

Konstantinos P. Michmizos, PhD

AFFILIATIONS	Assistant Professor Computer Science Department Rutgers University Piscataway, NJ, 08854	Researcher McGovern Institute for Brain Research Massachusetts Institute of Technology Cambridge, MA, USA
RESEARCH INTERESTS	<i>Basic Research:</i> Brain-inspired computing, Brain data Analytics, Computational Modeling <i>Translational Research:</i> Rehabilitation Robotics, Biological & Artificial Learning, Neuro-Robotics, Biomarkers of neuropathophysiology <i>Data:</i> Microelectrode recordings, EEG, MEG, EMG, kinematics	
EDUCATION AND EMPLOYMENT	Rutgers University <i>Assistant Professor (Department of Computer Science)</i>	Piscataway, NJ, USA September 2015 - today
	<ul style="list-style-type: none">• Head, The Computational Brain Lab	
	Harvard Medical School <i>Research Fellow (Department of Neurology)</i>	Boston, MA, USA July 2013 – August 2015
	<ul style="list-style-type: none">• Research Topic: Children with autism, sensorimotor processes and brain connectivity• Methods: M/EEG signal processing & analysis; source localization; brain modeling• Mentors: Prof. Tal Kenet & Prof. Matti Hamalainen	
	Massachusetts Institute of Technology <i>Research Affiliate (McGovern Institute for Brain Research)</i>	Cambridge, MA, USA July 2013 – today
	Massachusetts Institute of Technology <i>Postdoctoral Research & Instructor (Mechanical Engineering)</i>	Cambridge, MA, USA June 2011 – July 2013
	<ul style="list-style-type: none">• Research Topic: Children with Cerebral Palsy and robotic habilitation• Methods: sensorimotor control of lower limbs; adaptive algorithms for lower limb robotic neuro-habilitation; motor learning in lower limbs• Mentors: Prof. Hermano Igo Krebs & Prof. Neville Hogan	
	National Technical University of Athens <i>PhD (Electrical & Computer Engineering) (summa cum laude)</i>	Athens, Greece May 2011
	<ul style="list-style-type: none">• Thesis Topic: Development of computational models of biological neurons for the study and control of the pathophysiology of motion• Advisor: Prof. Konstantina Nikita, Eng., MD• cGPA: 4.0/4.0	
	McGill University <i>Master of Engineering (Biomedical Engineering)</i>	Montreal, Canada 2006
	<ul style="list-style-type: none">• Thesis Topic: Implementation of Robotic Visual Attention motivated by Human Physiology and Behavior• Advisor: Prof. Henrietta L. Galiana	
	University of Patras <i>5-year Diploma (Computer Engineering and Informatics) (summa cum laude)</i>	Patras, Greece 2004
	<ul style="list-style-type: none">• Thesis Topic: Microarray Image Processing and Analysis for the extraction of Genetic Information: A proposal of a novel segmentation technique for microarray spots• Advisor: Prof. Konstantinos Berberidis• cGPA (Rank): 8.53/10.0 (4th out of 200)	

HONORS AND SCHOLARSHIPS

Found. for Education & European Culture Research Award, Greece, 2011-2013 (€10,000)
 Nat. Techn. Univ. of Athens Graduate Research Award, Greece, 2007-2011 (€48,000)
 Onassis Foundation Graduate (PhD) Research Award, Greece, 2007–2010 (€36,000)
 Technical Chamber of Greece Award for Excellent Academic Performance, Greece 2007
 Hellenic Scholarship Foundation Graduate Research Award, Canada 2006
 Onassis Foundation Graduate (Master’s) Research Award, Greece, 2005–2006 (€12,000)
 Bodossakis Foundation Graduate Research Award (declined), Greece, 2005–2006
 McGill University Graduate Research Assistant Scholarship, Canada 2004–2006
 Nikoulis Foundation Research in Medicine Award, Greece, 2004
 Greek-Canadian Union Scholarship Award, Greece, 2004
 National Scholarship Foundation (for outstanding academic performance), Greece, 2003

GRANTS & GRANT PARTICIPATION

2016 – 2018. Busch Biomedical Grant Award “Computational Neuromodulation: Neuro-markers to personalize Deep Brain Stimulation” (K. Michmizos (PI) \$50,000)
 2014 – 2017. BAA-AFOSR-2013-0001 “Dynamic Integration of Motion and Neural Data to Capture Human Behavior” (D. Metaxas, Rutgers (PI) \$780,800) (authored the grant but was not listed as a co-PI, due to ineligibility of post-docs to serve as co-PIs.)
 2008 – 2010. NTUA ’s Basic Research Grant “Development of Computational Methods for the Study on Neuron Network Dynamics: Going from the microscopic simulation to the macroscopic analysis and control of neural diseases” (PI: Michmizos; €15,000)

