s disease by integrating structural MRI and resting-state fMRI,” *24<sup>th</sup> Annual Meeting of the Organization for Human Brain Mapping*, Singapore, June 17-21, 2018.
- C83. N. Abyari, M. Nazem-Zadeh, H. Saligheh Rad, J. Mehvari Habibabadi, S. S. Hashemi Fesharaki, and **A. Babajani-Feremi**, “Structural Connectivity Metrics for Prediction of Surgical Outcomes in Temporal Lobe Epilepsy,” *14<sup>th</sup> International Epilepsy Congress*, Isfahan, Iran, January 24-26, 2018.
- C82. A. Moharramipour, AP. Mostame, G. Hossein-Zadeh, and **A. Babajani-Feremi**, “Evaluation of statistical significance of effective connectivity measures in ECoG signals,” *71<sup>th</sup> Annual Meeting of the American Epilepsy Society*, Washington DC, DC, USA, December 1-5, 2017.
- C81. P. Mostame, A. Moharramipour, G. Hossein-Zadeh, and **A. Babajani-Feremi**, “Comparison of functional connectivity methods in ECoG data,” *71<sup>th</sup> Annual Meeting of the American Epilepsy Society*, Washington DC, DC, USA, December 1-5, 2017.
- C80. **A. Babajani-Feremi** and J. M. Chuang “Investigating comprehension of narrative speech using functional MRI,” *16<sup>th</sup> annual meeting of the World Federation of Neurosurgical Societies (WFNS)*, Istanbul, Turkey, August 20-25, 2017.
- C79. S. H. Hojjati, A. Ebrahimzadeh, A. Khazaei, and **A. Babajani-Feremi**, “Prediction of conversion from MCI to AD using a multimodal and multiatlas approach,” *23<sup>rd</sup> Annual Meeting of the Organization for Human Brain Mapping*, Vancouver, Canada, June 25-29, 2017.
- C78. A. Moharramipour, AP. Mostame, G. Hossein-Zadeh, and **A. Babajani-Feremi**, “Causal interactions between Broca’s area, motor cortex and superior temporal gyrus in speech,” *23<sup>rd</sup> Annual Meeting of the Organization for Human Brain Mapping*, Vancouver, Canada, June 25-29, 2017.
- C77. P. Mostame, A. Moharramipour, G. Hossein-Zadeh, and **A. Babajani-Feremi**, “High gamma ECoG phase synchrony in Broca’s area, superior temporal gyrus, and motor cortex,” *23<sup>rd</sup> Annual Meeting of the Organization for Human Brain Mapping*, Vancouver, Canada, June 25-29, 2017.
- C76. N. Noorizadeh, K. Kazemi, A. Aarabi, H. Danyali, and **A. Babajani-Feremi**, “An automated multiatlas based method for brain extraction in neonatal MR images,” *23<sup>rd</sup> Annual Meeting of the Organization for Human Brain Mapping*, Vancouver, Canada, June 25-29, 2017.
- C75. J. M. Chuang, **A. Babajani-Feremi**, F.A. Boop, A.C. Papanicolaou, and R. Rezaie, “Receptive language mapping with MEG under sedation: Pediatric brain tumor in Language area,” *23<sup>rd</sup> Annual Meeting of the Organization for Human Brain Mapping*, Vancouver, Canada, June 25-29, 2017.
- C74. **A. Babajani-Feremi**, R. Rezaie, F.A. Boop, J. W. Wheless, and A. C. Papanicolaou, “What can high gamma ECoG tell us about role of Broca’s area in speech production,” *9<sup>th</sup> Le Bonheur Children’s Hospital Pediatric Research Day*, Memphis, Tennessee, March 29, 2017.
- C73. S. H. Hojjati, A. Ebrahimzadeh, A. Khazaei, and **A. Babajani-Feremi**, “Application of resting-state fMRI and graph theory to predict conversion from MCI to AD,” *9<sup>th</sup> Le Bonheur Children’s Hospital Pediatric Research Day*, Memphis, Tennessee, March 29, 2017.
- C72. S. H. Hojjati, A. Ebrahimzadeh, A. Khazaei, and **A. Babajani-Feremi**, “Identification of Patients with AD and MCI using Granger Causality,” *9<sup>th</sup> Le Bonheur Children’s Hospital Pediatric Research Day*, Memphis, Tennessee, March 29, 2017.
- C71. N. Noorizadeh, K. Kazemi, A. Aarabi, H. Danyali, and **A. Babajani-Feremi**, “Multi-atlas brain extraction of neonatal MR images,” *9<sup>th</sup> Le Bonheur Children’s Hospital Pediatric Research Day*, Memphis, Tennessee, March 29, 2017.
- C70. S. Narayana, B. Mudigoudar, **A. Babajani-Feremi**, A.F. Choudhri, and F.A. Boop, “Successful motor mapping with transcranial magnetic stimulation (TMS) in an infant,” *9<sup>th</sup> Le Bonheur Children’s Hospital Pediatric Research Day*, Memphis, Tennessee, March 29, 2017.
- C69. A. C. Papanicolaou, R. Rezaie, and **A. Babajani-Feremi**, J. W. Wheless, F. A. Boop, A. F. Choudhri, and S. Narayana, “On the relative merits of invasive and non-invasive pre-surgical mapping,” *9<sup>th</sup> Le Bonheur Children’s Hospital Pediatric Research Day*, Memphis, Tennessee, March 29, 2017.
- C68. B. Elahian, M. Yeasin, B. Mudigoudar, J.W. Wheless, and **A. Babajani-Feremi**, “Multivariate approach to predict the seizure onset zone and improve the outcome of surgery,” *Minnesota Neuromodulation Symposium*, Minnesota, MN, April 13-14, 2017.

