

Education:

M.Sc. Degree in Civil Engineering at Polytechnic University of Marche (1980).

Ph.D. in Geodetic and Topographic Sciences at University of Bologna (1988).

Academic Career:

Assistant Professor at University of Bologna from 1990 to 1992.

Associate Professor at University of Perugia from 1992 to 2002.

Professor at University of Perugia since 2002.

Main scientific and research activities:

Design and observations treatment of geodetic networks including satellite (GNSS) and terrestrial measures. Analysis and assessment of geometric leveling networks.

Geomatic methods for the monitoring of deformations of soil surface and structures: GNSS monitoring networks (for landslide monitoring); Local high precision 3D networks (for buildings and monuments monitoring); High precision geometric leveling for monitoring structures, urban areas and landslides. His PhD thesis, discussed in 1988, concerned "Design, execution and analysis of the results of a high precision leveling network for the control of the settling of the Ancona landslide in December 1982".

Geodetic, navigational and survey applications of GNSS techniques for georeferencing, mapping, cadastre, civil and environmental engineering.

Analysis, implementation, assessment and management of GNSS networks constituted by Continuously Operating Reference Stations for datum definition, precise positioning, post-processing and real time services.

Applications of NRTK (Network Real Time Kinematic) GNSS on vehicle drive and control, in particular on Vehicle Fleets Monitoring (fire extinguishing vehicles, buses, public and scholastic transport), Machine Control (dozers, excavators and other operating machines for building activities) and Precision Agriculture (control and automatic/semiautomatic precision drive of tractors and agriculture machines).

Automatic extraction, reconstruction and modelling of buildings from terrestrial laser scanning (LIDAR) and digital photogrammetry.

Integration of Geomatic Techniques (GNSS, 3D networks, LIDAR, Digital Photogrammetry) for documentation and monitoring of cultural heritage such as historical building and archeological sites.

Remote Sensing: Analysis and treatment of high resolution satellite images for environmental and engineering applications. Refinement and assessment of techniques for the automatic recognition of buildings, vegetation, roads, water surfaces.

Analysis of maps from different sources (e.g. national, regional and cadastral) based on different data and map projections. Coordination and homogenization of different maps by means of geodetic algorithms. Development of software for the automation of the procedures.

The outcomes of all research activities resulted in the publication of 194 papers on journals and conference proceedings (85 of these at international level).

Italian Scientific Working Groups and Association Memberships:

Member of SIFET (Italian Society of Photogrammetry and Surveying).

Member of the coordination panel of the AUTEK (Association of Italian University Professors of Geomatics).

Member of the Council of the Professional Order of Engineers and of the Engineer Foundation of the Province of Perugia.

International Working Groups and Association Memberships:

Member of the ION (Institute Of Navigation).

Teaching:

"Geodesy, Cartography and Surveying" in the M.Sc. Degree Course on Civil Engineering (University of Perugia) since A.Y. 1992-93.

"Elements of Photogrammetry and Surveying" in the M.Sc. Degree Course on Conservation of Cultural Heritage (University of Bologna, Ravenna venue) from A.Y. 1992-93 to 1994-95.

"Geodesy, Cartography and Surveying" in the M.Sc. Degree Course on Civil Engineering (University of Bologna) A.Y. 1995-96.

"Geomatics Methods for Engineering" in the M.Sc. Degree Course on Civil Engineering (University of Perugia) from A.Y. 2002-03 to 2005-06.

"Geodesy and Cartography" in the M.Sc. Degree Course on Geology (University of Perugia) from A.Y. 2004-05 to 2008-09.

"Applied Photogrammetry" in the M.Sc. Degree Course of Civil Engineering / Architecture (University of Perugia) from A.Y. 2011-2012 to 2015-16.

Academic responsibility:

From 2004 to 2008 Director of the Civil and Environmental Engineering Department (DICA) at Perugia University.

Since 2016 President of the National Scientific Habilitation Commission (ASN 2016/2018 MIUR) for the sector 08/A4 – Geomatics.

Student supervision (including PhD):

From 1994 to 1998 Member of the Reference Council of the PhD on “Geodetic and Geomatic Sciences” at Bologna University, Perugia associated venue.

From 2002 to 2005 Member of the Reference Council of the PhD on “Geodesy and Geomatics” of Milan Polytechnic.

From 2003 to 2008 Member of the Reference Council of the PhD on “Civil Engineering” at the Department of Civil and Environmental Engineering of Perugia University.

From 2009 to 2012 Member of the Reference Council of the PhD on “Civil Engineering and Innovative Materials” at the Department of Civil and Environmental Engineering of Perugia University.

Since 2013 Member of the Reference Council of the PhD on “Energy and Sustainable Development” at the CIRIAF, Perugia University.

