SCIENTIFIC CURRICULUM OF LUCA FAES

Personal data

- Name: Luca Faes
- Date of birth September 14, 1973
- Place of birth: Levico Terme (TN), Italy
- Nationality: Italian
- Marital status: unmarried
- Address: Via Don E. Angeli, 38050 Calceranica al Lago (TN), Italy
- Phone Number: +39 3495889733
- E-mail: luca.faes@unint.it – faes.luca@gmail.com
- Personal website: www.lucafaes.net

Educational Background

- Master degree (Italian Laurea) in Electronic Engineering (*cum laude*) at the University of Padova, Italy, in 1998
- PhD degree in Electronic Devices at the University of Trento, Italy, in 2003

Professional experience

- 1999-2000: Research Fellow on system identification and modeling at the Medical Biophysics Division of ITC-irst (Institute for Scientific and Technologic Research), Trento, Italy
- 2000-2003: PhD student at the Department of Physics, University of Trento, Italy
- 2003-2008: Postdoctoral Fellow at the Biophysics and Biosignals Laboratory of the Department of Physics, University of Trento, Italy
- 2008-2013: Postdoctoral Fellow at the interdepartmental Center for Biotechnologies (BIOtech) of the University of Trento, Italy
- 2014: Researcher, Healthcare Research and Innovation Program, Bruno Kessler Foundation, Trento, Italy
- May-July 2007: visiting researcher at the Dept. of Biomedical Engineering at the State University of New York, Stony Brook, USA (Prof. Ki H. Chon)
- September-December 2010: Appointed Research Fellow at the Dept. of Biomedical Engineering at the Worcester Polytechnic Institute, Worcester, MA, USA (Prof. Ki H. Chon)
- March-June 2013: Appointed Research Fellow at the Dept. of Data Analysis, Faculty of Psychological and Pedagogical Sciences, Gent, Belgium (Prof. D. Marinazzo)

Professional Achievements

- 1999 - achievement of the qualification to practice the profession of Engineer
- Feb 2014 – achievement of the Italian National Scientific Qualification to function as associate professor in Italian Universities

Academic Activity

- 1999-2005: teaching assistant of General Physics II at the Engineering Faculty of the University of Trento, Italy (academic years: from 1999/2000 to 2004/2005)
- 2002-2007: teaching assistant of Signal and Image Processing for Clinical Diagnosis at the graduation course in Physics and Biomedical technologies of the University of Trento, Italy (academic years: from 2002/2003 to 2006/2007)
- Supervisor of eight master degree theses in Physics and Biomedical Engineering
- Supervisor of the PhD thesis of Silvia Erla, "Computational methods for the assessment of brain connectivity", awarded with the prize of best PhD thesis of 2012 in Cognitive Neuroscience at the University of Trento, Italy
- Co-supervisor of the PhD student Alessandro Montalto, University of Gent, Belgium (2013-2014)
- PhD students hosted for stages: Ulrike Richter, University of Lund, Sweden (3 months, 2010); Alejandro Alcaine Otin, University of Zaragoza, Spain (3 months, 2014)

Scientific Activity

- Membership in Societies: *IEEE Engineering in Medicine and Biology Society*, *Italian Society of Chaos and Complexity*
- Member of the Board of the European Study Group on Cardiovascular Oscillations (ESGCO)
- Member of the Scientific Committee, Program Chair and Local Organizer of the 8th Conference of the ESGCO (Fai della Paganella, Trento, Italy; May 2014)
- Associate Editor for the Signal Processing Theme (since 2008), and co-chair of the Track on Connectivity and Causality (since 2011) of the *Annual International Conference of the IEEE Engineering in Medicine and Biology Society*
- Member of the Editorial Board of the journals: *Frontiers in Computational Physiology and Medicine* (since 2014), *Computational and Mathematical Methods in Medicine* (Hindawi Publishing Corp, since 2014), *International Scholarly Research Notices* (former *ISRN Biomedical Engineering*, Hindawi Publishing Corp, since 2013).