- C67. M. Kilintari, R. Rezaie, S. Narayana, and **A. Babajani-Feremi**, and A.C. Papanicolaou “An MEG evaluation of the dual-route model on language,” *Annual Meeting of the Society of Applied Neurosciences (SAN)*, Corfu, Greece, Oct. 6-9, 2016.
- C66. **A. Babajani-Feremi**, “Heritability of comprehension of narrative speech in a large normal population,” *46<sup>th</sup> annual meeting of the society for neuroscience*, San Diego, CA, November 12-16, 2016.
- C65. **A. Babajani-Feremi**, R. Rezaie, F.A. Boop, J.W. Wheless, and A.C. Papanicolaou, “Investigation of role of Broca’s area in speech production using high gamma electrocorticographic recording,” *70<sup>th</sup> Annual Meeting of the American Epilepsy Society*, Houston, TX, USA, December 2-6, 2016.
- C64. B. Elahian, M. Yeasin, B. Mudigoudar, J.W. Wheless, and **A. Babajani-Feremi**, “Localization of seizure onset zone using classification of electrocorticographic synchronization pattern,” *70<sup>th</sup> Annual Meeting of the American Epilepsy Society*, Houston, TX, USA, December 2-6, 2016.
- C63. R. Rezaie, **A. Babajani-Feremi**, S. Narayana, L. Birg, J.W. Wheless, J.A. Saltzman, and A.C. Papanicolaou, “Optimizing Sedation for Clinical MEG Recordings in Pediatric Epilepsy,” *70<sup>th</sup> Annual Meeting of the American Epilepsy Society*, Houston, TX, USA, December 2-6, 2016.
- C62. A.C. Papanicolaou, R. Rezaie, **A. Babajani-Feremi**, L. Birg, J.W. Wheless, A.F. Choudhri, S. Narayana, “On the relative merits of invasive and non-invasive pre-surgical mapping,” *70<sup>th</sup> Annual Meeting of the American Epilepsy Society*, Houston, TX, USA, December 2-6, 2016.
- C61. F. Di Pompeo, G. Michalareas, L. Marzetti, J. Schoffelen, L. J. Larson-Prior, F. W. Prior, M. Kelsey, T. Nolan, F. de Pasquale, **A. Babajani-Feremi**, P. Fries, V. Pizzella, G. Romani, M. Corbetta, A. Z. Snyder, R. Oostenveld, and S. Della Penna, “MEG pipelines for the analysis of resting state data in the Human Connectome Project (HCP),” *20<sup>th</sup> International Conference on Biomagnetism (BIOMAG2016)*, Seoul, Korea, October 1-6, 2016
- C60. B. Elahian, M. Yeasin, B. Mudigoudar, J.W. Wheless, and **A. Babajani-Feremi**, “A multivariate approach for seizure localization using high frequency coupling,” *North American Neuromodulation Society annual meeting*, Baltimore, Meriland, June 26-29, 2016.
- C59. A. Babajani-Feremi, C. Holder, S. Narayana, R. Rezaie, B. Potter, S.P. Fulton, A.F. Choudhri, J.W. Wheless, and A.C. Papanicolaou, “Prediction of Postoperative Language Outcome: a Multimodal Approach using fMRI, MEG, TMS and High Gamma Electrocorticography,” *Brain Stimulation and Imaging Meeting*, Geneva, Switzerland, June 24-25, 2016.
- C58. **A. Babajani-Feremi**, “Neural mechanism underlie comprehension of narrative speech: A study based on ~500 subjects,” *22<sup>th</sup> Annual Meeting of the Organization for Human Brain Mapping*, Geneva, Switzerland, June 26-30, 2016.
- C57. B. Elahian, M. Yeasin, B. Mudigoudar, J.W. Wheless, and **A. Babajani-Feremi**, “Identification of seizure onset zone using phase locking value in electrocorticographic recording,” *22<sup>th</sup> Annual Meeting of the Organization for Human Brain Mapping*, Geneva, Switzerland, June 26-30, 2016.
- C56. A. Khazae, A. Ebrahimzadeh, and **A. Babajani-Feremi**, “Identification of Patients with AD and MCI using Granger Causality Analysis of Resting-State fMRI,” *22<sup>th</sup> Annual Meeting of the Organization for Human Brain Mapping*, Geneva, Switzerland, June 26-30, 2016.
- C55. S. H. Hojjati, A. Ebrahimzadeh, A. Khazae, and **A. Babajani-Feremi**, “Predicting conversion from MCI to AD using resting-state fMRI and graph theoretical approach,” *22<sup>th</sup> Annual Meeting of the Organization for Human Brain Mapping*, Geneva, Switzerland, June 26-30, 2016. \*3
- C54. M. Kilintari, R. Rezaie, S. Narayana, **A. Babajani-Feremi**, and A.C. Papanicolaou “An MEG test of the dual route model of speech processing,” *22<sup>th</sup> Annual Meeting of the Organization for Human Brain Mapping*, Geneva, Switzerland, June 26-30, 2016.
- C53. A. W-Y Chan, A. Trefler, and **A. Babajani-Feremi** “Exploring Face Selectivity in the Human Prefrontal Cortex: Data from ~500 Participants,” *16<sup>th</sup> Annual Meeting of the Vision Sciences Society*, St. Pete Beach, Florida, USA, May 13-18, 2016.
- C52. **A. Babajani-Feremi**\*2, C. M. Holder, S. Narayana, R. Rezaie, B. Potter, S. P. Fulton, A. F. Choudhri, J. W. Wheless, A. C. Papanicolaou, “Prediction of Postoperative Language Outcome using Electrocorticography, fMRI, MEG and TMS,” *8<sup>th</sup> Le Bonheur Children’s Hospital Pediatric Research Day*, Memphis, Tennessee, March 30, 2016.
- C51. B. Elahian, B. Mudigoudar, M. Yeasin, J. W. Wheless, and **A. Babajani-Feremi**, “Seizure Onset Zone Identification Using Electrocorticographic High-Frequency Oscillation,” *8<sup>th</sup> Le Bonheur Children’s Hospital Pediatric Research Day*, Memphis, Tennessee, March 30, 2016.
- C50. A. Khazae, A. Ebrahimzadeh, and **A. Babajani-Feremi**, “Classification of Patients with AD and MCI using rs-fMRI and Graph Theoretical Approaches,” *8<sup>th</sup> Le Bonheur Children’s Hospital Pediatric Research Day*, Memphis, Tennessee, March 30, 2016.

