

# CURRICULUM VITAE

## LEON D. IASEMIDIS (JASSEMIDIS), Ph.D.



<http://scholar.google.com/citations?user=1voF-R0AAAAJ>

Professor and Rhodes Eminent Scholar Chair

Fellow, American Institute of Medical and Biological Engineers (AIMBE)

Fellow, National Academy of Inventors (NAI)

Director, Center for Biomedical Engineering and Rehabilitation Science (CBERS)

Associate Editor of the Annals of Biomedical Engineering

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College of Engineering and Science  
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<http://ir.latech.edu/directory/coes/lookup.php>;

CBERS web page:

<http://coes.latech.edu/cbers/>

Personal web page:

<http://www2.latech.edu/~leonidas/>

Brain Dynamics Lab web page:

[www.braindynamics.latech.edu](http://www.braindynamics.latech.edu)

Adjunct Professor

**Louisiana State University (LSU)**  
**Health Sciences Center**  
Department of Neurology  
Shreveport, LA 71130-3932

Adjunct Professor

**University of Arkansas**  
**Medical Sciences**

Departments of Neurology and Neurosurgery  
Little Rock, AR 72205

Professor Emeritus

**Arizona State University (ASU)**

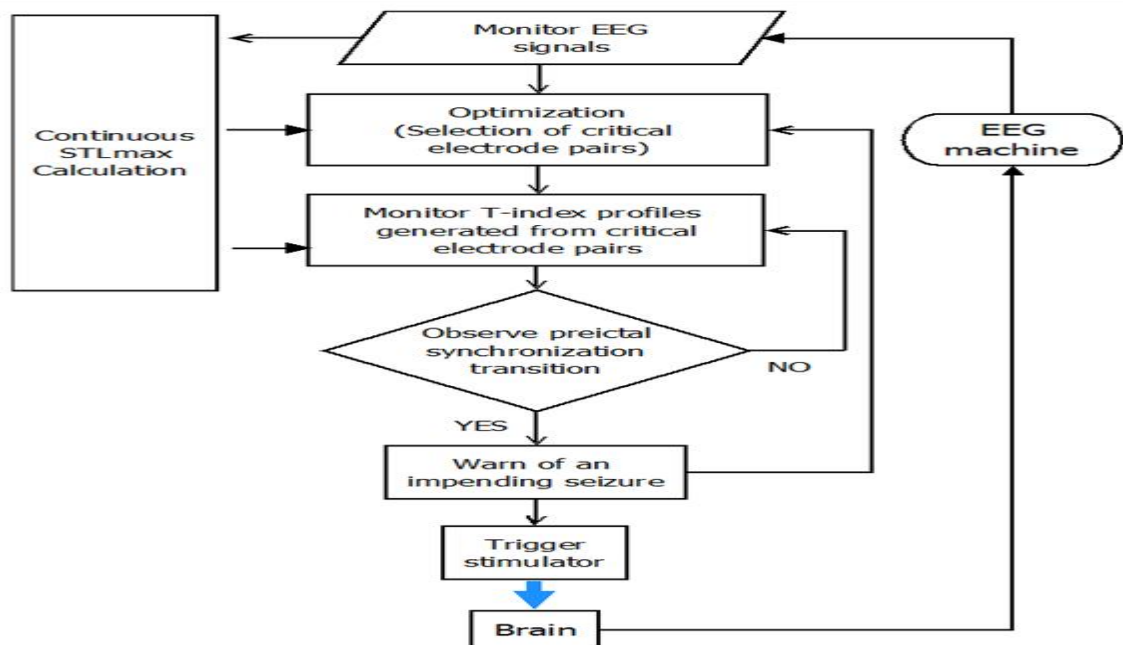
Tempe, AZ 85287-9709; E-Mail:

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## **I. PERSONAL DATA and SUMMARY**

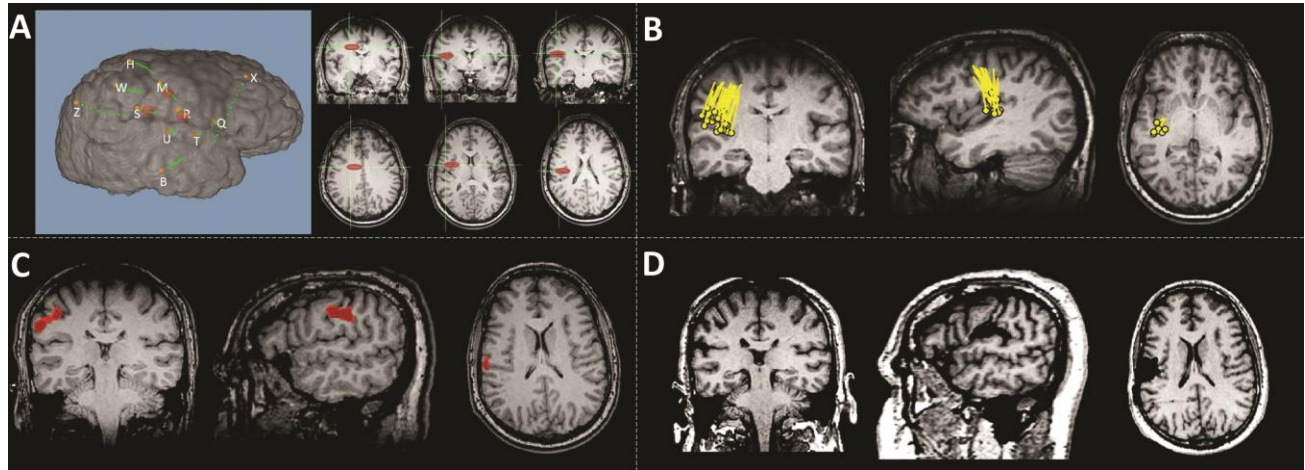
Home Address 311 Loblolly Lane, Choudrant, LA 71227 [(318) 768-7850 (H); (480) 570-7531 (Cell)]  
 Citizenship European Union (2000) and United States (1993)  
 Marital Status Married, daughter (05/31/93), son (10/20/98)  
 Languages Fluent in English and Greek, working knowledge of German

Dr. Iasemidis is a world renowned expert in nonlinear dynamics and the development of new measures of dynamics for the detection, prediction and control of crises in complex coupled systems, in particular the animal and human epileptic brain. His research and over 100 peer-reviewed publications, interdisciplinary conference organizations, presentations and invited talks have stimulated an international interest in the prediction and control of epileptic seizures and understanding of the mechanisms of epileptogenesis. He is considered one of the founders of the field of seizure prediction and has collaborated with Mayo Clinic, Cleveland Clinic and the Barrow Neurological Institute. Dr. Iasemidis served on the editorial board of *Epilepsia* and the *IEEE Transactions on Biomedical Engineering*, and currently is on the editorial board of the *Annals of Biomedical Engineering* and the *International Journal of Neural Systems*. He is a reviewer for a score of journals and research sponsoring national and international agencies, including the National Institutes of Health (NIH) and the National Science Foundation (NSF). Over the years, Dr. Iasemidis' research has been funded by NIH, VA, DARPA, NSF, DoD, the Epilepsy Foundation of America, the Science Foundation of Arizona, the Whitaker Foundation and industry. He has co-founded two companies in the area of neuromodulation and control of epilepsy and is the co-author of 4 awarded, 1 pending and 9 provisional patents in this area. His research has been highlighted on multiple forums, including the New York Times, Discover magazine, the Teaching Company, and the American Association for the Advancement of Science (AAAS). Dr. Iasemidis is currently an endowed Professor and the Rhodes Eminent Scholar Chair in the Biomedical Engineering Program, a Fellow of the American Institute of Medical and Biological Engineers (AIMBE), and the Director of the Center for Biomedical Engineering and Rehabilitation Science (CBERS), College of Engineering and Science, at Louisiana Tech University, Ruston, Louisiana, USA.



Flow Diagram of Real-Time On-Line Closed-Loop Epileptic Seizure Control System

(From: L. Iasemidis, "Seizure Prediction and its Applications", *J. Neurosurgery Clinics of North America*, vol. 22, pp. 489-506, 2011; [front cover of October's 2011 issue](#))



Results for localization of the epileptogenic focus from analysis of concordant clinical intracranial EEG and MEG data (focus in right hemisphere). The patient underwent limited right opercular resection and has been seizure free for 4 years. (A) Map of intracranial EEG electrodes reconstructed on a 3D rendering of the patient's MRI. Green filled dots denote location of each implanted stereo-EEG electrode. Red filled areas denote electrodes of ictal onset during ICEEG recordings. Axial and coronal slices of subfigure A depict the ICEEG-defined ictal onset electrodes (in red) (B) Results of conventional single equivalent current dipole analysis of clinical MEG data shown in a composite image. Locations and orientation of dipoles are denoted in yellow on the patient's MRI. (C) Results of FLA analysis of spontaneous MEG data superimposed on her MRI. The red area denotes the region of maximum inflow. (D) Axial slices of the patient's post-operative MRI. The area of resection largely corresponds to the regions identified by ICEEG, clinical MEG, and FLA analysis.

(From: B. Krishnan, I. Vlachos, Z. Wang, J. Mosher, I. Najm, R. Burgess, L. Iasemidis, A. Alexopoulos, "Epileptic focus localization based on resting state interictal MEG recordings is feasible irrespective of the presence or absence of spikes", *Clinical Neurophysiology*, vol. 126, pp. 667-674, 2015; [front cover of April's 2015 issue](#))

## **II. EDUCATION**

### **Postdoctoral training**

Research Fellow      **Biomedical Engineering** Program, Department of Electrical Engineering and  
Computer Science, University of Michigan, Ann Arbor, MI (1991-92)  
Research Fellow      Department of **Neurology**, University of Michigan, Ann Arbor, MI (1992-93)

### **Graduate studies**

**Ph.D. Biomedical Engineering**, University of Michigan, Ann Arbor, MI (05/04/1991)  
Ph.D. Dissertation:    *On the dynamics of the human brain in temporal lobe epilepsy*  
GPA:    A  
**M.S. Biomedical Engineering**, University of Michigan, Ann Arbor, MI (08/23/1985)  
Courses:    Biology, Biochemistry, Physiology, Electrical Biophysics, Biomedical  
Instrumentation and Design, Systems Theory, Advanced Signal Processing  
GPA:    A+  
**M.S. Physics**, University of Michigan, Ann Arbor, MI (12/19/1986)  
Courses:    Quantum Mechanics, Statistical Mechanics and Thermodynamics, Classical  
Mechanics, Nuclear Physics, Electromagnetics  
GPA:    A-  
**Post-Grad. Electrical Engineering**, Brown University, Providence, RI (1983-84)  
Courses:    Applied Mathematics, Optimization, Stochastic Processes, Stochastic  
Control, Digital Signal Processing, Neuroengineering

### **Undergraduate studies**

#### **Diploma (M.S.) Electrical Engineering**

National Technical University of Athens (NTUA), Greece (1982)

Thesis      Speech processing: *Estimation of pitch of human speech by the average  
magnitude difference function and the harmonic sieve method.*

Major:      Electronics and Digital Signal Processing.

Minor:      Communications and Information Theory.  
Graduated Summa cum Laude.

### **High School**

Varvakios Model School, Athens, Greece (1976; Summa cum Laude).

### **III. PROFESSIONAL EXPERIENCE / ACADEMIC POSITIONS**

<b>2015-present</b>	<u>Adjunct Professor</u> , Department of Neurosurgery, University of Arkansas Medical Sciences, Little Rock, AR
<b>2014-present</b>	<u>Director</u> of the Center of Biomedical Engineering and Rehabilitation Science, (CBERS), Louisiana Tech University, Ruston, LA
<b>2014-present</b>	<u>Adjunct Professor</u> , Department of Neurology, University of Arkansas Medical Sciences, Little Rock, AR
<b>2013-present</b>	<u>Adjunct Professor</u> , Department of Neurology, Louisiana State University, Health Medical Sciences, Shreveport, LA
<b>2012-present</b>	<u>Professor and Rhodes Eminent Scholar Chair</u> , Department of Biomedical Engineering, Louisiana Tech University, Ruston, LA
<b>2012-present</b>	<u>Professor Emeritus</u> , Arizona State University, Tempe, AZ
<b>2010-2012</b>	<u>Affiliate Professor</u> , The Graduate Program in Neurosciences, Arizona State University, Tempe, AZ.
<b>2009-2012</b>	<u>Adjunct Professor</u> , Department of Neurology, Mayo Clinic, Scottsdale, Arizona (03/01/09)
<b>2008 Fall</b>	Sabbatical Leave to Harvard Medical School (Department of Neurology, Dr. Steve Schachter) and Princeton University (Department of Chemical Engineering and Applied Mathematics; Dr. Yannis Kevrekidis)
<b>2007-2012</b>	<u>Affiliate Professor</u> , The Electrical Engineering Department, Arizona State University, Tempe, AZ.
<b>2004-2012</b>	<u>Associate Professor with Tenure</u> , The Harrington Department of Bioengineering, Arizona State University, Tempe, AZ.
<b>2000-2004</b>	<u>Associate Professor, Tenure Track</u> , Department of Bioengineering, Arizona State University, Tempe, AZ; <u>Founder and Director</u> of the ASU Brain Dynamics Laboratory, Tempe, AZ. (Neural Engineering: Bioinformatics, Signal Processing, BioMEMS, Dynamical Systems, Control of Chaos, Brain Coding)
<b>1999-2000</b>	<u>Affiliate Research Assistant Professor</u> , Center for Applied Optimization, Department of Systems and Industrial Engineering, University of Florida, Gainesville, FL. <u>Affiliate Research Assistant Professor</u> , Department of Neuroscience and the University of Florida Brain Institute, Medical School, University of Florida, Gainesville, FL.
<b>1997-2000</b>	<u>Research Assistant Professor</u> , Department of Electrical and Computer Engineering, College of Engineering, University of Florida, Gainesville, FL. <u>Senior Research Scientist (GS13-03)</u> , Research Service, Veterans Affairs Medical Center, Gainesville, FL. <u>Founder and Director, Brain Dynamics Laboratory</u> , Research Service, Malcolm Randall Veterans Affairs Medical Center, Gainesville, FL. The scope of the Brain Dynamics Laboratory was threefold: 1) analysis of human and animal brain's EEG & MEG waves and images with advanced signal processing techniques to accurately detect the dynamics of information generation and flow inside the brain, 2) develop spatio-temporal models to predict changes in brain's dynamics and 3) develop means to control the involved brain's dynamics.
<b>1993-97</b>	<u>Director, Clinical Neurophysiology Laboratory</u> , Neurology Service, Malcolm Randall Veterans Affairs Medical Center, Gainesville, FL, and <u>Affiliate Research Assistant Professor</u> , Department of Neurology, Medical School, University of Florida, Gainesville, FL.