GRANT REVIEWER

- Busch Biomedical Grant, 2017
- EU’s Horizon 2020, 2017

RESEARCH EXPERIENCE

Rutgers University Piscataway, NJ, USA
Assistant Professor - Lab Director **July 2013 – August 2015**
 The Computational Brain Lab

- Supervising 4 PhD students
- Graduated 5 MS students
 - 2 continue for a PhD in the Lab
- Supervised 3 individualized major theses for undergraduate students
- Supervised/ing 11 independent studies and 3 Aresty Honors undergraduate students
- Member of PhD Committees
 - Yan Zhu – with D. Metaxas (Chair), K. Bekris, D. Samaras (Stony Brook University), 2017
 - Xi Peng – with D. Metaxas (Chair), J. Yu, 2017
 - Menglin Jiang – with D. Metaxas (Chair), J. Yu, 2017
 - Zhennan Yan – with D. Metaxas (Chair), K. Bekris, X. Huang (Lehigh University), 2016
 - Faisal Khan – with C. Kulikowski (Chair), K. Chen, G. Mitsis (McGill University), 2016
 - Jan Vesely – with A. Bhattacharjee (Chair), T. Nguyen, U. Kremer (pre-quals), 2016
 - Yuanzhen Gu – with M. Fredman (Chair), W. Steiger, B. Kalantari (pre-quals), 2016
 - Jingjing Liu – with D. Metaxas (Chair), K. Bekris, S. Nagarakatte (pre-quals), 2015

Harvard University / Massachusetts Institute of Technology Boston, MA, USA
Research Fellow July 2013 – August 2015

Martinos Center for Biomedical Imaging, MGH

- Worked with children in Autism Spectrum Disorder
- Developed functional biomarkers for ASD, translatable to infants
- Designed, conducted and analyzed M/EEG experiments on sensorimotor paradigms
- Developed neurophysiological cortical models (Hodgkin-Huxley and Izhikevich neurons)

Massachusetts Institute of Technology Cambridge, MA, USA
Postdoctoral Research Associate June 2011 – July 2013

Newman Laboratory for Biomechanics and Human Rehabilitation

- Worked with children with Cerebral Palsy
- Developed an adaptive environment that addresses cognitive impairments to provide assist-as-needed robotic sensorimotor therapy
 - Pilot studies in 3 hospitals (Blythedale Children's Hospital, Valhalla, New York; Riley Children's Hospital, Indianapolis, Indiana; Bambino Gesù, Rome, Italy)
- Experimented on ankle sensorimotor control
 - Speed–Accuracy tradeoff: Fitts' law, Hick-Hyman law and Reaction Time, speed profiles in healthy ankle movements
- Built an interactive tele-rehabilitation platform to create a social network of patients
 - Collaborated with: Prof. Adriano Sequiera, University of Sao Paolo

National Technical University of Athens Athens, Greece
Principal Graduate Investigator and Researcher 2007 – 2011

Founder Member of the Computational Neuroscience Group, BioSim Laboratory

- Worked with Parkinson's disease patients undergoing DBS surgery
- Developed data-driven models of the human basal ganglia
 - Collaborated with: Neurosurgery Department, Evangelismos Hospital, Medical School, University of Athens, Greece
- Member of the research consortium of the EU COST-BM0601: Advanced Methods for the Estimation of Human Brain Activity and Connectivity (NEUROMATH) (2008-2011)
 - Communicated relevant research results in Workshops, Seminars and Conferences
 - Collaborated with: multi-disciplinary consortium consisting of 14 EU Universities

McGill University Montreal, Canada
Research Assistant 2004 – 2006

Oculomotor (HLG) Laboratory

- Developed a biomimetic robotic head
- Emulated the visual attention of the human oculomotor system: Added physiological and behavioral attributes (prognosis, memory) and attention (action selection)

University of Patras Patras, Greece
Undergraduate Research Assistant 2001 – 2004

Member of the Signal Processing Laboratory

- Worked with cDNA microarray spot images
 - Developed a novel, seeded-region-growing segmentation algorithm
- Worked with animal models
 - Analysed the frequency content of the rat's hippocampus using *in-vitro* experiments
 - Collaborated with: Medical Physics Laboratory and Neurophysiology Unit, Medical School, University of Patras

