Europass Curriculum Vitae

Personal information

Surname(s) / First name(s)	**Facchini, Angelo**
Address(es)	Via della Quercia 2/C, 53035, Monteriggioni (SI), Italy
Telephone(s)	Home: +39 0577304557 Mobile: +39 3337841703
Email(s)	4.facchini@gmail.com
Nationality(-ies)	Italian
Date of birth	26/12/1973
Gender	Male
Family	1 daughter (Corinna, born 8/8/2008)

Occupational field

Senior Researcher, Data Scientist, program and research manager

Work experience

Dates	**1/06/2016-present**
Occupation or position held	Assistant Professor
Main activities and responsibilities	Research and and project management on big data, climate change, complex systems , urban development, energy systems, water infrastructures
Name and address of employer	IMT Alti Studi Lucca, P.zza San Francesco 19, 55100 Lucca
Type of business or sector	Research and project management

Dates	**16/03/2016-present**
Occupation or position held	Consultant
Main activities and responsibilities	Digitalization of water infrastructures: application of big data analytics and complex networks methods, asset management, predictive maintenance
Name and address of employer	Gaia S.p.A. Via Donizetti 16, 55045 Marina di Pietrasanta
Type of business or sector	Research and project management

Dates	**16/03/2016-present**
Occupation or position held	Associate Scientist
Main activities and responsibilities	Draft of funding proposals, research, big data analysis, complex networks and critical infrastructures
Name and address of employer	CNR- Consiglio Nazionale delle Ricerche. Piazzale Aldo Moro 7, 00185 Roma
Type of business or sector	Research and project management

Dates	**20/01/2016-present**
Occupation or position held	Guest Scholar
Main activities and responsibilities	Draft of funding proposals, Research on nonlinear systems, big data analysis, and critical water and electricity infrastructures
Name and address of employer	IMT-Alti Studi Lucca, Piazza S. Francesco 19, 55100 Lucca.
Type of business or sector	Research and project management

Dates	**15/3/2012-15/3/2016**
Occupation or position held	Senior researcher and project manager

Main activities and responsibilities	Research, project management and coordination, data analysis, stakeholder engagement, sustainable urban development, urban metabolism, energy, water and waste flows in Megacities, resilience of urban systems and critical infrastructures, energy use and energy efficiency in cities and in the built environment, energy use in informal settlements, communication and dissemination activities
Name and address of employer	Enel Foundation, Viale Regina Margherita 137, 00198 Rome
Type of business or sector	Research, project management, stakeholder engagement, sustainable urban development, communication and dissemination activities
Dates	**1/1/2011-30/9/2011**
Occupation or position held	Post-doc
Main activities and responsibilities	Time series analysis and prediction of network electric load.
Name and address of employer	University of Siena, Department of Information Engineering, Via Roma 56, 53100, Siena, Italy.
Type of business or sector	Research, data analysis, FP7 Project ADDRESS, WP3, Task 3.5
Dates	**1/3/2009-1/5/2009**
Occupation or position held	Guest Scientist
Main activities and responsibilities	Research on project: *Stochastic perturbation of the bifurcation parameters of the parametrically forced pendulum.*
Name and address of employer	Max-Planck-Institut für Physik komplexer Systeme, Nöthnitzerstraße 38, D-01187 Dresden.
Type of business or sector	Research and data analysis
Dates	**1/1/2007-31/12/2010**
Occupation or position held	Research assistant
Main activities and responsibilities	Research on Complex Systems, data analysis (biophysics, statistical physics, finance), game theory, teaching
Name and address of employer	University of Siena, Department of Information Engineering, Via Roma 56, I-53100, Siena.
Type of business or sector	Research and data analysis
Dates	**1/12/2006-31/12/2006**
Occupation or position held	Researcher
Main activities and responsibilities	Research on the project: *Nonlinear time series analysis: from biophysical phenomena to ecology.*
Name and address of employer	University of Siena, Center for the Study of Complex Systems, Via Roma 56, I-53100, Siena.
Type of business or sector	Research and data analysis
Dates	**20/9/2006-20/11/2006**
Occupation or position held	Guest Scientist
Main activities and responsibilities	Research on project: *Nonlinear analysis of cardiac time series.*
Name and address of employer	Max-Planck-Institut für Physik komplexer Systeme, Nöthnitzerstraße 38, D-01187 Dresden.
Type of business or sector	Research and data analysis
Dates	**1/5/2005-1/5/2006**
Occupation or position held	Post-Doc
Main activities and responsibilities	Research on biophysical phenomena.
Name and address of employer	University of Siena, Department of Chemical and biosystems sciences, University of Siena, Via della Diana 2/A, I-53100, Siena.
Type of business or sector	Research and data analysis
Dates	**20/5/2005-20/6/2005**