Responsible for the overall clinical and technical performance of the Laboratory. In charge of the research collaboration of the Laboratory with faculty from Medical School and College of Engineering (submission of joint research grant proposals, supervision of interdisciplinary research projects). Responsible for the education of clinical technicians, trainees and other support personnel (medical students, residents, post-doctoral fellows) via organization of seminars and hands-on clinical neurological experiments. The clinical activities of the Laboratory included diagnostic evoked potential tests (brain stem, visual, somatosensory) on an outpatient and intra-operative basis; nerve conduction studies; diagnostic EEG tests on an inpatient (intra-operative, 24h long-term monitoring, intensive care) and outpatient (routine, emergency, status epilepticus) basis; and multiple sleep latency tests. Under my direction, the Laboratory was totally remodeled from an analog to a digital platform (1994-96) and obtained its first evoked potential normal data base. It was equipped with digital EEG data acquisition and video monitoring machines and intra-operative digital evoked potential machines in a network configuration. The funds (\$300,000) for this large-scale remodeling and reorganization of the Laboratory were secured from VA Federal Funds after my submission of a grant proposal.

**1992-93** Post-Doctoral Fellow, Department of Neurology, University of Michigan, Ann Arbor, MI.

*Research:* Detection of the development of synchronized spatio-temporal chaos in coupled semi-conductor linear and circular laser arrays via measures of stability from nonlinear dynamics. Relation of these synchronized phase transitions to neurodynamics of the epileptic human brain.

*Training:* Recording and diagnostic interpretation of electroencephalo-grams (EEG) and evoked potentials. This training included the use of intra-operative evoked potential recordings to monitor the electrical activity of the brain in patients during neurosurgery.

**1991-92** Post-Doctoral Fellow, Biomedical Engineering Program, Department of Electrical Engineering and Computer Science, University of Michigan, Ann Arbor, MI.

Detection and localization of structural damage in soft tissues via ultrasound. Analysis of A-lines before, during and after conditions of hyperthermia to: a) capture the temporal behavior of the development of the damage, b) control the damage's spatial extent and reversibility, and c) measure the temperature variations.

**1989-91** Research Associate, Biomedical Engineering Program, University of Michigan, Ann Arbor, MI.

Spatio-temporal analysis of the electrical brain activity recorded in patients with intractable epileptic seizures. Development of novel methods from nonlinear dynamics to estimate measures of complexity and chaoticity of the EEG (generalized correlation dimensions, generalized Lyapunov exponents, Kolmogorov entropy) for the detection and localization of the epileptogenic focus. Linear and nonlinear auto-regressive modeling of electroencephalo-grams. Long-term prediction of epileptic seizures.

**1988-89** Teaching Assistant, Biomedical Engineering Program, University of Michigan, Ann Arbor, MI.

**1986-88** Teaching Assistant, Department of Electrical Engineering and Computer Science, University of Michigan, Ann Arbor, MI.

- Courses: Digital Signal Processing I and II: Lecture, Recitation and Laboratory.
- 1986-87** Research Assistant, Department of Neurology, University of Michigan, Ann Arbor, MI.
- 1984-86** Studies in Clinical Neurophysiology. Signal analysis and modeling of EEG. Research Assistant, Biomedical Engineering Program, Departments of Electrical Engineering and Psychiatry, University of Michigan, Ann Arbor. Recording, storage and analysis of human ERP's (event related potentials) resulting from the visual presentation of words related to psychiatric disorders (supraliminally and subliminally). Use of principal component analysis, order statistics, Median filtering, Wiener filtering, Kalman filtering, Information Flow and Mutual Information techniques.
- 1983-84** Research Assistant, Department of Electrical Engineering, Brown University, Providence, RI.
- 1980-82** Speech analysis and synthesis (encoders and decoders), Kalman Filtering. Research Assistant, Department of Electrical Engineering, National Technical University of Athens (N.T.U.A.), Athens, Greece. Waveguide and Wireless Communication, Electronics, Microprocessors, Digital Signal Processing, Speech Processing.

#### **IV. AWARDS - ACADEMIC RECOGNITIONS**

- Company Award for **IntelliPace LLC** (2<sup>nd</sup> place placement in the Innovation Enterprise I20 Corridor venture championship competition; April 22, 2016)
- **Fellow**, National Academy of Inventors (NAI) for *“Demonstration of a highly prolific spirit of innovation in creating or facilitating outstanding inventions that have made a tangible impact on quality of life, economic development, and the welfare of society”* (December, 2015)
- **Recognition Award** for the *“Leadership role in national recognition of the College of Engineering and Science”*, Louisiana Tech University (September, 2014)
- **Fellow**, American Institute of Medical and Biological Engineers (AIMBE) for *“Outstanding contributions to understanding the origin of and to developing methods for diagnosing, predicting and treating epileptic seizures”* (January 2014)
- **IEEE Senior Member** (June 2013)
- **The Spectrum Award**, The Institutes for Achievement of Human Potential, Philadelphia, PA, for a “Unique fluency in the language of discovery, and a rare capacity to translate discoveries into applied science. His work has stimulated interest in the underlying mechanisms of seizures on an international scale. He has moved the world forward significantly in its understanding of neuroplasticity, which will benefit all mankind” (May 10, 2013)
- **Inventorship FY2009 Recognition Award**, Arizona Technology Enterprises (AzTE), ASU, October 29, 2009.
- **Invited Expert** in the *Reuters Insight Community of Experts* (registered 06/24/08)
- Our **research was highlighted** in "Chaos in health and disease." by Prof. Steven Strogatz, Lecture 21, Chaos course video, Science and Mathematics series, The Teaching Company, 2008.
- **Paper Award**: L.B. Good, S. Sabesan, S.T. Marsh, K. Tsakalis, *L.D. Iasemidis & D.M. Treiman*, “Automatic seizure prediction and deep brain stimulation control in epileptic rats”, Philadelphia, Pennsylvania, American Epilepsy Society Annual meeting, 2007.
- **ASU President upon Dr. Iasemidis tenure: “President Crow shines light on five new rising stars”**, **ASU Insight Magazine**, vol. 24, No. 37, page 1 and 6 (May 7, 2004)
- **Paper award**: The 2004 William Pierskalla best paper award for research excellence in health care management science, Institute for Operations Research and the Management Sciences (INFORMS), 2004. It has been ranked 5th in the Top 25 Articles in Operations Research Letters (P. M. Pardalos, W. Chaovalitwongse, L. D. Iasemidis, J. C. Sackellares, D-S. Shiau, P. R. Carney, O. A. Prokopyev and V. A. Yatsenko, "Seizure warning algorithm based on optimization and nonlinear dynamics", Mathematical Programming, Volume 101, Number 2 (November 2004) pp. 365 - 385.)
- **Best Paper and Best Speaker Award**. Title: “Predictability of epileptic seizure: A comparative study using Lyapunov exponent and entropy based measures”, in the 40th Annual Rocky Mountain Bioengineering Symposium, St. Louis, Missouri, 2003. (S. Sabesan, K. Narayanan, A. Prasad, A. Spanias, J.C. Sackellares & L. D. Iasemidis, “Predictability of epileptic seizures: A comparative study using Lyapunov exponent and entropy based measures”, *Proceedings of the 40<sup>th</sup> Annual Rocky Mountain Bioengineering Symposium*, Biloxi, Mississippi, ISA Publishing, pp. 129-135, 2003.)
- **Nominee for the “University’s Last Lecture Series”**, **Arizona State University** (2003) (Excellence in Teaching; nominated by the ASU Students Office of Co-Curricular Programs)
- Our **research was highlighted** in “Doctors look ahead to pacemakers for the brain”, **The New York Times**, science section page D5, February 18, 2003.
- **Member**, The Arizona State University President’s Community Enrichment Outreach Program, 2002



- Our **research was highlighted** in “*Fire in the Brain*”, **Discover magazine**, May issue 2002, pp. 50-53 ([www.discover.com](http://www.discover.com))
- **Invited Speaker**, “Quadratic integer optimization and nonlinear dynamics for prediction of epileptic seizures”, **American Society for the Advancement of Science (AAAS)**, San Francisco, Feb. 2001.
- Our **research was highlighted** in “*Epileptic seizures could be predictable*”, **The New York Times**, by Reuters, February 20, 2001
- **Who’s Who in America** (1998-present)  
(Marquis Edition)
- **Horace H. Rackham Pre-Doctoral Fellowship** (1989-90)  
(The Graduate School, University of Michigan, Ann Arbor)
- **The Distinguished Achievement Award for Outstanding work in Biomedical Engineering** (1988-89)  
(The College of Engineering, University of Michigan, Ann Arbor)
- **Recognition for excellence in teaching** (1987-88)  
(The Department of Electrical Engineering and Computer Science, University of Michigan, Ann Arbor)
- **Member of Tau Beta Pi society** (1987)  
(The USA National Engineering Honor Society)
- **Fellowship for excellence in undergraduate studies** (1977-82)  
(The State Scholarship's Foundation of Greece)

### **V. INVITED TALKS**

1. Speaker, "Brain dynamics for epileptogenic focus localization, seizure prediction and control", Louisiana State University Health Sciences Center Shreveport, Department of Neurology, September 19, 2014.
2. Speaker, "Spatio-temporal brain dynamics in epilepsy", Summer School on *Mathematical Modeling of Complex Systems*, Athens, Greece, July 25, 2014.
3. Speaker, "Resetting of the Epileptic Brain by Seizures", 30th Annual Southern Biomedical Engineering Conference, Gulfport, Mississippi, April 10, 2014.
4. **Keynote Speaker**, "Brain's Connectome: Application to Diagnosis and Treatment of Epilepsy", Int. Conference on Innovation in Medicine and Healthcare, U. Piraeus, Greece, July 17-19, 2013.
5. **Keynote Speaker**, "Resetting the Pathology of Brain Dynamics by Seizures and Conjectures on Control of Epilepsy", The Institutes and The World Organization for Human Potential, Wyndmoor, PA, May 9, 2013.
6. Speaker, "Quantitative analysis of EEG and MEG in the surgical treatment of Epilepsy", Louisiana State University Health Sciences Center Shreveport, Department of Neurosurgery, March 5, 2013.
7. Speaker, "Brain dynamics and applications to the diagnosis and treatment of epilepsy" Epilepsy Grand Rounds, Department of Neurology, Cleveland Clinic, OH, September 14, 2012.
8. Speaker, "EEG precursors in the development of brain disorders" Security and Defense Systems Initiatives: Human Performance Augmentation Meeting, Arizona State University, Tempe, March 1-2, 2012.
9. Speaker, "Spatiotemporal changes of brain dynamics and applications to neuromodulation and real-time control of epileptic seizures", Distinguished Lecture Series, The Center for Biomedical Engineering and Rehabilitation Science, The College of Engineering and Science, Louisiana Tech University, Dec. 12, 2011.
10. Speaker, "On Brain Dynamics in Epilepsy: Seizure Resetting, Prediction, Control and Focus Localization in Humans and Animals, 4<sup>th</sup> International Meeting on Epilepsy Research, Center for Integrative Neuroscience and Neuroengineering Research (CINNR) and the Intellectual and Developmental Disabilities Research Center (IDDRC), May 19 – May 21, Chicago, IL, 2011.
11. Speaker, "Seizure Prediction and Just-In-Time Control of Epilepsy via Electrical Stimulation", 39<sup>th</sup> Annual Neural Interfaces Conference, Long Beach, CA, June 21-23, 2010.
12. Invited Speaker, "Seizure Prediction", 22<sup>nd</sup> Annual Epilepsy Update, Mayo School of Continuous Professional Development, Scottsdale, Arizona, Nov. 7, 2009.
13. Speaker, "Dynamics of epileptic seizures: Epileptogenesis, seizure prediction and control", in the track *Neuroengineering: Modeling, stimulation and control*, at the Medical Physics and Biomedical Engineering World Congress, Munich, Germany, Sept. 7-12, 2009.
14. **Keynote Speaker**, "Chaos, Brain and Epilepsy", 2<sup>nd</sup> Chaotic Modeling and Simulation International Conference, Crete, Greece, June 2, 2009.
15. Speaker, "Seizure prediction and control of epilepsy via resetting of brain dynamics", 4<sup>th</sup> International workshop on seizure prediction, Kansas City, June 4-7, 2009.
16. Speaker, "Epilepsy: A new look into its dynamics", ASU/BNI Graduate Program in Neurosciences, February 28, 2009, Phoenix, Arizona.
17. Speaker, "Seizure dynamics", Dept. of Chemical Engineering, Princeton University, December 19, 2008.
18. Speaker, "Assessment of Seizure Susceptibility using Dynamical Analysis of EEG in Patients with Epilepsy", Beth Israel Deaconess Medical Center, Tuesday December 16,

