



# Andrea Marinoni

---

|  
|  
born 22.04.1983 (35 years old), Pavia (Italy) |  
IEEE Senior Member  
[https://www.researchgate.net/profile/Andrea\\_Marinoni](https://www.researchgate.net/profile/Andrea_Marinoni)

## Profile

I am a Data Scientist with strong skills on Information Theory and Machine Learning techniques applied to satellite remote sensing, environment, health, and sustainable development.

**Current position:** TENURE TRACK ASSOCIATE PROFESSOR at UIT – THE ARCTIC UNIVERSITY OF NORWAY, TROMSØ, NORWAY.

## Education

### PHD IN ELECTRONICS | 2011 | UNIVERSITY OF PAVIA, ITALY

- Thesis Title: “Design and decoding techniques of q-ary codes”
- Supervisor: Prof. Eugenio Costamagna
- Skills covered:
  - Development of non-binary codes construction and decoding techniques in several environments, from wireless channels affected by fading to hard disk drives.
  - Characterization and modelling of transmission channels;
  - Information theory-based design of read-write channels for storage devices;
  - Convex optimization of complex systems;
  - Efficient design of communication systems in environments affected by inter-symbol interference;
  - Iterative decoding techniques and graph theory;
  - Molecular information theory and digital signal processing applied to biomedical signals
  - Participation at several international and national PhD Courses and Schools

### MASTER DEGREE IN ELECTRONIC ENGINEERING | 2007 | UNIVERSITY OF PAVIA, ITALY

- Thesis Title: “Ottimizzazione di un decodificatore LDPC non binario per canali di lettura magnetici”
- Advisor: Prof. Pietro Savazzi; Co-advisor: Prof. Eugenio Costamagna
- Score: 110/110 cum laude
- Skills covered: Information theory, digital communications, spread spectrum and multiple access techniques, coding theory, telecommunications modelling, statistics applied to electronic circuits and systems, digital signal processing, electromagnetic remote sensing techniques, RF microelectronics, antennas, quantum mechanics, optical communications

### BACHELOR DEGREE IN ELECTRONIC AND TELECOMMUNICATION ENGINEERING | 2005 | UNIVERSITY OF PAVIA, ITALY

- Thesis title: “Codifica di canale basata su attrattori caotici continui”
- Advisor: Prof. Eugenio Costamagna; Co-advisor: Prof. Pietro Savazzi
- Score: 110/110
- Skills covered: Electronics, electrics, signal theory, electrical communications, telecommunications networks, information transmission, electronics for telecommunications, electromagnetic fields, propagation and radiocommunications, elements of remote sensing, elements of microwaves, mathematical methods, logical networks.

## **CURRENT RESEARCH ACTIVITY**

- Efficient nonlinear signal processing applied to multimodal remote sensing
- Information theory-based methods for pattern recognition over large-scale heterogeneous datasets
- Big Data mining, analysis and management for human-environment interaction assessment
- Non-convex optimization for complex systems
- Environmental monitoring by Earth Observations analysis

## **Work Experience**

### **TENURE TRACK ASSOCIATE PROFESSOR | AUGUST 2018 - ONWARDS | UIT – THE ARCTIC UNIVERSITY OF NORWAY, TROMSØ, NORWAY**

- Multimodal analysis for large-scale heterogeneous remote sensing dataset investigation:
  - Development of methods for efficient Information extraction
  - Characterization of water environment for emergency response and sustainable development
  - Sea ice mapping and feature extraction
  - Machine learning and deep learning techniques for scalable computing
  - Analysis of large scale time series for long term evolution analysis in the Arctic area

### **POST DOCTORAL RESEARCH FELLOW | MARCH 2013 – AUGUST 2018 | UNIVERSITY OF PAVIA, ITALY**

- Information theory-based techniques for remote sensing and biomedical informatics:
  - Development and implementation of nonlinear hyperspectral unmixing methods;
  - Physical-chemical composition assessment by means of remotely sensed data;
  - Big Data frameworks for human-environment interaction assessment;
  - Non-convex optimization algorithms for ill-posed problems;
  - High rate lossless compression of hyperspectral images based on information theory.
- Supervisors: prof. Paolo Gamba (Univ. Of Pavia), prof. Riccardo Bellazzi (Univ. of Pavia)

### **SHORT VISITING RESEARCHER | APRIL 2016 | FUDAN UNIVERSITY, SHANGHAI, P.R.C**

- Big Data analysis on remote sensing and transportation data for efficient polycenter activity assessment
- Hosting Institution: Fudan University, School of Computer Science – Shanghai Key Laboratory of Data Science, Key Laboratory for Information Science of Electromagnetic Waves (MoE) – Head: prof. Mingmin Chi

