

Marco Congedo, PhD

Curriculum Vitae

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8 pages

Biographical Sketch

Marco Congedo was born in Bari, Italy, in 1972. He attended the University of Padova, Italy, where in 1998 he received the "Laurea" in Psychology. In 1999 he joined Prof. Joel Lubar at the University of Tennessee, Knoxville, where he received the M.A. and Ph.D. degree in Biological Psychology, in 2001 and 2003, respectively. At the same time he received a minor Ph.D. degree in Statistics from the same University. In 2000 he has co-founded Nova Tech EEG, an Incorporation specialized in hardware and software for research and education in Electroencephalography. Since 2003 he has been a post-doc fellow at the French National Institute for Research in Informatics and Control (INRIA) and at France Telecom R&D, in France, where he has been working on Brain Computer Interfaces.

Dr. Congedo has been the recipient of several awards, scholarships and research grants. He is interested in basic human electroencephalography (EEG) and magnetoencephalography (MEG), real-time neuroimaging (neurofeedback and brain computer interface) and multivariate statistical tools such as electromagnetic inverse solutions and blind source separation.

Currently, Dr. Congedo is a member of the International Society of Neuronal Regulation and of the Society for Applied Neuroscience.

Permanent e-mail:

marco.congedo@gmail.com

Studies and Positions

2005-2006 **France Telecom R&D**, Grenoble, France.



Post-doctoral fellowship
Research on Brain Computer Interface
supervision: Dr. Denis Chêne.

From 2000 **Nova Tech EEG, Inc.**, Mesa, AZ, USA.



Hardware, Software and Services for Research and Education in Electroencephalography
R&D Director – and Co-Founder.

2003-2005 **INRIA** (National Institute for Research in Informatics and Control), Rennes and Grenoble, France.
Project SIAMES (Image Synthesis, Animation, Modeling, and Simulation)



Post-doctoral fellowship
supervision: Dr. Anatole Lécuyer.

1999-2003 **University of Tennessee**, Knoxville, USA. Department of Psychology



2003 - Philosophy Doctor major degree (PhD) in *Biological Psychology*.

Supervision: Prof. Joel Lubar

Thesis Title: “*Tomographic Neurofeedback; a new Technique for the Self-Regulation of Brain Electrical Activity*”.



2003 - Philosophy Doctor minor degree (PhD) in *Statistics*.

Supervision: Prof. William Seaver



2001 - Master of Arts degree (M.A.) in *Biological Psychology*

Supervision: Prof. Joel Lubar

Thesis Title: “*On the Comparison to EEG Norms: A new Method and a Simulation Study*”.

1998-1999 **Università di Bari**, Bari, Italy,

School of Medicine and Hospital, Department of Neurological and Psychiatric Sciences



Internship in *Clinical Psychology and Electroencephalography*.

Supervision: Dr. Rita Carone

1991-1998 **Università di Padova**, Padova, Italy. Department of Psychology



1998 – Laurea (M.A.) in *Experimental Social Psychology*

Supervision: Dr. Dora Capozza

Thesis Title: “*Group Distance of the Self and Perception of Homogeneity*”.

1996 **Université René Descartes (Paris V)**, Paris, France. Department of Psychology



Student exchange Program (ERASMUS) in *Experimental Social Psychology*

Supervision: Dr. Françoise Askevis.