- C49. L. Birg, J. Saltzman, R. Rezaie, **A. Babajani-Feremi**, J. W. Wheless, and A. C. Papanicolaou, "Optimizing Sedation for Clinical MEG Recordings in Pediatric Epilepsy," *8<sup>th</sup> Le Bonheur Children's Hospital Pediatric Research Day*, Memphis, Tennessee, March 30, 2016.
- C48. M. Kilintari, R. Rezaie, **A. Babajani-Feremi**, S. Narayana, and A. C. Papanicolaou, "Testing the Dual Route Language Model Using Magnetoencephalography," *8<sup>th</sup> Le Bonheur Children's Hospital Pediatric Research Day*, Memphis, Tennessee, March 30, 2016.
- C47. M. Kilintari, S. Narayana, **A. Babajani-Feremi**, R. Rezaie, A. Papanicolaou, H. Savaki, "Motor Cognition: an fMRI study," *Le Bonheur Children's Hospital Pediatric Research Day*, Memphis, Tennessee, March 30, 2016.
- C46. M. Kilintari, R. Rezaie, **A. Babajani-Feremi**, S. Narayana, and A. C. Papanicolaou, "Primary sensory cortices: from feature detection to social interaction," *Le Bonheur Children's Hospital Pediatric Research Day*, Memphis, Tennessee, March 30, 2016.
- C45. R. Rezaie, M. Kilintari, **A. Babajani-Feremi**, S. Narayana, and A. C. Papanicolaou, "Task efficacy in determining expressive language laterality using MEG," *Le Bonheur Children's Hospital Pediatric Research Day*, Memphis, Tennessee, March 30, 2016.
- C44. **A. Babajani-Feremi**, C. Holder, S. Narayana, R. Rezaie, B. Potter, S.P. Fulton, A.F. Choudhri, J.W. Wheless, and A.C. Papanicolaou, "Prediction of postoperative language outcome using high gamma electrocorticography, fMRI, and TMS," *69<sup>th</sup> Annual Meeting of the American Epilepsy Society*, Philadelphia, PA, USA, December 4-8, 2015.\*<sup>1</sup>
- C43. B. Elahian, B. Mudigoudar, M. Yeasin, A.C. Papanicolaou, J.W. Wheless, and **A. Babajani-Feremi**, "Identification of seizure onset zone using electrocorticographic high-frequency oscillation," *69<sup>th</sup> Annual Meeting of the American Epilepsy Society*, Philadelphia, PA, USA, December 4-8, 2015.
- C42. G. Michalareas, F. Di Pompeo, J. Schoffelen, R. Oostenveld, S. Della Penna:None. L. Larson-Prior, L. Marzetti, F. De Pasquale, M. Kelsey, **A. Babajani-Feremi**, et al., "Magnetoencephalography analysis in the human connectome project (HCP)," *45<sup>th</sup> annual meeting of the society for neuroscience*, Chicago, October 17-21, 2015.
- C41. Yu Liu, S. McAfee, R. Rezaie, **A. Babajani-Feremi**, R. Kozma, A.C. Papanicolaou, J. W. Wheless, and D. H. Heck, "Respiratory modulation of brain activity," *45<sup>th</sup> annual meeting of the society for neuroscience*, Chicago, October 17-21, 2015.
- C40. R. Kozma, D. H. Heck, Yu Liu, S. McAfee, R. Rezaie, **A. Babajani-Feremi**, A.C.Papanicolaou, and J. W. Wheless, "Hilbert analysis of the relation between respiration and LFP/ECOG," *45<sup>th</sup> annual meeting of the society for neuroscience*, Chicago, October 17-21, 2015.
- C39. M. Antonakakis, S. I. Dimitriadis, M. Zervakis, R. Rezaie, **A. Babajani-Feremi**, S. Micheloyannis, and A. C. Papanicolaou "Uncovering the brain model of MEG Brain Networks from Cross-Frequency Coupling Estimates via an attacking strategy," *37<sup>th</sup> Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS)*, Milano, Italy, August 25-29, 2015.
- C38. A. Babajani-Feremi, S. Narayana, R. Rezaie, A.F. Choudhri, S.P. Fulton, F.A. Boop, J.W. Wheless, and A.C. Papanicolaou, "Comparison of Presurgical Language Mapping using Electrographic High Gamma, fMRI, and TMS," *21<sup>th</sup> Annual Meeting of the Organization for Human Brain Mapping*, Honolulu, Hawaii, USA, June 14-18, 2015.
- C37. A. Babajani-Feremi, S. Narayana, R. Rezaie, A.F. Choudhri, S.P. Fulton, F.A. Boop, J.W. Wheless, and A.C. Papanicolaou, "A multimodal language mapping using TMS, fMRI, electrographic high gamma activity, and electrocortical stimulation," *Brain Stimulation and Imaging Meeting*, Honolulu, Hawaii, USA, June 12-13, 2015.
- C36. M. Kilintari, S. Narayana, **A. Babajani-Feremi**, R. Rezaie, A.C. Papanicolaou, and H. Savaki, "Motor cognition: an fMRI study," *21<sup>th</sup> Annual Meeting of the Organization for Human Brain Mapping*, Honolulu, Hawaii, USA, June 14-18, 2015.
- C35. A. Khazaei, A. Ebrahimzadeh, and **A. Babajani-Feremi**, "Classification of patients with AD using graph theoretical approaches," *21<sup>th</sup> Annual Meeting of the Organization for Human Brain Mapping*, Honolulu, Hawaii, USA, June 14-18, 2015.
- C34. A. Khazaei, A. Ebrahimzadeh, and **A. Babajani-Feremi**, "Automatic classification of Alzheimer's disease with resting-state fMRI and graph theory," *21<sup>th</sup> Iranian Conference of Biomedical Engineering (ICBME)*, Nov. 26- Nov. 28, 2014.
- C33. A. Ghodrati and A. Babajani-Feremi, "Morphology-based QT Interval Measurement Using Frame-based Representation of ECG Signal," *Computing in Cardiology scientific conferences*, Cambridge, MA, USA, September 7-10, 2014.
- C32. A. Babajani-Feremi, S. Narayana, R. Rezaie, A.F. Choudhri, S.P. Fulton, F.A. Boop, J.W. Wheless, and A.C. Papanicolaou, "Accuracy of high gamma activity and transcranial magnetic stimulation in language mapping," *44<sup>th</sup> annual meeting of the society for neuroscience*, Washington DC, November 15-19, 2014.