### **VISITING RESEARCHER | MARCH - APRIL 2016 | SUN YAT-SEN UNIVERSITY, GUANGZHOU, P.R.C**

- Hypergeometric analysis for urban remote sensing
- Hosting Institution: Sun Yat-Sen University, School of Geography and Planning, Dept. of Remote Sensing and Geographical, Information Engineering - Head: prof. Jun Li

### **SHORT VISITING RESEARCHER | NOVEMBER 2015 | BEN GURION UNIVERSITY OF THE NEGEV – BE'ER SHEVA, ISRAEL**

- Use of hyperspectral and SAR data for emergency response in Mediterranean
- Hosting Institution: Ben Gurion University of the Negev, Dept. of Geography and Environmental Development, Earth and Planetary Image Facility – Head: Prof. D. Blumberg

### **RESEARCH FELLOW | NOVEMBER 2010 – MARCH 2013 | UNIVERSITY OF PAVIA, ITALY**

- Analysis, design and optimization of 10+ Gbps transceivers over dispersive medium:
  - Analysis of system architectures defined by international standards (IEEE 802.3: 1000BASE-T, 10GBASE-T, 100GBASE-KR);
  - Study, design and implementation of efficient DSP algorithms;

- Development of models and simulation environments for transmission chains derived from international standards, technical directives and proceedings of standard study groups;
- Optimization of the system to improve the efficiency in terms of power consumption, error-rate performance, area occupation and overall complexity;
- Definition of technical specifications for the transmission systems, merging up the constraints imposed by analog and digital IC design;
- Optimization-oriented design of architectures for new and unreleased standards.
- Supervisors: prof. Paolo Gamba (Univ. Of Pavia), Stefano Valle (STMicroelectronics)

#### **VISITING RESEARCHER | FEB. – AUG. 2009 | UNIVERSITY OF CALIFORNIA – LOS ANGELES (UCLA), USA**

- Research and development of capacity approaching codes: construction and decoding techniques
- Hosting Institution: University of California – Los Angeles, Electrical Engineering Department, Communication System Lab. – Supervisor Prof. R. Wesel, Los Angeles, CA, USA 90095-1594

#### **EXTERNAL COLLABORATOR | DECEMBER 2008 - FEBRUARY 2009 | UNIVERSITY OF PAVIA, ITALY**

- Estimation of applicability of adaptive LDPC codes to video sequences transmission in time-varying radio communications

### **Invited Talks and Papers**

#### **DECEMBER 2018**

- Key-note speaker at 3<sup>rd</sup> Digital Belt and Road Conference (DBAR18), Tengchong, P.R. China, on “Integrated remote sensing for sustainable development in the polar region”

#### **JULY 2018**

- Invited paper at special session “Urban challenges and remotely sensed information capacities”: IEEE International Geoscience and Remote Sensing Symposium (IGARSS) 2018, Valencia, Spain
- Invited paper at special session “Big Earth Data for global scale applications”: IEEE International Geoscience and Remote Sensing Symposium (IGARSS) 2018, Valencia, Spain

#### **DECEMBER 2015**

- Invited paper: SAGE JOURNAL OF DIABETES SCIENCE AND TECHNOLOGY, vol 10, nr 1

#### **OCTOBER 2015**

- Invited speaker: Astroinformatics 2016, Dubrovnik, Croatia

#### **JULY 2015**

- Invited paper at special session “Big Data methodologies in remote sensing and astronomy”: IEEE International Geoscience and Remote Sensing Symposium (IGARSS) 2015, Milan, Italy

#### **MAY 2014**

- Invited speaker at Workshop on New challenges on astro- and environmental informatics in the Big Data era: Gothard Observatory, Eötvös University, Szombathely, Hungary

#### **DECEMBER 2010**

- Invited paper at Workshop on Application of Communication Theory to Emerging Memory Technologies: IEEE Globecom 2010, Miami, FL, USA

### **Participation to International Research Projects**

- EU H2020 EXTREMEEARTH project (“From Copernicus Big Data to Extreme Earth Analytics”)
- FramCentre Flagship 2018 ALSIM project (Automised Large-scale Sea Ice Mapping”)
- EU H2020 EOXPUSURE project (“Tools for mapping human exposure to risky environmental conditions by means of ground and earth observation data”)
- EU H2020 PULSE project (“Participatory urban living for sustainable environments”)
- EU FP7 MARSite project (“New Directions in Seismic Hazard assessment through Focused Earth Observation in the Marmara Supersite”)
- EU COST action BIG-SKY-EARTH (“Big Data Era in Sky and Earth Observation”)

