



UNIVERSITÀ  
DEGLI STUDI  
DI BERGAMO



## 3D-ARCH 2019

📍 BERGAMO, ITALY 📅 6-8 FEBRUARY 2019



University of Bergamo, Ex-Monastero di Sant'Agostino  
Piazzale Sant'Agostino 1, Città Alta, Bergamo, Italy

### Final program – 29.01.2019

WEDNESDAY, February 6th 2019	
9:00	Opening
9:30-10:45	<b>Technical Session 1 – 3D Surveying and Modeling</b> Chairman: Fabio Remondino
	<ul style="list-style-type: none"> <li>● GIGAPIXEL ORTOPHOTO AS SUPPORT FOR THE MAINTENENCE OF COMPLEX BUILDING Perfetti, L.; Fassi, F.; Gulsan, H.</li> <li>● A COMPLETE FRAMEWORK OPERATING SPATIALLY-ORIENTED RTI IN A 3D/2D CULTURAL HERITAGE DOCUMENTATION AND ANALYSIS TOOL Pamart, A.; Ponchio, F.; Abergel, V.; Alaoui Mdarhri, A.; Corsini, M.; Dellepiane, M.; Morlet, F.; Scopigno, R.; De Luca, L.</li> <li>● ALEPPO – BEFORE AND AFTER Fangj, G.</li> </ul>
10:45	Sponsor presentation – <b>Leica Geosystems</b> “How Edge Computing Empowered Reality Capture”
11:00-11:30	<b>COFFEE BREAK</b>
11:30-13:00	<b>Technical Session 2 – Point cloud processing</b> Chairman: Geert Verhoeven
	<ul style="list-style-type: none"> <li>● CLUSTERING OF WALL GEOMETRY FROM UNSTRUCTURED POINT CLOUDS Bassier, M.; Vergauwen, M.</li> <li>● POINT CLOUD SEGMENTATION AND SEMANTIC ANNOTATION AIDED BY GIS DATA FOR HERITAGE COMPLEXES</li> </ul>

	<p>Murtiyoso, A.; Grussenmeyer, P.</p> <ul style="list-style-type: none"> <li>● COMPARISON WITH ACCURACY OF TERRESTRIAL LASER SCANNER BY USING POINT CLOUD ALIGNED WITH SHAPE MATCHING AND BEST FITTING METHODS</li> </ul> <p>Ogawa, T.; Hori, Y.</p> <ul style="list-style-type: none"> <li>● AUTOMATED DETECTION AND LAYOUT REGULARIZATION OF SIMILAR FEATURES IN INDOOR POINT CLOUD</li> </ul> <p>Previtali, M.; Barazzetti, L.; Roncoroni, F.</p>
13:00-14:15	<b>LUNCH</b>
14:15-16:00	<b>Keynote</b> – Jan Boehm (UCL, UK) "Modelling from point clouds and the BIM process"
	<b>Technical Session 3 – BIM</b> Chairman: Stefano Brusaporci
	<ul style="list-style-type: none"> <li>● THE ARCHAEOLOGICAL ANALYSIS OF MASONRY FOR THE RESTORATION PROJECT IN HBIM</li> </ul> <p>Trizio, I.; Savini, F.; Giannangeli, A.; Boccabella, R.; Petrucci, G.</p> <ul style="list-style-type: none"> <li>● AUTOMATING THE VERIFICATION OF HERITAGE BUILDING INFORMATION MODELS CREATED FROM POINT CLOUD DATA</li> </ul> <p>Macher, H.; Chow, L.; Fai, S.</p> <ul style="list-style-type: none"> <li>● AS-BUILT RELIABILITY IN ARCHITECTURAL HBIM MODELING</li> </ul> <p>Maiezza, P.</p>
16:00-17:30	<p>POSTERS PRESENTATIONS</p> <p>DEMOS:</p> <ul style="list-style-type: none"> <li>● Virtual Reality visualization of museum of King Jan III's Palace at Wilanów – K. Choromański (Warsaw University of Technology, Poland)</li> <li>● An Ottoman fortress in Virtual Reality – G. Buyuksalih (Bimtas, Turkey)</li> <li>● Smartphone + Photogrammetry + Cloud – E. Grilli, D. Morabito (FBK Trento, Italy)</li> </ul>
17:30	Welcome party