- 2008, Farr 11 Conference Room, 12 – 1pm, Department of Neurology, Harvard Medical School, Boston, MA.
19. Speaker, “Seizure prediction and control”, Dept. of Neurology, Mayo Clinic, Scottsdale, AZ, August 13, 2008.
  20. Speaker, “The journey from seizure prediction to seizure control with an intermediate stop for epileptogenic focus localization”, CIMIT Epilepsy Innovation Summit, Boston, May 7, 2008.
  21. Speaker, “On ictogenesis, seizure prediction and control”, CIMIT (Center for Integration of Medicine & Innovation Technology) Innovation Congress 2007, Harvard-MIT, Boston, Nov. 13-14, 2007.
  22. Speaker, “On real-time prediction and control of epileptic seizures: An overview”, Dept. of Neurology, U. of Arizona, March 16, 2007.
  23. Speaker, International Workshop on “Complex dynamics of physiological systems: From heart to brain”, Presidency College, Kolkata, India, Feb. 14-17, 2007.
  24. Speaker, East China Normal University, Shanghai, China, Feb. 12-14, 2007.
  25. Speaker, “Can we predict seizures?”, 19<sup>th</sup> Mayo Conference on Epilepsy, Scottsdale, AZ, Nov. 4, 2006.
  26. Speaker, Summer School in Bioengineering, Patras, Greece, July, 2006
  27. Speaker, Flinn Foundation Conference on Bioengineering, June 2006
  28. Speaker, “A Dynamical View of Epilepsy: Application to the Prediction and Adaptive Control of Epileptic Seizures”, Florida International University, Miami, FL, April 2006.
  29. **Co-Chair and Speaker**, the 2<sup>nd</sup> International NIH sponsored workshop on Seizure Prediction and Control, Bethesda, April 2006.
  30. Speaker: ASU President Crow’s Community Outreach Program, “Seizure Prediction”, in the session on Neuroscience of the Brain, Fall 2005.
  31. Speaker, “Optimization in Epilepsy”, University of Coimbra, Workshop on “Optimization in Medicine”, Coimbra, Portugal, July 20-22, 2005
  32. Speaker, IEEE EMBEC, Chair of Session “Brain Pacemakers”, Prague, Hungary, November, 2005
  33. Speaker, International Summer School, “Complexity in Science and Society”, Patras and Ancient Olympia, Greece, July 14-27, 2004
  34. Speaker, 2<sup>nd</sup> Summer School on “Emerging Technologies in Biomedicine”, Patras, Greece, June 20-25, 2004
  35. Speaker, International Conference on “High Performance Algorithms and Software for Nonlinear Optimization: Status and Perspectives”, Ischia, Italy, June 18-20, 2004
  36. Speaker, “Predicting epileptic seizures: Methods and Results”, 21<sup>st</sup> Annual Houston Conference on Biomedical Engineering Research, University of Houston, Houston, TX, February 12-13, 2004
  37. Speaker, “Predicting Epileptic seizures”, Department of Neurology, Mayo Clinic, Phoenix, AZ, March 22, 2004
  38. Speaker, “Timely prediction of epileptic seizures: The road to intelligent pacemakers”, Department of Neurosurgery, Good Samaritan Hospital, Phoenix, AZ, December 10, 2003
  39. Speaker, “Prediction of epileptic seizures: Learning from the past and looking into the future”, Department of Neurology, Barrows Neurological Institute, Phoenix, AZ, November 28, 2003
  40. Speaker, “Seeking Answers: The Find a Cure for Epilepsy conference”, May 18-20, Lake Bluff, Illinois, 2003
  41. Speaker, “Brain Dynamics and Epilepsy”, The Harrington Department of Bioengineering of ASU and the Department of Neurosurgery of UA joint conference, October 8, Tempe, AZ, 2003

42. Speaker, "A New Look at the Dynamics of the Epileptic Brain: Prediction of Epileptic Seizures and Resetting of the Epileptic Brain Leads to Intelligent Brain Pacemakers", 14<sup>th</sup> Conference of the International Society for Brain Electromagnetic Topography, Santa Fe, New Mexico, November 2003.
43. Speaker, "Mathematical models of epilepsy and neuronal excitability", Spring Epilepsy Research Conference, Grand Cayman, British West Indies, April 2003.
44. Speaker, "Spatio-temporal dynamics of the human brain in epilepsy and brain pacemakers", *The role of mathematics and computation in systems and integrative biology*, NSF-sponsored workshop, Utah State University, Logan, Utah, March, 2003.
45. **Plenum Speaker**, "The history of epileptic prediction", 1<sup>st</sup> International Workshop on "Epileptic seizure prediction", Bonn, Germany, April 2002.
46. Speaker, "Dynamical brain disorders and the theory of chaos", The Arizona State University President's Community Enrichment Outreach Program, March 2002.
47. Speaker, "Predicting epileptic seizures... and more", New Horizons in Science Annual Meeting, Council for the Advancement of Science Writing, Nov. 2001 (<http://nasw.org/users/casw/Thurs2.htm>).
48. Guest Speaker, "Prediction of epileptic seizures and resetting of the epileptic brain", 14<sup>th</sup> Summer School on *Nonlinear Dynamics: Chaos and Complexity*, Patras, Greece, July 2001.
49. Speaker, "Quadratic integer optimization and nonlinear dynamics for prediction of epileptic seizures", American Society for the Advancement of Science (AAAS), San Francisco, Feb. 2001

## **VI) PRESS CITATIONS**

1. <http://www.ellines.com/en/achievements/29033-one-of-the-leaders-in-the-field-of-seizure-prediction/>, 2016.
2. <http://www.academyofinventors.org/press-releases.asp>, 2016
3. <http://www.theadvertiser.com/story/news/local/2014/02/04/la-techs-iasemidis-named-fellow-of-national-biomedical-organization/5201127/>, 2014.
4. <http://www.cureepilepsy.org/research/2015grantees.asp>, 2015
5. <http://aimbe.org/college-of-fellows/cof-1653/>, 2014.
6. <http://inmed13.innovationkt.org/keynotes.php>, 2013
7. Our research is highlighted by Prof. Steven Strogatz. In "Chaos in Health and Disease." in Lecture 21, Chaos course video, Science and Mathematics series, DVD, THE TEACHING COMPANY, 2008.
8. Dean's Report (2005-6), page 17, **Ira A. Fulton School of Engineering**, Arizona State University, Arizona Board of Regents, 2006.
9. Bioengineering Activities, "Arizona State University and Barrow Neurological Institute" and "International Workshop on Prediction of Epileptic Seizures", **The Arizona Bioscientist**, Flinn Foundation, October, 2006.
10. "President Crow shines light on five new rising stars", **ASU Insight Magazine**, vol. 24, No. 37, page 1 & 6 (May 7, 2004)
11. "Forecasting Mind Storms", **ASU Research Magazine**, Summer 2003
12. "A Brain Pacemaker", **Psychology Today**, July/August, 2003
13. "Predicting a storm in the brain", **IEEE Spectrum**, pp. 45, July 2003
14. "Doctors look ahead to pacemakers for the brain" in **The New York Times**, science section page D5, February 18, 2003.
15. "Technology provides advance warning for epileptic seizures", **Physician's Weekly**, January 14, 2002 ([www.physweekly.com/article.asp?issueid=3&articleid=119&printable=1](http://www.physweekly.com/article.asp?issueid=3&articleid=119&printable=1))
16. "Tomorrow's world" science and technology program by **BBC**, London, 2002.
17. "Epilepsy: can seizures be predicted?", **The Lancet Neurology**, May 2002.
18. "Fire in the Brain", **Discover magazine**, May issue 2002, pp. 50-53 ([www.discover.com](http://www.discover.com))
19. Congratulations from the **President of ASU** (Dr. Lattie Coor), 2001
20. "ASU Bioengineer presents evidence of forecasting epileptic attacks", ASU Engineering web page ([www.eas.asu.edu/ceas/news/](http://www.eas.asu.edu/ceas/news/)), 2002
21. Citation by the **ASU's Dean of Engineering** (Dr. Peter Crouch) ([www.eas.asu.edu/ceas/news/](http://www.eas.asu.edu/ceas/news/)), 2002
22. "Professors find way to predict epileptic seizures" in the **State Press**, March 1, 2001
23. "ASU Bioengineer presents evidence of forecasting epileptic attacks", **ASU Research Magazine**, March, 2001.
24. "Further research reported on seizure prediction", **Epilepsy Action News Archive**, February 26, 2001 ([www.epilepsy.org.uk/news/archive/2001/20010226.html](http://www.epilepsy.org.uk/news/archive/2001/20010226.html))
25. "Epileptic seizures could be predictable" in **The New York Times**, by Reuters, February 20, 2001
26. "Seized by chaos", **Beyond 2000**, June 13, 2000 ([http://beyond2000.com/news/story\\_370.html](http://beyond2000.com/news/story_370.html))
27. "Chaos theory sheds light on pre-seizure transition period", Vanguard, **U.S. Department of Veterans Affairs**, pp.13, February 2000.
28. "Chaos theory helps researchers predict epileptic seizures", Friday Evening Post, **The University of Florida Health Science Center**, December 17, 1999.

## **VII. PROFESSIONAL SERVICE**

### ***i) EDITORIAL ACTIVITIES***

- **Member of the Editorial Board** of “*Epilepsy Research*” (2015 - present)
- **Associate Editor** of “*Annals of Biomedical Engineering*” (2009 – present)
- **Associate Editor** of “*Int. J. Neural Systems*” (2005 - 2013)
- **Member of the Editorial Board** of “*Epilepsia*” (2003 - 2006)
- **Associate Editor** of “*IEEE Transactions on Biomedical Engineering*” (2001 - 2006)
- **Guest Editor of the Special Issue** of *Int. J. Neural Systems*, on “Bioelectromagnetism and Epilepsy: Theory and Applications” (2013)
- **Guest Editor of the Special Issue** of *Int. J. Neural Systems*, on “Neuromodulation and Epilepsy” (2010)
- **Guest Editor of the Special Issue** of *Int. J. Neural Systems*, on “Neuromodulation and Control of Epileptic Seizures” (2009)
- **Guest Editor of the Special Issue** of *Int. J. Neural Systems*, on “Synchronization of Neural Systems” (2007)
- **Guest Editor of the Special Issue** of *IEEE-TBME* on “Seizure Prediction” (2003)
- **Co-Editor, Book:** *Data Mining, Systems Analysis and Optimization in Neuroscience*, Springer Verlag, 2007.
- **Co-Editor, Book:** *Quantitative Neuroscience*, Kluwer Academic Publishers, Boston, 2004.

### ***ii) REVIEWER ACTIVITIES***

#### **EXTERNAL REVIEWER FOR TENURE AND PROMOTION**

- *U. Kentucky*
- *Georgetown University*
- *U. Rhode Island*
- *Johns Hopkins U.*

#### **FEDERAL AGENCIES AND NATIONAL ORGANIZATIONS**

- U Texas System – Brain Seed Grants (2015)
- LSU Biomedical Collaborative Research Program (2015)
- Kuwait Foundation for the Advancement of Sciences - KFAS (July 2014–present)
- Czech Science Foundation - GACR (August 2013-present)
- Medical Research Council (MRC), United Kingdom (November 2011-present)
- Center for Integration of Medicine and Innovative Technology (CIMIT) (March 2009-present)
- National Institutes of Health (NIH), USA, Emerging Technologies and Training in Neurosciences IRG (Oct. 2008-present)
- Austrian Science Fund (ASF) (June 2008–present)
- National Science Foundation (NSF), USA (Jan. 2004-present)
- National Medical Research Council (NMRC Singapore, Jan. 2004-present)

- U.S. Civilian Research and Development Foundation (CRDF) [www.crdf.org](http://www.crdf.org) (May 2003-present)
- Epilepsy Research Partnership Grants (Epilepsy Foundation of America) and CURE (May, 2003-present)
- NIH, National Institute of Neurological Disorders and Stroke, USA (2001-present)

## **JOURNALS**

- Springer Plus (2014-present)
- Brain Topography (2014-present)
- Entropy (Open Access) (2012-present)
- IEEE Computational Intelligence Magazine (2012-present)
- J. Biomedical and Health Informatics (2014-present)
- Neurolmage (2012-present)
- Computational and Mathematical Methods in Medicine (2011 – present)
- International J. of Bifurcation and Chaos (2011 – present)
- IEEE Transactions on Knowledge and Data Engineering (2010 - present)
- Computers in Biology and Medicine (2010 - present)
- Journal of Health Care Engineering (2009 – present)
- International Journal of Computer Mathematics (2009 - present)
- Recent Patents on Biomedical Engineering (2008 - present)
- Philosophical Transactions of the Royal Society A (2008 – present)
- IEEE Transactions on Neural Networks (2008 – present)
- IEEE Transactions on Information Technology in Biomedicine (2008 - present)
- IEEE Transactions on Neural Systems and Rehabilitation Engineering (2008 - present)
- Biological Cybernetics (2007 – present)
- Chaos (2006 - present)
- Int. J. Neural Systems (2006 - present)
- Epilepsy Research (2005 - present)
- Journal of Neural Engineering (2005 - present)
- Journal of Medical Engineering and Physics (2004 - present)
- Journal of Physiological Measurement (2003 - present)
- Journal of Global Optimization (2003 - present)
- The Lancet Neurology (2002 - present)
- Journal of Computational Statistics and Data Analysis (2002 – present)
- Mathematical Biosciences (2002 – present)
- Journal of Neuroscience Methods (2001 - present)
- Annals of Biomedical Engineering (2000 – present)
- IEEE Transactions on Systems, Man and Cybernetics (1999 - present)
- Journal of the Neurological Sciences (1997 – present)
- Electroencephalography and Clinical Neurophysiology (1996 – present)
- Neural Networks (1997 – present)
- IEEE Transactions on Biomedical Engineering (1993 – present)
- IEEE Transactions on Signal Processing (1997 – present)
- Epilepsia (1997 – present)