Articles in Peer-Reviewed Editorial Journals

-  Cannon, R., Lubar, J.F., **Congedo M.**, Thornton, K., Towler, K., Hutchens, T. (2007), The Effect of Neurofeedback Training in the Cognitive Division of the Anterior Cingulate Gyrus, *International Journal of Neuroscience*, 117(3), 337-357.
-  Lotte, F., **Congedo M.**, Lécuyer, A., Lamarche, F. Arnaldi, B. (2007), A Review of Classification Algorithms for EEG-based Brain-Computer Interfaces, *Journal of Neural Engineering*, (in press).
-  Sherlin L., Budzynski T., Kogan-Budzynski H, **Congedo M.**, Fischer M.E., Buchwald D. (2007), Low-resolution electromagnetic brain tomography (LORETA) of monozygotic twins discordant for chronic fatigue syndrome, *Neuroimage*, 34(4), 1438-1442.
-  **Congedo M.** (2006), Subspace Projection Filters for Real-Time Brain Electromagnetic Imaging, *IEEE Transactions on Biomedical Engineering*, 53(8), 1624-34.
-  **Congedo M.**, Lotte F, Lécuyer A. (2006), Classification of Movement Intention by Spatially Filtered Electromagnetic Inverse Solutions, *Physics in Medicine and Biology*, 51, 1971-1989.
-  **Congedo M.**, Lécuyer A., Gentaz E. (2006), The influence of Spatial De-location on Perceptual Integration of Vision and Touch, *PRESENCE Teleoperators and Virtual Environments*, 15(3), 353-357.
-  Sherlin L., **Congedo M.** (2005), Obsessive Compulsive Dimension Localized using Low Resolution Electromagnetic Tomography (LORETA), *Neuroscience Letters*, 387(2), 72-74.
-  Arrouët C., **Congedo M.**, Marvie J-E., Lamarche F., Lécuyer A., Arnaldi B. (2005), Open-ViBE: a 3D Platform for Real-Time Neuroscience, *Journal of Neurotherapy*, 9(1), 3-25.
-  **Congedo M.**, Lubar J.F., Joffe D. (2004), Low-Resolution Electromagnetic Tomography neurofeedback, *IEEE Trans. on Neuronal Systems & Rehabilitation Engineering*, 12(4), 387-397.
-  Cannon R., Rothove J., Lubar J.F., Thornton K., Wilson S., **Congedo M.** (2004), Limbic Beta Activation and LORETA; can Hippocampal and Related Limbic Activity be Recorded and Changes Visualized using LORETA in an Affective Memory Condition?, *Journal of Neurotherapy*, 8(4), 5- 24.
-  Lubar J.F. **Congedo M.**, Askew J.H. (2003), Low-Resolution Electromagnetic Tomography (LORETA) of Cerebral Activity in Chronic Depressive Disorder, *International Journal of Psychophysiology*, 49, 175-185.
-  **Congedo M.**, Lubar J.F. (2003), Parametric and Non-Parametric Normative Database Comparisons in Electroencephalography: A Simulation Study on Accuracy, *Journal of Neurotherapy*, 7(3/4), 1-29.
-  **Congedo M.** (2003), Introducing the Logistic Discriminant Function in Electroencephalography, *Journal of Neurotherapy*, 7(2), 5-23.
-  **Congedo M.**, Ozen C., Sherlin L. (2002), Notes on EEG Resampling by Natural Cubic Spline interpolation, *Journal of Neurotherapy*, 6(4), 73-80.

Articles in Conference Proceedings



Lécuyer, A., Burkhardt, J.M., Le Biller, J., **Congedo, M. (2005)**, A4: A Technique to Improve Perception of Contacts with Uder-Actuated Haptic Devices in Virtual Reality, Proceedings of the World Haptics Conference (Joint Haptics Symposium and Eurohaptics Conference), IEEE Press., March 18-20, Pisa, Italia, 316-322.

Book Chapters



Congedo M., Joffe D. (2007), Multi-Channel Tomographic Neurofeedback: Wave of the future?. In *"Handbook of Neurofeedback: Dynamics and Clinical Applications "*, (Ed) Evans J., Haworth Press, New York, (in press).



Congedo M., Lubar J.F. (2004), Parametric and Non-Parametric Analysis of QEEG: Normative Database Comparisons in Electroencephalography, a Simulation Study on Accuracy. In *"Quantitative Electroencephalographic Analysis (QEEG) Databases for Neurotherapy. Description, Validation, and Application"*, (Ed) Lubar J.F., Haworth Press, New York, 1-29.

Scientific Reviews



IEEE Transactions on Biomedical Engineering



Clinical Neurophysiology



IEEE Transactions on Neural System and Rehabilitation Engineering



Neuroscience Letters



Journal of Statistical Planning and Interference



Journal of Neurotherapy



Natural Sciences and Engineering Research Council of Canada (NSERC)



Austrian Science Fund (FWF).

Grants



2007-2010 – Stimulation Workgroup

Founder: Tinnitus Research Institute

Coordinator: Dr. De Ridder, Neurosurgeon French National Institute for Research in Informatics and Random Systems (Dr. A. Lécuyer),

French National Institute of Health and Medical Research (INSERM U280, Dr. O. Bertrand)



2006-2009 – Open-ViBE (an Open-Source Platform for Virtual Brain Environments)

Founder: French National Agency of Research (RNTL 2005)

Partners: French National Institute for Research in Informatics and Random Systems (Dr. A. Lécuyer),

French National Institute of Health and Medical Research (INSERM U280, Dr. O. Bertrand)



2005 – Open-ViBE (Open Platform for Virtual Brain environment)

Founder: International Society of Neuronal Regulation (personal grant)





2005-2009 – COST (European Cooperation in the Field of Scientific and Technical Research) B27







Electric Neuronal Oscillations and Cognition (Pres: Prof J. Pop-Jordanov),

Position: French Representative in the *Management Committee*.