- USHIER project (Utilizing SAR and Hyperspectral Integrated data for Emergency Response in the Mediterranean) sponsored by Agenzia Spaziale Italiana (ASI) under Italy-Israel cooperation program
- MoonMapping project (“Mapping the Moon surface for an extraterrestrial atlas”) sponsored by Agenzia Spaziale Italiana (ASI) and Chinese Center for Space Exploration (COSE)

## Participation to International Collaboration

- Coordination and participation to International collaboration with University of Zurich, Zurich, Switzerland for research projects about:
  - design and development of modern data processing architectures for mining and understanding large scale heterogeneous databases with different spatial- and time-granularity;
  - design and development of a new framework based on topic models and local affinity recognition for mapping of air pollution evolution in Europe.
- Coordination and participation to International collaboration with Paul Scherrer Institute, Zurich, Switzerland for research projects about:
  - Spectral analysis of cryoconite composition from samples collected on the Italian Alps;
  - Development of nonlinear methods for ultraspectral unmixing for glaciology and cryosphere characterization.
- Coordination and participation to International collaboration with CONAE (Argentinian Space Agency), Cordoba, Argentina for research projects about:
  - design and development of data processing suits for advanced characterization of epidemiological processes in the Cordoba area;
  - design and development of a new framework based on data collected from Earth observations, environmental records, epidemiological patterns and oviposition probes of Aedes Aegypti mosquitoes for accurate understanding of the impact of humidity and temperature on the sprawl and disease evolution, with special focus on Dengue fever.
- Coordination and participation to International collaboration with EPFL, Lausanne, Switzerland for research projects about:
  - design and development of nonlinear hyperspectral unmixing methods for detection of mafic minerals;
  - design and development of a new framework for identification of mafic minerals over extraterrestrial bodies (Mars, Moon) by means of higher order multivariate inversion.
- Coordination and participation to International collaboration with Sun Yat-Sen University, Guangzhou, P.R.C. for research projects about:
  - design and development of methods for nonlinear hyperspectral unmixing based on nonlinear optimization techniques;
  - design and development of a new framework for hypergeometric analysis and pattern recognition on remotely sensed records.
- Coordination and participation to International collaboration with Fudan University, Shanghai, P.R.C. for research projects about:
  - design and development of processing chain for active learning-based classification of hyperspectral images;
  - design and development of a new framework for polycenter activity in urban areas by means of remote sensing, environmental and transportation data.
- Coordination and participation to International collaboration with Ben Gurion University of Negev, Be’er Sheva, Israel for research projects about:
  - design and development of methods processing chain for rapid mapping using COSMO/Skymed spotlight SAR data;
  - design and development a new unmixing technique that may be used to extract information about built-up area extent and materials.
  - design and development of an architecture to check for changes in the road network and possibly detecting road blockage
- Coordination and participation to International collaboration with University of Extremadura, Caceres, Spain for research projects about:

- hyperspectral unmixing by means of polytope decomposition and artificial neural networks;
  - estimation of nonlinearity order in hyperspectral images;
  - nonlinearity a priori detection in hyperspectral unmixing frameworks.
- Coordination and participation to International collaboration with Applied Physics Lab., Johns Hopkins Univ., Laurel, MD for research projects about:
  - characterization of dark spectra in Mercury surface observations;
  - analysis of data from NASA MESSENGER mission;
  - development of nonlinear unmixing methods for Mercury surface data description enhancement;
  - understanding and quantifying physical-chemical composition of Mercury surface.
- Coordination and participation to International collaboration with University of California, Los Angeles (UCLA) for research projects about:
  - Coding theory;
  - Analysis and design of capacity approaching codes;
  - Optimization of q-ary codes, focusing on LDPC codes;
  - Spectrally efficient communications;
  - Turbo equalization applied to capacity approaching codes;
  - Iterative algorithms for detection and decoding;
  - Graph theory.
- Coordination and participation to collaboration with STMicroelectronics Italia for research projects about:
  - Coding theory;
  - Analysis and design of capacity approaching codes;
  - Optimization of q-ary codes, focusing on LDPC codes;
  - Application of q-ary codes to data storage systems;
  - Characterization and modeling of magnetic recording channels;
  - Turbo equalization applied to capacity approaching codes;
  - Soft detection by Forward-backward algorithms;
  - Iterative algorithms for detection and decoding and Graph theory;
  - Analysis of system architectures defined by international standards (IEEE 802.3an: 1000BASE-T, 10GBASE-T, 100GBASE-KR).