- C31. D.H. Heck, **A. Babajani-Feremi**, Y. Liu, R. Rezaie, and A.C. Papanicolaou, "Neocortical oscillations modulated by respiration," *44<sup>th</sup> annual meeting of the society for neuroscience*, Washington DC, November 15-19, 2014.
- C30. **A. Babajani-Feremi**, R. Rezaie, S. Narayana, A.F. Choudhri, F.A. Boop, J.W. Wheless, and A.C. Papanicolaou, "Aberrant Topography of Language Production Cortex," *20<sup>th</sup> Annual Meeting of the Organization for Human Brain Mapping*, Hamburg, Germany, June 8-12, 2014.
- C29. D.H. Heck, **A. Babajani-Feremi**, Y. Liu, R. Rezaie, and A.C. Papanicolaou, "Modulation of neocortical oscillations by respiration," *79<sup>th</sup> Cold Spring Harbor Symposium*, Cold Spring Harbor, NY, May 28 - June 2, 2014.
- C28. L.J. Larson-Prior, R. Oostenveld, S. Della Penna, G. Michalareas, F. Prior, **A. Babajani-Feremi** et al., "The electrophysiological component of the Human Connectome Project: imaging fast dynamics," *19<sup>th</sup> Annual Meeting of the Organization for Human Brain Mapping*, Seattle, WA, USA, June 16-20, 2013.
- C27. M. Kelsey, D. Politte, R. Verner, J. M. Zempel, T. Nolan, **A. Babajani-Feremi**, F. Prior, and L. J. Larson-Prior, "Determination of neural state classification metrics from the power spectrum of human ECoG," *Engineering in Medicine and Biology Society (EMBC), 2012 Annual International Conference of the IEEE*, 2012, pp. 4336-4340.
- C26. **A. Babajani-Feremi**, V. Gumenyuk, T. Roth, C.L. Drake, and H. Soltanian-Zadeh, "Brain Connectivity Analysis to Study Chronic Short Sleep," *26<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies*, Boston, MA, June 9-13, 2012.
- C25. S.M. Hadi, M.R. Siadat, and **A. Babajani-Feremi**, "Comparison between subjects with long- and short-allele carriers in the BOLD signal within amygdala during emotional tasks," *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*, 2012, p. 9.
- C24. S.M. Hadi, M.R. Siadat, and **A. Babajani-Feremi**, "Negative BOLD response and serotonin concentration within rostral subgenual portion of the anterior cingulate cortex for long-allele carriers during perceptual processing of emotional tasks," *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*, 2012, p. 58.
- C23. **A. Babajani-Feremi**, K. Jafari-Khouzani, and H. Soltanian-Zadeh, "Development of a Variational Bayesian Expectation Maximization (VBEM) Method for Model Inversion of Multi-Area E/MEG Model," *Biomedical Imaging: From Nano to Macro, 2011 IEEE International Symposium on*, 2011, pp. 964-968.
- C22. **A. Babajani-Feremi**, R. Jain, J. Narang, A. S. Arbab, K. Jafari-Khouzani, M.R. Nazem-Zadeh, and H. Soltanian-Zadeh, "Patlak Model Selection Using Dynamic Contrast Enhanced T1-weighted MR Measurement of Vascular Permeability," *Proc Int Soc Mag Reson Med*, 2011, p. 2050.
- C21. M. Nazem-Zadeh, K. Jafari-Khouzani, **A. Babajani-Feremi**, S. P. Nejad-Davarani, H. Soltanian-Zadeh, and Q. Jiang, "Clustering Method for Estimating Principal Diffusion Directions," *Proc Int Soc Mag Reson Med*, 2011, p. 3966.
- C20. J. Narang, R. Jain, A. S. Arbab, and **A. Babajani-Feremi**, "Utility of Non-model based 'Semi-quantitative' Indices derived from Dynamic Contrast Enhanced T1-weighted MR Perfusion in Differentiating Treatment Induced Necrosis from Recurrent Progressive Brain Tumor," *Proc Int Soc Mag Reson Med*, 2011, p. 3914.
- C19. M.A. Latif, **A. Babajani-Feremi**, D. Barkmeier, J. A. Leob, and H. Soltanian-Zadeh "Spatio-temporal Localization of Focal Epileptic Sources from Intracranial Electroocortical Recordings using an Independent Component Analysis (ICA) Algorithm," *Biomedical Engineering (ICBME), 2010 17th Iranian Conference of*, 2010, pp. 1-4.
- C18. M. Azarbad, A. Ebrahimzadeh, and **A. Babajani-Feremi**, "Brain Tissue Segmentation Using an Unsupervised Clustering Technique Based on PSO Algorithm," *Biomedical Engineering (ICBME), 2010 17th Iranian Conference of*, 2010, pp.1-6.
- C17. **A. Babajani-Feremi**, S.M. Bowyer, J.E. Moran, K. Elisevich, and H. Soltanian-Zadeh "Variational Bayesian Framework for Estimating Parameters of Integrated E/MEG and fMRI Model," *Proceedings of SPIE*, 2009, Vol. 7262(72621T), pp. 1-11.
- C16. **A. Babajani-Feremi**, S.M. Bowyer, J.E. Moran, K. Elisevich, K. Podell, and H. Soltanian-Zadeh "Multi-Area Integrated E/MEG and fMRI Modeling," *Presented at and Published in Proceedings of SPIE*, 2009, Vol. 7262 (72621V), pp. 1-11.
- C15. M. Rajabioun, **A. Babajani-Feremi**, and H. Soltanian-Zadeh "Combinational Method for Focal Brain Activation Detection Using MEG Signal," *Proceedings of SPIE*, 2009, Vol. 72621 (726220), pp. 1-11.
- C14. M. Rajabioun, **A. Babajani-Feremi**, and H. Soltanian-Zadeh, "A Novel Method for Activation Detection of Focal Cortical Sources Using MEG," *Presented at and Published in Proceedings of the 14<sup>th</sup> annual conference of computer society of Iran (CSICC2009)*, 1-2 July, 2009.
- C13. M.M. Ali, B. Janic, and **A. Babajani-Feremi**, N.R.S. Varma, A. Iskander, J. Anagli, and A.S. Ali, "MRI Monitoring of Tumor Response Following Angiogenesis Inhibition in an Experimental Human Glioma Model," *World Molecular Imaging Congress*, Montréal, Canada, Sept. 23-26, 2009.



