

**PERSONAL INFORMATION** Marco Piangerelli, Ph.D.**WORKING POSITIONS**1 February 2018 - Present **Postdoctoral Researcher**

Mathematics Division , School of Sciences and Technologies, University of Camerino

Activity:

Study and development of algorithms for the monitoring and prediction of changes in the psycho-physical state of patients in rehabilitation for spinal injuries.

Research-group leader: Prof. Renato De Leone

1 June 2017- 31 January 2018 **Postdoctoral Researcher**

BioShape and Data Science Lab, Computer Science Division, School of Sciences and Technologies, University of Camerino

Activity:

Study and development of algorithms and methods for the analysis of streaming and / or batch data for prediction, classification and clustering.

Research-group leader: Prof.ssa Emanuela Merelli

**EDUCATION**25 July 2017 **PhD in Computer Science**

QE Q 8

Thesis Title: "A topological classifier for detecting the emergence of anomalous synchronization in brain activity"

School of Sciences and Technologies, Computer Science Division, University of Camerino, Camerino, Italia

21 March 2013 **Master Degree in Biomedical Engineering**

QE Q 7

Thesis Title: "The effects of hypocalcemia on spatial alternans and ventricular fibrillation studied with optical mapping technique"

Alma Mater Studiorum- University di Bologna, Bologna, Italia

24 February 2009 **Bachelor Degree in Biomedical Engineering**

QE Q 6

Thesis Title: "Definizione di un protocollo per lo studio della deformazione delle labbra"

Politecnico di Milano, Milano, Italia

2 July 2003 **Diploma di Istruzione superiore**

QE Q 5

Liceo "G. Leopardi", Recanati, Italia

**EDUCATION (ADDITIONAL CERTIFICATIONS)**July 2018 **PF24**

Training planning, assessment and research - Pedagogy (6 ETCS)

Cognitive, learning and development processes - Psychology (6 ETCS)

Anthropology - Cultural anthropology (6 ETCS)

Teaching methods and technologies - Special Pedagogy And Didactics Of Inclusion (6 ETCS)

