



## Gabriele Moser

Associate professor

✉ gabriele.moser@unige.it

☎ +39 019 219 45135

☎ +39 010 353 2190

### *Education and training*

2005

#### **Ph.D. in Space Sciences and Engineering**

Advanced pattern-recognition methods for remote-sensing data analysis

University of Genoa - Genoa - IT

2001

#### **'Laurea quinquennale' (M.Sc. equivalent) in Telecommunication Engineering**

Development of unsupervised change detection methods for remote  
sensing images - 110/110 cum laude

University of Genoa - Genoa - IT

### *Academic experience*

2014 - ONGOING

#### **Associate Professor of Telecommunications**

University of Genoa - Genoa - IT

2010 - 2014

#### **Assistant Professor of Telecommunications**

University of Genoa - Genoa - IT

2005 - 2009

#### **Post-doctoral research fellow ('assegnista di ricerca')**

Universities of Genoa (3 years) and Florence (1 year) - IT

### *Language skills*

#### **English**

Proficient

#### **French**

Basic

### *Teaching activity*

**Lecturer** of telecommunications, image processing, and remote sensing  
courses in **B.Sc., M.Sc., and second-level master programs** at the University  
of Genoa:

- Electrical Communications, B.Sc. program in Computer Science

- Engineering since academic year (AY) 2015/2016;
- Remote Sensing and Satellite Images, M.Sc. program in Internet and Multimedia Engineering since AY 2017/2018;
- Remote Sensing of Natural Disasters, M.Sc. program in Engineering for Natural Risk Management since AY 2018/2019;
- Remote Sensing, M.Sc. programs in Environmental and Energy Engineering, and in Energy Engineering since AY 2013/2014;
- ICT for Management Systems 1, B.Sc. program in Industrial and Management Engineering since AY 2015/2016;
- Digital Processing of Historic-Artistic Images, M.Sc. program in History of Arts and Exploitation of Artistic Resources, from AY 2011/2012 to 2014/2015;
- Five courses (as a co-lecturer) for second-level master programs organized by the University of Genoa since 2007.

### **Thesis advising**

- Advisor of more than 40 B.Sc./M.Sc. theses on image processing, remote sensing, and pattern recognition topics since 2011.
- Co-advisor of more than 40 B.Sc./M.Sc. theses on the same disciplines since 2002.

### **Responsible, for the University of Genoa, of co-tutoring, exchange, and mobility agreements** (see also next section)

- Responsible since 2015 of an **Erasmus+ agreement** between the Universities of Genoa and Tromsø, Norway.
- **Reference advisor** in 2016 for two M.Sc. internships at the NASA Goddard Space Flight Center.
- **Exchange coordinator** in 2016 and 2018 for M.Sc. internships at the University of Colorado within the FGMS program of the Italian Ministry of Education, University, and Research.

### **Didactic publications**

- *Analisi di immagini telerilevate per osservazione della Terra*, ECIG publisher, 2007.
- *Tecniche di trasformazione di spazi vettoriali per analisi statistica multidimensionale*, ECIG, 2010.

*Esercitatore* (literally, “exercise instructor”), *cultore della materia* (literally, “expert of the subject”), and holder of didactic support contracts for several telecommunication, image processing, remote sensing, and pattern recognition courses in B.Sc. and M.Sc. programs from 2002 to 2010.

## ***Postgraduate research and teaching activity***

### **Supervision of PhD students, residents and post-doctoral fellows**

- **Advisor of three Ph.D. students** at the University of Genoa since 2013,

one of whom under co-tutoring with the University of Nice Sophia Antipolis, France.

- From 2013 to 2016, in relation to this co-tutored Ph.D. student, responsible of the **co-tutoring agreement** between the Ph.D. program in Systems Monitoring and Environmental Risk Management of the University of Genoa and the *École Doctorale des Sciences et Technologies de l'Information et de la Communication* of the University of Nice Sophia Antipolis, and scientific supervisor within a **research cooperation agreement** between DITEN and INRIA.
- **Co-advisor** of a Ph.D. student at the University of Tromsø since 2016.
- **Advisor of a postdoc** (*assegnista di ricerca*) since 2018.
- **Collaboration to the advising** of two Ph.D. students and a post-doc at INRIA from 2008 to 2012.