Supervisor of over 100 graduate thesis of the Engineering Courses at Perugia University.

National Competitive Funding:

(1993-1995) Research Unit Coordinator, PRIN (Cofin) : Advanced Survey Techniques (National Scientific Coordinator: Prof. R. Galetto).

(1996) Research Unit Coordinator, PRIN (Cofin) : Algorithms and procedures to promote the use of digital technology in the world of photogrammetric production (Nat. Scient. Coord.: Prof. R. Galetto).

(1998) Research Unit Coordinator, PRIN (Cofin) : Definition of a quality model of numerical cartography, realized with digital photogrammetry techniques and aimed at the detection and representation of urban buildings for the design of mobile telephony (Nat. Scient. Coord.: Prof. R. Galetto).

(1998-2000) Research Unit Coordinator, ASI (Italian Space Agency) : Quality control and validation of GPS data acquired from permanent stations (Nat. Scient. Coord.: 1998-1999 Prof. F. Sansò, 2000 Prof. B. Betti).

(1998) Research Unit Coordinator, PRIN (Cofin) : Laser scanning integrated by GPS in the production of numerical models for the creation of 3D cartography and digital ortophotos (Nat. Scient. Coord.: Prof. R. Galetto).

(1999) Research Unit Coordinator, PRIN (Cofin) : Permanent stations integrated by GPS networks and numerical cartography: from precision positioning to navigation (Nat. Scient. Coord.: Prof. M. Barbarella).

(1999-2001) Research Unit Coordinator, ENEA PNRA : Geodesy and cartography of the Eastern Antarctica, Pacific sector (Nat. Scient. Coord.: Dr. A. Morelli).

(2001) Research Unit Coordinator, PRIN (Cofin) : Applications of the satellite and inertial methods with high productivity and accuracy to the Road Cadastre and to the calibration and georeferencing of Remote Sensing images with metric resolution for territorial information systems (Nat. Scient. Coord.: Prof. G. Manzoni).

(2001) Research Unit Coordinator, ASI (Italian Space Agency) : Working group on measurements and methods of high precision space geodesy (Nat. Scient. Coord.: Prof. B. Betti).

(2002) Research Unit Coordinator, PRIN (Cofin) : Integrated Inertial Positioning Systems in Aerial Photogrammetry (Nat. Scient. Coord.: Prof. R. Galetto).

(2004) Research Unit Coordinator, PRIN (Cofin) : Integrated Inertial Positioning Systems in Aerial Photogrammetry (Nat. Scient. Coord.: Prof. C. Monti).

(2004) Research Unit Member, PRIN (Cofin) : Satellite Positioning Systems for the e-Government (Nat. Scient. Coord.: Prof. F. Sansò).

(2006) Research Unit Coordinator, PRIN (Cofin) : GALILEO and the modernized Satellite Positioning (Nat. Scient. Coord.: Prof. F. Sansò).

(2008) Research Unit Coordinator, PRIN (Cofin) : Interoperability of local GNSS networks with the national dynamic network (Nat. Scient. Coord.: Prof. F. Sansò).

(2011) Research Unit Coordinator, PRIN (Cofin) : Innovative and emerging geomatic techniques for survey, remote sensing (from aircraft, satellite, uav) and webgis for real-time risk mapping and prevention of environmental damage (Nat. Scient. Coord.: Prof. R. Santamaria).

Laboratories and infrastructures realized:

(1995) Institution of the Geomatics Laboratory of the University of Perugia.

(1996) Installation and management of the permanent GPS station UNPG included in the national ASI network and international EUREF / IGS. The station website allows the download of raw or RINEX data in real-time or post-processing.

(2001) Installation and management of a second permanent GPS-GLONASS as integrity monitor of UNPG station, capable of transferring code and phase differential corrections in real time through different infrastructures (web network, cellular telephony, radio).

(2004) Installation and management of the regional network **GPSUmbria** (12 stations) capable of transferring code and phase differential corrections in real time through different infrastructures (web network, mobile phone, radio) for a wide range of technical and scientific applications.

(2014) Planning and installation of the regional infrastructure **AGUMBRIA** set up for the positioning and precision automatic/semiautomatic guide of agricultural machines for the development of precision farming activities.

(2017) Design and construction of the regional network **GNSSUmbria** (13 permanent stations) capable of transferring differential code and phase corrections of all global satellite constellations (GPS, GLONASS, BEIDOU, GALILEO) with the new signals, in real time through different infrastructures (web network, cellular telephony, radio) for all users and a wide range of technical and scientific applications.

Editorial activities:

(2009) Editor with M. Barbarella and F. Sansò of the book “Lo sviluppo delle tecnologie per le reti geodetiche” - CISIS, printed by Gr. Bovini, Perugia, ISBN 978-88-904629-0-0.