Occupation or position held	Guest Scientist
Main activities and responsibilities	Research on project: *Investigation of pattern formation in recurrence plots from biophysical systems.*
Name and address of employer	Max-Planck-Institut für Physik komplexer Systeme, Nöthnitzerstraße 38, D-01187 Dresden.
Type of business or sector	Research and data analysis
Dates	**1/8/2004-30/9/2004**
Occupation or position held	Guest Scientist
Main activities and responsibilities	Research on project: *Investigation of structures in recurrence plots from nonstationary time series.*
Name and address of employer	Max-Planck-Institut für Physik komplexer Systeme, Nöthnitzerstraße 38, D-01187 Dresden.
Type of business or sector	Research and data analysis
Dates	**1/8/2003-31/12/2003**
Occupation or position held	Guest Scientist
Main activities and responsibilities	Research on project: *Models and phenomena of voice production.*
Name and address of employer	Max-Planck-Institut für Physik komplexer Systeme, Nöthnitzerstraße 38, D-01187 Dresden.
Type of business or sector	Research and data analysis
Dates	**1/11/2001-1/11/2004**
Occupation or position held	PhD student
Main activities and responsibilities	Analysis on nonlinear systems, nonlinear chemistry, time series analysis of biophysical phenomena, sustainable development, material flow analysis
Name and address of employer	University of Siena, Department of Chemical and Biosystems sciences, University of Siena, Via della Diana 2/A, I-53100, Siena.
Type of business or sector	Research on data analysis, material flow accounting, sustainability sciences

Education and training

date	18/2/2005
Title of qualification awarded	Ph.D in Physical chemistry.
Principal subjects/Occupational skills covered	Analysis on nonlinear systems, nonlinear chemistry, time series analysis of biophysical phenomena. Thesis title: *Encounters with ecodynamics: an exploration of complex systems*.
Name and type of organization providing education and training	University of Siena.
date	8/10/2001
Title of qualification awarded	Laurea
Principal subjects/Occupational skills covered	Complex systems, genetic algorithms, data mining. Thesis title:*Evolutionary algorithms with interactive fitness for the electronic commerce*.
Name and type of organization providing education and training	University of Siena.
date	20/7/1992
Title of qualification awarded	Maturità Scientifica
Name and type of organization providing education and training	Istituto Sacro Cuore di Gesù, Via Campansi 31, I-53100, Siena.

Personal skills and competences

Mother tongue(s)	**Italian**

Other language(s)

English, German

Self-assessment
European level(*)

	Understanding		Speaking		Writing
	Listening	Reading	Spoken interaction	Spoken production	
English	B2	C1	B2	C1	C1
German	A2	B1	B1	B1	B1

(*) *Common European Framework of Reference (CEF) level*

Social skills and networking

Team work

I have worked in various research teams with strong interdisciplinary characteristics.

- Networking and management of multidisciplinary research groups.
- Attitude to diplomatic negotiation, resolution of conflicts and difficulties.
- Intercommunication between science, research, institutional and civil society.