- Member of the Program Committee of MEDICON 2010 - 12th Mediterranean Conference on Medical and Biological Engineering and Computing; Member of the Program Committee of BIOSIGNALS - International Conference on bio-inspired systems and signal processing (2014, 2015); Member of the Program Committee of ITISE - International Work-Conference on Time Series (2014, 2015)
- Lead Guest Editor of the Special Issue "Methodological Advances in Brain Connectivity", published in 2012 in the Journal *Computational and Mathematical Methods in Medicine* (vol. 2012, www.hindawi.com/journals/cmmm/si/359045/)
- Guest Editor of the Special Issue "Assessing Causality in Brain Dynamics and Cardiovascular Control", published in 2013 in the Journal *Philosophical Transactions of the Royal Society A* (vol. 271, http://rsta.royalsocietypublishing.org/content/371/1997.toc)
- Guest Editor of the Special Issue "8th Conference of the European Study Group on Cardiovascular Oscillations, ESGCO 2014", Physiological Measurement (in preparation, 2015)
- Congress attendance: participation as speaker to numerous national and international conferences, also as invited speaker (9 invitations) and chairman (10 chaired sessions). He has organized the Invited Sessions:
    - 'Causality in brain dynamics and cardiovascular control', 33rd International Conference of the IEEE-EMBS (EMBC '11);
    - 'Model-Free and Non-Linear Interdependence Measures for Neurophysiological and Cardiovascular Time Series Analysis', 34th International Conference of the IEEE-EMBS (EMBC '12)
    - 'Entropy-Based Analysis of Physiological Time Series' at the 35th International Conference of the IEEE-EMBS (EMBC '13)
    - 'Methodological Advances in Multivariate Physiological Variability Analysis'; 36th International Conference of the IEEE-EMBS (EMBC '14)
- Invited seminars at the Dept. of Biomedical Engineering of the Lund University (Lund, Sweden, November 2009), at the Dept. of Biomedical Engineering of the Worcester Polytechnic Institute (Worcester, MA, USA, November 2010), and at the Dept. of Data Analysis, Faculty of Psychological and Pedagogical Sciences, UGent (Gent, Belgium, March 2013).

- Invited lecture at the Workshop "Applied Mathematics in Biosciences, Physics and Engineering", Gdansk, Poland, with title "Measuring Information Dynamics in Complex Physiological Networks" (November 2014)
- Reviewer for international scientific journals: *Advances in Adaptive Data Analysis*; *Autonomic Neuroscience: Basic and Clinical; BioMedical Engineering OnLine; Biomedical Signal processing and Control; Brain Connectivity; Cardiovascular Engineering and Technology; Chaos, Solitons and Fractals; Cognitive Neurodynamics; Computers in Biology and Medicine; European Journal of Applied Physiology; IEEE Transactions on Biomedical Engineering*; *IEEE Transactions on Signal Processing; IEEE Transactions on Neural Systems & Rehabilitation Engineering; International Journal of Statistical Mechanics; Journal of Neural Engineering; Journal of Neuroscience Methods; Medical and Biological Engineering and Computing; Methods of Information in Medicine; Neuroimage; Philosophical Transactions A; Physical Review Letters; Physical Review E*; *PLOS One; Physiological Measurement.*
- Grant reviewer activity: *Research Program University-Region 2010-2012- Regione Emilia-Romagna, Italy* (2011); *Postdoctoral Fellow grant applications, The Research Foundation – Flanders (FWO), Belgium* (2014)
- Publications: author of 55 full papers published in peer-reviewed indexed journals with impact factor, 53 papers in peer-reviewed conference proceedings, five book chapters, two editorials, and numerous abstracts and conference proceedings (see publication list)
- Evaluation of scientific activity: Bibliometric indexes from Scopus® - published documents: 101; total citations received: **930**; h-index: **18**; Bibliometric indexes from Google Scholar® - total citations received: **1238**; h-index: **22**; cumulative impact factor of published papers at the year of publication: **115,4** (font: Journal Citation Reports®)

