



**POLITECNICO  
DI TORINO**

Department  
of Electronics  
and Telecommunications

Full Professor  
Filippo MOLINARI

## Curriculum Vitae of Filippo Molinari

### Current Position

Full Professor of Bioengineering on faculty of the Dept. of Electronics and Telecommunications, Politecnico di Torino, Torino, Italy, since February 2018.

<b>Macrosettore:</b>	09/G
<b>Settore Concorsuale:</b>	09/G2
<b>Settore Scientifico Disciplinare:</b>	ING-INF/06
<b>Role:</b>	Full Professor (L.240/10)
<b>In role from:</b>	09/02/2018
<b>University:</b>	Politecnico di Torino
<b>Department</b>	Dipartimento di Elettronica e Telecomunicazioni

### Education and Academic Career

1997	Master Degree in Electronics at the Politecnico di Torino
2001	Ph.D. in Electronics and Communications at the Politecnico di Torino
2002 – 2004	Research Assistant Professor in Bioengineering at the Politecnico di Torino
2004 – 2014 (Sept.)	Assistant Professor in Bioengineering at the Politecnico di Torino
2014 (Oct.) – 2018 (Jan.)	Associate Professor in Bioengineering at the Politecnico di Torino
2018 (Feb.) – present	Full Professor in Bioengineering at the Politecnico di Torino

### Teaching Activity

2002 – present	<i>Instrumentation for medical imaging</i> , First Level Degree in Biomedical Engineering, Politecnico di Torino, Torino, Italy.
2004 – 2010	<i>Biomedical signal processing</i> , Second Level Degree in Biomedical Engineering, Politecnico di Torino, Torino, Italy.

Biolab  
Department of Electronics and Telecommunications  
Politecnico di Torino Corso Duca degli Abruzzi, 24 – 10129 Torino – Italia  
tel: +39 011.090.4135 fax: +39 011.090.4217  
filippo.molinari@polito.it socrate.polito.it/biolab  
www.det.polito.it www.polito.it



## **POLITECNICO DI TORINO**

Department  
of Electronics  
and Telecommunications

- 2004 – 2010 *Medical Imaging*, Second Level Degree in Biomedical Engineering, Politecnico di Torino, Torino, Italy.
- 2005 – present *Processing of Signals and Images of Biological Interest*, First Level Degree in Clinical Engineering, University of Trieste, Trieste, Italy.
- 2006 – 2010 *Diagnostic Techniques in Neurophysiopathology*, Second Level Degree in Biomedical Engineering, Politecnico di Torino, Torino, Italy.
- 2010 – 2014 *Biomedical Image and Signal Processing*, Second Level Degree in Biomedical Engineering, Politecnico di Torino, Torino, Italy.
- 2015 – present *Biomedical signal processing*, Second Level Degree in Biomedical Engineering, Politecnico di Torino, Torino, Italy.

### **Academic Responsibilities**

- 2004 – 2013 Member of the PhD Committee in Biomedical Engineering at the Politecnico di Torino, Torino, Italy.
- 2014 – present Member of the PhD Committee in Bioengineering and Medical-Surgical Sciences of the Politecnico di Torino and University of Torino, Torino, Italy.
- 2012 – present Institutional referent for the incoming and outgoing student mobility for the First Level and Second Level courses in Biomedical Engineering at the Politecnico di Torino and University of Torino, Torino, Italy.
- 2018 – present President of the Strategic Committee of the Dept. of Electronics and Telecommunications of the Politecnico di Torino, Torino, Italy.

### **Awards and Honors**

Senior Member of the IEEE Engineering in Medicine and Biology Society (EMBS).

Member of the European Society for Molecular Imaging (ESMI).

Visiting Professor, Graduate School of Design and Architecture, Nagoya City University, Japan (March 2009).

Visiting Professor, Graduate School of Design and Architecture, Nagoya City University, Japan (Feb 2010).