### **iii) PROFESSIONAL / CONFERENCE COMMITTEES**

1. Conference Chair, Southern Biomedical Engineering Conference (SBEC), Shreveport, March 11-13, 2016.
2. Chair of the Scientific Committee and Track Chair, Southern Biomedical Engineering Conference (SBEC), Shreveport, March 11-13, 2016.
3. Member of the AIMBE's "Neuroengineering and Physiological Engineering" Committee for nominations of Fellows to the AIMBE College of Fellows, 2014 and 2015.
4. Member of the IEEE Technical Committee on Biomedical Signal Processing (IEEE- EMBS); 2014-present. Chair of the Awards Subcommittee (2014-2015).
5. Session Chair, IEEE EMBS International Conference, Chicago, 2014.
6. Member of the International Scientific Committee, 5<sup>th</sup> International Summer School on Emerging Technologies in Biomedicine, September 26<sup>th</sup>-October 1<sup>st</sup> 2010, Patras, Greece with the support of the COST Action Neuromath, focusing on «High Throughput Communication between Brain and Machines».
7. Member of the Advisory Committee, "International Conference on Biomedical Data & Knowledge Mining: Towards Biomarker Discovery", July 7-9, 2010, Chania, Crete, Greece.
8. Member of the Advisory Committee, 4<sup>th</sup> International workshop on seizure prediction, Kansas City, June 4-7, 2009.
9. Chair, Registration Committee, IEEE International Conference on Complex Medical Engineering, Tempe, Arizona, April 9-11, 2009.
10. Co-Chair, session in Epilepsy, ASU/BNI Graduate Program in Neurosciences, 3<sup>rd</sup> Annual Neuroscience Symposium, Barrow Neurological Institute, February 28, 2009.
11. Member of the International Program Committee, 6<sup>th</sup> International Conference on Biomedical Engineering, (Biomed 2008), Feb. 13-15, 2008, Innsbruck, Austria.
12. Member of the International Program Committee, Circuits Signals and Systems (CSS) 4<sup>th</sup> International Conference, IASTED 2006.
13. Co-Organizer, Co-chair of the NIH-sponsored workshop on "Seizure Prediction", Washington DC, April 8-11, 2006
14. Co-Organizer, Co-chair and session chair, of the DIMACS workshop on "Data mining, systems analysis and optimization in neuroscience", Gainesville FL, Feb. 15-17, 2006
15. Member of the International Scientific Committee, 3<sup>rd</sup> European Medical and Biological Engineering Conference (EMBEC), Prague, Nov. 20-25, 2005.
16. Chair of the session "Brain Pacemakers for Epilepsy", 3<sup>rd</sup> European Medical and Biological Engineering Conference (EMBEC), Prague, Nov. 20-25, 2005.
17. Member of the International Program Committee, Circuits Signals and Systems (CSS) 3<sup>rd</sup> International Conference, IASTED 2005
18. Co-chair of the *Special Interest Group* workshop on "*Engineering and Epilepsy*", American Epilepsy Society Annual Meeting, New Orleans, December 2004
19. Member of the International Scientific Committee, Speaker, 2<sup>nd</sup> Summer School on "Emerging Technologies in Biomedicine", Patras, Greece, June 20-25, 2004
20. Co-Chair of the sessions "Seizure Management I and II", 21<sup>st</sup> Annual Houston Conference on Biomedical Engineering Research", University of Houston, Houston, TX, February 12-13, 2004
21. Co-chair of the *Special Interest Group* workshop on "*Engineering and Epilepsy*", American Epilepsy Society Annual Meeting, Boston, December 2003
22. Member, ASU representative, *Task Force Platform Committee on Bioengineering* for the Battelle Memorial Institute / Flinn Foundation. *Project: "Arizona's Bioscience Roadmap to Success (February 2003 – 2010)"*
23. Chair of session "Analysis of Nonstationary Biosignals", in "Biosignal Processing and Physiological systems modeling" track, IEEE 25<sup>th</sup> International Conference of EMBS (Engineering in Medicine and Biology Society), Cancun, Mexico, September 17-21, 2003



24. Chair of the session “Nonlinear dynamics and epilepsy”, International Nonlinear Sciences Conference on Research and applications in the Life sciences, Vienna, Austria, February 2003
25. Member of the Organization Committee of the International Conference on “Quantitative Neurosciences: Models, Algorithms, Diagnostics and Therapeutic Applications”, Gainesville, FL, February, 2003
26. Chair of the session “Neuromodelling”, 24<sup>th</sup> Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Houston, October 2002.
27. Co-chair of the *Special Interest Group* workshop on “*Engineering and Epilepsy*”, American Epilepsy Society Annual Meeting, Seattle, December 2002
28. Member of the International Scientific Committee for the “*Optimization and Industry*” Conference, Great Keppel Island, Australia, July 1-6, 2001.
29. Member of the International Scientific Committee for the “*Biocomputing 2000*” Conference, Gainesville, FL, February, 2001.
30. Member of the International Scientific Committee for the “*First European Conference on Signal Analysis and Prediction*”, Prague, June 24th-27th, 1997.

#### ***iv) PROFESSIONAL SOCIETIES***

- Member of the IEEE Engineering in Medicine and Biology Society (IEEE-EMBS)
- Member of the BioMedical Engineering Society (BMES)
- Member of the American Clinical Neurophysiology Society (ACNS)
- Member of the American Epilepsy Society (AES)
- Member of the Society for Neuroscience (SFN)
- Member of the American Association for the Advancement of Science (AAAS)

## **VIII. ACADEMIC SERVICE**

### **i) UNIVERSITY / COLLEGE / DEPARTMENTAL COMMITTEES**

#### **Louisiana Tech University (LA Tech)**

1. Member, Research Growth Team of the Senior VP of Research and Development, University level (2014-present)
2. Member, Committee for Intellectual Property and Commercialization, University level (2014-present)
3. Member, Faculty Search Committee, Computer Science and Electrical Engineering, College of Engineering (2013-15)
4. Chair, Promotion and Tenure Committee, Biomedical Engineering (2013-14)
5. Member, Promotion and Tenure Committee, Electrical Engineering (2013-14)
6. Chair, Space Committee, Biomedical Engineering (2012-13)
7. Member, Faculty Search Committee, Biomedical Engineering, College of Engineering (2012-13)

#### **Arizona State University (ASU)**

1. Member, **Department of Bioengineering Personnel Committee** (2011)
2. Chair of the subcommittee on "Translational Neuroscience", University Search Committee for Grand Challenges Faculty Positions on Health Care, ASU (2009-2011)
3. Member, Fulton School of Engineering Grievances Review Committee (2007-2012)
4. Member, **Department of Bioengineering Personnel Committee** (2007-2010)
5. Member, University Search Committee for the Chair in Bioengineering (2006)
6. Member, **The Dean's Advisory Personnel Committee**, Fulton School of Engineering (2004-2007)
7. Member, Ph.D. Comprehensive Exam Committees, The Harrington Dept. of Bioengineering (2006-2012)
8. **Chair of the Graduate Committee**, The Harrington Dept. of Bioengineering (2004-2006)
9. Chair, Ph.D. Comprehensive Exam Committee, The Harrington Dept. of Bioengineering (2004-2006)
10. Chair, Fulton School of Engineering Committee on Education for ECE 340 and ECE 350 (2004)
11. Member, Advertisement of Graduate and Undergraduate Studies Committee, Planning, Fulton School of Engineering (2004-2006)
12. Member, Biological Liaison Committee, Fulton School of Engineering (2004)
13. Member, Curriculum Committee, Fulton School of Engineering for ECE 100 and 300 courses (Spring, 2004)
14. Departmental Faculty Search Committee for Bioscience and Bioinformatics (Member)- joint with Computer Science (2003-04)
15. University Task Force Platform Committee on Bioengineering for the Battelle Memorial Institute / Flinn Foundation. Project: "Arizona's Bioscience Roadmap to Success", February, 2003-2010.
16. Departmental Faculty Search Committee for Bioinformatics (Member)- joint with Computer Science (2002-03)
17. Departmental Faculty Search Committee for BioMEMS (Member) (2001-02)
18. School of Engineering Committee on Diversity (2001)

## ***ii) STUDENT COMMITTEES***

### **Doctoral dissertations**

- Hemangini Dhaibar, Department of Cell Biology and Anatomy, LSU Health SC Shreveport (Member, 2016-present)
- Darrell Robinson, Biomedical Engineering program, LA Tech University (Member, 2016-present)
- Stephanie L. Villalba, Department of Cell Biology and Anatomy, LSU Health SC Shreveport (Member, 2014-present)
- Salah Alzghoul, Biomedical Engineering program, LA Tech University (Member, 2015-2016)
- Sreenivasa Rao Sanakam, Biomedical Engineering program, LA Tech University (Member, 2013-present)
- Varun Lingaiah Koppa, Biomedical Engineering program, LA Tech University (Member, 2013-present)
- Bharat Karumuri, Biomedical Engineering program, LA Tech University (Chair, 2013-present)
- Joshua Adkinson, Biomedical Engineering program, LA Tech University (Chair, 2012-present)
- Balu Krishnan, "On the Dynamics of Epileptic Spikes and Focus Localization in Temporal Lobe Epilepsy", Department of Electrical Engineering, Arizona State University, Tempe, AZ (Chair, April, 2012)
- Chenhui Yang, "Robust signal detection and modeling with applications to the analysis of cognitive neural control and video target tracking", Department of Electrical Engineering, Arizona State University, Tempe, AZ (Member, 2012)
- Christine Zwart, Department of Bioengineering, Arizona State University, Tempe, AZ (Member, 2012)
- Lifeng Miao, Department of Electrical Engineering, Arizona State University, Tempe, AZ (Member, 2012)
- David Stanley, Department of Bioengineering, Arizona State University, Tempe, AZ (Member, 2011)
- Baohua Li, "Robust dynamic programming for Markov decision processes and filtering applications to video target tracking", Department of Electrical Engineering, Arizona State University, Tempe, AZ (Member, 2009)
- Teresa Murray, "Shedding light on nicotinic acetylcholine receptors: creation and use of fluorescently tagged receptors", Department of Bioengineering, Arizona State University (Co-chair, Feb. 18, 2009)
- Shivkumar Sabesan, "Spatiotemporal brain dynamics in epilepsy: Application to seizure prediction and focus localization", Department of Electrical Engineering, Arizona State University, Tempe, AZ (Chair, 2008)
- Niranjana Chakravarthy, "A feedback systems perspective for modeling and controlling epileptic seizures", Department of Electrical Engineering, Arizona State University, Tempe, AZ (Chair, 2007)
- Levi Good, "Automated seizure prediction and control in a rat model of chronic epilepsy", Department of Bioengineering, Arizona State University (Chair, 2007).
- Tao Kang, "Design and control of cooperative mobile robotic systems", Department of Bioengineering, Arizona State University (Member, 2006)
- Byron Scott, "Use and adaptation of a novel brain machine interface", Department of Bioengineering, Arizona State University (Member, Dec., 2004)

- Derek Dossdall, “Modeling and experimental studies of rapid switching techniques for implantable defibrillators”, Department of Bioengineering, Arizona State University (Member, 2004)
- Kevin Otto, “Intracortical Microstimulation for Sensory Inputs in Brain-Machine Interfaces”, Department of Bioengineering, Arizona State University (Co-Chair, 2003)
- Darrin Rothe, Department of Bioengineering, Arizona State University (Member, 2001)
- Neil Euliano, Department of Electrical and Computer Engineering, University of Florida (Member, 1998)
- Ludong Wang, Department of Electrical and Computer Engineering, University of Florida (Member, 1996)

#### Masters theses

1. Biraj Shrestha, Biomedical Engineering program, LA Tech University (Chair, 2014-present)
2. Geetika Sruti, Biomedical Engineering program, LA Tech University (Chair, 2014-2016)
3. Francois Decuir, Biomedical Engineering program, LA Tech University (Member, 2013-2014)
4. Sri Akhila Kathari, Biomedical Engineering program, LA Tech University (Member, 2013-2015)
5. Sai Rudrashetty, Biomedical Engineering program, LA Tech University (Chair, 2013-2014)
6. Rui Liu, Biomedical Engineering program, LA Tech University (Chair, 2012-2015)
7. Fernando Puno, Biomedical Engineering program, LA Tech University (Member, 2013-2015)
8. Eddie Tobin, “Long-term EEG dynamics following traumatic brain injury in a rat model of post-traumatic epilepsy”, Department of Bioengineering, Arizona State University (Chair, 2012)
9. Vinay Venkataraman, “Brain dynamics-based automated epileptic seizure detection algorithm”, Department of Electrical Engineering, Arizona State University, Tempe, AZ (Chair, 2012)
10. Shashank Prasanna, “Directional information flow and applications”, Department of Electrical Engineering, Arizona State University, Tempe, AZ (Chair, 2011)
11. Suneth Attygale, “Characterizing motor learning of a novel tracking task in a virtual environment using kinematic evaluation”, Department of Bioengineering, Arizona State University, Tempe, AZ (Member, 2010)
12. Jobi Scaria George, “Methods of phase estimation and synchronization: Application to epileptic seizure prediction”, Department of Electrical Engineering, Arizona State University, Tempe, AZ (Chair, 2009)
13. Manikandan Ponnuswamy, “Dynamical analysis of epileptic seizures using synchronization-based measures”, Department of Electrical Engineering, Arizona State University, Tempe, AZ (Chair, 2005)
14. Mallika Mukherjee, “Application of Lyapunov exponents to hyperthermia-induced spreading depression and focus localization in temporal lobe epileptic seizures”, Department of Bioengineering, Arizona State University, Tempe, AZ (Chair, 2003)
15. Shivkumar Sabesan, “Entropy and transfer of entropy: Application to the epileptic brain”, Department of Electrical Engineering, Arizona State University, Tempe, AZ (Chair, 2003)
16. Balaji Veeramani, “A modeling approach for detection of information flow: Application to epileptic brain”, Department of Electrical Engineering, Arizona State University, Tempe, AZ (Chair, 2003)
17. Niranjana Chakravarthy, “Autoregressive modeling and feature analysis of DNA sequences”, Department of Electrical Engineering, Arizona State University, Tempe, AZ (Chair, 2003)
18. Rajesh Kumar Venugopal, “Noise reduction and predictability of epileptic seizures”, Department of Electrical Engineering, Arizona State University, Tempe, AZ (Chair, 2002)

19. Charles H. Overman, Department of Electrical and Computer Engineering, University of Florida (Member, 1998)
20. Konstantinos Pappas, Department of Electrical and Computer Engineering, University of Florida (Chair, 1996)

Masters Applied Projects (Masters Practicum)

1. Ankit Jain, "Study of Epileptic Seizure Susceptibility by Spectral Analysis of EEG", Biomedical Engineering program, LA Tech University (Chair, 2013-2015)
2. Joshua Hope, "Software development for long-term acquisition and analysis of peripheral vascular ultrasound Doppler waveform", Department of Bioengineering, Arizona State University (Member, 2011)

Undergraduate theses (Senior Design Projects, Honors Theses, FURI projects)