## Technical Scientific Committees

**JUNE 2017 | FLORENCE, ITALY**

Intl. Workshop on Content-Based Multimedia Indexing (CBMI17)

**SEPTEMBER 2016 | UNIVERSITY OF PAVIA, ITALY**

Summer School on “Big Data in Precision Medicine”

**APRIL 2016 | DLR OBERPFAFFENHOFEN, GERMANY**

Bigskyearth training school “Methodologies for large-scale analytics in Earth Observation and Astronomy”

**JULY 2014 | UNIVERSITY OF PAVIA, ITALY**

Big Data Day

## Publications

- Author of 28 Journal Papers
- Author of 32 Conference papers
- Author of 1 Book chapter
- Scopus H-Index: 8

## Scientific paper reviewer

- IEEE Transactions on Image Processing
- Elsevier Pattern Recognition

- Elsevier Pattern Recognition Letters
- Elsevier Journal of Biomedical Informatics
- SPIE Journal on Applied Remote Sensing
- IEEE Wireless Communication Letters
- IEEE Transactions on Communications
- IEEE Communication Letters
- IEEE Transactions on Geoscience and Remote Sensing
- IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing
- IEEE Geoscience and Remote Sensing Letters
- IEEE International Symposium on Information Theory (ISIT) 2015
- IEEE Wireless Communication and Networking Conference (WCNC) 2011
- IEEE Global Communication Conference (GLOBECOM) 2010
- IEEE International Symposium on Personal, Indoor and Mobile Radio Communication (PIMRC) 2009
- IEEE Information Theory Workshop (ITW) 2009
- GTTI annual meeting 2008

## Teaching

**2018 - ONWARD | UIT - THE ARCTIC UNIVERSITY OF NORWAY, TROMSØ, NORWAY**

Teaching “Environmental monitoring from satellite” – UiT the Arctic University of Norway

**2009 - 2018 | UNIVERSITY OF PAVIA, ITALY**

- Teaching assistant of “Digital signal processing” course - Univ. of Pavia, Italy
- Collaboration and support to didactic activity of “Digital signal processing” course: seminars, exams assistance, practice and laboratory projects development

**2005-2011 | UNIVERSITY OF PAVIA, ITALY**

- Tutor – Project n°2: Electronics, Univ. of Pavia, Italy.
- Collaboration and support to didactic activity of “Electronics” course: exams assistance, practice and laboratory projects development

**OCTOBER 2004 – OCTOBER 2005 | UNIVERSITY OF PAVIA, ITALY**

- Tutor – Project n°4: Computer Science, Univ. of Pavia, Italy.
- Collaboration and support to didactic activity of “Principles of Computer Science” and “Principles of Computer Science - Lab.” courses: exams assistance, practice and laboratory projects development

## Honors and Awards

- 2019: Winner of Åsgard research programme, funded by Institut Français de Norvège, Oslo, Norway, to foster collaboration in joint research projects between Norwegian and French research center
- 2018: Winner of “Progetto professionalità Ivano Becchi” grant funded by Fondazione Banco del Monte di Lombardia, Italy, and sponsored by the University of Pavia and NASA Jet Propulsion Laboratory, Pasadena, CA, USA, for supporting the development of advanced methods of air pollution analysis by remote sensing data investigation
- 2017: Winner of INROAD grant, sponsored by Univ. of Pavia and Fondazione CARIPOLO, Italy, for supporting excellence in design of EU ERC proposal
- 2010: Winner of “Dote Ricercatore” Post Doctoral Fellowship - Univ. of Pavia, Italy, STMicroelectronics and the Region of Lombardy (24 months - 50.000 €)
- 2010: Award for the best poster - Annual Meeting of Young Researchers in Physiology 2010
- 2009: “Premio Francesco Carassa 2009” award for the best paper from a young scientist in Transmission session - GTTI (Gruppo di Telecomunicazioni e Teoria dell’Informazione)

## Memberships

- IEEE (Student Member: 2007 – Member: 2011 – Senior Member: 2016)
- ISUH – International Society on Urban Health (2017)
- GTTI (Member: 2007)
- Founder and chair of IEEE GRSS Norway chapter (2019-onwards)

## **Skills and competences**

### **TECHNICAL SKILLS**

- Strong expertise on remote sensing images' processing and analysis
- Advanced knowledge of Data Mining, Machine Learning and Deep Learning algorithms and techniques
- Strong expertise on Information Theory
- Good organizational skills developed in a variety of deadline orientated situations

### **COMPUTER SCIENCE SKILLS**

- OS: Windows, Linux
- Languages: C, C++, Java.
- Matlab and Matlab's Simulink environment
- Knowledge of software ENVI for remote sensing images' processing .

