PERSONAL INFORMATION	Michele Basso

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Sex Male | Date of birth 29/12/1966 | Nationality Italian

POSITION

Associate Professor of Control Systems

WORK EXPERIENCE

30/12/2010–Present

Associate Professor of Control Systems

Department of Information Engineering, Università degli Studi di Firenze, Florence (Italy)

Main activities and responsibilities:

- president of the degree course in Electronic and Telecommunication Engineering and related master's degree courses;
- teaching assignments at the School of Engineering:
  - □ Fundamentals of Automation, degree course in Electronic Engineering and Telecommunications
  - □ Automatic laboratory, master's degree course in Electrical and Automation Engineering
- member of the teaching staff of the PhD in Information Engineering
- member of the scientific council of the Interdepartmental Center for the Study of Complex Dynamics (CSDC) of the University of Florence
- Head of the Non-linear Dynamics and Systems Control Laboratory of the Department of Systems and Informatics (2011-2014)

Brief overview of the research activity

Michele Basso's main research interests include tpoics related to non-linear systems (bifurcation theory, control of periodic and chaotic solutions), robust control (Quantitative Feedback Theory, LMI), real-time control systems and embedded systems, applications to scanning probe microscopy systems, optical tweezers, compressor control. These research activities are documented by over 70 publications in the most relevant international journals and conferences in the field.
He has also carried out intense research and technology transfer activities collaborating with numerous companies (GE-Nuovo Pignone, Sirio Sistemi Elettronici, Selex-Galileo, Vitrociset) and research centers (Institute of Complex Systems-CNR, Institute of Biophysics-CNR, Italian Institute of Technology-IIT).
From 2010 to 2014 he worked as Associate Editor of the Communication in Nonlinear Science and Numerical Simulation (Elsevier) magazine. He has also been reviewer for numerous journals (IEEE Transaction on Automatic Control, Automatica, Control Engineering Practice, etc.).

01/01/2010–31/12/2013

Membership at the Institute of Complex Systems

CNR, Sesto Fiorentino (FI) (Italy)

04/02/1998–29/12/2010

Researcher in Control Systems

Dipartimento di Sistemi e Informatica, Università degli Studi di Firenze, Florence (Italy)

01/03/1997–30/06/1997

Research contract

Mechanical and Environmental Engineering Department, University of California, Santa Barbara (United States)

EDUCATION AND TRAINING

01/07/1997

PhD degree in Systems Engineering

Università degli Studi di Bologna, Bologna (Italy)

- Analysis and control of periodic solutions in nonlinear systems.

10/09/1995–31/03/1996

Visiting scholar

Institute for Systems Research, University of Maryland, College Park (United States)

15/06/1992

Master's degree in Electronic Engineering

Università degli Studi di Firenze, Florence (Italy)

- Robust control via QFT techniques: A method for automatic design and its application to a space servomechanism.

01/07/1985

Scientific high school diploma

Liceo Scientifico G. Castelnuovo, Florence (Italy)

PERSONAL SKILLS

Mother tongue(s)   Italian

Foreign language(s)

UNDERSTANDING		SPEAKING		WRITING
Listening	Reading	Spoken interaction	Spoken production	
C1	C1	C1	C1	C1
A2	A2	A2	A2	A1

inglese: C1 C1 C1 C1 C1
German: A2 A2 A2 A2 A1

Levels: A1 and A2: Basic user - B1 and B2: Independent user - C1 and C2: Proficient user
Common European Framework of Reference for Languages - Self-assessment grid

Digital skills

- Excellent skills on commercial and basic software (eg Microsoft Office, MS Access)
- Programming languages: C / C ++, Javascript, Java, Matlab
- Skills on installation and management of desktop / server / real-time operating systems (MS Windows, Linux, MacOS, RTAI-Linux)
- Expertise of hw / sw tools for advanced process control (eg Matalb / Simulink, Labview, PLC, etc.)

ADDITIONAL INFORMATION

Recent publications:

- M. Basso, M. Galanti, G. Innocenti, D. Miceli (2020), Triggered INS/GNSS Data Fusion Algorithms for Enhanced Pedestrian Navigation System, IEEE SENSORS JOURNAL, 20, pp.1-13, ISSN:1530-437X. doi: 10.1109/JSEN.2020.2979335
- M. Basso, L. Bigazzi, G. Innocenti (2019). DART Project: A High Precision UAV Prototype Exploiting On-board Visual Sensing. In: ICAS 2019 The Fifteenth International Conference on Autonomic and Autonomous Systems, Athens, Greece, June 2 - 6, 2019, IARIA, pp. 27-31, ISBN:978-1-61208-712-2. ONLINE
- B. Tiribilli, M. Basso, F. Quercioli, M. Vassalli (2019). Optical refraction with a toy robot. PHYSICS EDUCATION, vol. 54, pp. 065013-065021, ISSN:0031-9120. doi: 10.1088/1361-6552/AB3E25
- G. Innocenti, M. Basso (2018). An approach to event-triggered control of unstable dissipative systems exemplified via PI controller. In: 16th European Control Conference, ECC 2018, cyp,

Institute of Electrical and Electronics Engineers Inc., pp. 918-923, ISBN:9783952426982. doi: 10.23919/ECC.2018.8550453

- L. Sallese, G. Innocenti, N. Grossi, A. Scippa, R. Flores, M. Basso, G. Campatelli (2017). Mitigation of chatter instabilities in milling using an active fixture with a novel control strategy. INTERNATIONAL JOURNAL, ADVANCED MANUFACTURING TECHNOLOGY, vol. 89, pp. 2771–2787, ISSN:0268-3768. doi: 10.1007/S00170-016-9831-6