## PUBLICATIONS

- A Bayesian approach for monitoring epidemics in presence of undetected cases. De Simone, A. and Piangerelli, M. *Chaos, Solitons and Fractals* 2020, 140, 110167
- Gender-Related Differences in Trimethylamine and Oxidative Blood Biomarkers in Cardiovascular Disease Patients. Bordoni, L.; Fedeli, D.; Piangerelli, M.; Pelikant-Malecka, I.; Radulska, A.; Samulak, J.J.; Sawicka, A.K.; Lewicki, L.; Kalinowski, L.; Olek, R.A.; Gabbianelli, R. *Biomedicines* 2020, 8, 238.
- Visualising 2-simplex formation in metabolic reactions; Piangerelli, M.; Maestri, S.; and Merelli, E. *Journal of Molecular Graphics and Modelling* 2020, 97
- BinarySDG: binary sensor data generation with R Piangerelli, M.; Rocchetti, G; Liscio, A; and A. De Leone, R. *arxiv* 2019
- Machine learning models predicting multidrug resistant urinary tract infections using “DsaaS”. A.; Vito, L.; , Marcelli, E.; Piangerelli, M.; De Leone, R.; Pucciarelli, S.; Merelli, E.; *BMC Bioinformatics* 2020, 21, 347
- Anti-Inflammatory, Anti-Arthritic and Anti-Nociceptive Activities of Nigella sativa Oil in a Rat Model of Arthritis. Nasuti, C.; Fedeli, D.; Bordoni, L.; Piangerelli, M.; Servili, M.; Selvaggini, R.; Gabbianelli, R. *Antioxidants* 2019, 8, 342.
- Shiferaw G., Mamuye A., Piangerelli M. (2019) Stationary Wavelet Transform for Automatic Epileptic Seizure Detection. In: Mekuria F., Nigussie E., Tegegne T. (eds) *Information and Communication Technology for Development for Africa. ICT4DA 2019. Communications in Computer and Information Science, vol 1026. Springer*
- Handbook of Machine Learning (book). Da.Re. Consortium. Free download at <http://dare-project.eu/download/>
- HTR2C gene variant and salivary cortisol levels after endurance physical activity: a pilot study, Bordoni, L.; Fedeli, D.; Piangerelli, M.; Gabbianelli, R., *Lifestyle Genomics*, 2019
- A Persistent Entropy Automaton for the Dow Jones Stock Market. Piangerelli M., Tesei L., Merelli E. In: Hojjat H., Massink M. (eds) *Fundamentals of Software Engineering. FSEN 2019. Lecture Notes in Computer Science, vol 11761. Springer*
- Big data: business, technology, education, and science. Johnson, J.; Tesei, L.; Piangerelli, M.; Merelli, E.; Paci, R.; Stojanovic, N.; ... and Amador, M. *Ubiquity*, 2018(July), 2.
- Topological classifier for detecting the emergence of epileptic seizures. Piangerelli, M.; Rucco, M.; Tesei, L.; Merelli, E. *BMC research notes*, 2018
- A novel neural prosthesis providing long-term electrocorticography recording and cortical stimulation for epilepsy and brain-computer interface. Romanelli, P.; Piangerelli, M.; Ratel, D.; Gaude, C.; Costecalde, T.; Puttilli, C.; Picciafuoco, M.; Benabid, A.; and Torres, N. *JNS*, 2018
- Obesity-related genetic polymorphisms and adiposity indices in a young Italian population. Bordoni, L., Marchegiani, F.; Piangerelli, M.; Napolioni, V.; Gabbianelli, R. *IUBMB Life*, 2017
- Hair Microelement Profile as a Prognostic Tool in Parkinson’s Disease. Ferraro, S.; Nasuti, C.; Piangerelli, M.; Giovannetti, R.; G., Guidi, M.; Ferri, A.; and Gabbianelli, R. *Toxics*, 2016.
- Pyrethroid Pesticide Metabolite in Urine and Microelements in Hair of Children Affected by Autism Spectrum Disorders: A Preliminary Investigation. Domingues, V.F.; Nasuti, C.; Piangerelli, M.; Correia-Sá, L.; Ghezzi, A.; Marini, M.; Abruzzo, P.M.; Visconti, P.; Giustozzi, M.; Rossi, G.; Gabbianelli, R. *Int. J. Environ. Res. Public Health* 2016, 13, 388.
- Metal and Microelement Biomarkers of Neurodegeneration in Early Life Permethrin-Treated Rats. Nasuti, C.; Ferraro, S.; Giovannetti, R.; Piangerelli, M.; Gabbianelli, R. *Toxics* 2016
- A fully integrated wireless system for intracranial direct cortical stimulation, real-time electrocorticography data transmission, and smart cage for wireless battery recharge. Piangerelli, M.; Ciavaro, M.; Paris, A.; and Marchetti, S.; Cristiani, P.; and Puttilli, C.; and Torres, N.; and Benabid, A.L.; and Romanelli, P. *Frontiers in neurology*, 2014
- A topological approach for multivariate time series characterization: the epileptic brain. Merelli, E.; Piangerelli, M.; Rucco, M.; Toller, D. *EAI Endorsed Transaction on Self-Adaptive Systems*, 2016
- Survey of TopDrim applications of Topological Data Analysis. Merelli E.; Rucco, M.; Tesei, L.; Piangerelli, M.; Mamuye, A.; and Quadrini, M. *Proceedings of the 2nd International Workshop on Knowledge Discovery on the WEB, KDWeb*, 2016
- Cyberbrain: a preliminary experience on non-human primate. Piangerelli, M.; Paris, A.; Romanelli P. *Neurotechnix 2014 Proceedings* .
- RNN-based model for self-adaptive system- The emergence of epilepsy in the human brain. Merelli, E.; Piangerelli, M. *NIJCCI 2014 Proceedings*.