International cooperations

During my career I established the following partnerships and cooperations:

- Prof. Mauro Rustici, Sassari University, Italy. Nonlinear chemistry and the Belousov-Zhabotinsky reaction.
- Prof. Holger Kantz, Max Planck Institute for the Physics of complex Systems, Dresden. Models and Phenomena of voice production, Analisys of non-stationary time series, Recurrence Plots.
- Prof. Felice Petraglia, Dept. of Pediatrics, obstetrics and reproduc- tive medicine, Siena University. Application of Time series analysis to tochocardiographyc signals.
- Dr. Carlo Bellieni, Dept. of Obstetric, Siena University. Application of Time series analysis to newborn cries.
- Prof. Nobuo Masataka, Primate research institute, University of Kyoto. Speech analysis of primates.
- Prof. Roberto Livi, Dept.of Physics, University of Florence, and Dr. Antonio Politi, Institute for the Study of Complex Systems, CNR, Florence. Nonlinear analysis of RR interval time series under the point of view of statistical physics.
- Dr. Sandro Wimberger, Dept. of Physics, University of Heidelberg. Multifractal fluctuations in open quantum systems.
- Prof. Stefano Ruffo, Dept. of Energetics, University of Florence. Long range correlations in the dynamics of the Hamiltonian Mean Field model, fluctuation analysis.
- Dr. Donatella Spina, Unità Operativa Complessa di Anatomia Patologica, University of Siena. Development of new diagnostic tools based on the analysis of histochemical images of lung cancer.
- Dr. Marcello Rossi, U.O. Fisiopatologia e Riabilitazione Respiratoria, Azienda Ospedaliera Universitaria Senese. Recurrence quantification analysis of lung sounds.
- Prof. Chris Kennedy, Dept. of civil engineering, University of Toronto. Sustainable urban development, urban metabolism of megacities; Thermodynamics of urban ecosystems.

- Prof. Federico Butera, Dept. ABC, Politecnico di Milano. Energy efficiency of the built environment, energy use patterns in informal settlements of developing countries.
- Prof. Oriol Nel·lo, Dept. of Geography, Autonomous University of Barcelona. THe evolution of the city and its relationships with energy.
- Prof. Gianluca Bocchi, Dept. of social and human sciences, University of Bergamo. Urbanization and complex systems, sustainable urban development.
- Prof. Nicoletta Trasi, Dept. of Architecture, University La Sapienza. Energy efficiency of the built environment.
- Dr. Alessandro Rubino, Senior Editor, Nature Publishing Group. Effect of regulation of electricity markets, consumer behavior.
- Dr. Antonio Scala, CNR-Institute of Complex Systems, University of Rome "La Sapienza". Big data analytics, complex networks and Nonlinear phenomena and characterization of electrophysiology of plants, critical infrastructures.
- Prof. Andrea Vitaletti, Dept. of Engineering and Control. Electrophysiology of plants
- Prof. Guido Caldarelli, IMT Alti Studi Lucca, Big data analytics, complex networks, water and electricity critical infrastrucures.

Teaching activity

2006 Lectures (10 hours) on Nonlinear time series analysis, Dept. of Information Engineering, Siena.

2007 Lectures (20 hours) on Nonlinear time series analysis, Dept. of Information Engineering, Siena.

2008 Lectures (20 hours) on Nonlinear time series analysis, Dept. of Information Engineering, Siena.

2009 Lectures (20 hours) on Nonlinear time series analysis, Dept. of Information Engineering, Siena.

2010 Lectures (20 hours) on Game theory, Dept. of Information Engineering, Siena.

2010 Lectures (40 hours) on Modelling of environmental systems, Dept. of Information Engineering, Siena.

2011 Lectures (20 Hours) on Nonlinear time series analysis, Dept. of Information Engineering, Siena.

2011 Lectures (20 hours) on Game theory, Dept. of Information Engineering, Siena.

Thesis advisorships

I have been Co-advisor of the following students:

- Francesca D'Auria, thesis title: *Pattern proliferativo e aggressività biologica delle neoplasie. Approssimazioni poligonali e region detection su array istopatologici*, Department of Information Engineering, University of Siena, 2009.
- Domenico Carlomagno, thesis title: *Algoritmi per l'ottimizzazione di strategie di trading*, Department of Information Engineering, University of Siena, 2010.
- Carmine Lianza, thesis title: *Ottimizzazione di tecniche di trading sui mercati finanziari*, Department of Information Engineering, University of Siena, 2010.
- Martina Falsetti, thesis title: *Processi decisionali nell'ambito della prevenzione sanitaria: Il caso dell'influenza A*, Department of Information Engineering, University of Siena.
- Caterina Bianciardi, thesis title: *Studio di problematiche sociali attraverso la teoria dei giochi*, Department of Information Engineering, University of Siena, 2010.
- Chiara Ciani, thesis title: *Implementazione di un gioco sulle problematiche sociali nelle popolazioni studentesche*, Department of Information Engineering, University of Siena, 2010.
- Carolina Tuzzami, thesis title: *Analisi dei dati relativi ai risultati di un gioco su tematiche sociali*, Department of Information Engineering, University of Siena, 2010.
- Giuseppe Bonagura, Thesis title: *Predizione del carico elettrico a breve termine mediante reti neurali*, Department of Information Engineering, University of Siena, 2010.
- Paolo Cini, Thesis title: *Predizione a breve termine del carico elettrico mediante support vector machines: analisi e confronti*, Department of Information Engineering, University of Siena, 2011.
- Alessio Lenzini, Thesis title: *Recurrence Quantification Analysis for the Classification of Lung Sounds*, Department of Information Engineering, University of Siena, 2012

Organizational skills and competences

I am present in the organizing staff/committee of the following international events:

2004 Organizing staff of the Conference of the Italian Society of Chemistry.

2005 Co-organizer of the International advanced school on nonlinear analysis of complex dynamical systems.

2007 Co-Organizer of the Second International Workshop on Recurrence Plots, Siena, 10-12 September 2007.

2010 Organizing staff of the Mind Force Conference, Siena, 7-8 October 2010.

2013 Organizing staff of the international conference "Energies for future urban environment", Rome 2-3 July 2013.

2015 Organizer of the International Symposium ”Energy and material flows in megacities” as side event of the conference ”Ecology at the interface”, Rome 21-25 September 2015

Technical skills and competences

My main skill and scientific production is in the field to data analysis and statistical characterization of natural and artificial phenomena. I am expert of both linear and nonlinear techniques of identification, filtering, feature extraction, and prediction. My interests also involve big data analytics, complex networks and spatio-temporal analysis and prediction of distributed systems (including image analysis)

Sustainable urban development

During my PhD I developed research activities with Prof. Enzo Tiezzi. My expertise was mainly focused in data analysis, material flow analysis, and greenhouse gas accounting. At Enel Foundation, in the double role of project manager and researcher, I have been in charge of research activities on sustainable urban development. The main topics are:

1. Thermodynamics of complex urban systems.
2. Comparative analysis of *urban metabolism* (i.e. energy, material and waste flows) of megacities.
3. The transformation of the city and its impact on energy consumption, with a focus on the *città consolidata*
4. Energy efficiency and energy use in informal settlements of developing countries.
5. Energy efficiency of the built environment.
6. Urban resilience and critical infrastructures, climate change adaptation in cities.
7. Relationships between energy and material flows and quality of life in cities.
8. Big data, smart cities and digital integration of infrastructures.

As project manager I managed the publication of the volume *Cities in the 21st Century*, edited by R. Mele and Oriol Nel-lo and published by Routledge.