- M. Basso, M. Galanti, G. Innocenti, D. Miceli (2016), Pedestrian Dead Reckoning Based on Frequency Self-Synchronization and Body Kinematics, IEEE SENSORS JOURNAL, 17, pp.534-545, ISSN:1530-437X. doi: 10.1109/JSEN.2016.2631629

- M. Basso, G. Innocenti (2015), Lego-bike: A challenging robotic lab project to illustrate rapid prototyping in the mindstorms/simulink integrated platform, COMPUTER APPLICATIONS IN ENGINEERING EDUCATION, 23, pp.947-958, ISSN:1061-3773. doi: 10.1002/cae.21666

- B. Torre, M. Basso, B. Tiribilli, P. Paoletti, M. Vassalli (2013), Disclosing and overcoming the trade-off between noise and scanning speed in atomic force microscopy, Nanotechnology, 24, 325104. doi: 10.1088/0957-4484/24/32/325104

- M. Vassalli, M. Basso, F. Difato (2013), Measurement of tension release during laser induced axon lesion to evaluate axonal adhesion to the substrate at piconewton and millisecond resolution, Journal of Visualized Experiments, vol. 75, pp. e50477-e50477, ISSN:1940-087X. doi: 10.3791/50477

- M. Basso, P. Paoletti, B. Tiribilli, M. Vassalli (2011), AFM Imaging via Nonlinear Control of Self-driven Cantilever Oscillations, IEEE Transactions on Nanotechnology, vol. 10, pp. 560-565, ISSN:1536-125X. doi: 10.1109/TNANO.2010.2051815

- P. Paoletti, M. Basso, V. Pini, B. Tiribilli, M. Vassalli (2011). Self-driven soft imaging in liquid by means of photothermal excitation, Journal of Applied Physics, vol. 110, pp. 114315-114320, ISSN:0021-8979. doi: 10.1063/1.3665396

- A. Guiggiani, B. Torre, A. Contestabile, F. Benfenati, M. Basso, M. Vassalli, F. Difato (2011), Long-range and long-term interferometric tracking by static and dynamic force-clamp optical tweezers, Optics Express, vol. 19, pp. 22364-22376, ISSN:1094-4087. doi: 10.1364/OE.19.022364

- P. Paoletti, M. Basso (2013), Analysis of Oscillating Microcantilever Dynamics: A Floquet Perspective, Proceedings of the 52nd IEEE Conference on Decision and Control, Firenze, pp 360-365. doi: 10.1109/CDC.2013.6759908

- M. Basso, G. Innocenti, A. Rosa (2013), Simulink meets Lego: Rapid Controller Prototyping of a Stabilized Bicycle Model Proceedings of the 52nd IEEE Conference on Decision and Control, Firenze, pp 330-335. doi: 10.1109/CDC.2013.6759903

- F. Difato, H. Tsushima, M. Pesce, A. Guiggiani, F. Benfenati, A. Blau, M. Basso, M. Vassalli, E. Chieregatti (2012) Axonal regeneration of cultured mouse hippocampal neurons studied by an optical nano-surgery system, Photonic Therapeutics and Diagnostics VIII, Society of Photo-Optical Instrumentation Engineers, San Francisco, pp 820760. doi: 10.1117/12.908345

Scientific supervision of PhD students

- Luca Bigazzi, *Development of control techniques and algorithms for small UAVs capable of tracking trajectories with millimeter precision* (2020).

- Matteo Galanti, *Model-based estimation techniques for oil and gas rotating equipment* (2018).

- Alice Bartolozzi, *Single cell elastography from nanoindentation experiments* (2018).

- Paolo Paoletti, *Modelling and control of dynamical systems via variational calculus* (2010).

- Marco Romagnoli, *A Framework To Design Real Time Distributed Control Systems* (2008).

- Donatello Materassi, *Atomic Force Microscopy: Modeling, Analysis and Identification* (2007).

Editorial committees and project evaluations

- Associate Editor (2010 - 2014) of the journal ISI Communication in Nonlinear Science and Numerical Simulation (Elsevier, I.F. 2.773).

- Member of the international committee for the evaluation of research projects for the Romanian National Research Council (UEFISCDI - Bucharest, October 2012).

Research Projects

- Erasmus + program: ROSE - Robotics Opportunities (to foster) STEM Education (Scientific manager, 2015).

- MIUR national project: Techniques for robust analysis of deterministic and stochastic models of

nonlinear dynamic networks. (Participant, 2005).

- FIRB negotiating project: Cellular self-organizing networks and chaotic nonlinear dynamics for modeling and controlling complex systems (Participant, 2002).
- MIUR national project: Techniques and applications of nonlinear dynamics and chaos in information engineering (Participant, 2002).
- University Scientific Research (Scientific Manager since 2002).

Research agreements supported by companies

- Vitrociset s.p.a.: Modeling and simulation of a radar tracking system, (Scientific responsible, 2018)
- GE-Nuovo Pignone: Development of Instruments and Advanced Control Solutions for Turbomachines, (Scientific responsible, 2016)
- Sirio Electronic Systems: Development and validation methods based on Simulink and PLC coder for a gas turbine control system, (Scientific responsible, 2015)
- Sirio Sistemi Elettronici: Analysis and control of stall phenomena in centrifugal compressors (Scientific responsible, 2008)
- Aerostudi-ESA: Design of a robust control system with QFT techniques (Scientific responsible, 2003)

Privacy policy

In compliance with the GDPR and the Italian Legislative Decree no. 196 dated 30/06/2003, I hereby authorize you to use and process my personal details contained in this document.

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