## PhD committees membership

**Ph.D. Committee Member** of the following Ph.D. programs of the University of Genoa:

- Interactive and Cognitive Environments since 2015 (since cycle no. XXXI);
- System Engineering from 2013 to 2017 (cycle no. XXIX);
- Arts, Show, and Multimedia Technologies from 2012 to 2015 (cycles nos. XXVII and XXVIII).

**Ph.D. Committee Member** of a **joint Ph.D. program** involving the Electrical and Computer Engineering Ph.D. program of the University of Iceland and the Electronic, Computer Science, Robotics, and Telecommunication Engineering Ph.D. program of the University of Genoa, from 2008 to 2011.

## Postgraduate (PhD) teaching activity

**Lecturer** of the Vector Space Transformation Techniques for Multivariate Statistical Analysis course at the University of Genoa, for the **Ph.D. school** in Sciences and Technologies for Information and Knowledge from 2007 to 2013 and the **Ph.D. program** in Science and Technology for Electronic and Telecommunication Engineering in 2014.

## Research interests

Development of advanced **pattern recognition, machine learning, and image processing** methodologies for **remote sensing** data analysis and for applications to environment, sustainability, and **renewable energies**.

Currently, the main methodological research topics include:

- Remote sensing image classification
- Bio/geophysical parameter estimation from remote sensing data
- Multitemporal remote sensing image analysis
- Fault detection and isolation in energy production plants based on fuel cells

## Awards

- **Interactive Symposium Paper Award** at the 2016 IEEE International Geoscience and Remote Sensing Symposium (IGARSS 2016), Beijing, China.
- **Best Paper Award** at the 2010 IEEE Workshop on Hyperspectral Image and Signal Processing (WHISPERS 2010), Reykjavík, Iceland.
- **"Alessandro e Rinaldo Viviani 2002" award**, issued in 2004 by the Italian Electrical and Electronic Association, for the *laurea* thesis in Telecommunication Engineering.
- **Senior Member** of the **Institute of Electrical and Electronic Engineers (IEEE)** since 2014.

## Roles in the scientific community of remote sensing and pattern recognition

- **Chair** from 2013 to 2015 and **Co-Chair** from 2015 to 2017 of the **Image Analysis and Data Fusion Technical Committee (IADF TC)** of the **IEEE Geoscience and Remote Sensing Society (GRSS)**.
- **Technical Co-Chair** of the "EARTHVISION – Looking from above: when Earth observation meets vision" GRSS/ISPRS workshop at the 2015 Computer Vision and Pattern Recognition (CVPR 2015) conference, Boston, MA, June 2015.
- **Co-Organizer** of the "EARTHVISION – Large scale computer vision for remote sensing imagery" GRSS/ISPRS workshop at CVPR 2017, Honolulu, HI, July 2017.
- **Publication Co-Chair** of the 2015 IEEE Geoscience and Remote Sensing Symposium (IGARSS 2015), Milan, Italy, July 2015.
- **Coordinator of Session Organizers** of all invited sessions of IEEE IGARSS 2015 (49 invited sessions and ~450 submissions).
- **Technical Program Committee Member** of IEEE IGARSS since 2013; the annual SPIE Image and Signal Processing for Remote Sensing conference since 2008; the biannual IAPR Pattern Recognition in Remote Sensing workshop since 2010; the IAPR International Conference on Pattern Recognition and Information Processing in 2011; the IEEE GOLD Remote Sensing conference in 2010 and 2012; and the biannual IEEE International Workshop on the Analysis of Multitemporal Remote Sensing Images since 2015.
- **Co-Organizer of special sessions** on signal processing and remote sensing in international scientific conferences since 2011.