Analysis and prediction of electricity distribution networks and electricity markets

- Within the project ADDRESS I worked on time series analysis identification and prediction of active demand in electric load time series by means of nonlinear stochastic models.
- Effect of regulatory frameworks on the dynamics of UK electricity market.

European projects

I have experience in working within the 7th Framewok Program (FP7) projects of the European Union and in the general organization of their funding schemes, with particular skills in “Cooperation” calls with STREP funding.

Nonlinear chemistry

During my PhD, under the supervision of Enzo Tiezzi and Mauro Rustici, I worked on nonlinear phenomena in the Belousov-Zhabotinsky (BZ) Reaction both from the theoretical and the experimental point of view. My expertise ranged from the experimental set-up of the reaction to the analysis of the time series, which showed a Ruelle-Taken-Newhouse transition to chaos. My efforts have been also devoted to the study of the BZ reaction in two dimensional lipidic substrates. I am familiar with the basic techniques and instruments of a chemistry laboratory.

Nonlinear Time Series Analysis of biophysical and ecological signals.

In am expert of methods for detecting nonlinear phenomena in experimental time series. In particular, I like to work with biophysical and ecological data:

- Analysis of dissolved oxygen in aquatic ecosystems.
- Nonlinear phenomena in human and animal vocalizations.
- Analysis of newborn cry recordings.
- Analysis of lung sounds.
- Electrophysiology of plants.

Under the theoretical point of view, my contribution is mainly devoted to:

- Analysis of non-stationary time series.
- Theoretical aspects of Recurrence Plots and Recurrence Quantification Analysis.
- Multifractal analysis of time series showing high fluctuating behavior, with particular interest in cardiac signals.

Spatially distributed systems

By using the Generalized Recurrence Quantification analysis I worked on the identification of bifurcations in spatially distributed systems, with particular interest in reaction-diffusion phenomena, such as the BZ reaction (experimental point of view) and the complex Ginzburg-Landau equation (theoretical point of view). This scientific activity is mainly focused towards:

- Bacterial growth phenomena.
- Tumor growth.
- Population dynamics.

Dynamics and statistical physics of mean-field Hamiltonian model

The Hamiltonian mean-Field model is a prototypical system for studying the statistical mechanics of a system composed of globally coupled particles. My effort has been mainly devoted in:

- Performing simulations in the micro-canonical and canonical ensemble.
- Study of the chaotic dynamics.
- Finite size effects and long range correlation phenomena.

Stochastic processes and effect of noise in dynamical systems

I have experience in working with stochastic processes:

- Numerical solution of Stochastic differential equation.
- Stochastic modeling of wind
- Effect of noise in bifurcation phenomena.

Within the Center for the study of Complex Systems, I realized an experimental version of an inverted pendulum (also known as Kapitza Pendulum) perturbed by noise, showing bifurcations and chaotic phenomena.

Computer skills and competences

- Excellent knowledge of Windows and Unix-based (Linux, MacOS X) operative systems.
- Excellent knowledge of the programming languages C and MATLAB.
- Good knowledge of FORTRAN.
- Good knowledge of MySql Languange and database management.
- Excellent knowledge of the Microsoft Office suite and LaTeX.
- Good knowledge of Adobe graphic design applications, (Photoshop, Illustrator, InDesign).
- Good knowledge of Adobe video producing/post producing software (Premiere Pro, Audiobooth, Encore).

Artistic skills and competences

I Like Painting and drawing. Since 2007 I am student of the painter Ettore Maiotti, who trained me in chiaroscuro drawing, watercolor, and oil painting. With E. Maiotti I am author of four DVDs on basic painting techniques (watercoulor, oil, pastel, and acrylic).

Other skills and competences

- Hobbies: Ham-Radio, gardening, painting.
- Sports: Karate, tennis, running.
- Strategy games: I enjoy the ancient game of Go.

