

## **Ludovico Giorgio Aldo Biagi, curriculum vitae**

Birthplace and date: Milano, 23 January 1966

### **Present situation and previous work experiences**

In 2017, August 2<sup>nd</sup> habilitation for the position of Full Professor in Geomatics (08/A4)

From 2017, January. Chair of the Master of Science in Geoinformatics Engineering at Politecnico di Milano.

From 2015, January. Associate Professor at Politecnico di Milano, Department of Civil and Environmental Engineering (DICA).

From 2013 to 2016, Chair of the Didactic Commission of DICA.

From 2011 to 2013, scientific responsible of the Geomatics Laboratory of the Politecnico di Milano, Como Campus.

From 2005 to 2014, Assistant professor at DICA.

From 1997 to 2004, Technician at the Politecnico di Milano and technical responsible of Geomatics Laboratory, Como Campus.

PhD in Geophysics, at the Modena University. X<sup>o</sup> Cycle, Dissertation title: *The Moho depth estimate by collocation*. Degree in physics, magna cum laude, at the Milano University, dissertation title: *Methods of analysis of signals from geodetic satellites*.

*Author or coauthor of 100 national and international scientific research publications; author or coauthor of 4 national research or academic books.*

### **Google Scholar indexes**

Citations: 350, H-index: 9, i10-index: 9

### **Main research activities related to the project proposal, in order of present relevance**

*Processing of GNSS data.* Study and implementation of software to improve positions and trajectories estimated by GNSS chipsets in smartphones and tablets. Study and implementation of software to adjust and monitor permanent GNSS networks. Implementation of libraries to compute tidal corrections and ocean loading, identification of the so called "Bernese Tide Bug". Study of the tropospheric delay on the GPS signal and implementation of libraries for the tropospheric correction by ECMWF grids.

*Statistical analysis.* Study and implementation of robust and efficient algorithms to identify and remove outliers in Least Squares problems. Study of the rank deficiency on Least Squares problems.

*Reference frames, GNSS networks and deformation monitoring.* Study of accuracy and reliability provided by low cost GNSS receivers in local monitoring. Study of the deformation field between the international ITRF, ETRF and the national ETRF-RDN and IGM95 reference frames. Models to compute deformations tensors and covariances from time series of coordinates of permanent networks. Cooperation with the Italian Geographic Military Institute (Istituto Geografico Militare) in the design and the adjustment of the official zero order network in Italy (Dynamic National Network, RDN). Automation of the adjustment of permanent networks and check of the results quality. Standards in designing, installing and managing permanent networks for positioning services.

### **Participation to previous Research Projects supported by the Italian Research and University Ministry (MIUR)**

2008-2011: in the leading unit of *The new Geodetic Italian Reference Frame: continuous monitoring and applications*; duration 24 months, national coordinator: Prof. F. Sansò.

2006-2008: in the leading unit of *Galileo and the modernized satellite positioning*, duration 24 months, national coordinator Prof. F. Sansò.

2004-2006: in the leading unit of *The satellite positioning services for the e-government*, duration 24 months, national coordinator Prof. F. Sansò.

2002-2004: *Integrated Inertial Systems for Positioning in Aerial Photogrammetry*, duration 24 months, national coordinator: Prof. R. Galetto.

2000-2002: *Digital Surveying techniques, GIS and multimedia network for the Architectural and Environmental Heritage*, duration 24 months, national coordinator: Prof. C. Monti.

2000-2002: *Active deformation at the borders of Adria Region*, duration 24 months, national coordinator: Prof. R. Sabadini.

1998-2000: *Litosphere Dynamic: seismology and deformations in active regions of central Italy*, duration 24 months, national coordinator: Prof. R. Sabadini.

### **Participation to Research Projects supported by Italian Space Agency (ASI)**

2004-2010 Participation to the design (2004-2005) and the realization (2007-2010, duration 36 months) of *Landslide monitoring and risk analysis by Earth Observations (MORFEO)* ASI project (in the realization, responsible of WP *GPS Data Processing*), national coordinator: Prof. L. Ubertini.

2004-2008, involved in the ASI *IERS Combination Pilot Project Proposal*, coordinator Dr. G. Bianco in the framework of IERS WG on combination.

1998-2004: junior researcher in several ASI Projects, related to Geophysics, Geodesy and Geomatics.

### **Participation to other research projects funded by international / national calls**

2014-2016: *Maps for easy paths*, duration 24 months, winner of PoliSocial Awards 2014.