- C12. **A. Babajani-Feremi**, J.E. Moran, and H. Soltanian-Zadeh, "Integrated MEG and fMRI Model: Synthesis, Analysis, and Validation Using Auditory Data," *10<sup>th</sup> International Conference on Cognitive Neuroscience (ICON X)*, Bodrum, Turkey, Sept. 1-5, 2008.
- C11. **A. Babajani-Feremi**, B. Weiland, J.E. Moran, S.M. Bowyer, K. Elisevich, and H. Soltanian-Zadeh, "Using Variational Bayesian Expectation Maximization (VBEM) Method for Multi-Area Integrated MEG/fMRI Model," *16<sup>th</sup> International Conference on Biomagnetism (BIOMAG'2008)*, Sapporo, Japan, August 25-28, 2008.
- C10. **A. Babajani-Feremi**, H. Soltanian-Zadeh, and John E Moran "Validation of Proposed Integrated EEG/MEG and fMRI Model Using Real Data," *Presented at and Published in the Proceedings of the 14th Iranian Biomedical Engineering Conference*, Tehran, Iran, Feb. 13-14, 2008.
- C9. M. Rajabioun, **A. Babajani**, and H. Soltanian-Zadeh, "A New Weighted Method for Reducing Noise Effect in MEG Inverse Solution," *Presented at and Published in the Proceedings of the 14<sup>th</sup> Iranian Conference on Electrical Engineering (ICEE2006)*, 16-18 May, 2006.
- C8. **A. Babajani** and H. Soltanian-Zadeh, "Using Real MEG and fMRI Data for Parameter Estimation of the Integrated Model," *Presented at and Published in the Proceedings of the 14<sup>th</sup> Iranian Conference on Electrical Engineering (ICEE2006)*, 16-18 May, 2006.
- C7. M. Rajabioun, **A. Babajani**, and H. Soltanian-Zadeh, "A Novel Method for Solving the Inverse Problem of MEG," *Presented at and Published in the Proceedings of the 11<sup>th</sup> annual conference of computer society of Iran (CSICC2006)*, 24-26 January, 2006.
- C6. **A. Babajani**, M. H. Nekooei, and H. Soltanian-Zadeh, "Extended Neural Mass Model for Integrated Modeling of EEG/MEG and fMRI," *the Proceedings of the 11<sup>th</sup> annual conference of computer society of Iran (CSICC2006)*, 24-26 January, 2006.
- C5. **A. Babajani**, M. H. Nekooei, and H. Soltanian-Zadeh, "Exploring Relationship between fMRI and MEG Using a New Model," *the Proceedings of the Third Iranian Conference on Machine Vision and Image Processing (MVIP2005)*, vol. 2, pp. 600-607, 23-24 February, 2005.
- C4. **A. Babajani**, M. H. Nekooei, and H. Soltanian-Zadeh, "Integrated MEG and fMRI Model," *the Proceedings of the 10<sup>th</sup> annual conference of computer society of Iran (CSICC2005)*, pp. 76-84, 15-17 February, 2005.
- C3. M.H. Nekooei, **A. Babajani-Feremi**, H. Soltanian-Zadeh, "Evaluating Linear MEG Inverse Problem Methods Based on Distributed Source Model and Developing an Efficient Combinative Method," *the Proceedings of the 11th Iranian Biomedical Engineering Conference*, pp. 259-266, Tehran, Iran, Feb. 17-18, 2004.
- C2. **A. Babajani-Feremi** and H. Soltanian-Zadeh, "A Novel Method for Segmentation of Body Structures in CT Images," *the Proceedings of the 7th Iranian Conference on Elec. Eng.: Biomedical Eng. Section*, pp. 143-150, Tehran, Iran, May 1999.
- C1. G.A. Hossein-Zadeh, H. Soltanian-Zadeh, A. Ghodrati, and **A. Babajani**, "Magnetic Resonance Imaging Through Wavelet Transform," *the Proceedings of the Third International Annual Computer Society of Iran Computer Conference (CSICC'97)*, Tehran, Iran, Dec. 1997.

\*<sup>4</sup> Invited by AES for Platform Presentation

\*<sup>3</sup> Received an award for a Merit Abstract Travel Stipend!

\*<sup>2</sup> Outstanding abstract award, selected for oral presentation, and considered as a continuing medical education (CME) course

\*<sup>1</sup> Distinguished poster among all ones presented in the same day for "Poster Walking Tours"

## Symposium & Grand rounds

- S4. "Mapping human language networks with intracranial EEG spectra," American Clinical Neurophysiology Society (ACNS), Las Vegas, Nevada, February 6-10, 2019.
- A. Babajani-Feremi, "Multimodal prediction of post-operative language outcomes."
  - R. Arya, "Development of information sharing in human language cortex."
  - N. E. Crone, "Spatiotemporal mapping of language network at the bedside with intracranial EEG in adults."
  - E. Asano, "3D and 4D mapping of speech and language in children with epilepsy."
- S3. "Challenges and Opportunities in Pediatric Functional Mapping," Grand round at Department of Pediatrics, University of Tennessee Health Science Center, Memphis, TN, September 5, 2018.

- S2. "Extra-operative language mapping using power spectra modulations in intracranial signals: networks, connectivity, and post-operative outcomes," *4<sup>th</sup> International Congress on Epilepsy, Brain & Mind*, Brno, Czech Republic, 2-5 May 2018.
- **A. Babajani-Feremi**, "Multimodal concordance and post-operative language outcomes driven by high-gamma ECoG mapping."
  - R. Arya, "Language mapping with ECoG high-gamma modulation vis-à-vis electrical cortical stimulation."
  - N. E. Crone, "Spatial temporal network dynamics of functional mapping with ECoG spectral modulation."
- S1. "Clinical Applications of Functional Neuroimaging for Presurgical Functional Mapping: The Past, Present, and Future Roles for Neuropsychologists," *International Neuropsychological Society (INS)*, New Orleans, USA, February 1-4, 2017.
- R. Rezaie, S. Narayana, **A. Babajani-Feremi**, and A.C. Papanicolaou, "Outcomes of Non-Invasive Presurgical Planning."
  - C.M. Holder, B. Potter, R. Rezaie, S. Narayana, and **A. Babajani-Feremi**, "Non-Invasive Procedures as the Future of Functional Mapping."