## Grants

2018 - ONGOING

**HRL CCI+. High resolution land cover essential climate**

## **variable**

European Space Agency (ESA)

Participant

Role: local coordinator for the University of Genoa

Project coordinator: Prof. L. Bruzzone, University of Trento, Italy

## **2018 - ONGOING**

### **TIAMO. Tecnologie Iot per l'Ambiente Marino**

Liguria Region ('Programma Operativo Regionale' European Regional Development Fund POR ERDF) - IT

Participant

Role: local coordinator for the University of Genoa

Project coordinator: SITEM S.r.l., Genoa, Italy

## **2016 - ONGOING**

### **RCN-251327. Change detection in heterogeneous remote sensing images**

Research Council of Norway - NO

Participant

Role: technical-scientific and advising activity

Project coordinator: Dr. S. N. Anfinsen, University of Tromso, Norway

## **2014 - 2015**

### **IMPAQUA. Monitoring and prediction platform for the environmental impact of fish farms**

Liguria Region (POR ERDF) - IT

Participant

Role: technical-scientific activity

Project coordinator: DHI Italia, Genoa, Italy

## **2014 - 2017**

### **PRIN-2012. Very high spatial and spectral resolution remote sensing a novel integrated data analysis system**

Italian Ministry of Education University and Research (MIUR) - IT

Participant

Role: technical-scientific activity

Project coordinator: Prof. S. B. Serpico, University of Genoa

<https://www.iprslab.it/prin2012.html>

## **2014 - 2017**

### **URBIS. Urban land recycling information services for sustainable cities**

European Commission (EC) Competitiveness and Innovation Framework Program (CIP)

Participant

Role: technical-scientific activity

Project coordinator: GISAT S.R.O., Prague, Czech Republic

<http://www.ict-urbis.eu>

2014 - 2016

**SOARASI-5245. Analysis of COSMO-SkyMed and RADARSAT-2 multitemporal images for risk monitoring and assessment**

Italian Space Agency (ASI) and Canadian Space Agency (CSA)

Participant

Role: technical-scientific activity

Project coordinator: Prof. S. B. Serpico, University of Genoa

Project framed within a joint announcement of opportunity issued by the Italian and Canadian Space Agencies

2013 - 2016

**RIMA. Development of technologies and software for a Mediterranean prediction network for marine-coastal environmental management**

Italian Ministry of Education University and Research (MIUR) - IT

Participant

Role: technical-scientific activity

Project coordinator: Liguria District of Marine Technologies, Italy

<http://dltm.it/category/progetti>

2012 - 2014

**CNES/INRIA no. 131024/00. Fusion of multitemporal and multiresolution remote sensing data with application to change detection for natural disasters**

Centre National d'Études Spatiales (CNES) - FR

Participant

Role: technical-scientific activity

Project coordinator: Prof. J. Zerubia, INRIA, France

2012 - 2014

**SEAGOSS. Information warning and management system for sea water pollution from oil slicks and sediments**

Liguria Region (POR ERDF)

Participant

Role: technical-scientific activity

Project coordinator: Gruppo SIGLA S.r.l., Genoa, Italy

2011 - 2013

**ENDORSE - Energy downstream services Providing energy components for GMES**

EC 7th Framework Programme (FP7)

Participant

Role: technical-scientific activity

Project coordinator: Prof. L. Wald, Mines ParisTech, France

<http://www.endorse-fp7.eu>

2010 - 2012

**CSK-AO-2181. Development and validation of multitemporal image analysis methodologies for multirisk monitoring of critical structures and infrastructures**

Italian Space Agency (ASI) - IT

Participant

Role: technical-scientific activity

Project coordinator: Prof. S. B. Serpico, University of Genoa

2007 - 2010

**OPERA. Civil protection from floods**

Italian Space Agency (ASI) in cooperation with the Italian Department of Civil Protection - IT

Participant

Role: technical-scientific activity

Project coordinator: COS(OT), Savona, Italy

2005 - 2008

**PROSCENIO. Development of processing procedures observation and computation tools for the validation of the probability of occurrence of hydrological hydraulic and fire risk**

