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R3 in Geomatics: Research, Results and Review

First International Workshop
in memory of Prof. Raffaele Santamaria
on R3 in Geomatics: Research, Results and Review, R3GEO 2019
Naples, Italy, October 10–11, 2019
Revised Selected Papers

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Preface

The First International Workshop R3 in Geomatics: Research, Results and Review (R3GEO 2020), was held in Naples at the Parthenope University of Naples, Italy, during October 10–11, 2019. This event was dedicated to the memory of Raffaele Santamaria (1950–2017), Italian Professor of Geomatics and Director of the Department of Sciences and Technologies (DiST) at Parthenope University of Naples (2013–2017). In his honor, the event was focused on Geomatics, the “discipline concerned with the collection, distribution, storage, analysis, processing, and presentation of geographic data or geographic information” (Standard Technical Committee ISO/TC 211).

According to the Declaration on Geomatics by the Italian Ministry of Education University and Research (MIUR), the contents of the scientific disciplines concern the acquisition, return, analysis, and management of metric or thematic data relating to the surface of the Earth, or portions of it, including the urban environment, infrastructures, and architectural heritage, identified by their spatial location and qualified by detection accuracy. The disciplines included in this scientific sector are: Geodesy (physical, geometric, and spatial), Topography, Photogrammetry (aerial and terrestrial), Cartography, Remote Sensing (by satellite, airplane, and close-range), Navigation (space, air, sea, and land), and Geographic Information Systems (GIS). The application areas concern, in particular, the study of the global and local reference systems, the instruments and methods of detection, control, monitoring of the territory, of the structures, and cultural heritage, the processing of measurement data, the production and updating of cartography, topographic databases, layout of works and infrastructures, mobile systems for surveying, Global Navigation Satellite System (GNSS), digital terrain and surface models (DTMs and DSMs), management and sharing of multidimensional, and multi-time geographic information.

The workshop was organized to remark on the recent developments in Geomatics and the submission of high quality abstracts was encouraged. Every contribution received (first as an abstract and then, if approved, as an article) was subjected to a rigorous single-blind review process. At the start, 39 of the submitted abstracts were accepted. Each submitted article received at least three reviews from the Scientific Committee and additional reviewers. Then authors were invited to revise their contribution. After revision was received, each paper was resubmitted to the review process. Ultimately, of the 39 papers submitted, 29 (74.4%) were accepted for publication, of which 27 (93.1%) included at least 12 pages (full papers). All Scientific Committee members were assembled from different countries and they made the workshop truly international in scope.

The papers were grouped according to the topics they addressed. For instance, three thematic areas were identified for the proceedings: GNSS and Geodesy, Photogrammetry and Laser Scanning, and GIS and Remote Sensing.

The support for the conference was provided by the International Society for Photogrammetry and Remote Sensing (ISPRS), the Association of the Italian University professors and researchers of Geomatics (Associazione Universitari di Topografia e Cartografia, AUTECH) two Italian Scientific Associations named, respectively, Società Italiana di Fotogrammetria e Topografia (SIFET) and Associazioni Scientifiche per le Informazioni Territoriali e Ambientali (ASITA), and the Parthenope University of Naples.

We would like to thank the organization staff, the members of the Scientific Committee, and reviewers. They worked very hard in reviewing papers and making valuable suggestions for the authors to improve their work. We would also like to express our gratitude to the external reviewers, for providing extra help in the review process, and the authors for contributing their research results to the workshop. We would like to extend our sincere thanks to the Rector of the Parthenope University of Naples, Prof. Alberto Carotenuto, and the Director of the DiST, Prof. Giorgio Budillon, for encouraging and supporting the event, as well as the DiST technical staff, especially Mr. Francesco Peluso, for the workshop website construction. Special thanks go to Springer for technically supporting and publishing the proceedings.