2014-2016: *The paths of Via Regina*, duration 27 months, funded by INTERREG Italia-Svizzera 2007-2013.

2010-2013: *HELI-DEM (Helvetia-Italy Digital Elevation Model)*, duration 36 months, funded by INTERREG Italia-Svizzera 2007-2013.

2010-2012: *WebCarte (WEB catalogue e archive of the historical cartography and its evolution)*, duration 24 months, funded by Fondazione Provinciale della Comunità Comasca Onlus.

2007: *Working group on GNSS permanent networks*, responsible of WP *Datum e National Zero order network*, duration 12 months, funded by CISIS (National conference of Regional Authorities for Geodatabases).

1998: *Control de deformaciones a escala local y regional con técnicas geodésicas de alta precisión en zonas tectónicamente activas. Aplicación en el sector central de la Cordillera Bética*, 36 months, funded by Programa Sectorial de Promoción General del Conocimiento (Ref. PB97-1267-C03-03DG), coordinator Prof. A. J. Gil.

### **Participation to international and national research groups**

From 2014: member of the Council of the Italian Association of Surveying and Cartography Professors (*Associazione Universitari di Topografia e Cartografia, AUTECA*).

From 2012 to 2016: secretary of the WG IV-3 (*Geospatial Databases and Location Based Services, Global DEM Interoperability*) of the International Society for Photogrammetry and Remote Sensing.

From 2010 to 2014: member of the Scientific Committee of Photogrammetry and Surveying Italian Society (*Società Italiana di Fotogrammetria e Topografia*, SIFET).

From 2009 to 2011: member of the Inter-Commission Study Group 1 - *Theory, Implementation and Quality Assessment of Geodetic Reference Frames* of the International Association of Geodesy.

From 2000 to 2003, Associate Member of the IAG Special Study Group 3.167 (*Regional Land and Marine Geoid Modelling*).

### **Participation to Editorial Boards**

From 2013: Associate Editor of *Applied Geomatics* (ISSN 1866-9298).

From 2011 to 2014: in the Editorial Board of *Bollettino SIFET* (ISSN 1721-971X).

From 2001: in the Editorial Board of *Geomatics Workbooks* (Politecnico di Milano, Geomatics Laboratory at Como Campus, ISSN 1591-092X).

From 1998 to 2002: in the Editorial Board of the *International Geoid Service Bulletin* (Politecnico di Milano, DIAR, ISSN 1128-3955).

### **Reviewing for international and national journals**

From 2002, *IAG Symposia Volumes*; from 2007, *Annals of Geophysics* and *Natural Hazards and Earth System Sciences*; from 2010, *Applied Geomatics*; from 2011, *Journal of Geodesy*; from 2012, *ISPRS Archives*; from 2015: *Sensors*; from 2004, *Bollettino SIFET*.

### **Participation to international and national symposia**

In the past, has participated to the following international symposia (for each participation, at least one oral / poster presentation): FOSS4G, ISPRS Congresses; ISPRS TC Symposia and Workshops; Scientific Assemblies of the IAG, International Unions of Geodesy and Geophysics; Hotine-Marussi Symposia; other IAG Symposia; EGU General Assemblies; EUREF Symposia; ION GNSS, GRASS Users Conferences. At the national level, from 1998 to 2010 regularly participates and presents at the National ASITA conferences; from 2010 regularly participates and presents at the National SIFET conferences.

### **Main technological transfer contracts**

From 2013 to 2016, Responsible of a Consultancy Contract of Politecnico di Milano, Como Campus to CISIS (Centro Interregionale per i Sistemi Informatici, Geografici e Statistici) for the study and the implementation of FOS software for data quality check of permanent networks.

Previously. Responsible of Consultancy Contracts relevant to the design, realization, startup and monitoring of GNSS Positioning Services.

### **Teaching**

In the present year, professor of: *Positioning and Location Based Services* (10 CFU, English language) and *Geofundamentals: geomatic part* (5 CFU, English language) for the International Master of Science in Geoinformatics Engineering at Politecnico di Milano.

Previously, professor of the following courses: *Satellite Navigation and Monitoring*, *Geodetic Monitoring*, *Deformation Monitoring Laboratory*, *Positioning and Surveying*, *Numerical Cartography*, *Statistical data analysis*.

*Supervision of 3 PhD theses. Supervision of 22 master and 21 bachelor theses*