### **TEAM WORK SKILLS**

- Strong skills in working in international teams and in different professional fields.
- Strong skills in coordinating people in a working team

## **Languages**

- Italian: mother tongue
- English: Proficient user for understanding, writing and reading
- Chinese: Basic user for understanding, writing and reading
- French: Basic user for understanding, writing and reading

## Andrea Marinoni - Publications

### Scientific Publications Journal Papers

#### Summary

5 publications on IEEE Trans. On Geoscience and Remote Sensing  
8 publications on IEEE Journal of Selected Topics in Applied Earth Observations And Remote Sensing  
2 publications on IEEE Geoscience and Remote Sensing Letters  
1 publication on IEEE Trans. On Computational Imaging  
1 publication on IEEE Journal of Selected Topics in Signal Processing  
1 publication on ISPRS archives  
2 publications on Remote Sensing  
3 publications on SPIE Journal of Applied Remote Sensing  
1 publication on Journal Of Diabetes Science And Technology (invited)  
1 publication on Elsevier Journal of Biomedical Informatics  
1 publication on Studies In Health Technology And Informatics  
1 publication on EURASIP Journal on Wireless Communications and Networking  
1 publication on IET Image Processing

#### List

1. **A. Marinoni**, P. Gamba, "Improving reliability in nonlinear hyperspectral unmixing by multidimensional structural optimization," IEEE Trans. on Geoscience and Remote Sensing, 2019
2. S. Xu, J. Li, M. Khodadadzadeh, **A. Marinoni**, P. Gamba, B. Li, "Abundance- Indicated subspace for hyperspectral classification with limited training samples," IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, 2019
3. Y. Su, J. Li, A. Plaza, **A. Marinoni**, P. Gamba, S. Chakravortty, "DAEN: Deep autoencoder networks for hyperspectral unmixing," IEEE Trans. on Geoscience and Remote Sensing, 2019
4. W. Luo, L. Gao, R. Zhang, **A. Marinoni**, B. Zhang, "Bilinear normal mixing model for spectral unmixing," IET Image Processing, 13(2): 344-354, 2019
5. **A. Marinoni**, J. Plaza, A. Plaza, P. Gamba, "Estimating nonlinearities in p-linear hyperspectral mixtures," IEEE Transactions on Geoscience and Remote Sensing, 56(11): 6586-6595, 2018
6. M. Tang, B. Zhang, **A. Marinoni**, L. Gao, P. Gamba, "Multiharmonic Postnonlinear Mixing Model for Hyperspectral Nonlinear Unmixing," IEEE Geoscience and Remote Sensing Letters, 15(11): 1765-1769, 2018
7. Y. Su, **A. Marinoni**, J. Li, J. Plaza, P. Gamba, "Stacked nonnegative sparse autoencoders for robust hyperspectral unmixing," IEEE Geoscience and Remote Sensing Letters, 15(9): 1427-1431, 2018
8. J. Ma, W. Zhang, **A. Marinoni**, L. Gao, B. Zhang, "An improved spatial and temporal reflectance unmixing model to synthesize time series of landsat-like images," Remote Sensing, 10(9), 1388, 2018
9. X. Pan, L. Gao, **A. Marinoni**, B. Zhang, F. Yang, P. Gamba, "Semantic Labeling of High Resolution Aerial Imagery and LiDAR Data with Fine Segmentation Network," Remote Sensing, 10(5), 743, 2018
10. M. Tang, L. Gao, **A. Marinoni**, P. Gamba, B. Zhang, "Integrating Spatial Information in the Normalized P-Linear Algorithm for Nonlinear Hyperspectral Unmixing," IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, 11(4):1179-1190, 2018
11. J. Ma, W. Zhang, **A. Marinoni**, L. Gao, B. Zhang, "Performance assessment of ESTARFM with different similar-pixel identification schemes," SPIE Journal Of Applied Remote Sensing, 12(2):025017, 2018
12. **A. Marinoni**, G.C. Iannelli, P. Gamba, "An information theory-based scheme for efficient classification of remote sensing data", IEEE Trans. On Geoscience and Remote Sensing, 55(10): 5864-5876, 2017
13. **A. Marinoni**, H. Clenet, "Higher order nonlinear hyperspectral unmixing for mineralogical analysis over extraterrestrial bodies", IEEE Journal Of Selected Topics In Applied Earth Observations And Remote Sensing, 10(8):3722-3733, 2017