### Invited Talks

- T20. "Predicting seizure outcome of vagus nerve stimulation (VNS) using MEG," at the Child Neurology Conference, Le Bonheur Children Hospital, Memphis, TN, March 14, 2019.
- T19. "Early Identification of Alzheimer's Disease Using a Machine Learning Approach Based on Functional and Structural MRI data," at the Machine learning research interest group meeting, *University of Tennessee Health Science Center*, Memphis, TN, Oct. 17, 2018.
- T19. "Presurgical Language Mapping in Patients with Epilepsy," at the Children Research Foundation Institute, *Le Bonheur Children Hospital*, Memphis, TN, Jan. 22, 2018.
- T18. "Multi-modal Approach for Presurgical Language Mapping," at the Cincinnati Children's Hospital Medical Center, Cincinnati, OH, USA, December 13, 2017.
- T17. "Presurgical Language Mapping in Patients with Epilepsy: a Multi-modal Approach Using fMRI, TMS, MEG, and ECoG," invited speaker at the 5<sup>th</sup> National Brain Mapping Laboratory (NBML) lecture series, University of Tehran, Tehran, Iran, July 20, 2016.
- T16. "Prediction of Postoperative Language Outcome using Electrographic high gamma activity, fMRI, MEG and TMS," at the Le Bonheur Research Day, *Le Bonheur Children Hospital*, Memphis, TN, March 30, 2016.
- T15. "Application of Neuroimaging Techniques in Epilepsy: a Multi-modal Approach using fMRI, MEG, TMS, and ECoG," at the Neuroscience Institute, *University of Tennessee Health Science Center*, Memphis, TN, Feb. 23, 2016.
- T14. "Multimodal language mapping," at the Children Research Foundation Institute, *Le Bonheur Children Hospital*, Memphis, TN, April 27, 2015.
- T13. "A multimodal language mapping using TMS, fMRI, electrographic high gamma activity, and electrocortical stimulation," at the *Brain Stimulation and Imaging Meeting*, Honolulu, Hawaii, USA, June 13, 2015.
- T12. "Presurgical language mapping using several techniques: electrographic high gamma activity, fMRI, TMS, and electrocortical stimulation," at *Tulane University*, New Orleans, LA, May 7, 2015.
- T11. "Language mapping using several techniques: electrographic high gamma activity, fMRI, TMS, and electrocortical stimulation," at *University of Missouri-Kansas City (UMKC)*, Kansas City, MO, April 24, 2015.
- T10. "Fundamental of Computed Tomography," at *Loyola University Chicago*, Chicago, IL, March 13, 2015.
- T9. "Language mapping using four methods: Cortical stimulation mapping (CSM), fMRI, TMS, and high gamma electrocorticography (hgECoG)," at *Loyola University Chicago*, Chicago, IL, March 13, 2015.
- T8. "Language mapping based on high gamma activity," at the Child Neurology Conference, *Le Bonheur Children Hospital*, Memphis, TN, May 8, 2014.
- T7. "Language mapping using high gamma activity in subdural recordings," at the Children Research Foundation Institute, *Le Bonheur Children Hospital*, Memphis, TN, Mar 31, 2014.
- T6. "Sentence vs. story/math task," at the Center for Magnetic Resonance Research, *University of Minnesota*, Minneapolis, MN, April 4, 2013.

- T5. “Effective connectivity analysis of MEG/EEG and fMRI data,” at Department of Electrical & Systems Engineering, *Washington University in St. Louis*, St. Louis, MO, Jan 14, 2013.
- T4. “Bayesian model inversion for EEG mismatch negativity (MMN) data,” at the Sleep Disorder Center, *Washington University in St. Louis*, St. Louis, MO, Nov 12, 2012.
- T3. “MEG/EEG: data quality control and analysis,” at the Eric P. Newman Education Center (all-hands meeting of the human connectome project), *Washington University in St. Louis*, St. Louis, MO, Sep 13, 2012.
- T2. “Development of a Variational Bayesian Expectation Maximization (VBEM) Method for Model Inversion of Multi-Area EEG/MEG Model,” at the Hyatt Regency McCormick Place, *the 8<sup>th</sup> International Symposium on Biomedical Imaging (ISBI’11)*, Chicago, IL, April 2011.
- T1. “Multi-area neural mass model,” at Department of Radiology, *Henry Ford Health System*, Detroit, MI, Mar 2008.

## RESEARCH FUNDING

### Ongoing or Completed Research Support

1. **UCI** 9/1/18 - 10/31/20  
The Urban Child Institute (UCI)  
Title: Defining neuro signatures and predicting outcomes of congenital cytomegalovirus (CMV) infection  
PI: Dr. DeVincenzo; Role: Co-Investigator
2. **CSTC-6431** 10/1/18 - 09/30/21  
The Cognitive Science and Technology Council of Iran (CSTC)  
Title: Mapping Reorganization of Long-Term Episodic Memory Following Mesial Structures Resection in Temporal Lobe Epilepsy  
PI: Dr. Nazemzadeh; Role: Co-Investigator
3. **LivaNova PLC** 07/1/17 - 06/30/19  
20 Eastbourne Terrace, London, W2 6LG, United Kingdom  
Title: VNS treatment: predicting seizure outcome and investigating re-organization of brain network  
Role: PI
4. **New Grant Support Funding** 06/1/17 - 05/31/19  
Univ. of Tennessee Health Science Center, Memphis, TN  
Title: Non-Invasive Language Mapping for Neurosurgical Planning  
Role: PI
5. **Children’s Foundation Research Institute** 07/1/16 - 06/30/18  
Le Bonheur Children’s Hospital, Memphis, TN  
Title: Multimodal Approach for Prediction of Language Outcome  
Role: PI
6. **Children’s Foundation Research Institute** 06/15/14 - 06/14/15  
Le Bonheur Children’s Hospital, Memphis, TN  
Title: Optimizing language mapping based on high gamma activity  
Role: PI
7. **NIH-NIMH, U54 MH091657-01** 09/01/10 - 08/31/15  
Title: Mapping the Human Connectome: Structure, Function, and Heritability  
PI: Dr. Van Essen; Role: HCP colleague and consultant

**TEACHING & MENTORING EXPERIENCE**Teaching

- **University of Tehran** Tehran, Iran  
*Teaching Assistant*  
 ECE-405: Medical Imaging Systems (3 hours graduate course) Spring 2006
- **University of Tehran** Tehran, Iran  
*Instructor*  
 ECE-657: Functional Imaging System (3 hours graduate course) Fall 2005
- **University of Tehran** Tehran, Iran  
*Teaching Assistant*  
 ECE-203: Advanced Engineering Mathematics (3 hours upper-level undergraduate course) Spring 1995