Driving licence(s)

Patente B

Additional information

Memberships

Since May 2016 I am *Accademico Fisiocritico*, i.e. member of the Siena Academy of Sciences (*Accademia de' Fisiocritici*), founded in Siena on March 1691. I am also member of the following institutions:

- Institute of the Electric and Electronic Engineers (IEEE).
- Deutsche Physikalische Gesellschafft (DPG).
- American Physical Society (APS).

Reviewer activity

I serve as referee for the following international Journals:

- Applied Energy
- Nature Scientific Reports
- Physical Review E.
- Physica A.
- Physics Letters A.
- Noise and Fluctuations Letters.
- Communications in Nonlinear Science and Numerical Simulations.
- Physica D.
- International Journal of Bifurcation and Chaos.

Publications

Publications in peer-reviewd journals

1. **A. Facchini**, S. Bastianoni, N.Marchettini, M.Rustici. Characterization of chaotic dynamics in the vocalization of Cervus elaphus corsicanus. Journal of Ac. Soc. Am. 114(6) 2003 [9 citations, IF 1.482].

2. **A. Facchini**, C. Bellieni, N. Marchettini, F. Pulselli, E.B.P. Tiezzi. Relating pain intensity of newborns to onset of nonlinear phenomena in cry recordings, Phys. Lett. A, 338(2005) 332-337 [7 citations, IF 1.550].

3. **A. Facchini**, H. Kantz, E. Tiezzi. Recurrence Plot analysis of nonstationary data: the understanding of curved patterns. Phys. Rev. E 72, 21915 (2005) [17 citations, IF 2.418].

4. **A. Facchini**, F. Delogu, L. Lambroni, F.M. Pulselli, E.B.P. Tiezzi. Experimental evidences for chaotic dynamics in the vocalizations of the humpback whale Megaptera novaeangliae. International Journal of Ecodynamics, 1(2), 180-188, 2006 [Non ISI Journal].

5. S. Bastianoni, **A. Facchini**, L. Susani, E. Tiezzi. Emergy as a function of exergy. Energy - The International Journal, **32** 1158-1162, 2007 [17 citations, IF 1.172].

6. **A. Facchini**, S. Wimberger, A. Tomadin. Multifractal fluctuations in the survivial probability of an open quantum system. Physica A, Vol 376, 266-274, 2007 [2 citations, IF 1.430].

7. **A. Facchini**, C. Mocenni, N. Marwan, A. Vicino, E. Tiezzi. Nonlinear time series analysis of dissolved oxygen in the Orbetello Lagoon (ITALY), Ecological Modelling, **203** 339-348, 2007 [11 citations, IF 2.077].

8. G. Fontani, S. Migliorini, R. Benocci, **A. Facchini**, M. Casini, F. Corradeschi. Effect of mental imagery on the development of skilled motor actions, *Percept. Mot. Skills*, Vol 105, 803-826, 2007 [10 citations IF 0.55].

9. **A. Facchini**, H. Kantz.Curved structures in recurrence plots: The role of the sampling time. Phys Rev E, **75** 36215, 2007 [8 citations, IF 2.483].

10 **A. Facchini**, C. Mocenni, A. Vicino. Generalized Recurrence Plots for the analysis of images from spatially distributed systems, Physica D, **238**, 162-169, 2009 [4 citations, IF 1.568].

11 Charles L. Webber Jr., Norbert Marwan, **Angelo Facchini**, Alessandro Giuliani. Simpler methods do it better: Success of Recurrence Quantification Analysis as a general purpose data analysis tool Physics Letters A, **373**, 3753-3756, 2009 [2 citations, IF 2.009].

12 **A. Facchini**, F. Rossi, C. Mocenni. Spatial recurrence strategies reveal different routes to Turing pattern formation in chemical systems, *Phys. Lett. A*, **373**, 4266-4272, 2009 [1 citation, IF 2.009].

