

Gabriella Olmo

Curriculum vitae et studiorum

Personal Information

Name Gabriella Olmo
Address Via Martini 5, 10125 Pino Torinese (To), Italy
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Education

- **October 2016:** MS degree in Medicine and Surgery, First class honors (score 110/110)
- **February 2017:** Qualification to practice as a Physician (“Esame di Stato per l’abilitazione all’esercizio della professione di Medico Chirurgo”), Università degli Studi di Torino
- **April 1992:** PhD degree in Electronic Engineering, Politecnico di Torino (POLITO)
- **October 1986:** MS degree in Electronic Engineering, First class honors (“Summa cum Laude”)
- **1987:** Qualification to practice as an Engineer (“Esame di Stato per l’abilitazione all’esercizio della professione di Ingegnere”), POLITO

Work Experience

- 1/11/2017 - present: Associate Professor at the Department of Control and Computer Engineering, POLITO
- 1/10/2002 - 30/10/2017: Associate Professor at the Department of Electronics and Telecommunications, POLITO
- 1991-2002: Assistant Professor at the Department of Electronics and Telecommunications, POLITO
- 1986-1988: Researcher at CSELT (now TiLab – Telecom Italia Lab), Torino

Other

- National scientific qualification for full professor (“abilitazione scientifica nazionale”), SSD ING-INF/03 telecommunications, since Dec. 2013 (first session)
- Senior member of IEEE
- Member of the Italian Society of Neurology and the Movement Disorder Society
- Member of HKN POLITO, Mu Nu Chapter of IEEE-Eta Kappa Nu
- Co-author of more than 200 papers in international journals, conference proceedings, book chapters
- H-index: 21
- Co-author of two international patents.

Languages

Mother tongue: Italian

Other languages: English, French

Research activities

G. Olmo has funded IPL, a research group at the Department of Electronics and Telecommunications of POLITO, on the following main research topics:

- Image and video compression.
- Distributed source coding.
- Joint source and channel coding.
- Robust variable length coding.
- Multiple descriptor coding for JPEG 2000 and H.264/SVC.
- SAR and hyperspectral data compression with 2D/3D transforms.

She participated with technical and managerial roles in numerous research projects, among which:

- COAST: Content aware searching, retrieval and streaming, VII Framework Program of the EU, 2010-2012. Research Unit (RU) scientific coordinator.
- NEWCOM++: Network of Excellence in wireless communications, VII Framework Program of the EU, 2008-2011. Scientific coordinator of research on wireless multimedia
- SEA: Seamless content delivery, VII Framework Program of the EU, 2008-2009. RU scientific coordinator. Member of the steering committee.
- Hyperspectral and SAR data compression, Regione Piemonte research grant, 2008.
- Systems and technologies for space exploration, Regione Piemonte research grant, 2008.
- Automatic image processing in capsule endoscopic diagnostics, Regione Piemonte research grant, 2007.
- Multiple description Coding and Scalability for multimedia content distribution, Telecom Italia Research Grant, 2008.
- STEP2: Video streaming for P2P transmission”, Research Projects of Relevant National Interest 2007 (PRIN 2007), Italian Ministry of Education and Research. Principal Investigator.
- MEADOW: Mesh adaptive home wireless nets, Italian Ministry of Education and Research grant, 2006-2008. Member of the steering committee. Scientific coordinator of research on wireless transmission.
- NEWCOM: Network of excellence in wireless communications, VI Framework Program of the EU, 2004-2006. Managerial and scientific coordinator for POLITO. Scientific coordinator of Department “Digital architectures”.
- DSC: Distributed coding of multiple video sources, Research Projects of Relevant National Interest 2005 (PRIN 2005), Italian Ministry of Education and Research. RU coordinator.
- PRIMO: Reconfigurable platforms for broadband wireless communications, Italian Ministry of Education and Research grant, 2001-2005. Member of the steering committee. Coordinator of research on wireless multimedia.
- CERCOM: Center of Excellence in wireless communications, Italian Ministry of Education and Research grant, 2000-2004. Deputy Head. Member of the steering committee. Scientific coordinator.
- Development and realization of advanced algorithms suitable for space applications for lossless and near-lossless compression of single-band and multi-hyperspectral optical data, Italian Space Agency grant, 2002-2003. Scientific coordinator.
- Robust watermarking of multispectral images, Research Projects of Relevant National Interest 2003 (PRIN 2003), Italian Ministry of Education and Research. RU coordinator.
- ACHYDA: Advanced methods for lossless compression of hyperspectral data, European Space Agency grant, 2002-2003.
- Personal wideband communication systems based on satellites and stratospheric platforms, Research Projects of Relevant National Interest 2002 (PRIN 2002), Italian Ministry of Education and Research.
- HeliNet: network of stratospheric platforms for traffic monitoring, environmental