Teaching Experience at Universities

- 2003**  **University of Tennessee**, Knoxville, USA. Department of Psychology.
“*Statistics in Psychology*”, spring semester.
- 1999**  **University of Bari**, ITALY. Department of Educational Science.
“*Social Psychology*”, spring semester.

Guest Lectures

-  **Congedo M., (2007)**, ICoN (Independent Component Neurofeedback), a freeware program for Blind Source Separation of continuous EEG and Extraction of Neurofeedback Weights. , *15th Annual Conference of the International Society for Neurofeedback and Research*, San Diego, CA, USA.
-  **Congedo M., (2007)**, Enhancing Neurofeedback by means of Multi-Channel Current Source Extraction Methods; a Theoretical and Practical Discourse, Department of Psychology, University of Praha, CZECH REPUBLIC.
-  **Congedo M., (2006)**, Multichannel Neurofeedback; a family of methods to improve the specificity of neurotherapy, Neuroscience Center of Zurich (ZNZ), Department of Psychology, SWITZERLAND.
-  **Congedo M., (2006)**, Linear Decomposition Methods for Real-Time Brain Electromagnetic Imaging, MEG Center, University of Tuebingen, GERMANY.
-  **Congedo M., (2005)**, Recent Trends on Non-Invasive Self-Regulation of Brain Electrical Activity, *14^e Journées Scientifiques du Centre de Recherche en Neuropsychologie Expérimentale et Cognition (CERNEC)*, Department of Psychology, University of Montreal, CANADA.
-  **Congedo M., (2004)**, EEG in Real Time: New Perspectives and a Platform for 3D Visualization of Functional Brain Dynamics, *12th Annual Conference of the International Society for Neuronal Regulation*, Fort Lauderdale, FL, USA.

Student Supervision

-  **2006-2008** Cédric Gouy-Pailler, PhD. at INPG-Grenoble, «Modélisation dynamique de l'activité cérébrale EEG pour la conception d'interfaces cerveau-machines asynchrones».
-  **2005** Fabien Lotte, M.S. at INRIA/INSA-Rennes, «Classification De Données pour l'Utilisation Des Brain-Computer Interfaces en Réalité Virtuelle».
-  **2004** Cédric Arrouët, M.S. at INRIA/INSA-Rennes, «Activité Cérébrale et Réalité Virtuelle».
-  **2002-2003** Rex Cannon, M.A. at University of Tennessee, «The Effect of Neurofeedback Training in the Cognitive Division of the Anterior Cingulate Gyrus».

Fellowships and Assistantships



2005-2006 – France Telecom R&D, InoVallée, Grenoble, France.
Founder: *France Telecom*
Post-Doctoral fellowship – 18 months



2003-2004 – IRISA (Institute for Research in Informatics and Random Systems), Rennes, France.
Founder: *French Defense Ministry*
Post-Doctoral fellowship – 18 months



1999-2003 – University of Tennessee, Knoxville, USA.
Department of Psychology
Founder: *Department of Psychology, The University of Tennessee.*
Doctoral assistantship – 48 months.



1996 – Université René Descartes (Paris V), Paris, France
Department of Psychology
Founder: *European Union (ERASMUS student exchange project)*
Undergraduate assistantship – 6 months.

Posters at International Conferences



Congedo M., Lécuyer A., Arnaldi B., (2005), Open-ViBE, a Platform for 3-D Visualization of Brain Electromagnetic Dynamics, *Neuroimage*, 26 (Supp. 1).



Congedo M., (2004), Low-Resolution Electromagnetic Tomography EEG Biofeedback, *Neuroimage*, 22 (Supp. 1).



Congedo M., Finos L., Turkheimer F., (2004), A Permutation Multiple Hypothesis Procedure based on the Weighted Sum of Test-Statistics, *Neuroimage*, 22 (Supp. 1).



Congedo M., (2004), Low-Resolution Electromagnetic Tomography EEG Biofeedback, *10th Annual Meeting of the Organization for Human Brain Mapping*, June 13-17, Budapest, Hungary.



Congedo M., (2004), A Permutation Multiple Hypothesis Procedure based on the Weighted Sum of Test-Statistics, *10th Annual Meeting of the Organization for Human Brain Mapping*, June 13-17, Budapest, Hungary.



Congedo M., (2002), Parametric and Non-Parametric Analysis Method., *10th Annual Conference of the International Society for Neuronal Regulation*, Scottsdale, AZ, USA.

