

Carlo Iapige De Gaetani

Curriculum Vitae

- **PRESENT POSITION**

Since Dec/2016 Temporary Research Fellow (RTD A), Politecnico di Milano, Department of Civil and Environmental Engineering, Geodesy and Geomatics section, Milano.

- **ACADEMIC CAREER**

Apr/2014 – Sep/2016 Research Geophysicist, Dolphin Geophysical Ltd., Tunbridge Wells, UK.

Jan/2013 – Mar/2014 Post-Doc, Politecnico di Milano, Department of Civil and Environmental Engineering, Milano.

Mar/2011 – Nov/2011 Consultant, Golder Associates s.r.l., Milano.

- **EDUCATION**

2010 – 2012 PhD, Environmental and Infrastructure Engineering, Politecnico di Milano, Department of Civil and Environmental Engineering, Milano. Summa cum laude.

Main contents: Geodesy, Satellite Positioning, Topography, Structural and Land Monitoring, Advanced Statistics, Computer Science, Data Processing.

Thesis: “Covariance models for geodetic applications of collocation”.

Description: Geoid estimation through integration of different kind of gravity data has been dealt. Least Squares Collocation theory and Remove-Restore technique have been applied for an integrated local estimate of the geoid. Satellite gradiometry, radar-altimetry and aero-gravimetry have been properly combined for this purpose. This study has been done in the framework of a research project in collaboration with ENI S.p.A.

2007 – 2009 MSc, Civil Engineering - Geomatics, Politecnico di Milano, Milano. 108/110.

Main contents: Applied Geophysics, Numerical Analysis, Photogrammetry, Geographic Information Systems, Satellite Positioning, Computer Science, Remote Sensing, Statistical Data Processing, Topography, Surveying, SAR DTM generation.

Thesis: “Structural monitoring with GPS technique: the case of Cixerri dam”.

Description: The potential of the GNSS technique for monitoring purposes have been investigated. In this work a real case of dam monitoring has been analyzed. Result of the work has been the development of an algorithm based on the combination of GNSS time series analysis and statistical inference for automatic alerts. This study has been done in the framework of a research project in collaboration with Leica Geosystems S.p.A.

2002 - 2007 BSc, Civil Engineering, Politecnico di Milano, Milano. 90/110.

Main contents: Fundamentals of Road engineering, Soil Mechanics, Hydraulic Engineering and Structural Analysis, Technology of Materials, Electrical Engineering.

Thesis: “Experimental investigation on the laboratory gyratory compaction of bituminous mixtures”.

- **NATIONAL AND INTERNATIONAL RESEARCH PROJECT**

Sep/2011 – Feb/2013 “Integration of Different Linear Functionals of Gravitational Potential for Regional Oil Investigations”. Politecnico di Milano, Milano.

The spatial resolution of the gravity field models can be improved integrating different kinds of data. The usual methodology for the integration of different linear functionals of the anomalous gravity potential is based on the Least Squares Collocation theory. Applying this method, the estimation of local gravity field models takes advantage of the different frequency spectrum covered by different data. The target of this project has been the development of a software package able to integrate gravimetric and gradiometric data for local applications in order to characterize crustal structural elements.

Jan/2010 – Jul/2011 “Feasibility Study on the Use of Satellite Gradiometry in Oil Investigations”. Politecnico di Milano, Milano.

A methodology for the detection of hydrocarbons can be based on the analysis of gravimetric anomalies. In a general way, gravimetric anomalies can be correlated to the presence of mass anomalies and, therefore, existing oil and gas deposits. The target of this project has been the evaluation of prospection methods based on satellite gradiometry and gravimetric data, with particular reference to the GOCE space mission, with the hypothesis of possible applications in the field of oil & gas industry.

- **NATIONAL AND INTERNATIONAL ACKNOWLEDGMENTS**

Since Jan/2016 ISG - International Service for the Geoid, official service of IAG – International Association of Geodesy. Member of the scientific staff.