surveillance and broadband services, V Framework program of the European Union, 2000-2002.

- MARVEL: Micro air vehicles for multipurpose remote monitoring and sensing, V Framework program of the EU, 2000-2003.
- PEC-SAR: advanced methods for raw SAR data compression, Cosmo Skymed program of the Italian Space Agency, 2001-2002.
- “SAR data processing and compression”, Italian Space Agency grant, 2000.
- Since 2009, motivated by a deep professional and personal crisis, she has progressively left the IPL direction, and dedicated to the study of medicine and surgery, achieving the master’s degree and qualification to practice as a physician. She has been driven, besides scientific and human interest, by the belief that true interdisciplinary research in the biomedical field represent a key social requirement.

In 2017, and after a two-year sabbatical leave (2012-13), Gabriella Olmo got the transfer to the System Biology Group at the Department of Control and Computer Engineering of POLITO and resumed her research activities. At present, she is leading a research group on biomedical signal processing whose activities are at the boundaries between medical and engineering practice:

- Signal processing for molecular biology (analysis of fluorescence microscopy images).
- Rare childhood diseases (microcephaly, autism).
- Estimation and characterization of fatigue in Multiple Sclerosis patients.
- Neural interface to assess the consciousness level of non-responsive patients.
- Application of machine learning/artificial intelligence for the improvement of diagnostics and follow-up of neurodegenerative diseases.
- Parkinson’s disease home monitoring using wearable sensors.

Her research group, even though recently established, has already cooperated with several universities, hospitals, and industries, with student exchange programs as well as common research projects. Among them, it is worth mentioning:

- University of Turin, Department of Neuroscience “Rita Levi Montalcini” and Molecular Biotechnology Center.
- Politecnico di Milano, Dept. of Electronics, Information and Biomedical Eng.
- Università di Verona, Dept. of Neuroscience, Biomedicine and Movement.
- Università di Roma “La Sapienza”, Dept. of Information, Electronics and Telecommunications and Department of Human Neurosciences.
- Neuroscience Institute Cavalieri Ottolenghi, Turin.
- Hospital “A.O.U. Città della Scienza e della Salute (Molinette)”, Turin, Regional Reference Center for Parkinson’s disease and Movement Disorders.
- Policlinico Umberto I, Rome, Department of Neuroscience and Mental Health.
- San Luigi Gonzaga Hospital, Orbassano (Turin), Regional Reference Center for Multiple Sclerosis.
- Spaulding Rehabilitation Hospital, Motion Analysis Laboratory, Boston MA, USA.
- Harvard Medical School, Dept. of Physical Medicine and Rehabilitation, Boston MA, USA.
- Houston Methodist, Houston TX, USA.
- Imperial College, Dept. of Bioengineering, London, UK.
- Ecole Polytechnique Fédérale de Lausanne, Center for Neuroprosthetics and Institute of Bioeng., Lausanne, CH.
- University of Essex, UK.
- STMicroelectronics, Agrate Brianza, MI.

In 2019 the group received a donation from Rotary Club Italy for studies on telemonitoring of PD.