

IRENE MALVESTIO

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Google Scholar: cloSQ2MAAAAJ

EDUCATION

- PhD with
European Joint
Doctorate in
TIME SERIES
ANALYSIS* Nov 2015–Feb 2019 Department of Information and Communication Technologies, Universitat Pompeu Fabra, Barcelona, Spain ·
Department of Physics, Università degli Studi di Firenze, Florence, Italy
Excellent cum laude
Thesis: *Detection of directional interactions between neurons from spike trains*
Supervisors: Ralph G. ANDRZEJAK, Thomas KREUZ, Roberto LIVI
- Master Degree in
THEORETICAL
PHYSICS* 2014–2015 Università degli Studi di Padova
GPA: 29.5/30.0 · 110/110 *cum laude*
Thesis: *Validation of statistical models of spatial flows*
Supervisors: Prof. Amos MARITAN & Prof. Filippo SIMINI
- Bachelor Degree in
PHYSICS* 2010–2013 Università degli Studi di Padova
GPA: 27.8/30.0 · 107/110
Thesis: *Fragility and Robustness of Complex Networks*
Supervisors: Prof. Amos MARITAN & Dr. Samir SUWEIS

WORK EXPERIENCE

- Post-doc* June 2021–current Department of Management, Economics and Industrial Engineering, Politecnico di Milano ·
Affiliated Scientist at RFF-CMCC EIEE
- High School
teacher* Mar 2021–May 2021 Teacher of Computer Science at Liceo Scientifico G. Bruno, Venezia-Mestre.
- Post-doc* May 2020–Oct 2020 Department of Condensed Matter Physics, University of Barcelona ·
Universitat de Barcelona Institute of Complex Systems (UBICS)
- Post-doc* Sept 2019–Feb 2020 Department of Engineering Mathematics, University of Bristol, UK
- Post-doc* March 2019–Aug 2019 Department of Information and Communication Technologies, Universitat Pompeu Fabra, Barcelona, Spain
- Early Stage
Researcher* Nov 2015–Feb 2019 Universitat Pompeu Fabra, Barcelona, Spain ·
Institute of Complex Systems, Florence, Italy

RESEARCH STAY

- Research visit* Nov 2017–Jan 2018 Hospital del Mar, Barcelona, Spain
- Research visit* Aug 2017 University of Bonn, Germany
- Research visit* Feb–Aug 2015 Bristol University

CONFERENCE ORGANIZATION

Steering
committee of
AMCOS

19-23 Mar 2018 PRBB, Barcelona, Spain

AMCOS (*Analysis and Modeling of Complex Oscillatory Systems*, <http://amcosconference.com>.) was an International Conference with 110+ attendees from 20+ different countries.

PUBLICATIONS

A. Plazas, I. Malvestio, M. Starnini, A. Díaz-Guilera, *Modeling partial lockdowns in multiplex networks using partition strategies*. *Applied network science* 6.1 (2021): 1-15.

I. Malvestio, A. Cardillo, N. Masuda, *Interplay between k -core and community structure in complex networks*. *Sci Rep* 10, 14702 (2020).

M. G. Leguia, C. G. B. Martinez, I. Malvestio, A. Tauste Campo, R. Rocamora, Z. Levnajić, and R. G. Andrzejak, *Inferring directed networks using a rank-based connectivity measure*. *Phys. Rev. E* 99, 012319 (2019).

R. G. Andrzejak, G. Ruzzene, I. Malvestio, K. Schindler, E. Schöll, and A. Zakharova. *Mean field phase synchronization between chimera states*. *Chaos* 28, 091101 (2018).

I. Malvestio, T. Kreuz, and R. G. Andrzejak. *Robustness and versatility of a nonlinear interdependence method for directional coupling detection from spike trains*. *Phys. Rev. E* 96, 022203 (2017)

E. Satuavuori, M. Mulansky, N. Bozanic, I. Malvestio, F. Zeldenrust, K. Lenk, T. Kreuz. *Measures of spike train synchrony for data with multiple time scales*. *Journal of Neuroscience Methods* 287, 25-38 (2017)

R.G. Andrzejak, G. Ruzzene, and I. Malvestio. *Generalized synchronization between chimera states*. *Chaos* 27, 053114 (2017)

BOOK CHAPTER

E. Satuavuori, I. Malvestio, T. Kreuz, *Measures of Spike Train Synchrony and Directionality*. In *Mathematical and Theoretical Neuroscience* (pp. 201-222). Springer, Cham (2017)

CONFERENCE PRESENTATIONS: TALKS

Presenting author:
S. Roman

Dec 2020, *Opinion Dynamics as Associative Diffusion - On the intersection of meaning and models*