## CONFERENCES, WORKSHOPS, SEMINARS AND INTERNATIONAL EXPERIENCES

- July 2019 Workshop on Algorithmic Aspects of Temporal Graphs II - ICALP 2019, Invited Speaker
- May 2019 Topological Data Analysis: from data to knowledge , IMT, Lucca (Italy), Invited Speaker
- May 2019 FSEN 2019 - 8th IPM International Conference on Fundamentals of Software Engineering, IPM, Tehran (Iran), Accepted Speaker
- December 2018 Neurotop 2018 - workshop on Topology and Neuroscience, EPFL , Lausanne (Switzerland)
- September 2018 VI scientific day – Camerino
- September 2016 KDWeb 2016, Cagliari (Italy), Tutorial on Topological data analysis, Invited Speaker
- June 2016 V scientific day – Camerino
- July 2015 TopDrim summer school and Workshop, Camerino (Italy)
- June 2015 INS 12th World Congress, Montreal (Canada), Poster Presentation\Accepted Speaker
- October 2014 Conference NEUROTECHNIX, Rome (Italy), Accepted Speaker
- October 2014 Conference IJCCI-NCTA, Rome (IT), Poster presentation
- September 2014 European Conference on Complex Systems (ECCS), Lucca (Italy), Accepted Speaker
- June 2014 IV scientific day – Camerino
- June 2014 Conference CS2BIO, Berlin (Germany)
- March 2014 Bertinoro International Spring School (BISS), Bertinoro (Italy),
- August 2012 NBCR Summer School at UCSD, San Diego, California, USA.
- March 2012 - August 2012 International student at Biomedical Sciences department at Cornell University, Ithaca, NY, USA. Project about the effect of hypocalcaemia on cardiac dynamic (advisors: Prof. Robert Gilmour and Dr. Flavio Fenton).

## PROJECTS

- 1 February 2018 – Present Tailored Rehabilitation for the Engagement and Empowerment of chronically disabled people (T.R.E.E.), Fondo europeo di sviluppo regionale (FESR)
- 1 June 2017– 30 August 2019 Data science Pathways for Reimagine Education (Da.Re.), EU Erasmus+ (www.dare-project.eu)
- 2017 – Present Doctoral Candidates Research Grant (DRG) “Nutrigenomics role of bioactive compounds extracted from legumes: new insights on lignans”
- 2015 – 2017 Fondo di Ateneo per la Ricerca (FAR) “Materials and Technologies for improving the use of Renewable Energy in the Districts of smart city (MATREND).”
- 2015 Topology Driven Methods for Complex Systems (TOPDRIM) Project, FET-FP7

## RESEARCH COLLABORATIONS

Prof. Andrea Danani, SUPSI, Lugano (CHE)

Prof. Jeff Johnson, The Open University, Milton Keynes (UK)

Prof. Flavio Fenton, Georgia Institute of Technology, Atlanta (USA)

Dr. Adane Mamuye University of Gondar, Gondar (ETH)

Prof. Sayed Mohammad Sadegh Movahed, Shahid Beheshti University, Tehran (IRN)

Dr. Michele Bellesi, University of Bristol, Bristol (UK)

Prof.ssa Emanuela Merelli, University of Camerino, Camerino (ITA)

Prof. Renato De Leone, University of Camerino, Camerino (ITA)

Dr. Tiziano Squartini, IMT, Lucca (ITA)

Prof.ssa Rosita Gabbianelli, University of Camerino, Camerino (ITA)

Loccioni Group, Angeli di Rosora (ITA)

**PROGRAMME COMMITTEE MEMBER**

- 2019 ATDA2019 - International Workshop on Applications of Topological Data Analysis, Würzburg (GER), 16-20 September 2019
- 2018 WOA 2018 - 19th Workshop From Objects to Agents, Palermo (ITA), 28-29 June 2018

**REFEREE FOR**

*EPJ Data Science, IEEE Transaction on Information Theory, Chaos, Solitons and Fractals, IEEE, Transactions on knowledge and data engineering, Computers in Biology and Medicine, Iranian Journal of Science and Technology-Transactions of Electrical Engineering, Entropy* (Reviewer Board Member)

**TEACHINGS**

- 2020 – Present **Cultore della Materia**  
Methods and Technology for Mathematical Education (6 ETCS) - MAT/02, Master Degree of Science Education, Università di Macerata
- 2018 – Present **Professor**  
Machine Learning (3 ETCS), Master Degree in Computer Science, Università di Camerino
- 2018 – Present **Professor**  
Machine Learning (2 ETCS), Ph.D Degree in Physics, Università di Camerino
- 2016 – Present **Assistant**  
Distributed Calculus and Coordination (6 ETCS), Master Degree in Computer Science, Università di Camerino
- 2017 – 2018 **Professor**  
Algoritmi e strutture Dati- Lab (6 ETCS), Bachelor Degree in Informatica, Università di Camerino
- 2014 – 2015 **Professor**  
Distributed Calculus and Coordination (DCC) (3 ETCS), Master Degree in Computer Science, Università di Camerino
- 2014 – 2015 **Tutor**  
Reti Logiche, Laurea Triennale in Informatica, Università di Camerino