Rutgers University

Assistant Professor, Computer Science Department

Piscataway, USA
2015–today

- Fall 2017
 - “525 - Brain-inspired Computing”
 - Class enrollment: 76 students
- Spring 2017
 - Developed a new Graduate course “525 - Brain-inspired Computing”
 - Class enrollment: 61 students
 - Evaluated with 4.8/5
- Fall 2016
 - 107 “Computing for Math and the Sciences”
 - Class enrollment: 63
 - Evaluated with 4.8/5
- Fall 2015 & Spring 2016
 - 443/674 Seminar Course “Integration of Computer and Brain Sciences”
 - Class enrollment: F’15: 41; S’16: 83
 - Evaluated with 4.8/5
- Extracts from Teaching Evaluations (full evaluations available upon request)
 - *The instructor was phenomenal – engaging, funny, and helpful*
 - *He encouraged us to research very complex problems, combine biology with science and critical thinking*
 - *He motivated individual learning and direct application of the knowledge into something tangible*
 - *He gives absolutely everything necessary and 10x more*
 - *Professor Michmizos cares more about his students than any other professor I have ever had. He really wants everyone to understand and do well and gives every opportunity to do so*
 - *For the first time in my life, I enjoy programming*
 - *This was an incredibly refreshing course*
 - *Professor Michmizos definitely influenced my thought on science as a whole*
 - *He has given me a new perspective on the future of science*
 - *Greatest teacher at Rutgers!*
 - *Professor Michmizos is hands down the best instructor I had*
 - *I am now hoping to do research in the field*
 - *I didn’t think I would come back for graduate school or academia. Now it is a real possibility*
 - *This course has been a delight to attend, and has inspired me to pursue research in this area*
 - *Because of this course and the professor, the brain is in my current and future research plans.*

Massachusetts Institute of Technology

Instructor, Mechanical Engineering Department

Cambridge, USA

Spring Semester, 2013

- 2.671 “Measurement and Instrumentation” (2 sessions; 6 h/week)
- Designed, guided and graded semester-wide research projects for 28 students
- Evaluated with 6 / 7

Assistant, MIT’s Undergraduate Research Opportunities Program

2012 – 2013

- Supervised students on developing experimental protocols and analyzing acquired data

Short Course’s Lecturer, Mechanical Engineering Department

June 2012

- Lectured short courses on Biomedical Signal Processing and Analysis

National Technical University of Athens

Athens, Greece

Instructor, ECE & Applied Sciences and Mathematics Departments

2006 – today

- Supervised 14 undergraduate Diploma theses, 2 of which resulted to papers presented at Referred International Conferences
 - 12 students continued on graduate studies, among which 4 outside Greece
- Supervised 2 Master’s theses

Teaching Assistant, ECE & Applied Sciences and Mathematics Dept.

2006 – 2011

- Undergraduate Courses (2006-11): Medical Image and Image Processing, Simulation of Physiological Systems, Laboratory Course on Biomedical Engineering, Laboratory Course on Simulation of Physiological Systems
- Graduate Course (2008-11): Advanced Topics in Medical Image Processing & Analysis
 - Authored laboratory simulation experiments on cardiac circulatory system
 - Developed Lab assignments; Graded student papers and presentations, final exams

PROFESSIONAL
EXPERIENCE

Institute of Communication and Computer Systems, N.T.U.A.

Athens, Greece

Research Engineer

2007 – 2011

Co-author of the EU INTERREG III B ARCHIMED Project: An INTEgrated broadband telecommunication pilot teleservices-platform for improving health care provision in the Region of MEDiterranean (INTERMED)

- Designed the network architecture
- Collaborated with: multi-disciplinary consortium consisting of 6 EU Universities

School of Medicine, “Alexandra” Hospital, University of Athens

Athens, Greece

Research and Consulting Engineer

2007 – 2010

Member of the group of the Heart Failure Clinic

- System Administrator, National Data Base “Promitheas” for Patients with Heart Failure
- Technical consultant for Patent No 1006511 02/09/09 “Paraaortic counterpulsation pump with adjusting and controllable blood flow”, Industrial Property Organization of Greece
- Developer of the interactive educational CD for the “First Aid” course for 1st year Medical and Nursing School students, Univ. of Athens, Athens, Greece