14. **A. Marinoni**, A. Plaza, P. Gamba, "A novel pre-unmixing framework for efficient detection of linear mixtures in hyperspectral images," *IEEE Trans. On Geoscience and Remote Sensing*, 55(8):4325-4333, 2017
15. **A. Marinoni**, P. Gamba, "Unsupervised data driven feature extraction by means of mutual information maximization," *IEEE Trans. On Computational Imaging*, 3(2):243-253, 2017
16. **A. Marinoni**, P. Gamba, "Efficient detection of anomaly patterns through global search in remotely sensed big data," *SPIE Journal of Applied Remote Sensing*, 10(4),045012, Oct. 2016
17. W. Luo, L. Gao, A. Plaza, **A. Marinoni**, B. Yang, L. Zhong, P. Gamba, B. Zhang "A New Algorithm for Bilinear Spectral Unmixing of Hyperspectral Images Using Particle Swarm Optimization", *IEEE Journal Of Selected Topics In Applied Earth Observations And Remote Sensing*, 9(12):5776-5790, Sept. 2016
18. **A. Marinoni**, P. Gamba, "Seizing on sparsity in nonlinear hyperspectral unmixing for enhanced image compression", *SPIE Journal Of Applied Remote Sensing*, 10(4),042007, Aug. 2016
19. S. Havivi, I. Schvartzman, S. Maman, **A. Marinoni**, P. Gamba, S. R. Rotman, D. G. Blumberg, "Utilizing SAR and multispectral integrated data for emergency response", *ISPRS-archives*, 41:493-496, June 2016
20. **A. Marinoni**, A. Plaza, P. Gamba, "Harmonic Mixture Modeling for Efficient Nonlinear Hyperspectral Unmixing", *IEEE Journal Of Selected Topics In Applied Earth Observations And Remote Sensing*, 9(9):4247-4256, Jan. 2016
21. **A. Marinoni**, P. Gamba, "Accurate Detection of Anthropogenic Settlements in Hyperspectral Images by Higher Order Nonlinear Unmixing", *IEEE Journal Of Selected Topics In Applied Earth Observations And Remote Sensing*, Dec. 2015
22. A. Dagliati, **A. Marinoni**, C. Cerra, P. Decata, L. Chiovato, P. Gamba, R. Bellazzi, "Integration of Administrative, Clinical, and Environmental Data to Support the Management of Type 2 Diabetes Mellitus: From Satellites to Clinical Care", *Journal Of Diabetes Science And Technology* 10(1):19-26, Dec. 2015 (invited paper)
23. **A. Marinoni**, P. Gamba, "An Efficient Approach for Local Affinity Pattern Detection in Remotely Sensed Big Data," *IEEE Journal Of Selected Topics In Applied Earth Observations And Remote Sensing* 8(10):1-12, Oct. 2015
24. **A. Marinoni**, P. Gamba, "A Novel Approach For Efficient p-Linear Hyperspectral Unmixing," *IEEE Journal Of Selected Topics In Signal Processing* 9(6):1-11, Sept. 2015
25. A. Dagliati, **A. Marinoni**, C. Cerra, P. Gamba, R. Bellazzi, "On The Correlation Between Geo-Referenced Clinical Data And Remotely Sensed Air Pollution Maps", *Studies In Health Technology And Informatics* 216:1048, Aug. 2015
26. **A. Marinoni**, J. Plaza, A. Plaza, P. Gamba: "Nonlinear Hyperspectral Unmixing Using Nonlinearity Order Estimation and Polytope Decomposition", *IEEE Journal Of Selected Topics In Applied Earth Observations And Remote Sensing*, 8(6):1-11, June 2015
27. **A. Marinoni**, E. Rizzo, I. Limongelli, P. Gamba, R. Bellazzi: "A kinetic model-based algorithm to classify NGS short reads by their allele origin", *Elsevier Journal on Biomedical Informatics*, vol 53, Oct. 2014
28. **A. Marinoni**, P. Savazzi, P. Gamba: Efficient detection-and-decoding for q-ary LDPC coded signals over Partial Response channels", *EURASIP Journal on Wireless Communications and Networking*, 2013:18

## Scientific Publications Conferences

### Summary

- 6 publications on IEEE International Geoscience and Remote Sensing Symposium proceedings (1 invited)
- 1 publication on EARSeL SIG Imaging Spectroscopy Workshop proceedings
- 1 publication on Elsevier Intl, Conf. on Urban Health proceedings
- 6 publications on IEEE Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing proceedings
- 2 publications on ESA Big Data from Space Conference proceedings
- 1 publication on Astroinformatics proceedings (invited)
- 1 publication on Joint Urban Remote Sensing Event proceedings
- 1 publication on Workshop on New challenges on astro- and environmental informatics in the Big Data era proceedings (invited)