## THURSDAY, February 7<sup>th</sup> 2019

9:00-10:45	<b>Keynote</b> – G. Vassena (Univ. of Brescia, Italy) "iMMS approach for construction monitoring and geospatial applications: new prospective and near future developments"
	<b>Technical Session 4 – Data fusion</b> Chairman: Francesco Fassi
	<ul style="list-style-type: none"> <li>● QUALITY FEATURES FOR THE INTEGRATION OF TERRESTRIAL AND UAV IMAGES</li> </ul> <p>Farella, E. M.; Torresani, A.; Remondino, F.</p> <ul style="list-style-type: none"> <li>● A COMBINED APPROACH FOR SURVEYING COMPLEX COASTAL SITES</li> </ul> <p>Liuzzo, L.; Feo, R.; Giuliano, S.; Pampalone, V.</p> <ul style="list-style-type: none"> <li>● THE INTEGRATED 3D SURVEY FOR PLANNED CONSERVATION: THE FORMER CHURCH AND CONVENT OF SANT'AGOSTINO IN BERGAMO</li> </ul> <p>Cardaci, A.; Mirabella Roberti, G.; Versaci, A.</p>
10:45	Sponsor presentation – <b>Agisoft</b> "New Features in Agisoft Metashape"
11:00-11:30	<b>COFFEE BREAK</b>
11:30-13:00	<b>Technical Session 5 – 3D in Heritage</b> Chairman: Pierre Grussenmeyer
	<ul style="list-style-type: none"> <li>● MODELLING BUILDING COSTS FROM 3D BUILDING MODELS - ESTIMATING THE CONSTRUCTION EFFORT FROM IMAGE-BASED SURFACE MODELS OF DRY-STONE SHEPHERD SHELTERS (KRAS, SLOVENIA)</li> </ul> <p>Štuhec, S.; Verhoeven, G.; Štuhec, I.</p>

	<ul style="list-style-type: none"> <li>● KNOWLEDGE-BASED FRAMEWORK FOR AUTOMATIC SEMANTISATION AND RECONSTRUCTION OF MILITARY ARCHITECTURE ON CITY-SCALE MODELS Gros, A.; Jacquot, K.; Messaoudi, T.</li> <li>● HIGH QUALITY TEXTURE MAPPING PROCESS AIMED AT THE OPTIMIZATION OF 3D STRUCTURED LIGHT MODELS Inzerillo, L.; Di Paola, F.; Alogna, Y.</li> <li>● 3D MODELING FOR ROCK ART DOCUMENTATION USING LIGHTWEIGHT MULTISPECTRAL CAMERA Zainuddin, K.; Majid, Z.; Ariff, M. F. M.; Idris, K. M.; Abbas, M. A.; Darwin, N.</li> </ul>
13:00-14:00	LUNCH
14:00-15:30	POSTERS PRESENTATIONS DEMOS: <ul style="list-style-type: none"> <li>● To achieve real immersion: the 3D virtual and physical reconstruction of Cave No.3 and No.12 Yungang Grottoes – Y. He (Yungang Grottoes Academy, China)</li> <li>● Myin-pya-gu: Photogrammetry to VR – A. Dhanda (Carleton University, Canada)</li> <li>● Aioli: A reality-based 3D annotation platform for the collaborative documentation of heritage artefacts – A. Pamart (MAP-CNRS, France)</li> </ul>
15:30-16:00	COFFEE BREAK
16:00-17:30	FINE Benchmark session – Moderator: Francesco Fassi <ul style="list-style-type: none"> <li>● SURVEYING IN 3D COMPLEX NARROW SPACES - PREVIOUS EXPERIENCES AND CHALLENGES Fassi, F. (Politecnico di Milano, Italy)</li> <li>● (GEO)POSITIONING OF SLAM-BASED MAPPING: FIRST TESTS WITH ZEB REVO POINT CLOUDS Spano', N.; Sammartano, G. (Politecnico di Torino, Italy)</li> <li>● TESTS ON THE FISHEYE TOWER BLOCK Forlani, G.; Roncella, R. (University of Parma, Italy)</li> <li>● FINE BENCHMARK: MULTI-CAMERA RIG CONFIGURATION TO SURVEY NARROW SPACES Perfetti, L. (Politecnico di Milano, Italy)</li> </ul>
18:30	Guided tour in the historic city centre
20:00	Social dinner @ <b>Ristorante Da Franco</b> , Via Bartolomeo Colleoni 8, Bergamo

## FRIDAY, February 8<sup>th</sup> 2019

9:30-11:00	<b>Keynote</b> – L. De Luca (MAP-CNRS, France) "Reality-based 3D annotation of cultural heritage artefacts"
	<b>Technical Session 6 – 3D investigations</b> Chairman: Andreas Georgopoulos
	<ul style="list-style-type: none"> <li>● A COMPARATIVE STUDY AMONG THREE REGISTRATION ALGORITHMS: PERFORMANCE, QUALITY ASSURANCE AND ACCURACY Wujanz, D.; Barazzetti, L.; Previtali, M.; Scaioni, M.</li> <li>● FOVEON VS BAYER: COMPARISON OF 3D RECONSTRUCTION PERFORMANCES Vlachos, M.; Skarlatos, D.; Bodin, P.</li> </ul>
11:00-11:30	COFFEE BREAK
11:30-13:00	<b>Technical Session 7 – Semantic</b> Chairman: Jan Bohem
	<ul style="list-style-type: none"> <li>● SEMANTIC PHOTOGRAMMETRY – BOOSTING IMAGE-BASED 3D RECONSTRUCTION WITH SEMANTIC LABELLING Stathopoulou, E.K.; Remondino, F.</li> <li>● TOWARDS DEEP LEARNING FOR ARCHITECTURE: A MONUMENT RECOGNITION MOBILE APP</li> </ul>