ADVISING AT
RUTGERS

PhD students:

- Vladimir Ivanov (since 2016)
- Guangzhi Tang (since 2017)
- Neelesh Kumar (since 2017)
- Giannis Polykretis (since 2017)

MS students:

- Guangzhi Tang (graduated April 2017)
- Praveenram Balachandar (graduated April 2017)
- Neelesh Kumar (graduated April 2017)
- Chintan Trivedi (graduated April 2017)
- Fan Yang (graduated October 2017)

UG students:

- Kevin Feigelis (Physics) - Now a PhD student at Stanford University
- Leo Kozachkov (Physics) - Now a PhD student at MIT
- Arpit Shah (CS) - Aresty Undergraduate Program
- Joshua Siegel (CS/ECE) - Aresty Undergraduate Program
- Hoberman, Scott (CS) - Aresty Undergraduate Program
- Sandeep Mattappali (CS)

- Roopeswar Kommalapati (CS) declaring individualized major
- Vaibhav Sharma (CS)
- Karan Naik (CS)
- Becca Demcsak (CS) declaring individualized major
- Aditya Vinjamuri (Neuroscience and CS)
- Benjamin Maas (BME)
- Anuja Sarwate (BME)
- Christian Suasi (Psychology)
- Christine Chhantwal (declared individualized major in Cognitive Science)

SCIENTIFIC ACTIVITIES

Associate Editor, 37th, 38th, 39th Annual International Conference of the *IEEE* Engineering in Medicine and Biology Society (*EMBC 2015, 2016, 2017*)

Associate Editor, Frontiers In Computational Neuroscience, special issue “From Single Neurons to Brain Complexity and Human Behavior”, 2017

Technical Program Director, 2016 IEEE International Conference on Imaging Systems and Techniques (*IEEE IST 2016*)

Technical Program Director, 2014 IEEE International Conference on Imaging Systems and Techniques (*IEEE IST 2014*)

Technical Program Director, 2014 *IEEE* International School of Imaging, Oct. 2014

Chair, Session on “Neurorehabilitation I,” 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (*EMBC 2016*), Orlando, Florida, 2016

Chair and co-Organizer of a Special Session on “Towards Understanding Neurons’ Language: From Micro-Processing to Macro-Analysing Brain Recordings,” 33rd Annual International Conference of the *IEEE* Engineering in Medicine and Biology Society (*EMBC 2011*)

Chair, Special Session on “Health Information Management and Electronic Health Records,” 33rd Annual International Conference of the *IEEE* Engineering in Medicine and Biology Society (*EMBC 2011*)

Technical Program Committee, 5th EAI International Conference on Wireless Mobile Communication and Healthcare - “Transforming healthcare through innovations in mobile and wireless technologies” (*Mobihealth 2015*), London, Great Britain, 2015

Technical Program Committee, 4th EAI International Conference on Wireless Mobile Communication and Healthcare - “Transforming healthcare through innovations in mobile and wireless technologies” (*Mobihealth 2014*), Athens, Greece, 2014

Technical Program Committee, 17th International Conference on Digital Signal Processing (*DSP 2011*), Corfu, Greece, 2011

Publicity Chair, International *ICST* Conference on Wireless Mobile Communication and Healthcare - *MobiHealth ’10*, Ayia Napa, Cyprus, 2010

Program Committee, 7th EAI International Conference on Wireless Mobile Communication and Healthcare - “Transforming healthcare through innovations in mobile and wireless technologies” (*Mobihealth 2017*), Wien, Austria, 2017

Program Committee, 6th EAI International Conference on Wireless Mobile Communication and Healthcare - “Transforming healthcare through innovations in mobile and wireless technologies” (*Mobihealth 2016*), Milan, Italy, 2016

Organizing Committee, 8th *IEEE* International Conference on Bioinformatics and Bioengineering (*BIBE 2008*), Athens, Greece, 2008

Treasurer, *IEEE* EMBS Greek Chapter, 2009 – 2010.