13 A. Barucci, G. Macaluso, D. Mecatti, L. Noferini, D. Fanelli, **A. Facchini**, M. Materassi, M. Pieraccini, C. Atzeni. Universal fluctuations in tropospheric radar measurements, *Europhysics Letters*, **89**, 20006, 2010 [1 citations, IF 2.893 (estimate)].

14 C. Mocenni, **A. Facchini**, A. Vicino. Identifying the dynamics of complex spatio-temporal systems by spatial recurrence properties. *Proc. Nat. Academy of Sciences*, **107**, 8097-8102, 2010 [0 citations IF 9.432 (estimate)].

15 C. Mocenni, **A. Facchini**, A. Vicino. Comparison of recurrence quantification methods for the analysis of temporal and spatial chaos. *Math and Comp. Modelling*, in press, 2010 [0 citations IF 1.103 (estimate)].

16 **A. Facchini**, C. Mocenni. Filling gaps in ecological time series by means of twin surrogates, *Int. J. Bifurcation and Chaos*, in press, 2010 [0 citations IF 0.918 (estimate)].

17 **A. Facchini**, C. Mocenni. Recurrence Indicators for the estimation of characteristic size and frequency of spatial patterns, *Chaos and Complexity Lett.*, 6(1-2), 2012. [0 citations, IF=NA].

18 **A. Facchini**, C. Mocenni. Recurrence methods for the identification of morphogenetic patterns, PLOS-ONE, 8(9), e73686, 2013. [1 citation, IF=3.73].

19 C. Kennedy, I. Stewart, N. Ibrahim, **A. Facchini**, R. Mele. Developing a multi-layered indicator set for urban metabolism studies in megacities, *Ecol. Indicators*, 47, 7-15. [1 citation, IF=3.23].

20 C. Kennedy, I. Stewart, **A. Facchini**, R. Mele et al., Energy and material flows in megacities, *Proc. of the Nat. Ac. of Science*, vol. 122, 19, 2015. [IF=9.8]

21 L. Valori, G.L. Giannuzzi, **A. Facchini**, T. Squartini, D. Garlaschelli, R. Basosi. A Generation-attraction model for renewable energy flows in Italy: a complex network approach, *Eur. Phys. J. - Special Topics*, Accepted.

Submitted papers

A. Facchini, C. Kennedy, I. Stewart, R. Mele, The energy metabolism of Megacities, submitted to *Applied Energy*. Major revisions pending

Monographic issues

Norbert Marwan, **Angelo Facchini**, Marco Thiel, Joseph P. Zbilut and Holger Kantz. 20 Year of Recurrence Plots: Perspectives for a Multi-purpose Tool of Nonlinear Data Analysis, *European Physical Journal – Special Topics*, volume 164, 1-2, 2008 [2 citations, IF 0.689].

Citation report

- Sum of the Times Cited: 394
- h-index: 12

Books Chapters

In O. Nel-lo, R. Mele (eds), Cities in the 21st Century, Routledge, 2016.

Essays

1. G. Bocchi, A. Facchini, Living at the edge of Chaos: a complex systems view of cities, pp. 99-105.

Outlooks (short case studies)

1. A. Facchini The ”città diffusa” of the Po valley, p. 57
2. A. Facchini Climate-sensitive urbanization in Tokyo-Yokohama, p. 106
3. A. Facchini, Shaping the city with big data: Seattle, Chicago, and Lyon, p. 178
4. A. Facchini, Res Novae: new things and concepts in the smart city of Bari, p. 205
5. A. Facchini, Exchanging recyclable waste for electricity in Fortaleza, p. 290.