1 publication on IEEE International Conference on Environmental Engineering proceedings  
 1 publication on IEEE International Conference on Healthcare Informatics proceedings  
 2 publications on IEEE Global Communications Conference proceedings (1 invited)  
 1 publication on IEEE International symposium on applied sciences in biomedical and communication technologies proceedings  
 2 publications on International Symposium on Turbo Codes and iterative information processing proceedings  
 1 publication on Annual Meeting of Young Researchers in Physiology proceedings  
 1 publication on IEEE International Conference on Communications proceedings  
 4 publications on GTTI Annual meeting proceedings

## List

29. Y. Zhao, B. Huang, **A. Marinoni**, P. Gamba, "High spatiotemporal resolution PM2.5 concentration estimation with satellite and ground observations: A case study in New York City," IEEE International Conference on Environmental Engineering (EE 2018), Milan, Italy
30. **A. Marinoni**, P. Gamba (2017) "Daily monitoring of air quality by remotely sensed data for enhanced exposure assessment," Elsevier Intl Conc. On Urban Health 2017 (ICUH 2017), Coimbra, Portugal.
31. **A. Marinoni**, P. Gamba (2017) "On the direct assessment of endmember fractions in hyperspectral images," IEEE International Geoscience and Remote Sensing Symposium 2017 (IGARSS 2017), Dallas, TX, USA
32. M. Tang, L. Gao, **A. Marinoni**, B. Zhang (2017) "Nonlinear hyperspectral unmixing based on normalized p-linear algorithm," IEEE International Geoscience and Remote Sensing Symposium 2017 (IGARSS 2017), Dallas, TX, USA
33. Y. Su, J. Li, **A. Marinoni**, A. Plaza, P. Gamba (2017) "Nonnegative sparse autoencoder for robust endmember extraction from remotely sensed hyperspectral images," IEEE International Geoscience and Remote Sensing Symposium 2017 (IGARSS 2017), Dallas, TX, USA
34. **A. Marinoni**, P. Gamba (2017) "Mineral mapping from Chang'E 1 data," 10th EARSeL SIG Imaging Spectroscopy Workshop, 19-21 April 2017, Zurich (CH)
35. **A. Marinoni**, H. Clenet (2016) "Identification Of Mafic Minerals On Mars By Nonlinear Hyperspectral Unmixing", IEEE Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing (WHISPERS) 2016, June 21-24, 2016, Los Angeles, CA, USA
36. **A. Marinoni**, J. Plaza, A. Plaza, P. Gamba (2016) "An Iterative Enhancement Of Higher Order Nonlinear Mixture Model For Accurate Hyperspectral Unmixing", IEEE Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing (WHISPERS) 2016, June 21-24, 2016, Los Angeles, CA, USA
37. **A. Marinoni**, A. Plaza, P. Gamba (2016) "On The Detection Of Linear Mixtures In Hyperspectral Images", IEEE International Geoscience and Remote Sensing Symposium 2016 (IGARSS 2016), July 10-15, 2016, Beijing, China
38. **A. Marinoni**, P. Gamba (2016) "On the effect of air pollution on clinical records of diabetes-related patients", ESA Big Data from Space Conference (BiDS), March 15-17, 2016, Santa Cruz de Tenerife, Spain
39. **A. Marinoni** (2015) "Multivariate inverse problems in Earth and extraterrestrial observations analysis", Astroinformatics, 2015, Dubrovnik, Croatia. (Invited paper)
40. **A. Marinoni**, P. Gamba (2015) "Nonlinear endmember extraction in Earth observations and astroinformatics data interpretation and compression", IEEE International Geoscience and Remote Sensing Symposium 2015 (IGARSS 2015), July 26-31, 2015, Milan, Italy
41. **A. Marinoni**, A. Dagliati, R. Bellazzi, P. Gamba (2015) "Inferring air quality maps from remotely sensed data to exploit georeferenced clinical onsets: the Pavia 2013 case", IEEE International Geoscience and Remote Sensing Symposium 2015 (IGARSS 2015), July 26-31, 2015, Milan, Italy
42. **A. Marinoni**, P. Gamba (2015) "Order- $\infty$  nonlinear hyperspectral unmixing by sinusoidal polytope decomposition", IEEE Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing (WHISPERS) 2015, June 2-5, 2015, Tokyo, Japan