1. Daniel Rivera, (**Senior Design** Project: "Anesthesia Monitor"), Department of Biomedical Engineering, LA Tech (Chair, 2015-2016)
2. John Basile, (**Senior Design** Project: "Anesthesia Monitor"), Department of Biomedical Engineering, LA Tech (Chair, 2015-2016)
3. Justin Huckaby (**Senior Design** Project: "Anesthesia Depth Monitor – iEsthesia"), Department of Biomedical Engineering, LA Tech (Chair, 2014-2015)
4. James Liman (**Senior Design** Project: "Anesthesia Depth Monitor – iEsthesia"), Department of Biomedical Engineering, LA Tech (Chair, 2014-2015)
5. Zach Lee (**Senior Design** Project: "Anesthesia Depth Monitor – iEsthesia"), Department of Biomedical Engineering, LA Tech (Chair, 2014-2015)
6. Ashmit Pyakurel (**Senior Design** Project: "Anesthesia Depth Monitor – iEsthesia"), Department of Biomedical Engineering, LA Tech (Chair, 2014-2015)
7. Austin Roth (**Honors Thesis**), Department of Bioengineering, "Dynamical EEG analysis in the diagnosis and treatment of epilepsy", ASU (Chair, 2013)
8. Kashyap Barot (**Senior Design** Project), Department of Bioengineering, ASU (Chair, 2011-2012)
9. Manui Malhotra (**Senior Design** Project), Department of Bioengineering, ASU (Chair, 2011-2012)
10. Shaima Shahin (**Senior Design** Project), Department of Bioengineering, ASU (Chair, 2011-2012)
11. Aaron Ogata (**Senior Design** Project), Department of Bioengineering, ASU (Chair, 2011-2012)
12. Justin Green (**Senior Design** Project), Department of Bioengineering, ASU (Chair, 2011-2012)
13. Madeline Grade (**FURI** Project), Department of Bioengineering, ASU (Chair, 2011-2012)
14. Steven Mullane (**FURI** Project), Department of Bioengineering, ASU (Chair, 2011-2012)
15. David Eaton (**FURI** Project), Department of Bioengineering, ASU (Chair, 2010)
16. Oliver Letham (**FURI** Project), Department of Bioengineering, ASU (Chair, 2009-2011)
17. Austin Roth (**FURI** Project), Department of Bioengineering, ASU (Chair, 2009-2012)
18. Stathis Kondylis (**Honors Thesis**), Department of Bioengineering, ASU, "Dynamical Brain Resetting as a means to quantify the efficacy of VNS therapy in Humans" (Chair, 2011)
19. Stathis Kondylis (**Senior Design** Project), Department of Bioengineering, ASU, "A monitoring software module for measurement of the efficacy of VNS stimulation in patients with epilepsy" (Chair, 2011)
20. Jose Rios (**Honors Thesis**), Department of Bioengineering, ASU, "Using Signal Analysis Techniques to Assess the Effect of Therapy for Neurological Diseases" (Member, 2010)

21. Gatha Nair (**Honors Thesis**), Department of Computer Science, ASU, "Dynamics of entrainment of EEG during sleep in epileptic and non-epileptic patients" (Chair, 2009-2010)
22. David Guffrey (**Senior Design Project**), Department of Bioengineering, ASU, "Diagnostic software for optimized VNS therapy in epilepsy" (Chair, 2008-9)
23. Aaron Faith (**Honors Thesis**), Department of Bioengineering, ASU, "Dynamical EEG analysis of resetting in Epilepsy" (Chair, 2009)
24. Aaron Faith (**Senior Design Project**), Department of Bioengineering, ASU, "Improved seizure prediction algorithm for patients with epilepsy" (Chair, 2008-9)
25. Roman Fuentes (**Honors Thesis**), Department of Bioengineering, ASU, "Dynamical analysis of EEG: Applications to sleep and epilepsy" (Chair, 2007-9)
26. Sterling Noelck (**Honors Thesis**), Department of Bioengineering, ASU, "Filtering of Electroencephalographic Signals: Application to Seizure Predictability", BME 493 (Chair, 2007-8)
27. Aishwarya Ramachandran (**Senior Design Project**), Department of Bioengineering, ASU, "Testing and validation to improve an existing online real-time epileptic seizure prediction software performance" (Chair, 2006-7)
28. Jesse Martin (**Senior Design Project**), Department of Bioengineering, ASU, "Status epilepticus EEG analysis module" (Chair, 2006-7)
29. Trevor Boone (**Senior Design Project**), Department of Bioengineering, ASU, "Feedback loop for seizure control in lab rats" (Chair, 2006-7)
30. Andrew M. Vahabzadeh-Hagh (**Senior Design Project**), Department of Bioengineering, ASU, "Automated epileptic seizure control via a dynamic drug delivery system" (Chair, 2006-7)
31. Sterling Noelck (**Senior Design Project**), Department of Bioengineering, ASU, (Chair, 2005-7)
32. Alaa Obeid (**Senior Design Project**), Department of Bioengineering, ASU, "Filtering of scalp EEG recordings for epileptogenic focus localization" (Chair, 2005-6)
33. Maribel Hernandez (**Senior Design Project**), Department of Bioengineering, ASU, "Epileptic seizure drug delivery systems" (Chair, 2005-6)
34. Ting Chen (**Senior Design Project**), Department of Bioengineering, ASU, "Optimization of a brain stimulator for seizure control with respect to stimulus artifact" (Chair, 2005-6)
35. Chin Guan Lee (**Senior Design Project**), Department of Bioengineering, ASU, "Hardware design and evaluation of closed/open loop brain stimulator" (Chair, 2005-6)
36. Benjamin Letham (**Senior Design Project**), Department of Bioengineering, ASU, "EEG Analysis Module for seizure prediction" (Chair, 2004-5)
37. Andrew Woehler (**Senior Design Project**), Department of Bioengineering, ASU, "Towards a closed loop approach for the control of epileptic seizures" (Chair, 2003-4)
38. Melissa Blank (**Senior Design Project**), Department of Bioengineering, ASU, (Chair, 2002-3)

### ***iii) SUPERVISED /SUPPORTED STUDENTS AND POST-DOCS***

#### Postdoctoral fellows

1. Ioannis Vlachos, Department of Bioengineering, Arizona State University (2011- 2015)
2. Shivkumar Sabesan, Department of Bioengineering, Arizona State University (2008- 2010)
3. Levi Good, Barrow Neurological Institute, Phoenix (2007-8)
4. Zonghua Liu, Department of Bioengineering, Arizona State University (2003- 2004)
5. Narayanan Krishnamurti, Department of Bioengineering, Arizona State University (2001- 2004)
6. Awadhesh Prasad, Department of Bioengineering, Arizona State University (2001- 2003)

7. Martin Casdagli, Department of Physics, University of Michigan (1994 - 96)
8. Vladimir Krajca, Dept. of Neurology, Bulovka Hospital, Prague, Czech Republic (1995)
9. Armando Barretto, Department of Electrical and Computer Engineering, University of Florida (1993)

Graduate students

1. Biraj Shrestha, Biomedical Engineering program, LA Tech University (2014-present)
2. Geetika Sruti, Biomedical Engineering program, LA Tech University (2014-present)
3. Joshua Adkinson, Biomedical Engineering program, LA Tech University (2012-present)
4. Bharat Karumuri, Biomedical Engineering program, LA Tech University (2012-present)
5. Rui Liu, Biomedical Engineering program, LA Tech University (2012-present)
6. Sai Rudrashetty, Biomedical Engineering program, LA Tech University (2012-2015)
7. Ankit Jain, Biomedical Engineering program, LA Tech University (2013-2015)
8. MD Ashfaque Bin Shafique, Department of Electrical Engineering, Arizona State University (2011-2012)
9. Vinay Venkataraman, Department of Electrical Engineering, Arizona State University (2010-2012)
10. Eddie Tobin, Department of Bioengineering, Arizona State University (2010-2012)
11. Shashank Prasanna, Department of Electrical Engineering, Arizona State University (2010-2011)
12. Aaron Faith, Department of Bioengineering, Arizona State University (2008- 2012)
13. Balu Krishnan, Department of Electrical Engineering, Arizona State University (2007-2012)
14. Jobi George, Department of Electrical Engineering, Arizona State University (2007-2009)
15. Manikandan Ponnuswamy, Department of Electrical Engineering, Arizona State University (2004-2005)
16. Niranjana Chakravarthy, Department of Electrical Engineering, Arizona State University (2002- 2007)
17. Levi Good, Department of Bioengineering, Arizona State University (2002- 2007)
18. S. Sabesan, Department of Electrical Engineering, Arizona State University (2001- 2008)
19. Balaji Veeramani, Department of Electrical Engineering, Arizona State University (2001- 2004)
20. Kevin Otto, Department of Bioengineering, Arizona State University (2000-2003)
21. Mallika Mukherjee, Department of Bioengineering, Arizona State University (2000- 2003)
22. Rajesh Kumar Venugopal, Department of Electrical Engineering, Arizona State University (2000- 2002)
23. Jose Flores-Godoy, Department of Electrical Engineering, Arizona State University (2002)
24. Rahul Vohra, Department of Electrical Engineering, Arizona State University (2001)
25. Archint Srivastava, Department of Computer Science, University of Florida (1999-2001)
26. Art Chaovalitwongse, Department of Industrial Engineering, University of Florida (1999 - 2000)
27. Rahul Ponniah, Department of Electrical and Computer Engineering, University of Florida (1999 - 2000)
28. Varun Bhagwan, Department of Electrical and Computer Engineering, University of Florida (1999 - 2000)
29. Ook Kim, Department of Electrical and Computer Engineering, University of Florida (1998 - 2000)
30. Qiang Luo, Department of Electrical and Computer Engineering, University of Florida (1998 - 2000)
31. Deng-Shan Shiao, Department of Statistics, University of Florida (1997-2000)
32. Changjian Sun, Department of Computer and Information Sciences, University of Florida (1997-98)

33. Radha Krishna Mohan Konyala, Department of Computer and Information Sciences, University of Florida (1997-98)
34. Sriram Subramanian, Department of Electrical and Computer Engineering, University of Florida (1997)
35. Hsiao-Chun Wu, Department of Electrical and Computer Engineering (1996)
36. Jovan Sokolovic, Department of Electrical and Computer Engineering, University of Florida (1995)
37. Ludong Wang, Department of Electrical and Computer Engineering, University of Florida (1995-96)
38. John Neeley, Department of Electrical and Computer Engineering, University of Florida (1995-96)
39. Radu Manuka, Department of Physics, University of Michigan (1994-96)
40. Shannon Fields, Department of Electrical and Computer Engineering, University of Florida (1994-95)
41. David Yu, Department of Electrical and Computer Engineering, University of Florida (1994)
42. Moschos Vogiatzis, Department of Natural Resource Management, University of Florida (1994-95)
43. Konstantinos Pappas, Department of Electrical and Computer Engineering, University of Florida (1993-97)

#### Undergraduate students

1. Benjamin Sturgeon, Biomedical Engineering program, LA Tech University (2014-present)
2. Willson Meli Ngong, Biomedical Engineering program, LA Tech University (2014-present)
3. Daniel Rivera, Biomedical Engineering program, LA Tech University (2014-present)
4. John Basile, Biomedical Engineering program, LA Tech University (2014-present)
5. Anil Oberoi, Biomedical Engineering program, LA Tech University (2014-2015)
6. Akpofure Unukpo, Biomedical Engineering program, LA Tech University (2013-2014)
7. Logan Didier, Biomedical Engineering program, LA Tech University (2013-2015)
8. T. Noah Hutson, Biomedical Engineering program, LA Tech University (2013-present)
9. Alyssa Dyess Tregre, Biomedical Engineering program, LA Tech University (2013-2015)
10. Ashmit Pyakurel, Biomedical Engineering program, LA Tech University (2012-2014)
11. Ranjita Shrestha, Biomedical Engineering program, LA Tech University (2012-2015)
12. Madeline Grade (FURI), Department of Bioengineering, ASU (2011-2012)
13. Steven Mullane (FURI), Department of Bioengineering, ASU (2011-2012)
14. David Eaton (FURI), Department of Bioengineering, ASU (2010)
15. Oliver Letham(FURI), Department of Bioengineering, ASU (2009-2011)
16. Austin Roth (FURI), Department of Bioengineering, ASU (2009-2013)
17. Stathis Kondylis (FURI), Department of Bioengineering, ASU (2009-present)
18. John Spanias, Department of Bioengineering, ASU (2009)
19. Elizabeth Marek, Department of Bioengineering, ASU (2009)
20. Stephen Brink, Department of Bioengineering, ASU (2001-2)
21. Gavin Lewis, Department of Computer Science, ASU (2001- 2006)
22. Thomas Brown, physician assistant program, Santa Fe Community College (1994-96)
23. Jason Czaplewski, Department of Electrical and Computer Engineering, University of Florida (1994-97)
24. David Kerr, Bioengineering program, Santa Fe Community College (1997-2000)

#### **iv) INTERNSHIP MENTORSHIP**



1. Sandip Pati MD, Mayo Clinic Scottsdale (2007-8)
2. Shivkumar Sabesan, Banner Health Co. (2007)
3. Vanessa Xavier, The CORE Institute (2007)