Visiting Professor, Graduate School of Design and Architecture, Nagoya City University, Japan (July 2013)

### **Editorial Activity**

- 2007 – present Associate Editor of the *Journal of Neuroengineering and Rehabilitation*.
- 2008 – present Associate Editor of the track “*Nano and Micro Systems and Instrumentation*” of the IEEE EMBS Annual International Conference.
- 2010 – present Anchored European Associated Editor of the *Journal of Medical Imaging and Health Informatics*, and co-founder.
- 2011 – present Associated to Editorial Board of the Journal “*Ultrasounds in Medicine and Biology*”.
- 2015 – present Associate Editor of the “*Medical and Biological Engineering & Computing*”.

Biolab  
Department of Electronics and Telecommunications  
Politecnico di Torino Corso Duca degli Abruzzi, 24 – 10129 Torino – Italia  
tel: +39 011.090.4135 fax: +39 011.090.4217  
filippo.molinari@polito.it socrate.polito.it/biolab  
www.det.polito.it www.polito.it



## POLITECNICO DI TORINO

Department  
of Electronics  
and Telecommunications

### Research interests

Prof. Filippo Molinari spent over 10 years in developing advanced data analysis techniques in several fields of biomedical engineering, including neurophysiology, neurorehabilitation, vascular analysis, functional imaging, and neuromuscular assessment. He is active in the field of ultrasound image processing, where he developed innovative algorithms for the completely automated segmentation and characterization of the carotid artery. He is also active in the field of neuroscience and, particularly, in the non-invasive monitoring and assessment of cerebral functions and autoregulation.

Image processing – Prof. Molinari is the principal investigator of the Image Processing division of the Biolab of the Politecnico di Torino. The main activity focus is the development of fully automated algorithms for quantitative imaging. From a technical point of view, Prof. Molinari developed original techniques based on robust edge-detectors, deformable models, and multiresolution operators. The principal recent applications are:

- Ultrasound cardiovascular imaging: automated measurement of the intima-media thickness of arteries; non-invasive characterization of atherosclerotic plaque; arterial wall aging and strain measurement.
- Cancer imaging: quantification of cancer lesions' vascular pattern; automated segmentation and classification of suspicious lesions (thyroid and ovarian); automated processing of histological, fluorescence, and immunohistochemical images; cell counting and stereological analysis; automation of the workflow in pathology.
- Musculoskeletal ultrasound imaging: automated measurement of muscle thickness, fascicles length and pennation angles; texture analysis of skeletal muscles; force estimation in dynamic contractions.

Signal processing - Prof. Molinari has been working in the field of biomedical signal processing since 15 years. His main activity is the development of innovative time-frequency, non-linear processing strategies, and empirical-mode decomposition of biological signals. The main recent applications are:

- Functional analysis of brain metabolism by near-infrared spectroscopy in patients with neurodegenerative disorders.
- Aging assessment by analysis of muscle fatigue, muscle metabolism and EMG.

Further details about prof. Molinari's research can be found at the following link:

<http://socrate.polito.it/biolab/Research.html>

### Publications

Prof. Molinari published more than 130 contributes including journal papers and peer reviewed proceedings in the field of signal and image processing, including four collaborative books. A complete list of prof. Molinari publications can be found at the following link:

<http://porto.polito.it/view/creators/Molinari=3AFilippo=3A009675=3A.html>

Biolab  
Department of Electronics and Telecommunications  
Politecnico di Torino Corso Duca degli Abruzzi, 24 – 10129 Torino – Italia  
tel: +39 011.090.4135 fax: +39 011.090.4217  
filippo.molinari@polito.it socrate.polito.it/biolab  
www.det.polito.it www.polito.it



**POLITECNICO  
DI TORINO**

Department  
of Electronics  
and Telecommunications

The updated Google Scholar profile of Prof. Molinari can be found at the following link:

<http://scholar.google.it/citations?user=ttbUYiQAAAAJ&hl=it>

Torino: 03/03/2018

Sincerely,

Prof. Filippo Molinari, PhD