

## PERSONAL INFORMATION

Valentina Alena Girelli

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Sex Female | Date of birth 12/04/1976 | Nationality Italian

## WORK EXPERIENCE

June 2021 to date

### Senior assistant professor

Department of Civil, Chemical, Environmental, and Materials Engineering (DICAM) – University of Bologna (UNIBO), Italy (<https://dicam.unibo.it/en/index.html>)

- 3 years research program entitled "Integration of advanced geomatic techniques for the surveying and restitution of buildings and land"
- The research is primarily focused on the in-depth analysis of the potential and problems of the most modern 3D surveying techniques, in particular aerial and close-range digital photogrammetry and scanning systems, for the restitution and 3D modelling of objects characterized by different sizes, from the territory to cities, from the building to the single find.  
The addressed issues, realized in several case studies within multidisciplinary research projects, are many:
  - geometric analysis for the documentation, the decay study and the restoration
  - monitoring of structures and land, also in case of disasters (e.g. landslides)
  - processing of aerial and terrestrial thermal images
  - calibration of amateur digital cameras, using commercial and in-house software
  - calibration of terrestrial thermal cameras
  - fusion of multi-source data
  - 3D terrain and surface modelling for environmental and other applications
  - processing of large blocks of aerial and terrestrial images, for orthophoto generation in architecture and for the large-scale mapping of wide areas
  - recycling of amateur terrestrial images
  - recycling of historical aerial images for the land multi-temporal analysis
  - recycling of high resolution declassified remote sensing images
  - georeferencing of high-resolution remote sensing images by means of GNSS techniques
  - metrical comparison of 3D models obtained using different technologies and techniques
  - DTM generation by frames and high-resolution remote sensing stereoscopic images
  - use of UAV data
  - application of laser scanning for the characterization of road pavements surface texture
  - photogrammetric applications in Antarctica
  - geometric characterization of 3d-printed elements

SC 08/A4, SSD ICAR/06 (Geomatics)

June 2016 to May 2021

### Junior assistant professor

DICAM (UNIBO)

2014 – 2015

### Research fellowship

Inter-Department Research Centre (CIRI) Building and Constructions (UNIBO)

- Research project entitled "Integration of advanced geomatic techniques for the 3D surveying of Cultural Heritage"
- Research activity aimed at testing the potential of new algorithms and new hardware tools in Cultural Heritage 3D surveying and in mapping of phenomena by integrating data by different sensors (data fusion), in particular to evaluate the decay and to support and document the conservation activities

2013

### Independent contractor agreement

DICAM (UNIBO)

- Support activities to the research project "PRIDE (Record Paleoclimatici dall'elaborazione di dati da Ice Core) – unità operativa di geodesia per il monitoraggio di corpi glaciali in Antartide"; the work focused on the extraction of very high-resolution digital terrain models of Antarctic debris-covered glaciers from satellite and aerial images

**2013 Independent contractor agreement**

CIRI Building and Constructions (UNIBO)

- Support activities to the research project “Sperimentazione di sistemi a scansione ad alta risoluzione e alta precisione per acquisizioni ed elaborazioni 3D multiscala nel campo dei Beni Culturali”; the work focused on testing different active sensors in terms of resolution and accuracy in the field of Cultural Heritage

2007 – 2012

(Maternity leave:  
Jul 2009 – Mar 2010)**Research fellowship**

DICAM (UNIBO)

- Research project entitled “New techniques for the elaboration and analysis of digital photogrammetric and remote sensing imagery by a unique approach”
- Research activity aimed at deepening some specific issues of Remote Sensing, such as the data fusion with thermal images and 3D laser scanner data

**QUALIFICATIONS**

May 2019

National Academic Qualification as Associate Professor SC 08/A4 Geomatics

Jul 2003

Qualification as Civil and Environmental Engineer

UNIBO

**EDUCATION AND TRAINING**

Jan 2004 – Dec 2006

Ph.D., Doctoral Program "Geodetic and Topographic Science"

DICAM (UNIBO)