- **REFEREE FOR SCIENTIFIC JOURNALS**

Since Feb/2017 British Journal of Mathematics & Computer Science

- **SPEAKER AT SCIENTIFIC CONGRESSES AND SUMMER SCHOOL**

- 1) Joint Scientific Assembly of the International Association of Geodesy and the International Association of Seismology and Physics of the Earth’s Interior, IAG-IASPEI, 30/07 – 04/08 2017, Kobe, Japan. Talk: “Comparing marine gravity and satellite altimetry in the Mediterranean area”.
- 2) Joint Scientific Assembly of the International Association of Geodesy and the International Association of Seismology and Physics of the Earth’s Interior, IAG-IASPEI, 30/07 – 04/08 2017, Kobe, Japan. Talk: “Height datum unification by patching local geoid models”.
- 3) European Association of Geoscientists & Engineers, 78th EAGE Conference & Exhibition 2016 Efficient Use of Technology - Unlocking Potential, 30/05 – 02/06 2016, Vienna, Austria. Talk: “Practical Aspects of Non Local Means Filtering of Seismic Data”.
- 4) Society of Exploration Geophysicists, 2016 SEG International Exposition and Annual Meeting, 16/10 – 21/10 2016, Dallas, Texas, US. Talk: “Advancements on the use of the nonlocal means algorithm for seismic data processing”.
- 5) 3th Summer School “Progettazione e Realizzazione di Rilevamenti Topografici”, Politecnico di Milano, Department of Civil and Environmental Engineering. Sep/2013, Menaggio (Como).
- 6) 1st Summer School “Progettazione e Realizzazione di Rilevamenti Topografici”, Politecnico di Milano, Department of Civil and Environmental Engineering. May/2011, Menaggio (Como).

- **POSTERS AT SCIENTIFIC CONGRESSES**

- 1) The International service for the Geoid and its Products. EGU2017, 23/04 – 28/04 2017, Vienna, Austria.
- 2) Locally adapted space-wise grids from GOCE data. EGU2014, 27/04 – 02/05 2014, Vienna, Austria.
- 3) Covariance modelling in geodetic applications of collocation. EGU2014, 27/04 – 02/05 2014, Vienna, Austria.

- **BACHELOR THESIS SUPERVISOR**

- 1) “Confronto tra metodi di stima delle deformazioni nel monitoraggio della diga Eleonora d’Arborea”, Moiana Francesco, Politecnico di Milano, Ingegneria Edile e delle Costruzioni, 2018.
- 2) “Confronto tra serie temporali GPS con ricevitori a basso costo”, Pasqualone Fabio, Politecnico di Milano, Ingegneria Civile, 2018.
- 3) “Analisi degli spostamenti della diga Eleonora d’Arborea, Piazzini Andrea, Politecnico di Milano, Ingegneria Civile, 2018.
- 4) “Il posizionamento RTK: un test multi-costellazione”, Savaresi Stefano, Politecnico di Milano, Ingegneria Civile, 2017.
- 5) “Analisi di precisione di strumenti GNSS a basso costo”, Bello Daniela, Politecnico di Milano, Ingegneria dell’Edilizia, 2017.

- **TEACHING**

A.A. 2017/18	Topografia e Sistemi Informativi GIS, school of Architecture, Urban Planning and Construction Engineering, Politecnico di Milano.
A.A. 2016/17	Topografia e Sistemi Informativi GIS, school of Architecture, Urban Planning and Construction Engineering, Politecnico di Milano.
30/05/11 – 14/06/11	Tutoring in: “Special course on determination and use of the geoid”. Attended at ISG - International service for the Geoid by researchers of the Centre of Geodesy and Geodynamics (National Space Resource and Development Agency, Nigeria). Milan, Italy.

- **PUBLICATIONS**

PAPERS:

- 1) Estimating and Comparing Dam Deformation Using Classical and GNSS Techniques. March 2018, Sensors 18(3), DOI10.3390/s18030756
- 2) Covariance function modelling in local geodetic applications using the simplex method. June 2016, DOI10.1590/S1982-21702016000200019
- 3) Statistical assessment of predictive modelling uncertainty: A geophysical case study. March 2014, Geophysical Journal International, DOI10.1093/gji/ggt510
- 4) Measurement of CNGS muon neutrino speed with Borexino. October 2012, Physics Letters B 716(s 3–5):401, DOI10.1016/j.physletb.2012.08.052
- 5) Precision measurement of the neutrino velocity with the ICARUS detector in the CNGS beam. August 2012, Journal of High Energy Physics 2012(11), DOI10.1007/JHEP11(2012)049

- 6) Esperienze di utilizzo di Reti di SP GNSS per il monitoraggio.
January 2011, Bollettino della Società Italiana di Fotogrammetria e Topografia

CHAPTERS:

- 1) Improving Low-Cost GNSS Navigation in Urban Areas by Integrating a Kinect Device.
March 2018, DOI10.1007/1345_2018_27
- 2) Estimating Crustal Deformations by GNSS Time Series Data Analysis.
January 2018, DOI10.1007/978-3-319-56218-6_3
- 3) Global to Local Moho Estimate Based on GOCE Geopotential Model and Local Gravity Data.
January 2015, DOI10.1007/1345_2015_15

autorizzo il Politecnico di Milano a pubblicare il presente curriculum sul sito WEB di Ateneo, ai fini istituzionali e in ottemperanza al D. Lgs n. 33 del 14 marzo 2013 “Decreto trasparenza” come modificato dal D. Lgs. 97 del 2016