Conference contributions

Full papers

1. **A.Facchini**, E.B.P. Tiezzi, A. Mecocci. An Interactive Evolutionary Algorithm for Adaptive User Interface Design, Intersymp' 2002.
2. M. Rustici, G. Lai, **A. Facchini**, S. Bastianoni. Experimental evidences for chaotic dynamics in the roar of Cervus elaphus corsicanus. Design and Nature 2002. Udine.
3. M. Rosini, **A. Facchini**, M. P. Picchi. Composing Indicators in a multilayered perspective: towards a hermeneutics of sustainbility. The sustainable city, segovia 2002.
4. V. Niccolucci, R. Ridolfi, **A. Facchini**. The emergy analysis of the province of Siena in the SPIn-Eco project, Ecosud 2003.
5. E.B.P Tiezzi, F.M. Pulselli, **A.Facchini**. Determination of Pain intensity in newborns by time series analysis. Design and Nature 2004, WIT Press.
6. **A. Facchini**, C. Mocenni, E. Tiezzi, A. Vicino. Nonlinear time series analysis of ecological data collected in the Lagoon of Orbetello (Italy). Ecosud 2005, WIT Press.
7. **A. Facchini**, S. Ruffo. Low dimensional Features of the Hamiltonian Mean Field model, in *Dynamics and Thermodynamics of Systems with Long-Range interactions: Theory and Experiments*, Volume 970, pp. 109-116.
8. **A. Facchini**, C. Mocenni, A. Vicino. Identification of Bifurcations of Distributed Systems Using Generalized Recurrence Quantification Analysis. 15th IFAC symposium on System identification, Saint-Malo, 2009.
9. **A. Facchini**, A. Lenzini, C. Mocenni, M. Rossi. Reccurrence Quantification Analysis for the classification of Lung sounds, *AIP Proceedings of the International Conference o Numerical and Applied Mathematics*, Rodos, 2010.
10. **A. Facchini**, C. Mocenni. Filling gaps in complex time series by means of twin surrogates, *AIP Proceedings of the International Conference of Numerical and Applied Mathematics*, Rodos, 2010.
11. S. Paoletti, M. Casini, A. Giannitrapani, **A. Facchini**, A. Garulli, A. Vicino. Load forecasting for active distribution networks, IEEE-PES ISGT Europe, 2011.
12. A. Vicino, S. Paoletti, A. Giannitrapani, A. Garulli, M. Casini, **A. Facchini**. Predizione del carico e della generazione distribuita per reti di distribuzione attive, Convegno Nazionale AIET, 2011.
13. **A. Facchini**, A. Rubino. Time recurrence structure of electricity markets: the case of UK, 14th IAEE Energy Conference, Rome, November 29, 2014.

Oral communications

1. **A. Facchini**, M. Rustici, L. Bracchini, C. Rossi, E. Tiezzi, chaotic dynamics of chemico-physical parameters of Montepulciano lake, 10th EuCheMS-DCE International conference on chemistry and the environment, Sept. 2005, Rimini.

2. **A. Facchini**, H. Kantz, N. Marchettini, E. Tiezzi. Curved patterns in recurrence plots, 13th Int. IEEE Workshop on Nonlinear Dynamics of Electronic Systems, Potsdam, 2005.

3. **A. Facchini**, C. Mocenni, N. Marwan, A. Vicino. Recurrence Quantification Analysis of the Dissolved Oxygen time series recorded in a coastal Mediterranean lagoon, Congrès scientifique sur les Environnements Côtiers Vannes, 6-7 septembrer 2006.

4. **A. Facchini**, A. Tomadin, S. Wimberger. Multifractal conductance fluctuations. DPG-Frühjahrstagung 2007, Regensburg.

5. **A. Facchini**, H. Kantz. The origin of curved patterns in Recurrence Plots, Second International Workshop on Recurrence Plots, 2007, Siena.

6. C. Mocenni, **A. Facchini**, A. Vicino. Defining new measures of image complexity using the Generalized Recurrence Quantification Analysis, Second International Workshop on Recurrence Plots, 2007, Siena.

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Autocertificazione

Dichiaro che quanto sopra riportato corrisponde a verità a i sensi delle norme in materia di dichiarazioni sostitutive di cui agli artt. 46 e seguenti del D.P.R. 445/2000.