**SUPERVISOR / CO-SUPERVISOR****PhD**

- 2020 Leonardo Vito (on going)

**Bachelor Degree**

- 2018-2019 Alberto Pompei - Title: studio comparativo di modelli di Deep Learning
- 2018-2019 Maria Curcio - Title: Algoritmi di ricerca informata - Applicazione nel Gioco del 15 di A\* in Lua
- 2018-2019 Giacomo Rocchetti - Title: Monitoraggio di anomalie comportamentali nei pazienti in fase di riabilitazione da traumi spinali
- 2018-2019 Alessandro Liscio - Title: Monitoraggio di anomalie comportamentali nei pazienti in fase di riabilitazione da traumi spinali

- 2018-2019 Luca Pretini - Title: Analisi di sequenze e Pattern recognition: il caso della ritenzione degli introni nello splicing dell'RNA
- 2018-2019 Giovanni Santinelli - Title: Analisi di sequenze e Pattern recognition: il caso della ritenzione degli introni nello splicing dell'RNA
- 2018-2019 Manuel Cretone - Title: CNN per la rilevazione di crisi epilettiche da dati sintetici
- 2018-2019 Emilio Silvestri - Title: CNN per la rilevazione di crisi epilettiche da dati sintetici
- 2017-2018 Michael Vasquez Otazu - Title: CHoleR - Holes Researcher (C++ Tool for the Analysis of Persistent Homology on Undirected Weighted Graphs)
- 2017-2018 Simone Morettini - Title: Reti HTM per il riconoscimento di Pattern
- 2017-2018 Silvio Colaci - Title: MotionHunt -A motion detection system
- 2017-2018 Matteo Imperato- Title: MotionHunt - A motion detection system

## MENTORING

### Curricular Group Project

- 2018-2019 Emilio Silvestri - Manuel Cretone, title: Rete neurale per analisi di segnali unidimensionali
- 2018-2019 Matteo Belenchia - Sebastiano Verdolini, title: Pipeline automatizzata per analisi topologica
- 2018-2019 Alessandro Liscio - Giacomo Rocchetti, title: Stay Healthy
- 2017-2018 Simone Morettini - Alessandra Renieri, title: Studio delle CNNs per la predizione di crisi epilettiche (seizures)
- 2017-2018 Matteo Imperato- Silvio Colaci, title: Monitoraggio del sonno attraverso il rilevamento del movimento nei roditori

## PERSONAL SKILLS

Mother tongue Italiano

Other languages	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
Inglese	B2	B2	B2	B2	B2
IELTS B2					

Levels: A1 and A2: Basic user – B1 and B2: Independent user – C1 and C2: Proficient user  
[Common European Framework of Reference for Languages](#)

## Digital competences

SELF-ASSESSMENT				
Information Processing	Communication	Content creation	Safety	Problem solving
Proficient user	Proficient user	Proficient user	Proficient user	Proficient user

[Digital competences - Self-assessment grid](#)

Technical Skills

- R (very good)
- Python (very good)
- MATLAB (very good)
- C \C++ (good)
- Latex
- Expert user / Developer of CHOLER (Software for topological data analysis)
- Java (basic)
- Office (No ACCESS)

Driving licence B

## SCHOLARSHIPS AND AWARDS

January 2017 Fondi DRG - School of advanced Studies, Università di Camerino

June 2014 4th Scientific Day della Scuola di Scienze e Tecnologie, BEST POSTER in Computer Science  
August 2012 Scholarship University of California - San Diego (UCSD): Poster presentation :“Effects of hypocalcemia on spatial alternans and ventricular fibrillation.” NBCR summer school.

**OTHER INTEREST**

- History
- Philosophy (of Science)
- Science outreach
- Music
- Sports (Football, Skiing, Jogging, and Water Sports)