43. **A. Marinoni**, R. Klima, P. Gamba (2015) "Characterizing dark spectra in Mercury surface observations by nonlinear hyperspectral modeling", IEEE Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing (WHISPERS) 2015, June 2-5, 2015, Tokyo, Japan
44. **A. Marinoni**, P. Gamba (2015): "On the effect of nonlinear mixing in hyperspectral images of human settlements", Joint Urban Remote Sensing Event (JURSE), Mar. 30 – Apr. 1, 2015, Lausanne, CH
45. **A. Marinoni**, P. Gamba (2014): "Big Data for human-environment interaction assessment: challenges and opportunities", ESA Big Data from Space Conference (BiDS), Nov. 12-14, 2014, Frascati, I
46. **A. Marinoni**, P. Gamba (2014): "Detection of local affinity patterns in Big Data", Workshop on New challenges on astro- and environmental informatics in the Big Data era, Szombathely, H (invited paper)
47. **A. Marinoni**, P. Gamba (2014): "Non-linear hyperspectral unmixing by polytope decomposition", IEEE Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing (WHISPERS) 2014, June 24-27, 2014, Lausanne, CH
48. **A. Marinoni**, J. Plaza, A. Plaza, P. Gamba (2014): "Integrating multiple nonlinear estimators into hyperspectral unmixing", IEEE Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing (WHISPERS) 2014, June 24-27, 2014, Lausanne, CH
49. **A. Marinoni**, E. Rizzo, I. Limongelli, R. Bellazzi, P. Gamba (2014): "Kimimila: a new model to classify NGS short reads by their allele origin", IEEE International Conference on Healthcare Informatics (ICHI) 2014, Sept. 15-17, 2014, Verona, I
50. **A. Marinoni**, P. Savazzi, R. Wesel (2011): "On q-ary LDPC Code Design for a Low Error Floor", IEEE Global Communications Conference (GLOBECOM) 2011, Dec. 5-9, 2011, Houston, TX.
51. **A. Marinoni**, A. Cabrini, E. Costamagna, G. Torelli, P. Gamba (2010) : "Challenges and opportunities for information theory-based design of Phase Change Memories", IEEE Global Communications Conference (GLOBECOM) 2010 - Workshop on Application of Communication Theory to Emerging Memory Technologies, Dec. 6-10, 2010, Miami, FL. (invited paper).
52. P. Spaiardi, F. Talpo, M. Toselli, G. Biella, **A. Marinoni**, P. Savazzi, L. Favalli (2010): "Analysis of the noise associated to the muscarinic modulation of the mouse perirhinal cortex", 3rd International symposium on applied sciences in biomedical and communication technologies (ISABEL) 2010, November 7-10, 2010, Roma,
53. **A. Marinoni**, P. Savazzi, R. Wesel (2010): "Protograph-based q-ary LDPC codes for higher order modulation", 6th International Symposium on Turbo Codes and iterative information processing (ISTC) 2010, Sept. 6-10, 2010, Brest, F.
54. F. Talpo, P. Spaiardi, **A. Marinoni**, P. Savazzi, L. Favalli, Y. Yanagawa, M. Toselli, G. Biella (2010): "Muscarinic modulation of the mouse perirhinal cortex and associated noise analysis", Annual Meeting of Young Researchers in Physiology 2010 – June, 14-18, 2010, Pisa, I
55. **A. Marinoni**, P. Savazzi (2010): "Efficient receivers for q-ary LDPC coded signals over Partial Response channels", IEEE International Conference on Communications (ICC) 2010, May 23-27, 2010, Cape Town, ZA.
56. **A. Marinoni**, P. Savazzi, L. Favalli (2010): "Exploiting source correlation to improve performance of q-ary Rate Compatible LDPC codes", Gruppo nazionale Telecomunicazioni e Teoria dell'Informazione (GTTI) Annual meeting 2010, June 21-23, 2010, Brescia, I
57. **A. Marinoni**, P. Savazzi (2010): "Efficient receivers of q-ary LDPC coded signals over Partial Response channels", Gruppo nazionale Telecomunicazioni e Teoria dell'Informazione (GTTI) Annual meeting 2010, June 21-23, 2010, Brescia, I
58. **A. Marinoni**, T. Courtade, R. Wesel (2009): "Spectrally efficient LDPC coded modulations", Gruppo nazionale Telecomunicazioni e Teoria dell'Informazione (GTTI) Annual meeting 2009, June 23-25, 2009, Parma, I
59. **A. Marinoni**, P. Savazzi, S. Valle (2008): "Efficient design of non-binary LDPC codes for magnetic recording channels, robust to error bursts", 5th International Symposium on Turbo Codes and related topics (ISTC) 2008, Sept. 1-5, 2008, Lausanne, CH.
60. **A. Marinoni**, P. Savazzi, S. Valle. (2008): "Non-binary LDPC codes with good performance on channels affected by bursty noise", Gruppo nazionale Telecomunicazioni e Teoria dell'Informazione (GTTI) Annual meeting 2008, June 16-18, 2008, Firenze, I.

## Book Chapter

61. **A. Marinoni**, P. Gamba, "Air quality and health monitoring in urban areas using EO and clinical data", in Urban Remote Sensing, 2<sup>nd</sup> Edition, CRCpress, 2017