- INVITED TALKS “Computational Astrocyence,” Rutgers Center for Quantitative Biology (CQB), NJ, USA, November 2017
- “Computational Astrocyence,” Brain Health Institute, Rutgers University, Piscataway, NJ, USA, July 2017
- “Engineering Neuropathophysiology,” Computer Science Department, Rutgers University, Piscataway, NJ, USA, March 2015
- “Translational neuromodeling: From Microscopic Simulations to Macroscopic Assessment and Rehabilitation of Neurological Disorders,” Computer Science Department, Rutgers University, Piscataway, NJ, USA, November 2012
- “Translational neuromodeling: From Microscopic Simulations to Macroscopic Assessment and Rehabilitation of Neurological Disorders,” Bioengineering Department, Wichita State University, Wichita, Kansas, USA, October 2012
- “Toward building an adaptive environment for providing assist as needed robotic therapy to children with CP,” Electrical & Computer Engineering Department, Northeastern University, Boston, MA, USA, August 2011
- “The Data Base Promitheas for patients with Heart Failure living in Greece,” 10th National Convention of Cardiac Failure, Athens, Greece, February 2009
- “Integrating broadband telecommunication services for improving health care,” INTERMED kick-off meeting, Paphos, Cyprus, December 2006
- MEMBERSHIPS Member, IEEE / IEEE Engineering in Medicine and Biology Society (EMBS)
 Founder Member, Greek Society for Ergotherapy and Rehabilitation
 Member, Hellenic Bioscientific Association in the USA (HBA-USA)
 Member, Technical Chamber of Greece
 Youth Member, Hellenic Parliament (the best 20–page paper on External Affairs among 35,000 students), 1997
- REVIEWER [Journals] *IEEE* Trans on Neural Systems and Rehabilitation Engineering, *IEEE* Robotics and Automation Magazine, *IEEE* Trans on Biomedical Engineering, *IEEE* Trans on Information Technology in Biomedicine, *IEEE* Journal of Biomedical and Health Informatics, J of Neural Engineering, J of Computational Neuroscience, Neurocomputing, Robotica, Intern J of Computational Science and Engineering, Applied Bionics and Biomechanics, PLOS One
- [Conferences] *IEEE* IROS '17; *IEEE* IST '14, '15; *IEEE* BioRob '12, '14, '16; *IEEE* EMBC '11 - '15, *IEEE* DSP '09, '11, '13, *IEEE* BHI '14; *IEEE* ROMAN '14, '15; *IEEE* ICORR '15.
- BOOK CHAPTERS H.I. Krebs, **K.P. Michmizos**, T. Susko, H. Lee, A. Roy, N. Hogan, “Beyond Human or Robot Administered Treadmill Training,” (pp. 409-433) in D.J. Reinkensmeyer, V. Dietz (eds.): *Neurorehabilitation Technology*, Springer, August 2016
- [— ComBra Lab founded —]
- K.P. Michmizos**, K.S. Nikita, “Physiological Systems Modeling Simulation and Control,” (pp. 745-787) in Z.O. Abu-Faraj (ed.): *Handbook of Research on Biomedical Engineering Education and Advanced Bioengineering Learning: Interdisciplinary Concepts*. IGI-Global, Hershey, PA, USA, 2011
- JOURNAL PUBLICATIONS (*supervised students' names in italics*)
- [J18] S. Khan , J. Hashmi, F. Mamashli, **K.P. Michmizos**, M. Kitzbichler, H. Bharadwaj,