Scientific Participations to funded Projects

- IV Programma Quadro - Progetto EPIMEDICS 2001 - "Enhanced, Personal, Intelligent and Mobile system for Early Detection and Interpretation of Cardiological Syndromes" (36 months, participant)
- Provincia Autonoma di Trento - Commissione Ricerca Scientifica 2005 - "The combined role of visual attention and stochastic resonance on human perception" (12 months, participant)
- Progetti di Ricerca Tecnologica Applicata 2005, Fondazione Cassa di Risparmio di Trento e Rovereto - "Integrazioni di immagini multimodali in cardiologia interventistica per il trattamento con ablazione della fibrillazione atriale permanente" (30 months, participant)

- Progetto Industriale SIMM_PAC 2007 - "Sistema di monitoraggio multiparametrico per la gestione integrata di pazienti e soggetti ad alto rischio di malattia cardiovascolare" (24 months, participant)
- Bando FIRB “Futuro in Ricerca” 2008 – “Cardiorespiratory dysregulation in hypertensive cardiomyopathy and chronic obstructive pulmonary disease: a nonlinear signal processing approach to diagnostics, optimizing mechanical ventilation and reducing peri- and postoperative morbidity” (36 months, participant)

Research Interests

- General research activity: development of advanced biomedical signal processing methods for the analysis of complex physiological systems.
- Methodological approaches: multivariate time series analysis, spectral analysis, complexity analysis, linear and nonlinear prediction, coupling and causality analysis, information-theoretic approaches, system identification, system modeling.
- Applicative contexts: cardiovascular, cardiorespiratory and cerebrovascular regulation, heart rate variability, cardiac atrial fibrillation, cardiovascular neuroscience, brain connectivity, brain-heart interactions, network physiology.
- Aims: characterization of brain, cardiac and multi-organ physiological mechanisms in normal and impaired conditions, aimed at mechanism understanding and disease assessment.

Collaborations

Active:

- Department of Technologies for Health, University of Milano, Italy (A. Porta)
- Department of Data Analysis Faculty of Psychological and Pedagogical Sciences, University of Gent, Belgium (D. Marinazzo)
- Biomed Group, Department of Electrical Engineering, KU Leuven, Belgium (S. Van Huffel)
- Department of Psychiatry, Erasmus Academic Hospital of Free University of Brussels, Belgium (F. Jurysta)
- Department of Physiology, Comenius University, Jessenius Faculty of Medicine, Martin, Slovakia (M. Javorka)
- Department of Electrical and Computer Engineering, Faculty of Engineering, Aristotle University of Thessaloniki, Greece (D. Kugiumtzis)
- Radiation Sciences Group, University of Umea, Sweden (Urban Wiklund)

- Aragon Institute of Engineering Research, University of Zaragoza, Spain (Juan Pablo Martinez)
- Departamento de Engenharia Eletrônica, Universidade Federal de Minas Gerais, Belo Horizonte, Brazil (A. Beda)
- Department of Neurology, Sacro Cuore Don Calabria Hospital, Negrar (VR), Italy (G. Rossato)

Past:

- Department of Biomedical Engineering, Worcester Polytechnic Institute, MA, USA (Ki H. Chon)
- US Navy Experimental Diving Unit, Panama City, FL, USA (John P. Florian)
- Cardiology and Neurology divisions, S. Chiara Hospital of Trento, Italy (M. Disertori, Dr. D. Orrico)
- Department of Electrical and Information Technology, University of Lund, Sweden (L. Sörnmo)
- Laboratorio per l'analisi e la modellizzazione della variabilità cardiorespiratoria, Fondazione S. Maugeri, Istituto Scientifico di Montescano, Italy (G.D. Pinna)
- Department of Pre-clinical Science, University of Milano, Italy (M. Pagani, Prof. N. Montano)
- ET Medical Devices, Cavareno-Milano, Italy (A. De Giuli)

I hereby grant permission to use my personal data in accordance with the Legislative Decree no. 196/2003 – Italian Personal Data Protection Code (June 2003).

December 3, 2014