	<p>Palma, V.</p> <ul style="list-style-type: none"> <li>● GENERATIVE ADVERSARIAL NETWORKS FOR SINGLE PHOTO 3D RECONSTRUCTION Kniaz, V.V.; Remondino, F.; Knyaz, V.A.</li> <li>● VAULT MODELING WITH NEURAL NETWORKS Barazzetti, L.; Previtali, M.</li> </ul>
13:00-14:00	<b>LUNCH</b>
14:00-15:00	<p>POSTERS PRESENTATIONS</p> <p>DEMOS:</p> <ul style="list-style-type: none"> <li>● VR for real measurements – D. Kontos and A. Georgopoulos (NTUA Athens, Greece)</li> <li>● Enhanced connections: AI and AR between architectural space and digital information – V. Palma, R. Spallone (Politecnico di Torino, Italy)</li> <li>● Aerial and mobile survey techniques for Bergamo in 3D – F. Fassi (Politecnico di Milano, Italy)</li> </ul>
15:00-16:30	<p><b>Technical Session 8 – Heritage visualization and VR/AR</b></p> <p>Chairman: Giulio Mirabella Roberti</p>
	<ul style="list-style-type: none"> <li>● INTERACTIVE IMAGE GEOLOCALIZATION IN AN IMMERSIVE WEB APPLICATION Harrach, M.; Devaux, A.; Brédif, M.</li> <li>● ACCESS AND WEB-SHARING OF 3D DIGITAL DOCUMENTATION OF ENVIRONMENTAL AND ARCHITECTURAL HERITAGE Tommasi, C.; Fiorillo, F.; Jiménez Fernández-Palacios, B.; Achille, C.</li> <li>● VIRTUALISING AN OTTOMAN FORTRESS – LASER SCANNING AND 3D MODELLING FOR THE DEVELOPMENT OF AN INTERACTIVE, IMMERSIVE VIRTUAL REALITY APPLICATION Tschirschwitz, F.; Büyüksalih, G.; Kersten, T. P.; Kan, T.; Enc, G.; Baskaraca, P.</li> <li>● PARAMETRIC SURFACES FOR AUGMENTED ARCHITECTURE REPRESENTATION Russo, M.; Menconero, S.; Baglioni, L.</li> </ul>
16:30	<b>Awards and Closing</b>

#### POSTERS PRESENTATIONS - WEDNESDAY, February 6th 2019, 16:00-17:30

- POINT CLOUD SURVEY AND BIG DATA COMPARATIVE ANALYZE IN DIFFERENT REGISTRATION SYSTEMS IN THE CASE OF VARDZIA HERITAGE STUDY  
Mikadze, G.; Giorgobiani, A.; Lekveishvili, N.; Chachava, N.;
- CREATING. VISUALIZING AND SHARING HIGH-POLY AND MULTI-TEXTURES MODELS ON THE WEB  
Rechichi, F.; Fiorillo, F.
- RECREATING CULTURAL HERITAGE ENVIRONMENTS FOR VR USING PHOTOGRAMMETRY  
Dhanda, A.; Reina Ortiz, M.; Weigert, A.; Paladini, A.; Min, A.; Gyi, M.; Su, S.; Fai, S.; Santana Quintero, M.
- INTEGRATION AND COMPARISON OF CLOSE-RANGE SFM METHODOLOGIES FOR THE ANALYSIS AND THE DEVELOPMENT OF THE HISTORICAL CITY CENTER OF BETHLEHEM  
Parrinello, S.; Picchio, F.
- SEMANTIC WEB TECHNOLOGIES MEET BIM FOR ACCESSING AND UNDERSTANDING CULTURAL HERITAGE  
Iadanza, E.; Maietti, F.; Ziri, A.E.; Di Giulio, R.; Medici, M.; Ferrari, F.; Bonsma, P.; Turillazzi, B.
- MACRO PHOTOGRAMMETRY IN INVENTORY OF HISTORICAL ENGRAVINGS AT THE ROYAL CASTLE IN WARSAW  
Zawieska, D.; Markiewicz, J.; Łuba, M.
- IMAGE RECORDING CHALLENGES FOR PHOTOGRAMMETRIC CONSTRUCTION SITE MONITORING  
Vincke, S.; Bassier, M.; Vergauwen, M.
- THE EUROPEAN RESEARCH NIGHT: NEW WAYS FOR COMMUNICATING SCIENCE WITH ICT AND VIDEOMAPPING  
Quattrini, R.; Pierdicca, R.; Lucidi, A.; Di Stefano, F.; Malinverni, E. S.
- UNCERTAINTY VISUALIZATION APPROACHES FOR 3D MODELS OF CASTLES RESTITUTED FROM ARCHEOLOGICAL KNOWLEDGE