Dissertation and thesis committee member

- **University of Tennessee Health Science Center** Memphis, Tennessee  
*Mohammad Nahvi*, Ph.D. candidate at Babol University of Technology, Iran Jan. 2017 to date  
 Project Title: Identification of seizure onset zone using ECoG recordings  
 Rule in thesis committee: Co-Advisor
- **University of Tennessee Health Science Center** Memphis, Tennessee  
*Moein Asefi*, Ph.D. candidate at University of Tehran, Tehran, Iran Feb. 2017 to date  
 Project Title: Predict evaluation of brain plasticity during motor learning using neural circuits modeling  
 Rule in thesis committee: Co-Advisor
- **University of Tennessee Health Science Center** Memphis, Tennessee  
*Negar Noorizadeh*, Ph.D. candidate at Shiraz University of Technology, Shiraz, Iran Oct. 2016 to date  
 Project Title: Automatic segmentation of newborn and infant brain magnetic resonance images with application to investigate the effect of segmentation errors on EEG forward model  
 Rule in thesis committee: Co-Advisor
- **University of Tennessee Health Science Center** Memphis, Tennessee  
*Parham Mostame*, M.S. candidate at University of Thran, Iran June 2016 to Sep. 2018  
 Project Title: Investigating neuronal mechanism underlying language processing using ECoG and DTI: A functional connectivity approach  
 Rule in thesis committee: Co-Advisor
- **University of Tennessee Health Science Center** Memphis, Tennessee  
*Ali Moharramipour*, M.S. candidate at University of Thran, Iran June 2016 to Sep. 2018  
 Project Title: An effective connectivity approach to investigate the language processing with ECoG signals and DTI  
 Rule in thesis committee: Co-Advisor
- **University of Tennessee Health Science Center** Memphis, Tennessee  
*Seyed Hani Hojjati*, Ph.D. candidate at Babol University of Technology, Iran June 2015 to Mar. 2018  
 Project Title: Application of resting-state fMRI in early detection of Alzheimer's disease  
 Rule in thesis committee: Co-Advisor
- **University of Tennessee Health Science Center** Memphis, Tennessee  
*Ali Khazae*, Ph.D. candidate at Babol University of Technology, Iran June 2010 to Sep. 2015  
 Project Title: Using resting-state fMRI and graph theory to study brain connectivity in patients with Alzheimer's disease  
 Rule in thesis committee: Co-Advisor
- **Washington University School of Medicine** St. Louis, Missouri  
*Shamil Hadi*, Ph.D. candidate at Oakland University, Rochester, MI Jan 2010 to Dec. 2013  
 Project Title: Estimating effective connectivity within brain emotional circuitry using dynamic causal modeling and fMRI  
 Rule in thesis committee: Co-Advisor

- **Washington University School of Medicine** St. Louis, Missouri  
*Mehdi Yousefi*, M.S. candidate at Babol University of Technology, Iran June 2011 to Sep. 2012  
 Project Title: Classification of normal subjects from patients using resting-state functional magnetic resonance imaging  
 Rule in thesis committee: Co-Advisor
- **Henry Ford Health System** Detroit, Michigan  
*Mehrdad Azarbad*, M.S. candidate at Babol University of Technology, Iran Sep. 2008 to Sep. 2010  
 Project Title: Brain Tissue Segmentation Using an Unsupervised Clustering Technique Based on PSO Algorithm  
 Rule in thesis committee: Co-Advisor

### Mentoring

- **University of Tennessee Health Science Center** Memphis, Tennessee  
*Vahab Yousofzadeh*, PhD, Postdoctoral fellow April 2018 to Mar. 2019  
 Role: Supervisor and mentor
- **University of Tennessee Health Science Center** Memphis, Tennessee  
*Farimah Salami*, PhD, Research Assistant April 2018 to date  
 Role: Supervisor and mentor
- **University of Tennessee Health Science Center** Memphis, Tennessee  
*Nithila Ramesh*, B.S. student at Rhodes College 2017 to 2018  
 Project Title: Application of high-density EEG and fMRI in evaluating efficacy of VNS treatment
- **University of Tennessee Health Science Center** Memphis, Tennessee  
 Chang Choi, Medical Student at UTHSC Aug. 2018 to July 2019  
 (Faculty/Peer Mentor for the 2018-19 academic year)
- **University of Tennessee Health Science Center** Memphis, Tennessee  
 Glidden, Nicolette, Medical Student at UTHSC Aug. 2018 to July 2019  
 (Faculty/Peer Mentor for the 2018-19 academic year)
- **University of Tennessee Health Science Center** Memphis, Tennessee  
 Reagan Mead, Medical Student at UTHSC Aug. 2018 to July 2019  
 (Faculty/Peer Mentor for the 2018-19 academic year)
- **University of Tennessee Health Science Center** Memphis, Tennessee  
 Peyton Murin, Medical Student at UTHSC Aug. 2018 to July 2019  
 (Faculty/Peer Mentor for the 2018-19 academic year)
- **University of Tennessee Health Science Center** Memphis, Tennessee  
 Zachary Rubnitz, Medical Student at UTHSC Aug. 2018 to July 2019  
 (Faculty/Peer Mentor for the 2018-19 academic year)
- **University of Tennessee Health Science Center** Memphis, Tennessee  
 Margaret Veers, Medical Student at UTHSC Aug. 2018 to July 2019  
 (Faculty/Peer Mentor for the 2018-19 academic year)
- **University of Tennessee Health Science Center** Memphis, Tennessee  
*James H. Acuff*, Medical Student at UTHSC Aug. 2017 to July 2018  
 (Faculty/Peer Mentor for the 2017-18 academic year)
- **University of Tennessee Health Science Center** Memphis, Tennessee  
*Kaci Dejarnette*, Medical Student at UTHSC Aug. 2017 to July 2018  
 (Faculty/Peer Mentor for the 2017-18 academic year)
- **University of Tennessee Health Science Center** Memphis, Tennessee  
*Austin G. Demaagd*, Medical Student at UTHSC Aug. 2017 to July 2018  
 (Faculty/Peer Mentor for the 2017-18 academic year)
- **University of Tennessee Health Science Center** Memphis, Tennessee