Italian Department of Civil Protection - IT

Participant

Role: technical-scientific activity

Project coordinator: Prof. F. Siccardi, CIMA Research Foundation, Italy

2005 - 2007

**PRIN-2005. Development and validation of innovative data-fusion techniques for environmental remote sensing**

Italian Ministry of Education University and Research (MIUR) - IT

Participant

Role: technical-scientific activity

Project coordinator: Prof. S. B. Serpico, University of Genoa

2004

**SARIS. SAR Image Interpretation Preliminary project for a SAR image processing system**

Italian Space Agency (ASI) - IT

Participant

Role: technical-scientific activity

Project coordinator: D'Appolonia S.p.A., Genoa, Italy

2003 - 2005

**PRIN-2003. Development of satellite and radar data assimilation models for the estimation of the water**

## **balance at the soil surface integrated with limited area models**

Italian Ministry of Education University and Research (MIUR) - IT

Participant

Role: technical-scientific activity

Project coordinator: Prof. F. Castelli, University of Florence, Italy

2002 - 2004

## **PRIN-2002. Processing and analysis of multitemporal and hypertemporal remote sensing images for environmental monitoring**

Italian Ministry of Education University and Research (MIUR) - IT

Participant

Role: technical-scientific activity

Project coordinator: Prof. L. Bruzzone, University of Trento, Italy

2002 - 2003

## **ECOSAR. Processing and classification of optical and SAR data for environmental risk management**

Italian Space Agency (ASI) - IT

Participant

Role: technical-scientific activity

Project coordinator: Prof. S. B. Serpico, University of Genoa

2002 - 2003

## **PRIN-2001. Analysis and classification of remotely sensed hyperspectral images**

Italian Ministry of Education University and Research (MIUR) - IT

Participant

Role: technical-scientific activity

Project coordinator: Prof. G. Corsini, University of Pisa, Italy

2002

## **PRIN-2000. Fusion of remote-sensing data for environmental monitoring**

Italian Ministry of University and of Scientific and Technological Research (MURST) - IT

Participant

Role: technical-scientific activity

Project coordinator: Prof. S. B. Serpico, University of Genoa

2002

## **MERIS. Experimentation of integrated methodologies for water color analysis by MERIS data**

Italian Space Agency (ASI) - IT

Participant

Role: technical-scientific activity



Project coordinator: Prof. G. Corsini, University of Pisa, Italy

2001 - 2002

### **MRF. Bayesian methods based on Markov random fields for information extraction from remotely sensed images**

Italian Space Agency (ASI) - IT

Participant

Role: technical-scientific activity

Project coordinator: Prof. V. Pascazio, University of Naples Parthenope, Italy

2011

### **DASE. IEEE GRSS data and algorithm standard evaluation website**

IEEE Geoscience Remote Sensing Society (GRSS) - US

Principal investigator

Coordinator, by appointment of IEEE GRSS, of the DASE project aimed at the development of an international open benchmarking platform for novel remote sensing image processing methods and results. My role involved coordination of a project advisory board, definition of the specifications of algorithms, interaction with a firm contracted for implementation, responsibility of progress, final assessment and approval.

## ***Editorial activity***

- **Area Editor** of Pattern Recognition Letters since 2015.
- **Associate Editor** of IEEE Geoscience and Remote Sensing Letters since 2008.
- **Associate Editor** of Pattern Recognition Letters from 2011 to 2015.
- **Guest Co-Editor** of a special issue of the IEEE Geoscience and Remote Sensing Magazine on data fusion in remote sensing (September 2015).
- **Evaluator of research project proposals** for the Swiss National Science Foundation and for the Italian Ministry of Education, University, and Research in 2012 and 2013, respectively.

## ***Assignments abroad***

- **External collaborator** of the Aryn research team, headed by Prof. J. Zerubia at INRIA, from 2012 to 2016.
- **Visiting Professor** at the *Institut National Polytechnique de Toulouse* (INPT), France, in January and February 2016.
- **Visiting Ph.D. student** in the Ariana research team, headed by Prof. J. Zerubia at INRIA, Sophia Antipolis, France, within the EU IMAVIS project (Marie Curie fellowship) from January to March 2004.
- **Invited to give seminars** in foreign universities and research centers including INRIA (2004 and 2009), University of Tromsø, Norway (2009), *École Polytechnique Fédérale de Lausanne* (EPFL, Switzerland, 2014), *École Nationale Supérieure Agronomique de Toulouse* (INPT ENSAT; 2016), University of Zurich (Switzerland, 2016).