Selected Oral Presentations at International Conferences



Congedo M., (2006), Classification of movement intention by spatially filtered electromagnetic inverse solutions, *1th Annual Conference of the Society of Applied Neuroscience*, Swansea, UK.



Congedo M., (2004), The Analysis of Neurofeedback Data: a Suitable Theoretical and Statistical Frameworks, *2nd Annual Meeting of the European Chapter of the International Society of Neuronal Regulation*, Winterthur, Switzerland.



Congedo M., Joffe D., Jubar J.F., (2003), Electromagnetic Tomographic Neurofeedback: A Pilot Study, *1st meeting of the European Chapter of the International Society of Neuronal Regulation*, Udine, Italy










Lubar J.F., **Congedo M., Sherlin L., (2002)**, LORETA of Cerebral Activity in Chronic Depressive Disorder, *10th Annual Conference of the International Society for Neuronal Regulation*, Scottsdale, AZ, USA.



Congedo M., Lubar J., (2001), Logistic Regression Discriminant Functions for QEEG, *9th Annual Conference of the International Society for Neuronal Regulation*, Monterey, CA, USA.


Selected Didactic Workshops at International Conferences

-  **Congedo M., Lubar J.F., (2004)**, How to filter out Blinks and Background Noise without Removing Data: Theory and Practice., *12th Annual Conference of the International Society for Neuronal Regulation*, Fort Lauderdale, FL, USA.
-  Pascual-Marqui R.D., **Congedo M., (2004)**, qEEG-based Functional Imaging: how to use the LORETA-Key and the Nova Tech EEG Packages, *2nd Annual Meeting of the European Chapter of the International Society of Neuronal Regulation*, February 24-28, Winterthur, Switzerland.
-  **Congedo M., Lubar J.F., (2003)**, The First User-Friendly System for LORETA Neurofeedback Using the Deymed Acquisition Device, *11th Annual Conference of the International Society for Neuronal Regulation*, September 18-21, Houston, TX, USA.
-  **Congedo M., Lubar J.F., Sherlin L., (2003)**, Exact Statistics for qEEG and LORETA Data: A Theoretical Tutorial and a Computer Program for Performing Analysis, *11th Annual Conference of the International Society for Neuronal Regulation*, September 18-21, Houston, TX, USA.
-  **Congedo M., Lubar J.F., Pascual-Marqui R., Sherlin. L., (2002)**, Combining Enhanced QEEG and LORETA Analysis: Clinical Intervention and Research, *10th Annual Conference of the International Society for Neuronal Regulation*, Scottsdale, AZ, USA.
-  Lubar J.F., **Congedo M., Joffe D., Sherlin L. (2001)**, LORETA 3-D Neurofeedback, Normative Database and New Findings. *9th Annual Conference of the International Society for Neuronal Regulation*, October 27-30, Monterey, CA, USA.
-  Lubar J.F., **Congedo M., (2000)**, Getting to Know LORETA, *8th Annual Conference of the International Society for Neuronal Regulation*, September 20-24, St. Paul Minnesota, USA.


Languages

-  English, French, Italian (mother tongue)

Complementary Skills

-  Computer Programming *Especially using the Borland® Delphi® development environment.*
Digital Signal Processing, Monte Carlo Simulations, Data Analysis and graphical display, real-time applications.

Characteristics

-  Natural inclination for a multidisciplinary and multicultural working environment
Interest in organizational and technical aspects of research.
Challenged by problem solving.
Enjoy computer programming to create specific and self-conceived tools.

Anagraphic

Born in	Bari, South-Est of Italy, October 1972
Gender:	Male
Citizenship:	Italian, European
Offspring:	A 6 y.o. son

Recommendations from co-workers



Joel Lubar, full Professor (jlubar@utk.edu)

The University of Tennessee, Knoxville - Department of Psychology - USA



Anatole Lécuyer, Junior Scientist (anatole.lecuyer@irisa.fr)

INRIA – Rennes - Project SIAMES - FRANCE



Bernard Hennion, Senior Scientist (bernard.hennion@francetelecom.com)

France Telecom R&D - Accessibility Project - FRANCE



Juri Kropov, full Professor (jdkropotov@yahoo.com)

The Russian Academy of Science, St. Petersburg, - Institute of the Human Brain - RUSSIA



Roberto Pascual-Marqui, Senior Scientist (pascualm@key.unizh.ch)

The Key-Institute for Brain-Mind Research - Zurich - SWITZERLAND



Federico Turkheimer, Senior Scientist (Federico.Turkheimer@imperial.ac.uk)

The Imperial College of London - Department of Neuropathology - UK