- Thesis title: “Tecniche digitali per il rilievo, la modellazione tridimensionale e la rappresentazione nel Campo dei Beni Culturali”. Research activity focused about aerial and close-range digital photogrammetry and terrestrial laser scanning, even in integration with other Geomatic techniques, particularly in the field of Cultural Heritage
- 3 months education period (May–July 2006) at the ETH-Institute of Geodesy and Photogrammetry, in Zurich; research project focused on the non-metric cameras calibration procedures and 3D modelling of archaeological objects
- Participation in the Archaeological Missions of UNIBO in Uzbekistan (2004-2005), Turkey (2005), and Ercolano (2006), for the application of integrated geomatic techniques for the surveying and the 3D modelling in archaeological areas

Sep 1995 - Mar 2003

MSc., Environmental Engineering

UNIBO

- Thesis in Photogrammetry, with title: “Impiego di un sistema non convenzionale di fotogrammetria aerea in campo archeologico”.  
Mark: 96/100; advisor: Prof. Gabriele Bitelli.

**PERSONAL SKILLS**

Mother tongue

Italian

Other languages

English - proficient user (listening B2, speaking B2, writing B2)

German – basic user (listening A0, speaking A0, writing A0)

Digital skills

- Knowledge and utilization of the most widespread software of digital photogrammetry, scanner data processing, 3D data processing, GIS (commercial and open source):  
Leica Photogrammetric Suite, Agisoft Metashape, Bentley ContextCapture, MicMac, Riegl RiSCAN PRO, Artec Studio, Geomagic Design X, CloudCompare, Meshlab, QGIS, Global Mapper, Surfer, ...
- Customary use of Windows, Office, graphic design software, Autodesk products.

## ADDITIONAL INFORMATION

### Publications

Valentina Alena Girelli is author of 22 papers in referred journals, 12 book chapters, 25 conference proceedings (with review), 4 abstracts (Jul 2022)

ORCID ID: <https://orcid.org/0000-0001-9257-9803>

SCOPUS (ID: 16315923200): <https://www.scopus.com/authid/detail.uri?authorId=16315923200>

Bibliometric data (Jul 2022):

SCOPUS: H-index 12; documents 30; citations 352

### Involvement in research projects

- National project PRIN 2003 prot. 2003080528\_12 "Tecnologie innovative per la previsione, il controllo e la mitigazione dell'impatto delle emergenze ambientali" (20/11/2003-19/11/2005)
- National project PRIN 2004 prot. 2004080741\_012 "La carta del rischio del patrimonio culturale: rilievo, georeferenziazione, monitoraggio e modellazione multiscala" (30/11/2004-12/01/2007)
- National project 2007 prot. 2007C4SC5W\_004 "Atelier, fabbrica, cantiere. Tecnica e cultura della produzione del mondo romano" (22/09/2008-20/10/2010)
- European project "ENERGYCITY: Reducing energy consumption and CO emissions in cities across Central Europe" (01/03/2010-31/08/2013)
- European project FP7-IDEAS-ERC-2009-AdG\_20090415 "The early state and its chora. Towns, villages and landscapes at Ebla in Syria during the 3rd Millennium BC. Royal archives, visual and material culture, remote sensing and artificial neural networks" (01/04/2010-31/03/2014)
- Project POR-FESR 2014-2020 INFRASAFE "Monitoraggio intelligente per infrastrutture sicure" (01/04/2016-31/03/2018)
- National project PRIN 2015 n. 2015HJLS7E "GAMHer-Geomatics Data Acquisition and Management for Landscape and Built Heritage in a European Perspective" (2017-2020)
- European project id 10046731 "SUSHI-DROP, SUsustainable fiSHeries wIth DRones data Processing", programma Interreg Italia-Croazia (2019-2021)
- Project POR-FESR 2014-2020 eBIM Existing Building Information Modeling per la gestione dell'intervento sul costruito esistente (2019-2021)

### Scientific memberships

- Since 2019 member of the Scientific Committee of SIFET, Italian Society of Photogrammetry and Topography
- Since 2016 member of AUTeC, Italian National Association of Professors in Surveying and Mapping
- Since 2015 member of the Inter-Department Research Center (CIRI) Building and Constructions
- Since 2008 member of Alma HeritageScience, Integrated Research Team of UNIBO dedicated to Science and Technology for Cultural Heritage