- Y. Bekhti, K-L Garel, S. Whitfield-Gabrieli, R. Gollub, J. Kong, L. Vaina, K. Rana, S. Stufflebeam, M. Hamalainen, T. Kenet “Cortical Beta and Gamma Rhythm Resting-State Networks Follow Distinct Maturation Trajectories,” (under review), 2017
- [J17] *L. Kozachkov*, **K.P. Michmizos**, “A computational role for Astrocytes in Memory,” (under review), arXiv:1707.05649, 2017
- [J16] *L. Kozachkov*, **K.P. Michmizos**, “The Causal Role of Astrocytes in Slow-Wave Rhythmogenesis: A Computational Modelling Study,” *PLOS Computational Biology* (under review), arXiv:1702.03993, 2017
- [J15] **K.P. Michmizos**, H. I. Krebs, “Pediatric Robotic Rehabilitation: Current knowledge and future trends in treating children with sensorimotor impairments,” *Neurorehabilitation*, (in press), 2017
- [J14] **K.P. Michmizos**, B. Lindqvist, S. Wong, E.L. Hargreaves, G.D. Mitsis, S.F. Danish, K.S. Nikita, “Computational Neuromodulation: Future Challenges for Deep Brain Stimulation,” *IEEE Signal Processing Magazine*, vol. 34(2), pp. 114-119, 2017
- [J13] F. Mamashli, S. Khan, H.M. Bharadwaj, **K.P. Michmizos**, S. Ganesan, K. Garel, J. Hashmi, M. Herbert, M. Hamalainen, T. Kenet, “Auditory Processing in Noise is Associated with Complex Patterns of Disrupted Functional Connectivity in Autism Spectrum Disorder,” *Autism Research*, vol. 10(4), pp. 631-647, 2016
- [J12] *K. Kostoglou*, **K.P. Michmizos**, P. Stathis, D. Sakas, K.S. Nikita, G.D. Mitsis, ”Classification and prediction of clinical improvement in Deep Brain Stimulation from intraoperative microelectrode recordings,” *IEEE Transactions on Biomedical Engineering*, vol.64(5), pp.1123-1130, 2016
- [J11] S. Khan, J.A. Hashmi, F. Mamashli, H.M.Bharadwaj, S. Ganesan, **K.P. Michmizos**, M. Kitzbichler, M. Zetino, K. Garel, M. Hamalainen, T. Kenet, “Altered Onset Response Dynamics in Somatosensory Processing in Autism Spectrum Disorder,” *Frontiers in Neuroscience, section Child and Adolescent Psychiatry*, 2016
- [— ComBra Lab founded —]
- [J10] **K.P. Michmizos**, S. Rossi, P. Kappa, H.I. Krebs, “Robot-Aided Neurorehabilitation: A Pediatric Robot for Ankle Rehabilitation,” *IEEE Transactions on Neural Systems and Rehabilitation Engineering* (11 pp), doi: 10.1109/TNSRE.2015.2410773, **2015**
- [J09] S. Khan, **K.P. Michmizos**, M. Tommerdahl, S. Ganesan, M. Kitzbichler, M. Zetino, K. Garel, M. Herbert, M. Hamalainen, T. Kenet, “Imbalances in local and directed somatosensory cortex functional connectivity in autism spectrum disorders,” *Brain* (16 pp), in press, doi:10.1093/brain/awv043, 2015
- [J08] **K.P. Michmizos**, *P. Frangou*, P. Stathis, D.E. Sakas, K.S. Nikita, “Beta - band frequency peaks inside the subthalamic nucleus as a biomarker for motor improvement after Deep Brain Stimulation in Parkinsons disease,” *IEEE Journal of Biomedical and Health Informatics* 19 (1), 174-180, 2015
- [J07] **K.P. Michmizos**, L. Vaisman, H.I. Krebs, “A comparative analysis of speed profile models for ankle pointing movements: Evidence that Lower and Upper Extremity Discrete Movements are controlled by a Single Invariant Strategy,” *Frontiers in Human Neuroscience*, 8:962 (15 pp), doi: 10.3389/fnhum.2014.00962, **2014**

- [J06] **K.P. Michmizos**, H.I. Krebs, “Reaction time in ankle movements: A diffusion model analysis,” *Experimental Brain Research* vol. 232(11), pp. 3475-3488, 2014
- [J05] S. Khan, J. Lefevre, S. Baillet, **K.P. Michmizos**, S. Ganesan, M. Kitzbichler, M. S. Hamalainen, C. Papadelis, T. Kenet, “Encoding Cortical Dynamics in Sparse Features,” *Frontiers in Human Neuroscience*, (9 pp) doi: 10.3389/fnhum.2014.00338, 2014
- [J04] **K.P. Michmizos**, H.I. Krebs, “Pointing with the ankle: the speed-accuracy tradeoff,” *Experimental Brain Research*, vol. 232(2), pp. 647-657, 2014
- [J03] **K.P. Michmizos**, D.E. Sakas, K.S. Nikita, “Parameter identification for a local field potential driven model of the parkinsonian subthalamic nucleus spike activity,” *Neural Networks*, vol. 36, pp. 146–156, **2012**
- [J02] **K.P. Michmizos**, D.E. Sakas, K.S. Nikita, “Prediction of the timing and the rhythm of the parkinsonian subthalamic nucleus neural spikes using the local field potentials,” *IEEE Transactions of Information Technology in Biomedicine*, vol. 16(2), pp. 190-7, 2012
- [J01] **K.P. Michmizos**, D.E. Sakas, K.S. Nikita, “Toward relating the subthalamic nucleus spiking activity with the local field potentials acquired intranuclearly,” *IOP Measurement Science and Technology*, vol. 22, 114021 (9 pp), **2011**

PEER -
REVIEWED
CONFERENCE
PUBLICATIONS

(*supervised students' names in italics*)