Conference on Complex Systems CCS2020, Online conference

A. Keucheniuss, S. Roman, C. Q. Camargo, I. Malvestio, M. Biesaga, L. Hildebrandt, A. Bovet

Talk

Sept 2020, *Interplay between k -core and community structure in networks*
International School and Conference on Network Science, NetSci Rome, online conference

I. Malvestio, A. Cardillo, N. Masuda

Presenting author:
A. Keucheniuss

July 2020, *Bringing Meaning into the Model: Opinion Dynamics as Associative Diffusion*

6th International Conference on Computational Social Science, ic2s2 2020, Online conference

A. Keucheniuss, C. Q. Camargo, A. Bovet, I. Malvestio, L. Hildebrandt, M. Biesaga, S. Roman, A. Shreevastava

Talk

Jan 2020, *k -core requires something more.*

Mini-workshop on Network Science, Suzukakedai Campus, Tokyo

Institute of Technology. Organized by Petter Holme
holme@cns.pi.titech.ac.jp

- Talk *June 2017, Nonlinear interdependence detection from spike trains.*
 XXII National Conference on Statistical Physics and Complex Systems,
 University of Parma.
 I. Malvestio, T. Kreuz, R. G. Andrzejak
- Talk *Dec 2016 Inferring network connectivity: open questions and some answers.*
 2nd COSMOS Workshop, Amsterdam, NL.
 I. Malvestio, M. Grau, E. Satuvuori, G. Cecchini, Rok C.

CONFERENCE PRESENTATIONS: POSTERS

- Poster *July 2019, Interaction between single neurons in different brain regions: influence of sleep.* Second International Summer Institute on Network Physiology (ISINP), Lake Como School of Advanced Studies, Italy.
 I. Malvestio, J. Niediek, F. Mormann, R. G. Andrzejak
- Poster *June 2018, Linear and nonlinear analysis of neuronal connectivity from spike trains.* Research in Encoding And Decoding of Neural Ensembles (AREADNE), Santorini, Greece.
 I. Malvestio, T. Kreuz, F. Mormann, J. Niediek, R. G. Andrzejak
- Poster *May 2018, Detection of interaction between brain regions: influence of sleep.* Barcelona Computational and Systems Neuroscience (BARCCSYN), Barcelona, Spain.
 I. Malvestio, T. Kreuz, F. Mormann, J. Niediek, R. G. Andrzejak
- Poster *March 2018, Detecting connectivity between single neurons.* Analysis and Modeling of Complex Oscillatory Systems (AMCOS), Barcelona, Spain.
 I. Malvestio, T. Kreuz, F. Mormann, J. Niediek, R. G. Andrzejak
- Poster *Nov 2017, Using a non-linear interdependence approach to detect directional coupling from spike trains.* Neuroscience 2017, Washington DC, WA United States.
 I. Malvestio, T. Kreuz, F. Mormann, R. G. Andrzejak
- Poster *July 2017, Versatility of a nonlinear interdependence method for directional coupling detection from spike trains.* 39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Jeju island, South Korea.
 I. Malvestio, T. Kreuz, R. G. Andrzejak
- Poster *Sept 2016, The asymmetric state similarity criterion: a versatile feature to detect directional couplings from signals.* Advances in the collective behaviour of complex systems. University of Potsdam, Potsdam, German.
 P. Laiou, I. Malvestio, R. G. Andrzejak
- Poster *June 2016, Robustness to noise of couplings detection method between spike trains.* BARCCSYN. Barcelona, Spain.
 I. Malvestio, R. G. Andrzejak
- Poster *April 2016, Detecting couplings between spike trains with noise.* International Conference on Biological Oscillations. Lancaster, UK.
 I. Malvestio, R. G. Andrzejak

SCHOOLS AND WORKSHOP

- Feb 2021 Winter Workshop on Complex Systems 2021, Online edition.*
- Jan 2020 Winter Workshop on Complex Systems 2020, Charmey, Switzerland.*
- Jan 2020 NetSci-X 2020 in Tokyo: International school and conference on Network Science.*

Apr - Jun 2019 An Introduction to Wavelets and their Applications, at the Barcelona Graduate school of Mathematics (BGSMath).

2015 - 2018 Participation to many schools and workshops for the European project COSMOS:

<https://www.uni-potsdam.de/cosmos-itn/cosmos-events/>.

The topics covered were, among the other: Synchronization of Oscillators, Nonlinear Dynamics, Theoretical Neuroscience, Statistical Physics, Biological Physics.

OTHER INFORMATION

Computer Skills Python [packages: numpy, pandas, networkx, ...], Matlab, C++, Open PBS Job Scheduler, L^AT_EX, Ubuntu Linux, MS-Office Suite.

Languages ITALIAN · Mother tongue

ENGLISH · Advanced

SPANISH · Advanced

June 4, 2021