- **Scientific collaborations with foreign universities and research centers** including NASA Goddard Space Flight Center, USA, since 2008; INRIA since 2004; University of Iceland since 2006; EPFL and University of Zurich from 2013 to 2017; Wageningen University & Research, Netherlands, since 2017; University of Tromsø since 2008; INPT ENSAT since 2016; University of Colorado, USA, since 2006; DigitalGlobe Inc., USA, since 2013; Peking University, China, since 2006; *Deutsches Zentrum für Luft- und Raumfahrt* (German Aerospace Center), Munich, Germany, since 2002; *Télécom Bretagne – Institut Mines-Télécom*, Brest, France, since 2006.
- **Member of a Ph.D. Dissertation Committee (“opponent”)** at the University of Tromsø in 2011.

## *Other professional activities*

### **Technology transfer**

- **United States Patent** no. US 8,355,579 B2; Date of patent: January 15, 2013; “Automatic extraction of planetary image features,” Inventors: J. J. Le Moigne, G. Troglio, J. A. Benediktsson, S. B. Serpico, and G. Moser.
- **Participation in the Scientific Committee** of the project *Genova 2021 – Il ruolo strategico della tecnologia* (literally, “Genoa 2021 – The strategic role of technology”), promoted in 2011 by Dixet (the Genoa industrial district of advanced technologies) in collaboration with the Genoa Chamber of Commerce. The project aimed to analyze and forecast the expected technological and market evolution of the high-tech industry in the Genoa area from 2011 to 2021, and to propose a set of coordinated actions that would entail all institutional, industrial, and academic players participating in the consolidation and development of and innovation in the high-tech fields in the area.
- The results of the conducted scientific activity were employed in numerous **applied research projects** that were funded by ASI, DPC, and EC (see above), among others. The impact of the conducted research is confirmed by the **generation, upon request of ASI and DPC**, of remote sensing image analysis results associated with **recent environmental disasters** (e.g., floods in Albania, Thailand, and Northeast Italy; earthquakes in Haiti and L'Aquila, Italy; tsunami in Japan) and aimed at providing DPC with information to support activities related to such events. Furthermore, one of the products developed within an EC project focused on the production of renewable energy (i.e., the aforementioned “ENDORSE” project) has been integrated into a **downstream service** framed in the **GEOSS Architecture Implementation Pilot Program – Phase 5 of the Group on Earth Observation (GEO)** established by the European Commission and United Nations.

### **Institutional activity**

- **Head of the Remote sensing for environment and Sustainability**

**(RIOS) laboratory** at DITEN (Methods and Systems for Signal Processing and Recognition operational unit), Savona University Campus, since 2013.

- **Member of the Department Committee** (*Giunta di Dipartimento*) of DITEN since 2012.
- **Co-Chair of the Didactic Committee** of DITEN since 2015 and Department Delegate for 'Alternanza Scuola-Lavoro' since 2016.
- **Department Delegate** of DITEN for promotion, marketing, and placement from 2016 to 2017.
- **Quality assurance responsible** of the M.Sc. program in History of Arts and Exploitation of Artistic Resources from 2013 to 2015.
- **Member** of the following committees associated with **B.Sc. and M.Sc. programs**: Promotion and Advertising Committee of the B.Sc. program in Electronic and Information Technology Engineering since 2011; Advertising Committee of the M.Sc. programs in Multimedia Signal Processing and Telecommunication Networks from 2012 to 2016 and in Internet and Multimedia Engineering since 2016; Re-examination Reporting Committees of the M.Sc. programs in Environmental and Energy Engineering, from 2013 to 2014, and in History of Arts and Exploitation of Artistic Resources from 2013 to 2015; Study Plan and Admission Committee since 2014, Schedules Committee since 2015, and International Affairs and Erasmus Committee since 2015 of the M.Sc. program in Energy Engineering.