- [C33] *G. Tang*, **K.P. Michmizos**, “A Spiking Neural Network model of the Brain’s Navigation System for Autonomous Robots,” *IEEE ICRA 2018* (under review).
- [C32] *G. Tang*, **K.P. Michmizos**, “NeuroRobotics: A Spiking Neural Network Model of the Brain’s Spatial Navigation System for Autonomous Robots,” *Cognitive Computational Neuroscience (CCN)*, NY, September 2017
- [C31] *N.Kumar*, *C.Trivedi*, D. Pantazis, D. Metaxas, **K.P. Michmizos**, “Camera-based Detection of the Early Stages of Fatigue: Validation with MEG and Self-Assessment Data,” *Cognitive Computational Neuroscience (CCN)*, NY, September 2017
- [C30] *L. Kozachkov*, **K.P. Michmizos**, “On the Computational Roles of Astrocytes”, *Cognitive Computational Neuroscience (CCN)*, NY, September 2017
- [C29] *P. Balachandar*, **K.P. Michmizos**, “NeuroRobotics: A Spiking Neural Network Model of the Oculomotor System for Controlling a Biomimetic Robotic Head,” *Cognitive Computational Neuroscience (CCN)*, NY, September 2017
- [C28] *L. Kozachkov*, *K. Feigelis*, **K.P. Michmizos**, “A Biomimetic Neural-Astrocytic Network: Adding a Slow Layer for Fast Information Processing,” 5th Neuro Inspired Computational Elements Workshop (*NICE 2017*), IBM Research - Almaden, March 6th-8th, 2017
- [C27] *P. Balachandar*, **K.P. Michmizos**, “Neuromorphic Robotic Attention: A spike-based oculomotor controller,” 5th Neuro Inspired Computational Elements Workshop (*NICE 2017*), IBM Research - Almaden, March 6th-8th, 2017
- [C26] *G. Tang*, **K.P. Michmizos**, “GRIDBOT: Spike-based head direction cells employing Bayesian inference,” 5th Neuro Inspired Computational Elements Workshop (*NICE 2017*), IBM Research - Almaden, March 6th-8th, 2017
- [C25] Y Mohsenzadeh, **K.P. Michmizos**, D Metaxas, D Pantazis, “Mental fatigue in a

prolonged multiple object tracking task,” (abstract) *Society for Neuroscience*, San Diego, November 12-16, 2016

[C24] Y Mohsenzadeh, **K.P. Michmizos**, D Metaxas, D Pantazis, “Neural and pupil diameter effects of mental fatigue,” *20th International Conference on Biomagnetism*, Seoul, South Korea, October 1-6, 2016

[C23] *J. Ames*, **K.P. Michmizos**, “A Biologically Inspired Image Classifier: Adaptive Feature Detection,” *IEEE EMBC '16*, Orlando, USA, 2016 [oral - acceptance rate .20]

[C22] *R. Kommalapati*, **K.P. Michmizos**, “Virtual Reality for Pediatric Neuro-Rehabilitation: Adaptive Visual Feedback of Movement to Engage the Mirror Neuron System,” *IEEE EMBC '16*, Orlando, USA, 2016 [oral - acceptance rate .20]

[C21] H.I. Krebs, **K.P. Michmizos**, L. Monterosso, J. Mast, “Pediatric Anklebot: Pilot Clinical Trial,” *IEEE BioRob '16*, Singapore, 2016 [oral - acceptance rate .15]

[— ComBra Lab founded —]

[C20] **K.P. Michmizos**, S. Khan, M. Hamalainen, T. Kenet, “From spikes to MEG signals: A Computational Model Mimics Abnormalities in Cortical Feed-forward and Feed-back Connectivity in Autism Spectrum Disorders,” *IEEE EMBC '14*, Chicago, Illinois, USA, **2014**

[C19] **K.P. Michmizos**, H.I. Krebs, “A Hierarchical Bayesian Modeling of the Ankle Reaction Time,” *IEEE EMBC '14*, Chicago, Illinois, USA, 2014

[C18] **K.P. Michmizos**, H.I. Krebs, “Modeling Reaction Time in the Ankle,” *IEEE BioRob '14*, Sao Paulo, Brazil, 2014 [*nominated for best-paper award*]

[C17] A. Siqueira, **K.P. Michmizos**, H.I. Krebs, “Development of a robotic system for bilateral telerehabilitation,” COBEM '13, Sao Paulo, Brazil, **2013**