- Deborah Jingjia Mi*, Medical Student at UTHSC  
(Faculty/Peer Mentor for the 2017-18 academic year) Aug. 2017 to July 2018
- **University of Tennessee Health Science Center**  
*Andrew E. Mikhael*, Medical Student at UTHSC  
(Faculty/Peer Mentor for the 2017-18 academic year) Memphis, Tennessee  
Aug. 2017 to July 2018
  - **University of Tennessee Health Science Center**  
*Lucas A. Tidwell*, Medical Student at UTHSC  
(Faculty/Peer Mentor for the 2016-17 academic year) Memphis, Tennessee  
Aug. 2016 to July 2017
  - **University of Tennessee Health Science Center**  
*Adam R. Wray*, Medical Student at UTHSC  
(Faculty/Peer Mentor for the 2016-17 academic year) Memphis, Tennessee  
Aug. 2016 to July 2017
  - **University of Tennessee Health Science Center**  
*Trevor H. Marquand*, Medical Student at UTHSC  
(Faculty/Peer Mentor for the 2016-17 academic year) Memphis, Tennessee  
Aug. 2016 to July 2017
  - **University of Tennessee Health Science Center**  
*James B. Tansey*, Medical Student at UTHSC  
(Faculty/Peer Mentor for the 2016-17 academic year) Memphis, Tennessee  
Aug. 2016 to July 2017
  - **University of Tennessee Health Science Center**  
*Emma Squire*, Medical Student at UTHSC  
Project Title: language lateralization and localization using fMRI Memphis, Tennessee  
Summer 2016
  - **University of Tennessee Health Science Center**  
*Bahareh Elahian*, Ph.D. candidate at University of Memphis, Memphis, TN  
Project Title: Identification of seizure onset zone using ECoG recordings in patients with epilepsy Memphis, Tennessee  
Jan. 2015 to Jan. 2017
  - **University of Tennessee Health Science Center**  
*Brittney L Gorman*, B.A. in Biomedical physics  
Project Title: Lateralization of language in patients with epilepsy using fMRI Memphis, Tennessee  
Summer 2016
  - **University of Tennessee Health Science Center**  
*Kunal Singhal*, Assistant Professor at UTHSC  
Project Title: Biomechanical & neuro-motor systems approach to analyze fall risk during gait in realistic environment Memphis, Tennessee  
Aug. 2015 to Aug. 2017  
(iRISE Career Development Award (KL2); 2 yrs; \$82,058/yr)
  - **University of Tennessee Health Science Center**  
*Marina Kilintari*, Postdoctoral fellow at UTHSC  
Project Title: Processing of MEG data Memphis, Tennessee  
2014 to 2015
  - **University of Tennessee Health Science Center**  
*Rakib Al-Fahad*, MS student  
Project Title: Application of deep learning in resting-state fMRI Memphis, Tennessee  
May 2015 to Aug. 2015
  - **Henry Ford Health System**  
*Abdulrahman Hassan*, BS student  
Project Title: Tumor segmentation using Eigentools Detroit, Michigan  
Mar 2009 to Jun 2011
  - **Henry Ford Health System**  
*Cyrus Sarosh*, BS student  
Project Title: Process of the dynamic contrast enhancement MRI (DCE-MRI) datasets in ImageJ Detroit, Michigan  
Mar 2010 to Dec 2010
  - **University of Tehran**  
*Hamid Khosravi*, PhD student  
Project Title: Efficient non-linear methods for MEG inverse Problem Tehran, Iran  
Sep 2008 to Sep 2011
  - **University of Tehran** Tehran, Iran

*Mehdi Rajabioun, MS student*  
Project Title: MEG inverse Problem

Sep 2006 to Sep 2007

## **PROFESSIONAL ACTIVITIES**

### **Reviewer of Professional Journals**

- Nature
- NeuroImage
- Ageing Research Reviews
- Epilepsia
- Neuroscience
- GigaScience
- IEEE Trans. Biomedical Engineering
- IEEE Transactions on Affective Computing
- Journal of Magnetic Resonance Imaging
- Magnetic Resonance in Medicine
- European Journal of Neuroscience
- International Journal of Neural Systems
- International Journal of Engineering
- Journal of Electronic Imaging
- Journal of Digital Signal Processing
- American Institute of Biological Sciences
- Journal of Computer Methods and Programs in Biomedicine
- Journal of Research in Medical Sciences
- Journal of Chemical Neuroanatomy
- Current Medical Imaging Reviews
- Measurement
- Annals of Biomedical Engineering
- Journal of Theoretical Biology
- Computers & Electrical Engineering
- Journal of the Neurological Sciences
- European Journal of Paediatric Neurology
- Computer Methods and Programs in Biomedicine
- Biomedical Informatics Insights
- EURASIP Journal on Bioinformatics and Systems Biology
- Pediatric Neurology
- Computers in Biology and Medicine
- Epilepsy & Behavior
- BMC Medical Imaging
- Journal of Neuroscience Methods

### **Reviewer of Professional Conferences**

- Organization for Human Brain Mapping (OHBM)
- The IEEE International Symposium on Biomedical Imaging (ISBI)
- Data Mining in Biomedical Informatics and Healthcare (DMBIH)
- International Society for Magnetic Resonance in Medicine (ISMRM)
- International Conference on Affective Computing and Intelligent Interaction (ACII)
- Workshop on Medical Informatics and Healthcare (MIH)
- Computer Society of Iran Computer Conference (CSICC)
- Iranian Conference of Biomedical Engineering (ICBME)
- Iranian Conference on Electrical Engineering (ICEE)
- Iranian Conference on Machine Vision and Image Processing (MVIP)

### **Grant Reviewer, Funding Agencies**

- Letter Reviewer NIH, Challenge Grants in Health and Science Research (RC1)
- Member of Panel Reviewer of the American Institute of Biological Sciences (AIBS) and United States Army Medical Research and Materiel Command (USAMRMC)

- Alzheimer Nederland (the Dutch Alzheimer's Society)
- Henry Ford Health System, Early Career Investigator award
- American Epilepsy Society (AES) Early Career Grant Review

**Memberships**

- IEEE and Signal Processing Society (SPS)
- Organization for Human Brain Mapping (OHBM)
- Society for Neuroscience (SFN)
- American Epilepsy Society (AES)

**ADDITIONAL INFORMATION**

United States Citizen