July 2020

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Contents

GNSS and Geodesy

Positioning Domain Assessment of Multi Constellation Dual Frequency Lowcost Receivers in an Highly Degraded Scenario	3
<i>Umberto Robustelli, Matteo Cutugno, and Giovanni Pugliano</i>	
Statistical Comparison Between Different Approaches to GNSS Single-Frequency Data Processing for Meteorological Applications	16
<i>Alessandra Mascitelli, Andrea Gatti, Eugenio Realini, and Giovanna Venuti</i>	
Precipitable Water Vapor Content from GNSS/GPS: Validation Against Radiometric Retrievals, Atmospheric Sounding and ECMWF Model Outputs over a Test Area in Milan	27
<i>Alessandra Mascitelli, Stefano Barindelli, Eugenio Realini, Lorenzo Luini, and Giovanna Venuti</i>	
A Fuzzy Logic-Based Weighting Model for GNSS Measurements from a Smartphone	35
<i>Anna Innac, Antonio Angrisano, Salvatore Gaglione, and Antonio Maratea</i>	
Educational Experiences for Geomatics Scientific Dissemination	47
<i>Domenico Sguerso, Elena Ausonio, Bianca Federici, Ilaria Ferrando, Sara Gagliolo, and Stefania Viaggio</i>	
Use of CORS Time Series for Geodynamics Applications in Western Sicily (Italy).	61
<i>Claudia Pipitone, Gino Dardanelli, Mauro Lo Brutto, Valentina Bruno, Mario Mattia, Francesco Guglielmino, Massimo Rossi, and Giovanni Barreca</i>	
Performances and New Aspects of Multi-GNSS, Dual Frequency and Low-Cost Receivers in Harsh Urban Environments	77
<i>Marco Piras, Paolo Dabove, and Nives Grasso</i>	
Geomatics for Port Safety and Security	91
<i>M. Soldani</i>	
A Preliminary Study on Attitude Measurement Systems Based on Low Cost Sensors.	103
<i>Fabiana Di Ciaccio, Salvatore Gaglione, and Salvatore Troisi</i>	

Development and Initial Assessment of a Low Cost Mobile Mapping System.	116
<i>Andrea Masiero, Francesca Fissore, Alberto Guarnieri, Antonio Vettore, and Ugo Coppa</i>	
A Comparison of Indoor Positioning Approaches with UWB, IMU, WiFi and Magnetic Fingerprinting.	129
<i>Ahmed Gamal Abdellatif Ibrhaim Keshka, Andrea Masiero, Mostafa Mohamed Ahmed Mostafa, and Antonio Vettore</i>	
Sea Tide Analysis Derived by PPP Kinematic GPS Data Acquired at David-Drygalski Floating Ice Tongue (Antarctica)	142
<i>Luca Vittuari, Marco Dubbini, Leonardo Martelli, and Antonio Zanutta</i>	
Photogrammetry and Laser Scanning	
A Procedure to Obtain a 3D Model in Bim and Structural Analysis Software.	157
<i>Domenica Costantino, Massimiliano Pepe, Marcello Carrieri, and Alfredo Restuccia Garofalo</i>	
Integration of Laser Scanning and Photogrammetry in Architecture Survey. Open Issue in Geomatics and Attention to Details.	170
<i>Gabriella Caroti and Andrea Piemonte</i>	
Integration and Assessment Between 3D Data from Different Geomatics Techniques. Case Study: The Ancient City Walls of San Ginesio (Italy)	186
<i>Francesco Di Stefano, Stefano Chiappini, Fabio Piccinini, and Roberto Pierdicca</i>	
Dynamic Measurement of Water Waves in a Wave Channel Based on Low-Cost Photogrammetry: Description of the System and First Results.	198
<i>Serena Artese, Michele Perrelli, Giuseppe Tripepi, and Francesco Aristodemo</i>	
3-D Survey of Rocky Structures: The Dolomitic Spire of the Gusela del Vescovà	211
<i>Michele Monego, Vladimiro Achilli, Massimo Fabris, and Andrea Menin</i>	
A Python Customization of Metashape for Quasi Real-Time Photogrammetry in Precision Agriculture Application	229
<i>Irene Aicardi, Stefano Angeli, Rosario Milazzo, Andrea Maria Lingua, and Maria Angela Musci</i>	