#### **v) PLACEMENT OF FELLOWS / STUDENTS**

1. Steven Mullane, BIOTRONIK, Clinical Studies Engineer Team, Oswego, Oregon (2014)
2. Balu Krishnan, Research Fellow, Department of Neurology, Cleveland Clinic, Cleveland, OH (2012)
3. Stathis Kondylis, Medical School, U. Pittsburg, PA (2012)
4. Art Chaovalitwongse, Professor, Department of Radiology and Industrial Engineering, U. Washington, Seattle, WA (2011)
5. Shashank Prasanna, Research Fellow, Mathworks (MatLab), Cambridge, MA (2011)
6. Teresa Murray, Assistant Professor, Department of Bioengineering, Louisiana Tech University (2011)
7. Jobi George, Senior Engineer, Mathworks, Bangalore, India (2011)
8. Shivkumar Sabesan, Senior Scientist, Cyberonics Inc., Houston, TX (2010)
9. Niranjana Chakravarthy, Senior Scientist at Corventis Inc., St. Paul, MN (2009)
10. Levi Good, Department of Neurology, University of Texas Southwestern Medical Center, 5323 Harry Hines Blvd, Mail Code 8813, Dallas, Texas, 75390 (2008)
11. Trevor Boone, Quality Engineer, Gore Company, Flagstaff (2009)
12. Andrew M. Vahabzadeh-Hagh, Harvard U. Medical School (2007)
13. Manikandan Ponnuswamy, Intel, Phoenix (2006)
14. Kevin Otto, Assistant Professor, Cornell U. (2006)
15. Benjamin Letham, in pursuit of M.S. in Biomedical Engineering at Johns Hopkins U, and Ph.D. in Applied Mathematics at MIT (2005, 2010 respectively)
16. Andrew Woehler, Department of Neuroscience, Max Planck Institute, in pursuit of Ph.D. (2005)
17. Stephen Brink, Department of Bioengineering, Georgia Tech, in pursuit of Ph.D. (2005)
18. Balaji Veeramani, Department of Biomedical Engineering, Johns Hopkins University in pursuit of Ph.D. (2004); Research Scientist, Dow Company (2011)
19. Zonghua Liu, Professor, Department of Physics, East China Normal University, Shanghai 200062, PR China (2004)
20. Awadhesh Prasad, Assistant Professor, Department of Physics, New Delhi University, India (2003)
21. Deng-Shan Shiau, VP Scientific Affairs, Optima Neuroscience Inc, Gainesville, FL
22. Varun Bhagwan, IBM Almaden Research Center, San Jose, CA
23. *Armando Barretto*, Associate Professor, Department of Electrical & Computer Engineering, Florida International University, Miami, FL. [E-mail: barreto@eng.fiu.edu]
24. *Martin Casdagli*, Senior Scientist, Nonlinear Prediction Company, Los Alamos, NM
25. *Vladimir Krajca*, Assistant Professor, Technical University at Ostrava; Senior Medical Engineer, Department of Neurology, Faculty Hospital Bulovka, Prague, Czech Republic [E-mail: krajca@neuro.anet.cz]
26. *Jason Czapski*, Systems Analyst, Shands Health Care, Gainesville, FL [E-mail: jason@sands.ufl.edu]
27. *Moschos Vogiatis*, Remote Sensing Co., Thessaloniki, Greece
28. *Shannon Fields*, President, Navigation Technology Associates, Inc., Huntsville, AL [E-mail: shannon@hiwaay.net]
29. *Konstantinos Pappas*, Senior Engineer, Ericsson Co., Durham, NC [E-mail: kostas-pappas@ericsson.com]

30. *Radha Krishna Mohan Konyala*, Software Engineer, Informix Software Inc., Oakland, CA [E-mail: mohan@informix.com]
31. *Changjian Sun*, Software Engineer, i2 Technologies Inc., Boston, MA
32. Archint Srivastava, Software Analyst, Microsoft Corporation, SC.

## **IX. RESEARCH GRANTS**

### ***i) GRANTS AWARDED***

#### **Principal Investigator**

1. **Epifocus** (05/16-05/17) Innovation Enterprise Fund (Louisiana Tech University Research Foundation; \$20,000)
2. **Anaesthesia Depth Monitor** (03/15-03/16) (Biomedical Research Foundation of Northwest Louisiana; \$33,400)
3. **VNS Closed-Loop** (01/12-06/12) (Cyberonics Inc.; Total amount: \$200,000)
4. **ASU High Performance Computing Center Allocation Grant** (250,000 CPU hours; 2011)
5. **Unrestricted research equipment donation; from Mayo** (\$100K market value; 2011)
6. **Characterization of Novel Vagus Nerve Stimulation (VNS) Parameters' Efficacy, Based on Desynchronization of Brain Dynamics, in Open and Closed-Loop Configurations: A Study in an Animal Model of Chronic Epilepsy** (06/10-12/11) (Cyberonics Inc.; Total amount: \$560,000; ASU: GES0149)
7. **Mayo's grant GES 0161** (\$21,149; 03/01/11-03/01/13)
8. **ASU High Performance Computing Center Allocation Grant** (100,000 CPU hours; 2010)
9. **Vagus Nerve Stimulation: A Bioengineering Approach to Assess its Effect on Resetting the Epileptic Brain Dynamics** (03/09-03/12) (NIH R21 NS061310-01A2, in collaboration with BNI; Co-PI: Dr. D. Treiman; Total amount: \$414,714; ASU: GES0118)  
The major goal of this project is to relate the successes and failures of the VNS treatment of epileptic patients to the VNS capability of resetting the pathology in brain dynamics, as this is measured by mathematical analysis of scalp EEG.
10. **Optimizing Multidimensional Time Series Classification: Spatio-Temporal Data Mining in Epileptic Brain Dynamics** (07/08-07/09) (Science Foundation of Arizona CAA 0281-08; in collaboration with Mayo at Scottsdale; Co-PI: Dr. J. Sirven ; Total amount: \$267,000; ASU: GES0097)
11. **Seizure Control by Closed Loop Feedback in a Rat Model of Chronic Temporal lobe Epilepsy** (07/01/05-06/30/06) (Epilepsy Research Foundation, Total amount: \$100,000)
12. **On-line Real-Time Seizure Prediction** – ASU site (07/05-06/06) (NIH; subcontract from the University of Florida; Total amount: \$2,523,000)
13. **Dynamical modeling and control of epileptic seizures** (08/01/03-07/31/04) (Ira Fulton School of Engineering, ASU, Seed Grant, Total amount: \$48,000)
14. **Dynamics of Hyperthermia-Induced Seizures in Immature Rat Hippocampal Slices** (02/02-02/03) (Biomedical Engineering Seed Grant, Department of Bioengineering, Arizona State University; Seed Grant, Total amount \$20,000)
15. **Bioengineering Research Partnership for Brain Dynamics** – ASU site (05/01-05/06) (NIH, NS039687, subcontract from the University of Florida; Total amount: \$4,600,000)
16. **Dynamical studies in generalized childhood epilepsy** (05/99-05/00) (Biomedical Engineering Seed Grant, Biomedical Engineering Program, The University of Florida; Total amount: \$15,000)
17. **Spatio-temporal models and the epileptic brain** (06/94-06/95) (Division of Sponsored Research, The University of Florida; Total amount: \$7,500)
18. **Equipment grant** (06/93-06/94) (Division of Sponsored Research, The University of Florida; Total amount: \$10,000)

Co-Principal Investigator

19. **Employment of *in vivo* biosignal dynamics as biomarkers of SUDEP** (09/15-09/17) (CURE Foundation; PI: A.E. Glasscock; Total amount: \$250,000)
20. **A new quantitative EEG technique for prediction of post-traumatic epilepsy (PTE) in individual subjects after traumatic brain injury (TBI)** (08/11-02/15) (Dept. of Defense - DoD Concept Award PT090712; PI: D. Treiman; Total amount: \$300,000)
21. **Epileptogenic Focus Localization and Closed-Loop Control of Brain Dynamics in Epilepsy** (NSF, ECCS Division, Cyber Systems ECCS-1102390, 09/11-09/15; Total amount: \$360,000; DWS 0692; PI: K. Tsakalis)  
In this proposed basic research, we will investigate the effect of the knowledge of the epileptogenic focus location in our previously developed just-in-time feedback decoupling scheme of seizure control. The experiments will be conducted on epileptic rats in real time over long periods of time (months) to study the short and long-term efficacy of the proposed electrical stimulation.
22. **IGERT: An Arts, Sciences, and Engineering Research and Education Initiative for Experimental Media** (NSF, 09/05-09/12; Senior personnel; Total amount: \$3,000,000; PI: T. Rikakis)
23. **Closed-loop control of brain dynamics in epilepsy** (04/06-03/10) (NSF Cyber Systems ECS-0601740), Total amount: \$240,000, PI: K. Tsakalis; ASU: DWS0193)
24. **A quantitative EEG method for real-time detection of neonatal seizures in the neonatal intensive care unit** (08/01/03-07/31/04) (Partnership for Pediatric Epilepsy Research, Epilepsy Foundation of America; Total amount: \$75,000; PI: Paul Carney)
25. **Advanced Neural Implants and Control** (08/00-08/03) (DARPA; Total amount: \$6,000,000; PIs: Daryl Kipke / Jiping He)
26. **Comparison of the dynamical responses of epileptogenic versus non-epileptogenic human cerebral cortex to weak magnetic stimuli** (06/00-06/01) (Division of Sponsored Research, The University of Florida; Total amount: \$25,000; PI: Chris Sackellares)
27. **Transitions in correlated chaotic systems** (10/98-10/99) (Division of Sponsored Research, The University of Florida; Total amount: \$35,000; PI: Chris Sackellares)
28. **Dynamical studies in temporal and frontal lobe epilepsy** (06/97-06/01) (NIH-NINCDS Grant R01 NS31451-05A1; Total amount: \$715,974; PI: Chris Sackellares)
29. **Dynamical mechanisms initiating temporal lobe seizures** (04/97-04/00) (VA Merit Grant, Department of Veterans Affairs; Total amount: \$195,600; PI: Chris Sackellares)
30. **Dynamical studies in temporal lobe epilepsy** (08/93-08/97) (NIH-NINCDS Grant R01 NS31451; Total amount: \$539,466; PI: Chris Sackellares)

Co-Investigator

31. **Development of a closed-loop detect-and-treat system using transcranial direct current stimulation (tDCS) for epilepsy** (01/10-01/11) (CIMIT: The Center for Integration of Medicine and Innovative Technology in Boston; PI: Felipe Fregni, Department of Neurology, Harvard University)
32. **Seizure prediction system: A clinical and research tool for epilepsy** (09/05-09/06) (NIH-SBIR 1R43NS050931-01A1; Total amount: \$100,000; PI: Victor Baidoon)
33. **Recognition of sound signatures using biologically plausible sensors and recurrent neural networks** (08/96-08/97) (Office of Naval Research N00014-94-1-0858; Amount: \$15,397; PI: Jose Principe)

34. **Lasers, brains and epilepsy: The emergence and destruction of synchronized chaos** (09/92-09/93) (Office of Vice President of Research, The University of Michigan; Amount: \$20,000; PI: Winful)
35. **Investigation via ultrasound of the structural damage caused by hyperthermia in soft tissues** (09/91-09/92) (Office of Vice President of Research, The University of Michigan; Amount: \$20,000; PI: Ebbini)

#### **X. SPIN OFF COMPANIES**

- Co-founded and VC funded the start-up company “Neurobionics”( -> “Bioneuronics” -> “**Neurovista**”) in the area of Epilepsy, Seizure Prediction and Control, 2004.
- Co-founded the start-up company “ABS” (**Advanced Brain Systems**) in the area of Brain Dynamics and Control of Brain Disorders, 2010.
- Co-founded the start-up company “**EpiFocus**”, 2016.

## **XI. PUBLICATIONS**

**Sources for citations: ISI Web of Science and Google Scholar**  
**(h-index=33; G-index=61; i10-index=70; # citations=4,668)**

### **A. JOURNAL MANUSCRIPTS**

1. B. Krishnan, I. Vlachos, Z. Wang, J. Mosher, I. Najm, R. Burgess, L. D. Iasemidis, A. Alexopoulos, "Epileptic focus localization based on resting state interictal MEG recordings is feasible irrespective of the presence or absence of spikes", *Clinical Neurophysiology*, vol. 126, pp. 667-674, 2015.
2. B. Krishnan, I. Vlachos, A. Faith, S. Mullane, K. Williams, A. Alexopoulos, L.D. Iasemidis, "Novel Spatiotemporal Analysis of Peri-ictal Spiking to Probe the Relation of Spikes and Seizures in Epilepsy", *Annals of Biomedical Engineering*, vol. 42, pp. 1606-1617, 2014.
3. L.D. Iasemidis, S. Schachter, F. Fregni & R. Ilmoniemi, Guest Editorial on "*Bioelectromagnetism and Epilepsy*", Special Issue of the *Int. J. Neural Systems*, 2013.
4. L.D. Iasemidis, "Seizure Prediction and its Applications", *Neurosurg. Clin. N. Am.*, vol. 22, pp. 489-506, 2011.
5. L.D. Iasemidis, S. Schachter, G.A. Worrell & D. Mogul, Guest Editorial on "*Neuromodulation in Epilepsy*", Special Issue of the *Int. J. Neural Systems*, vol. 21, No. 2, pp. v-vi, 2011.
6. Balu Krishnan, Aaron Faith, Ioannis Vlachos, Austin Roth, Korwyn Williams, Katie Noe, Joe Drazkowski, Lisa Tapsell, Joseph Sirven & Leon Iasemidis, "Resetting of Brain Dynamics: Epileptic versus Psychogenic Non-Epileptic Seizures", *Epilepsy and Behavior*, vol. 22, S74-S81, 2011.
7. W. Chaovalitwongse, R.S. Pottenger, Wang, Y.J. Fan & L.D. Iasemidis, "Pattern-Based and Network-Based Classification Techniques for Multichannel Medical Data Signals to Improve Brain Diagnosis", *IEEE Transactions on Systems, Man, and Cybernetics Part A: Systems and Humans*, vol. 99, pp. 1-12, 2011.
8. L. B. Good, S. Sabesan, S. T. Marsh, K. Tsakalis, D. M. Treiman & L.D. Iasemidis, "Nonlinear Dynamics of Seizure Prediction in a Rodent Model of Epilepsy," *Nonlinear Dynamics, Psychology, and Life Sciences*, vol. 14, No. 5, pp. 411-434, 2010.
9. L.D. Iasemidis, K. Tsakalis, I. Osorio & H. Adeli, Guest Editorial for the Special Issue on "*Neuromodulation and Control of Epileptic Seizures*", *Int. J. Neural Systems*, vol. 19, No. 3, pp. v-vii, 2009.
10. P.N. Sandeep, D-S Shiau, J.C. Principe, L.D. Iasemidis, P.M. Pardalos, W.M. Norman, P.R. Carney, K.M. Kelly & J.C. Sackellares, "An investigation of EEG dynamics in an animal model of temporal lobe epilepsy using the maximum Lyapunov exponent", *J. Experimental Neurology*, vol. 216, pp. 115-121, 2009. [Citations: 19]
11. S.C. Schachter, J. Guttag, S.J. Schiff, D.L. Schomer et al., Advances in the application of technology to epilepsy: The CIMIT/NIO epilepsy innovation summit", *Epilepsy and Behavior*, vol. 16, pp. 3-46, 2009. [Citations: 20]
12. N. Chakravarthy, K. Tsakalis, S. Sabesan & L.D. Iasemidis, "Homeostasis of brain dynamics in epilepsy: a feedback control systems perspective of seizures", *Annals of Biomedical Engineering*, vol. 37, pp. 565-585, 2009. [Citations: 23]
13. L. Good, S. Sabesan, S. Marsh, K. Tsakalis, D. Treiman & L.D. Iasemidis, "Control of synchronization of brain dynamics leads to control of epileptic seizures in rodents", *Int. J. Neural Systems*, vol. 19, No. 3, 173-196, 2009. [Citations: 63]