### Awards

- 2019: the article "High resolution 3D acquisition and modelling in Cultural Heritage knowledge and restoration projects: the survey of the Fountain of Neptune in Bologna" (authors: Girelli V.A., Tini M.A., Dellapasqua M., Bitelli G.) win the Best Poster Award at the 2nd International Conference of Geomatics and Restoration GEORES2019 (Milano, 8-10 May 2019)
- 2019: the article "Structure from Motion for aerial thermal imagery at city scale: Pre-processing, camera calibration, accuracy assessment" (authors: Conte P., Girelli V.A., Mandanici E., in ISPRS Journal of Photogrammetry and Remote Sensing) win the DICAM Best Paper Award
- 2017: the article "Back Analysis of the 2014 San Leo Landslide Using Combined Terrestrial Laser Scanning and 3D Distinct Element Modelling" (authors: Spreafico M.C., Francioni M, Cervi F., Stead D., Bitelli G., Ghirotti M., Girelli V.A., Lucente C.C., Tini M.A., Borgatti L., in Rock Mechanics and Rock Engineering Journal) win the DICAM Best Paper Award
- 2009: 3<sup>rd</sup> place ex-aequo in the National Award "Licinio Ferretti, photogrammetry of the 21st century: methods, tools and applications"

### Service as reviewer or editor

- 2020 – 2022: guest editor of the Special Issue "3D Virtual Reconstruction for Archaeological Sites" of the Journal Applied Science
- Since 2021: member of the Editorial Board of the journal Applied Science
- Since 2019: member of the Reviewer Board of the journal Remote Sensing

- Since 2015: reviewer for many international journals in the field of Mapping and Remote Sensing: Applied Geomatics; Applied Sciences; Remote Sensing; Journal of Archaeological Science; Sensors; Sustainability; Journal of Cultural Heritage; Geosciences
- Invited talks at international conferences or workshop
- 2017: 8th International Symposium on Temporal Design (Bologna, 14-15 Settembre 2017), with the presentation "The modern 3D digital geomatic techniques and their potential for the acoustic modelling"
  - 2012: workshop "Versa nelle giare ... sigilla col tuo sigillo ... sigilla l'accesso al tetto! Riflettendo sulle procedure amministrative nel Vicino Oriente antico", organized by the Post-Graduate School in Archaeological Heritage (interuniversity) of the University of Trieste, Udine and Venezia, with the presentation "The contribution of Geomatics in Archeology: the 3D surveying of objects for scientific dissemination"
- Teaching activity
- School of Engineering and Architecture (UNIBO):
- Since academic year 2017/2018:
    - Cartography and Spatial Data Management (Building Engineering, BSc degree, 60 hours – 6 CFU)
    - Digital Mapping and GIS (Environmental Engineering, BSc degree, 60 hours – 6 CFU)
  - Academic year: 2016/2017:
    - Cartography and Spatial Data Management (Building Engineering, BSc degree, 48 hours)
    - Geomatic Engineering for Cultural Heritage" (Engineering of Building Processes and Systems, MSc degree in English, 12 hours)
  - Academic years 2010/11 and 2011/12:
    - Geomatics laboratory (Civil Engineering, MSc degree, 30 hours)
  - Supervisor of 6 BSc and co-supervisor of more than 80 BSc and MSc thesis
- Public engagement
- 2018: participation in the European Researchers Night - 3D: a new dimension for the surveying of Cultural Heritage
  - 2011: participation in the realization of the exhibition "KINKU: Seals of the Bronze Age from the Region of Gaziantep in Turkey" (Bologna, Museo Civico Medievale, April-September 2011)
  - 2008: Research to Business – exhibition in the field of digital innovation for companies and public institutions (Bologna)
- Service at DICAM Dept.
- Since 2021: member of the 3<sup>rd</sup> Mission Committee  
The Committee has the goal of promoting the research and teaching activities carried out at DICAM, promoting the communication among researchers within the Department and enhancing the Department's visibility. The Committee is also in charge of organizing the bi-annual "DICAM Works" event, aimed at gathering professors, researchers, students and companies for a mutual transfer of knowledge
  - Since 2020: member of the Committee that evaluates the students' procedures for transfers and CFU recognitions (

Bologna, 13 July 2022