Innovative Technologies for Coastal Paleo-Landscape Reconstruction and Paleo-Sea Level Measuring	244
<i>Gaia Mattei, Pietro Patrizio Ciro Aucelli, Claudia Caporizzo, Francesco Peluso, Gerardo Pappone, and Salvatore Troisi</i>	
Handheld 3D Mobile Scanner (SLAM): Data Simulation and Acquisition for BIM Modelling	256
<i>Mattia Previtali, Fabrizio Banfi, and Raffaella Brumana</i>	
Processing of 3D Models for Networking of CH in Geomatics	267
<i>Andrea Scianna and Marcello La Guardia</i>	
Use of Non-professional UAV Video Sequences for the 3D Modelling of Archaeological Sites by SfM Techniques	282
<i>Gabriele Bitelli, Federico Artini, Valentina Alena Girelli, Alessandro Lambertini, and Emanuele Mandanici</i>	
Refractory Brick Lining Measurement and Monitoring in a Rotary Kiln with Terrestrial Laser Scanning	296
<i>Grazia Tucci, Alessandro Conti, and Lidia Fiorini</i>	
Morphological Evolution of Somma-Vesuvio During the Last Century: Integration Between Historical Maps and Airborne LiDAR Survey	311
<i>Marina Bisson, Alessandro Tadini, Roberto Gianardi, and Andrea Angioletti</i>	
GIS and Remote Sensing	
Processing Very High-Resolution Satellite Images for Individual Tree Identification with Local Maxima Method	323
<i>Oscar Rosario Belfiore, Manuel Angel Aguilar, and Claudio Parente</i>	
Coastline Extraction from Optical Satellite Imagery and Accuracy Evaluation	336
<i>Emanuele Alcaras, Angela Errico, Ugo Falchi, Claudio Parente, and Andrea Vallario</i>	
Using Images Generated by Sentinel-2 Satellite Optical Sensor for Burned Area Mapping	350
<i>Domenica Costantino, Francesca Guastaferro, Claudio Parente, and Massimiliano Pepe</i>	
Monitoring Strategies of Displacements and Vibration Frequencies by Ground-Based Radar Interferometry	363
<i>Giovanni Nico, Giuseppina Prezioso, Olimpia Masci, and Yuta Izumi</i>	

Multi-scale Remote Sensed Thermal Mapping of Urban Environments: Approaches and Issues.	375
<i>Gabriele Bitelli, Emanuele Mandanici, and Valentina Alena Girelli</i>	
Correction to: Educational Experiences for Geomatics Scientific Dissemination.	C1
<i>Domenico Sguerso, Elena Ausonio, Bianca Federici, Ilaria Ferrando, Sara Gagliolo, and Stefania Viaggio</i>	
Author Index	387

Short biography



Raffaele Santamaria Born on 2 May 1950 in Naples (Italy), Raffaele Santamaria graduated in Nautical Sciences at Naval University Institute of Naples and became full Professor of Geomatics (Topography and Cartography) at the Parthenope University of Naples. First he held the role of dean of the Faculty of Sciences and Technologies (2005–2013) and then of director of the Department of Sciences and Technologies at the same University (2013–2017). He also carried out teaching activities at the Federico II University of Naples, Faculty of Engineering, where he was a teacher of Topography.

He was the Coordinator of the PhD Course in Geodetic and Topographical Sciences for the three-year period 2006–2008. In the next years, he took part in the teaching staff of the Doctoral program in “Geomatics, Navigation and Geodesy” and of the Doctoral program in “Sciences Applied to the Sea, the Environment and the Territory” of the same University.

In 1994 he was director of the post-graduate Master in Marine Sciences and Engineering at the Naval University Institute of Naples.

He was member of the Commission for the National Radio Navigation Plan, and scientific manager of the European consortium for research named MED-TEAM (Maritime Engineering Development and Trans Mediterranean Environmental Awareness and Management) of the European Commission (EU).

He participated in numerous research projects relating to Cartography, Navigation, Geographic Information System (GIS), Global Positioning System (GPS), Global Navigational Satellite System (GNSS), and Remote sensing, presenting the results of his studies and applications in national and international conferences. He was involved in the study of orbits and constellations of artificial satellites for selective coverage of the earth's surface. He conducted research activities funded by ASI (Italian Space Agency) on the reduction of ionospheric and multipath errors to improve accuracy in RTK (Real Time Kinematic) GPS applications, with particular attention to navigational ones.

He was scientific responsible of numerous research projects in the geodetic, topo-cartographic and remote sensing fields. Particularly, he was National Coordinator of two projects funded by the Italian Ministry of Education University and Research (MIUR): the PRIN 2008 project entitled “WEBGIS and innovative remote sensing techniques for safeguarding against territorial and environmental risks” as well as the PRIN 2010–11 project entitled “Innovative and emerging geomatics techniques of survey, remote sensing (by airplane, satellite, UAV) and WEBGIS for risk mapping in real-time and the prevention of environmental damage”.

He was the author of more than one hundred works presented at national and international conferences and/or published in national and international journals. At age 67, he died in Naples in June 2017, mourned by family and friends, many of whom had been his pupils.