14. S. Sabesan, L. Good, K. Tsakalis, A. Spanias, D. Treiman & L.D. Iasemidis, "Information flow and application to epileptogenic focus localization from EEG", *IEEE Trans. Neural Systems Rehab Engineering*, vol. 17, No. 3, 244-253, 2009. [\[Citations: 29\]](#)
15. Ya-Ju Fan, Wanpracha A. Chaovalitwongse, Chang-Chia Liu, Rajesh C. Sachdeo, L. D. Iasemidis & Panos M. Pardalos, "Optimization and Data Mining Techniques for the Screening of Epileptic Patients", special issue of the *International Journal of Bioinformatics Research and Applications (IJBRA)*, pp. 187-196, 2009.
16. N. Chakravarthy, S. Sabesan, L.D. Iasemidis & K. Tsakalis, "Controlling epileptic seizures in a neural mass model", *J. Combinatorial Optimization*, vol. 17, pp. 98-116, 2009. [\[Citations: 12\]](#)
17. S. Sabesan, N. Chakravarthy, K. Tsakalis, P. Pardalos & L.D. Iasemidis, "Measuring resetting of brain dynamics at epileptic seizures: Application of global optimization and spatial synchronization techniques", *J. Combinatorial Optimization*, vol. 17, pp. 74-97, 2009. [\[Citations: 19\]](#)
18. L.D. Iasemidis, "Synchronization in Neural Systems", Guest Editorial for the special issue on Synchronization in Neural Systems., *Int. J. Neural Systems*, vol. 17, pp. 1-2, 2007.
19. V. Atti, A. Spanias, K. Tsakalis, C. Panayiotou, L.D. Iasemidis & V. Berisha, "Gradient projection-based channel equalization under sustained fading", *Signal Processing*, vol. 88, pp. 236-246, 2007.
20. A. Spanias, K. Huang, A. Natarajan, R. Ferzli, H. Kwon, V. Atti, V. Berisha, L.D. Iasemidis, H. Krishnamoorthi, P. Spanias, S. Misra, M. Banavar, K. Tsakalis & S. Haag, "Interfacing Java-DSP with a TI DSK for use in a Signal Processing Class", *ASEE Computers in Education Journal*, Vol. XVII, No. 3, pp. 27-35, 2007.
21. N. Chakravarthy, S. Sabesan, L.D. Iasemidis & K. Tsakalis, "Modeling and controlling synchronization in a neuron-level population model", *Int. J. Neural Systems*, vol. 17, pp. 123-138, 2007. [\[Citations: 49\]](#)
22. W.A. Chaovalitwongse, L.D. Iasemidis, P.M. Pardalos, P.R. Carney, D-S Shiau, & J.C. Sackellares, "Reply to comments by F. Morman, CE Elger, and K. Lehnertz on the performance of a seizure warning algorithm based on the dynamics of intracranial EEG", *Epilepsy Research*, vol. 72, pp. 85-87, 2006.
23. W.A. Chaovalitwongse, L.D. Iasemidis, P.M. Pardalos, P.R. Carney, D-S Shiau & J.C. Sackellares, "Reply to comments by M. Winterhalder, B. Schelter, A. Achulze-Bonhage and J. Timmer on the performance of a seizure warning algorithm based on the dynamics of intracranial EEG", *Epilepsy Research*, vol. 72, pp.82-84, 2006.
24. K. Tsakalis, N. Chakravarthy, S. Sabesan, L.D. Iasemidis & P.M. Pardalos, "A feedback control systems view of epileptic seizures", *Cybernetics Systems Analysis*, vol. 42, pp. 483 -495, 2006. [\[Citations: 23\]](#)
25. J.C. Sackellares, D-S Shiau, J.C. Principe, M.C.K. Young, L.K. Dance, W. Suharitdamrong, W. Chaovalitwongse, P.M. Pardalos & L.D. Iasemidis, "Predictability analysis for an automated seizure prediction algorithm", *J. Clinical Neurophysiology*, vol. 23, pp. 509-520, 2006. [\[Citations: 42\]](#)
26. K. Tsakalis & L.D. Iasemidis, "Control aspects of a theoretical model for epileptic seizures", *Int. Journal of Bifurcations and Chaos*, vol. 16, pp. 2013-2027, 2006. [\[Citations: 19\]](#)
27. N. Chakravarthy, K. Tsakalis, L.D. Iasemidis & A. Spanias, "A multi-dimensional scheme for controlling unstable periodic orbits in chaotic systems", *Phys. Lett. A*, vol. 349, pp. 116-127, 2006.
28. Z. Liu, B. Hu & L.D. Iasemidis, "Detection of phase locking from nonstationary time series", *Europhys. Lett.*, vol. 71, pp. 200-206, 2005. [\[Citations: 12\]](#)
29. W. Chaovalitwongse, L.D. Iasemidis, P.M. Pardalos, P.R. Carney, D.-S. Shiau & J.C. Sackellares, "Performance of a Seizure Warning Algorithm Based on Nonlinear Dynamics of the Intracranial EEG", *Epilepsy Research*, vol. 64, pp. 93-113, 2005. [\[Citations: 78\]](#)

30. A. Prasad, L.D. Iasemidis, S. Sabesan & K. Tsakalis, "Dynamical hysteresis and spatial synchronization in coupled nonidentical chaotic oscillators", *Pramana J. of Physics*, Indian Academy of Sciences, vol. 64, pp. 513-523, 2005. [Citations: 26]
31. L.D. Iasemidis, D-S Shiau, P.M. Pardalos, W. Chaovalitwongse, K. Narayanan, A. Prasad & K. Tsakalis, P. Carney & J.C. Sackellares, "Long-term prospective on-line real-time seizure prediction", *J. Clin. Neurophysiol.*, vol. 116, pp. 532-544, 2005. [Citations: 142]
32. W. Chaovalitwongse, P.M. Pardalos, L.D. Iasemidis, D-S Shiau & J.C. Sackellares, "Dynamical approaches and multi-quadratic integer programming for seizure prediction", *J. Optimization Methods and Software*, vol. 20, pp. 383-394, 2005. [Citations: 17]
33. L.D. Iasemidis, K. Tsakalis, J.C. Sackellares & P.M. Pardalos, "Comments on the Inability of Lyapunov Exponents to Predict Epileptic Seizures", *Phys. Rev. Lett.*, vol. 94, 019801, 2005. [Citations: 16]  
L.D. Iasemidis, K. Tsakalis, J.C. Sackellares & P.M. Pardalos, "Comments on the Inability of Lyapunov Exponents to Predict Epileptic Seizures", *The Virtual Journal of Biological Physics Research*, 2005 (<http://www.vjbio.org>).
34. B. Veeramani, K. Narayanan, L.D. Iasemidis, A. Prasad, A. Spanias & K. Tsakalis, "A State Space Modeling Approach to Estimate Directional Coupling", *IEEE Signal Processing Letters*, vol. 11, pp. 617-620, 2004. [Citations: 10]
35. P.M. Pardalos, W. Chaovalitwongse, L.D. Iasemidis, J.C. Sackellares, D.S. Shiau, P.R. Carney, O. A. Prokopyev & V. A. Yatsenko, "Seizure warning algorithm based on optimization and nonlinear dynamics", *J. Math. Programming*, vol. 101, pp. 365-385, 2004. [Citations: 67] **Paper award:** The 2004 William Pierskalla best paper award for research excellence in health care management science, Institute for Operations Research and the Management Sciences (INFORMS), 2004.
36. L.D. Iasemidis, D.S. Shiau, J.C. Sackellares, P.M. Pardalos & A. Prasad, "Dynamical resetting of the human brain at epileptic seizures: Application of nonlinear dynamics and global optimization techniques", *IEEE Transactions on Biomedical Engineering*, vol. 51, pp. 493-506, 2004. [Citations: 114]
37. N. Chakravarthy, A. Spanias, L.D. Iasemidis & K. Tsakalis, "Autoregressive modeling and feature analysis of DNA sequences", *EURASIP J. Applied Signal Processing*, Special Issue on Genomic Signal Processing, 2004:1, pp. 11-26, 2004. [Citations: 63]
38. H. Witte, L.D. Iasemidis & B. Litt, "Special Issue on Epileptic Seizure Prediction", *IEEE Transactions on Biomedical Engineering*, vol. 50 (5), pp. 537-539, 2003. [Citations: 60]
39. P.M. Pardalos, V. Yatsenko, J.C. Sackellares, D.S. Shiau, W. Chaowolitwongse & L.D. Iasemidis, "Analysis of EEG data using optimization statistics, and dynamical system techniques", *J. Computational Statistics and Data Analysis*, vol. 44, pp. 391-408, 2003. [Citations: 17]
40. L.D. Iasemidis, "Epileptic seizure prediction and control", *IEEE Transactions on Biomedical Engineering*, vol. 50 (5), pp. 549-558, 2003. [Citations: 228]
41. L.D. Iasemidis, D.S. Shiau, W. Chaovalitwongse, J.C. Sackellares, P.M. Pardalos, J.C. Principe, P.R. Carney, A. Prasad, B. Veeramani & K. Tsakalis, "Adaptive epileptic seizure prediction system", *IEEE Transactions on Biomedical Engineering*, vol. 50 (5), pp. 616-627, 2003. [Citations: 245]
42. L.D. Iasemidis, P.M. Pardalos, D.S. Shiau, W. Chaowolitwongse, K. Narayanan, S. Kumar, P.R. Carney & J.C. Sackellares, "Prediction of human epileptic seizures based on optimization and phase changes of brain electrical activity", *J. Optimization Methods and Software*, vol. 18, pp. 81-104, 2003. [Citations: 43]
43. L.D. Iasemidis, P. Pardalos, J.C. Sackellares & D.S. Shiau, "Quadratic binary programming and dynamical system approach to determine the predictability of epileptic seizures", *J. Combinatorial Optimization*, 5:9-26, 2001. [Citations: 171]



44. M.C. Casdagli, L.D. Iasemidis, R.L. Gilmore, S.N. Roper, R.S. Savit & J.C. Sackellares, "Nonlinearity in invasive EEG recordings from patients with temporal lobe epilepsy", *Electroenceph. Clin. Neurophysiol.*, 102:98-105, 1997. [\[Citations: 163\]](#)
45. M.C. Casdagli, L.D. Iasemidis, J.C. Sackellares, S.N. Roper, R.L. Gilmore & R.S. Savit, "Characterizing nonlinearity in invasive EEG recordings from temporal lobe epilepsy", *Physica D*, 99:381-399, 1996. [\[Citations: 88\]](#)
46. L.D. Iasemidis & J.C. Sackellares, "Chaos theory and epilepsy", *Neuroscientist*, 2:118-126, 1996. [\[Citations: 170\]](#)
47. L.D. Iasemidis, L.D. Olson, J.C. Sackellares & R. Savit, "Time dependencies in the occurrences of epileptic seizures: a nonlinear approach", *Epilepsy Research*, 17:81-94, 1994. [\[Citations: 105\]](#)
48. H.P. Zaveri, W.J. Williams, L.D. Iasemidis & J.C. Sackellares, "Time-frequency representation of electrocorticograms in temporal lobe epilepsy", *IEEE Transactions on Biomedical Engineering*, 39:502-509, 1992. [\[Citations: 70\]](#)
49. L.D. Iasemidis, "On the dynamics of the human brain in temporal lobe epilepsy", Ph.D. dissertation, U. of Michigan, Ann Arbor, 1991. [\[Citations: 49\]](#)
50. L.D. Iasemidis, J.C. Sackellares, H.P. Zaveri & W.J. Williams, "Phase space topography of the electrocorticogram and the Lyapunov exponent in partial seizures", *Brain Topogr.*, 2:187-201, 1990. [\[Citations: 350\]](#)

## **B. PATENTS**

1. *Seizure Warning and Prediction* (with J.C. Sackellares, M.D.), filed on Sep. 22, 1999; U.S. Patent and Trademark Office; **Patent No. 6,304,775, awarded on Oct. 16, 2001.**  
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6. *Pacemaker for treating physiological system dysfunction* (with K. Tsakalis); July 14, 2005 (US and International patent application PCT/US2005/024864). Nationalized PCT (US) filed 8/18/08 SN: 11/632,456. Published 10/22/09 as US-2009-0264952-A1.
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#### **E. ABSTRACTS OF CONFERENCE PRESENTATIONS**