[C16] **K.P. Michmizos**, *P.D. Frangou*, P. Stathis, D. Sakas, K.S. Nikita, “Beta band peak localizes the optimal Deep Brain Stimulation contact in Parkinson’s disease patients,” *International Conference on Deep Brain Stimulation*, Dusseldorf, Germany, 2013

[C15] *P.D. Frangou*, **K.P. Michmizos**, P. Stathis, D. Sakas, K.S. Nikita, “Beta band peak in Local Field Potentials as a marker of clinical improvement in Parkinsons disease after Deep Brain Stimulation,” *IFMBE MEDICON '13*, Sevilla, Spain, 2013 [*among top-10 awarded papers*]

[C14] *K. Kostoglou*, **K.P. Michmizos**, P. Stathis, D. Sakas, K.S. Nikita , G. Mitsis, “Prediction of the Parkinsonian subthalamic nucleus spike activity from local field potentials using nonlinear dynamic models,” *IEEE BIBE '12*, Larnaca, Cyprus, **2012**

[C13] **K.P. Michmizos**, H.I. Krebs, “Assist-as-Needed in Lower Extremity Robotic Therapy for Children with with Cerebral Palsy,” *IEEE BioRob '12*, Rome, Italy, 2012

[C12] **K.P. Michmizos**, H.I. Krebs, “Serious Games for the Pediatric Anklebot,” *IEEE BioRob '12*, Rome, Italy, 2012

[C11] **K.P. Michmizos**, K.S. Nikita, “Addition of deep brain stimulation signal to a local field potential driven Izhikevich model masks the pathological firing pattern of an STN neuron,” *IEEE EMBC '11*, Boston, USA, **2011**

[C10] **K.P. Michmizos**, K.S. Nikita, “Local field potential driven Izhikevich model predicts a subthalamic nucleus neuron activity,” *IEEE EMBC '11*, Boston, USA, 2011

- [C09] **K.P. Michmizos**, V. Papavasileiou, D. Sakas, K.S. Nikita, “Mathematical Physiological Modeling of the relation between local field potentials and spikes recorded inside the Subthalamic Nucleus,” *IEEE ITAB '10*, Corfu, Greece, **2010**
- [C08] **K.P. Michmizos**, K.S. Nikita, “Can We Infer Subthalamic Nucleus Spike Trains from Intranuclear Local Field Potentials?” *IEEE EMBC '10*, Buenos Aires, Argentina, 2010
- [C07] **K.P. Michmizos**, D. Sakas, K.S. Nikita, “An in-silico model of an STN neuron that uses LFPs to predict spikes” *Consciousness and its Measures*, Limassol, Cyprus, **2009**
- [C06] **K.P. Michmizos**, G. Tagaris, D.E. Sakas, K.S. Nikita, “Employing LFPs and spikes to model the non-linear behavior of the STN,” *18th Annual Comp. Neuroscience Meeting*, Berlin, Germany, (publ. in *BMC Neuroscience* doi:10.1186/1471-2202-10-S1-P320J1) 2009
- [C05] **K.P. Michmizos**, G. Tagaris, D.E. Sakas, K.S. Nikita, “Toward Input Output Non-Linear Modeling of the Subthalamic Nucleus using Intranuclear Recordings,” *IEEE NER '09*, Antalya, Turkey, 2009
- [C04] **K.P. Michmizos**, G. Tagaris, D.E. Sakas, K.S. Nikita, “Automatic Intra-Operative Localization of STN using the Beta Band Frequencies of Microelectrode Recordings,” *IEEE BIBE '08*, Athens, Greece, **2008**
- [C03] **K.P. Michmizos**, H.L. Galiana, “A Biomimetic robotic Head using a model of ocular tracking,” *Festival on International Conferences on Caregiving, Dissability, Aging and Technologies*, Toronto, Canada, **2007**
- [C02] **K.P. Michmizos**, C. Argyropoulos, V. Aidinis, G. Nikiforidis, K. Berberidis, “A proposal of a novel segmentation technique of microarray images,” *IEEE IST '07*, Krakow, Poland, 2007
- [C01] I. Nikita, **K.P. Michmizos**, K. Berberidis, G. Kostopoulos, “Carbachol induces fast oscillations (20-45Hz) with greater probability and intensity in ventral than in dorsal hippocampal slices of the rat” *National Convention of the Hellenic Society of Neurosciences*, Athens, Greece, **2003** [*awarded paper*]