1. Vikas Mishra, Nicky Gautier, Bharat K. Karumuri, Rui Liu, Ioannis Vlachos, Leonidas D. Iasemidis and Edward Glasscock, "*Scn2a*-null heterozygosity improves survival and modifies neurocardiac interaction in the *Kcna1*-null mouse model of SUDEP", Society for Neuroscience, October, 2015.
2. L.D. Iasemidis & K. Tsakalis, "Application of homeostasis of brain dynamics to closed-loop control of epileptic seizures", IEEE EMBS, The BRAIN Grand Challenges conference, Washington DC, Nov. 13-14, 2014.
3. B. K. Karumuri, R. Liu, N. Gautier, I. Vlachos, E. Glasscock<sup>2</sup>, L.D. Iasemidis, A novel biomarker for susceptibility to SUDEP: Long-term disassociation of EEG from ECG", Industry Day, Shreveport, LA, September 26, 2014
4. Edward Glasscock, Nicky Gautier, Bharat K. Karumuri, Rui Liu, Ioannis Vlachos & L.D. Iasemidis, "*Scn2a*-null heterozygosity improves survival and modifies neurocardiac interaction in the *Kcna1*-null mouse model of SUDEP", 68<sup>th</sup> American Epilepsy Society Annual meeting, Seattle, Washington, December 5-9, 2014.
5. A. Jain, R. Lui, J. Adkinson, I. Vlachos & L.D. Iasemidis, "Study of epileptic seizure susceptibility by spectral analysis of the EEG", 30th Southern Biomedical Engineering Conference, Gulfport, Mississippi, April 2014 (SBEC2014).
6. S. M. Rudrashetty, A. Pyakurel, R. Lui, B.R. Karumuri, I. Vlachos & L.D. Iasemidis, "Quantitative EEG Analysis for Differentiation of Sleep Disorders, 30th Southern Biomedical Engineering Conference, Gulfport, Mississippi, April 2014 (SBEC2014).
7. B. Krishnan, I. Vlachos, Z.I. Wang, J. Mosher, L.D. Iasemidis, R. Burgess & A.V. Alexopoulos, "MEG Source Analysis and Directional Information Flow for Non-Invasive Interictal Epileptogenic Focus Localization in Patients with Non-Lesional MRI and Neocortical Epilepsy", 67<sup>th</sup> American Epilepsy Society Annual meeting, Washington DC, December, 2013.
8. L. Iasemidis, I. Vlachos, R. Liu & J. Adkinson, "Dynamics of epileptic seizures as revealed by analysis of EEG", Louisiana Academy of Science Meeting, Grambling State University, March 9, 2013.
9. L. Iasemidis, I. Vlachos, B. Krishnan, R. Sidique, E. Tobin, V. Venkataraman, A. Faith, S. Prasanna, A. Shafique, K. Tsakalis, S. Marsh, D. Treiman, S. Sabesan, S. Maschino,

- Reduction of seizure frequency by responsive just-in-time VNS in an animal model of chronic epilepsy, 66<sup>th</sup> American Epilepsy Society Annual meeting, San Diego, CA, December, 2012.
10. I. Vlachos, B. Krishnan, R. Sidique, E. Tobin, V. Venkataraman, A. Faith, S. Prasanna, A. Shafique, K. Tsakalis, L. Iasemidis, S. Marsh, D. Treiman, S. Sabesan, S. Maschino, Long-term effect of VNS on seizure burden in an animal model of chronic epilepsy, 66<sup>th</sup> American Epilepsy Society Annual meeting, San Diego, CA, December, 2012.
  11. Edward C. Tobin, Jamie White-James, I. Vlachos, B. Krishnan, L.D. Iasemidis & D. Treiman, Dynamics of EEG in a longitudinal study of Post-Traumatic Epilepsy after TBI, 66<sup>th</sup> American Epilepsy Society Annual meeting, San Diego, CA, December, 2012.
  12. B. Krishnan, I. Vlachos, S. Mullane, A. Faith, K. Williams, L. Iasemidis, "Spatio-temporal dynamics of interictal spiking and applications, 66<sup>th</sup> American Epilepsy Society Annual meeting, San Diego, CA, December, 2012.
  13. Edward C. Tobin, Jamie White-James, I. Vlachos, B. Krishnan, Vinay Kataraman, L.D. Iasemidis & D. Treiman, "Long-term EEG dynamics following Traumatic Brain Injury in a rat model of Post-traumatic Epilepsy", Neurotrauma 2012 Symposium, Phoenix, July 22-25, 2012.
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  16. A. Roth, B. Krishnan, A. Faith, L. Tapsell, J. Sirven & L.D. Iasemidis, "Disentrainment of Brain Dynamics in PNES", BMES (BioMedical Engineering Society) Annual meeting, Hartford, Connecticut, October 12-15, 2011.
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  24. Y.J. Fan, W. Chaovalitwongse, CC. Liu, R.C. Sachdeo, L.D. Iasemidis & P.M. Pardalos, "Optimization and data mining techniques for the screening of epileptic patients", *BIOMAT*, 2007.
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39. L.D. Iasemidis, "Complex dynamics of epileptic phenomena", in the "Complexity in the Science and Society" Int. Conference and Summer School, 07/14-07/26/04, Patras & Olympia, Greece.
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## **XII. NATIONAL AND INTERNATIONAL COLLABORATORS (current and past)**

### **1. University of Arkansas**

- **Demetris Serletis, M.D.**, Assistant Professor, Department of Neurosurgery (2014 - present). (Neuromodulation in epilepsy)
- **John Greenfield, M.D.**, Professor and Chair, Department of Neurology (2014 - present). (Long-term EEG monitoring and analysis in epilepsy)

### **2. Louisiana State University at Shreveport**

- **Anil Nanda, M.D.**, Professor and Chair, Department of Neurosurgery (2013 - present). (EEG analysis in the OR)

### **3. Cleveland Clinic**

- **Andreas Alexopoulos, M.D.**, Professor, Department of Neurology (2011 - present). (Dynamical analysis of MEG in epilepsy)

### **4. Arizona State University**

- **Konstantinos Tsakalis, Ph.D.**, Associate Professor, Department of Electrical Engineering (2000 – present). (Control of Systems, Implanted Closed-Loop Neurostimulators)
- **Andreas Spanias, Ph.D.**, Professor, Department of Electrical Engineering (2000 – present). (Classical Signal Processing + Communications)
- **Jiping He, Ph.D.**, Professor, Department of Bioengineering (2000 – 2004) (Prosthetics, Spinal Cord Rehabilitation, Adaptation, Cognition, Stroke Rehabilitation)
- **Thanassis Rikakis, Ph.D.**, Professor and Director, School of Media, Arts and Engineering (2009 – present). (Stroke patients Rehabilitation)
- **Jennie Si, Ph.D.**, Professor, Department of Electrical Engineering (2000 – 2004). (Neural Networks + Pattern Recognition)
- **Frank Hoppenstead, Ph.D.**, Professor, Director of the Center for Systems Science and Engineering Research, Departments of Electrical Engineering and Mathematics (2000 – 2006). (Neural Networks + Modeling)
- **Jim Sweeney, Ph.D.**, Associate Professor and Associate Chair, Department of Bioengineering (2000 – 2006). (ECG, Pacemakers and Defibrillators)

### **5. Barrow Neurological Institute, Arizona**

- **Jie Wu, Ph.D., M.D.**, Associate Professor and Director, Epilepsy Research (2001 – 2006). (Epilepsy, Neurophysiology, Animal models)
- **David Treiman, M.D.**, Professor and Director, Division of Clinical Epilepsy (2002 – present). (Electrical Stimulation, Seizure Control, Animal Models)

### **6. Mayo Clinic, Arizona**

- **Joseph Sirven, M.D.**, Professor and Chair, Department of Neurology (2003-present) (Epilepsy Monitoring Unit, Clinical Neurophysiology).
- **Joseph Drazkowski, M.D.**, Associate Professor, Department of Neurology, (2003-present) (Epilepsy Monitoring Unit, Clinical Neurophysiology).
- **Katherine Noe, M.D., Ph.D.**, Associate Professor, Department of Neurology, (2003-present) (Epilepsy Monitoring Unit, Clinical Neurophysiology).

**7. The University of Arizona**

- **Hemant Kudrimoti, M.D., Ph.D.,** Assistant Professor, Department of Neurology, (2006-2007) (Epilepsy Monitoring Unit, Stimulation studies)
- **David Labiner, M.D.,** Professor, Department of Neurology, (2006-2007) (Epilepsy Monitoring Unit, Stimulation studies)

**8. The University of Michigan**

- **William J. Williams, Ph.D.,** Professor, Department of Electrical Engineering & Computer Science and Bioengineering Program (1984 -1993). (Digital Signal Processing, Time Frequency and Wavelet Transforms)
- **Daryl Kipke, Ph.D.,** Professor, Department of Biomedical Engineering (2000 - 2004). (Neural Plasticity, Man-Machine Interfaces, Bio-electrodes)

**9. The University of Florida**

- **Panos M. Pardalos, Ph.D.,** Professor, Department of Industrial and Systems Engineering (1993 – present). (Global Optimization, Modeling)
- **Jose C. Principe, Ph.D.,** Professor, Department of Electrical and Computer Engineering (1993 - 2004). (Neural Networks, IC Design)
- **John G. Harris, Ph.D.,** Professor, Department of Electrical and Computer Engineering (1999 – 2000). (BioMEMS, IC Design)
- **Mark Yang, Ph.D.,** Professor, Department of Statistics (1996 – 2000). (Parametric and Nonparametric statistical analysis)
- **Zongan Qiu, Ph.D.,** Associate Professor, Department of Physics (1998 – 2000). (Statistical Physics, Phase Transitions)
- **J. Chris Sackellares, M.D.,** Professor, Departments of Neurology, Neuroscience and the Bioengineering Program (1986 – 2004). (Neurology, Epilepsy)
- **Paul Carney, M.D.,** Professor, Departments of Pediatrics and Neuroscience (1999 – 2004). (Neurology, Sleep, Epilepsy, Animal models)
- **Robin L. Gilmore, M.D.,** Professor, Director of the Epilepsy Monitoring Unit, Departments of Neurology, Pediatrics and Neuroscience (1993 – 2000). (Neurology, Epilepsy)
- **Steven N. Roper, M.D.,** Professor, Department of Neurological Surgery (1993 – 2000). (Neurosurgery, Epilepsy Surgery)
- **Richard J. Melker, M.D., Ph.D.,** Professor, Departments of Anesthesiology and Pediatrics (1998 – 2000). (EEG and Anesthesia)
- **Johannes H. Van Oostrom, Ph.D.,** Associate Professor, Department of Biomedical Engineering (1999 – 2000). (Medical Instrumentation)

**10. U. Washington, Seattle**

- **Wanpracha Art Chaovaitwongse, Ph.D.,** Associate Professor, Department of Industrial and Systems Engineering (2004 - present) (Epileptic seizure prediction and diagnosis)

**11. Stanford University**

- **Robert Fisher, M.D.,** Chaired Professor, Department of Neurology (2000 – 2001). (Epilepsy: Control and stimulation studies)

**12. Princeton University**

- **Yannis Kevrekidis, Ph.D.,** Professor, Department of Chemical and Biomedical Engineering and Applied Mathematics (2008 - 2009) (Dynamical Analysis of EEG)

**13. Yale University**



- **Hitten Zaveri, Ph.D.**, Associate Research Scientist, Computational Neurophysiology Laboratory, Department of Neurology (1990 - present) (Epilepsy, Signal Processing)

**14. The Harvard University Medical School**

- **Steven Schachter, MD**, Professor, Department of Neurology (2008 - present) (Vagus nerve stimulation)
- **Bernard Chang, MD**, Assistant Professor, Beth Israel Deaconess Medical Center, Department of Neurology (2008) (Epileptogenic focus localization)
- **Alexander Rotenberg, MD, Ph.D.**, Assistant Professor, Children's Hospital Boston, Department of Neurology (2008) (Animal and Human EMU)

**15. University of Rhode Island**

- **Walter Besio, Ph.D.**, Associate Professor, Department of Electrical, Computer and Biomedical Engineering (2008) (Epilepsy, Animal studies)

**16. Massachusetts Institute of Technology**

- **John Guttag Ph.D.**, Dugald C. Jackson Professor, Department of Electrical Engineering and Computer Science (2008) (Dynamical analysis of brain waves)

**17. University of Bonn, Germany**

- **Klaus Lehnertz, Ph.D.**, Professor, Director Neurophysics Group, Department of Epileptology, Medical Center (2001 - present). (Epileptic Seizure Prediction.)

**18. The Free University of Amsterdam, Netherlands**

- **Stiliyan Kalitzin, Ph.D.**, Professor, Head of Medical Physics Department (2001 – present). (Epileptic Seizure Prediction)
- **Demetris Velis, M.D.**, Professor, Head of Neurology, Epileptology Clinic, (2001 – present). (Epileptic Seizure Prediction, Neurological Disorders)

**19. The National Center for Scientific Research (CNRS) of France**

- **Michel Le Van Quyen, Ph.D.**, National Center of Scientific Research (CNRS), Institute of Federal Research in Neurosciences (IFNRS), Paris (2001) (Epileptic Seizure Prediction)

**20. University of Vienna, Austria**

- **Christoph Baumgartner, M.D.**, Head, Comprehensive Epilepsy Center, Department of Neurology, General Hospital Hietzing with Neurological Center Rosenhugel, Riedelgasse 5, A-330, Vienna, Austria, [christoph.baumgartner@wienkav.at](mailto:christoph.baumgartner@wienkav.at), Ph. +43-1-88000-266, Fax +43-1-88000-384 (Seizure detection)

**21. Aristotle University, Thessaloniki, Greece**

- **Dimitris Kugiumtzis, Ph.D.**, Associate Professor, Department of Mathematical, Physical and Computational Sciences (2001 – present). (Statistics of seizure prediction)

**22. Norway**

- **Paal Larsson, M.D.**, Professor, Epilepsy Monitoring Unit (Clinical neurophysiology studies)
- **Per Gunnar Kjeldsberg, Ph.D.**, Associate Professor, Department of Electronics and Telecommunication, Norwegian University of Science and Technology, O.S. Bragstads Plass 2A, NO-7491 TRONDHEIM, NORWAY; Telephone: +47 7359 4405; Cell phone: +47 9345 9550; Fax: +47 7359 1441 [per.gunnar.kjeldsberg@iet.ntnu.no](mailto:per.gunnar.kjeldsberg@iet.ntnu.no). (2011 – present). (Hardware for a seizure prediction device)

**23. Czech Republic**

- **Vladimir Krajca, Ph.D.**, Assistant Professor, Technical University at Ostrava; Senior Medical Engineer, Department of Neurology, Faculty Hospital Bulovka, Prague (1995 – present). (Conventional EEG analysis)

**24. The University of Delhi, India**

- **Awadhesh Prasad, Ph.D.**, Assistant Professor, Dept. of Physics (2001 – present). (Transitions in network of chaotic oscillators)

**25. East China Normal University, Sanghai, China**

- **Zonghua Liu, Ph.D.**, Associate Professor, Dept. of Physics (2003 – present). (Phase estimation)