- Landes, T.; Heissler, M.; Koehl, M.; Benazzi, T.; Nivola, T.
- CONNECTING INSIDE AND OUTSIDE THROUGH 360° IMAGERY FOR CLOSE-RANGE PHOTOGRAMMETRY  
Barazzetti, L.; Previtali, M.; Roncoroni, F.; Valente, R.
  - A BIM APPROACH FOR THE ANALYSIS OF AN ARCHAEOLOGICAL MONUMENT  
Bosco, A.; D'Andrea, A.; Nuzzolo, M.; Zanfagna, P.
  - WOODEN TRUSSES RECONSTRUCTION AND ANALYSIS THROUGH PARAMETRIC 3D MODELING  
Prati, D.; Zuppella, G.; Mochi, G.; Guardigli, L.; Gulli, R.
  - RECONSTRUCTION OF LOST ARCHITECTURAL VOLUMES BY INTEGRATION OF PHOTOGRAMMETRY FROM ARCHIVE IMAGERY WITH 3-D MODELS OF THE STATUS QUO  
Bevilacqua, M. G.; Caroti, G.; Piemonte, A.; Ulivieri, D.
  - INTEGRATED 3D SURVEY AND DIAGNOSTIC ANALYSIS FOR THE BUILDING ENGINEERING: THE FORMER KINDERGARTEN SAN FILIPPO NERI IN DALMINE  
Azzola, P.; Cardaci, A.; Versaci, A.
  - ACCURACY ASSESSMENT OF 3D MODELS GENERATED FROM GOOGLE STREET VIEW IMAGERY  
Bruno, N.; Roncella, R.
  - A FULLY AUTOMATED INCREMENTAL PHOTOGRAMMETRIC PROCESSING DEDICATED FOR COLLABORATIVE REMOTE-COMPUTING WORKFLOW  
Pamart, A.; Morlet, F.; de Luca, L.
  - EVALUATING THE STRUCTURAL INTEGRITY OF THE SAINT ANTONIO BARREL VAULT IN THE FORTRESS OF ALMEIDA BY COMBINING LASER SCANNER AND LIMIT ANALYSIS  
Sanchez-Aparicio, L.J.; Rodriguez-Gonzalvez, P.,(2); Gonzalez-Aguilera, D., Ramos, L. F.
  - THE REAL IN THE VIRTUAL - THE 3D MODEL IN THE CULTURAL HERITAGE SECTOR: THE TIP OF THE ICEBERG  
Pratali Maffei, S.; Canevese, E.; De Gottardo, T.
  - AUGMENTED EXPERIENCE TO DISSEMINATE CULTURAL HERITAGE: HOUSE OF COMMONS WINDOWS, PARLIAMENT HILL NATIONAL HISTORIC SITE (CANADA)  
Carrión-Ruiz, B.; Blanco-Pons, S.; Duong, M.; Chartrand, J.; Li, M.; Prochnau, K.; Fai, S.; Lerma, J. L.
  - QUALITY ASSESSMENT OF UAV PHOTOGRAMMETRIC ARCHAEOLOGICAL SURVEY  
Barba, S.; Barbarella, M.; Di Benedetto, A.; Fiani, M.; Limongiello, M.
  - DIGITAL CONTENTS FOR ENHANCING THE COMMUNICATION OF MUSEUM EXHIBITION: THE PERVIVAL PROJECT  
Micoli, L. L.; Gonizzi Barsanti, S.; Caruso, G.; Guidi, G.
  - IMMERSIVE WAYFINDING: VIRTUAL RECONSTRUCTION AND EYE-TRACKING FOR ORIENTATION STUDIES INSIDE COMPLEX ARCHITECTURE  
Bianconi, F.; Filippucci, M.; Felicini, N.
  - FAST INDOOR MAPPING TO FEED AN INDOOR DB FOR BUILDING AND FACILITY MANAGEMENT  
Cantoni, S.; Vassena, G.
  - DATA MODELING FOR MUSEUM COLLECTIONS  
Lo Turco, M.; Calvano, M.; Giovannini, E. C.
  - THE "DIAGNOSTIC SURVEY": A METHODOLOGY FOR THE KNOWLEDGE OF A COMPLEX ARCHITECTURAL PALIMPSEST  
Bortolotto, S.; Ciochini, E.; Garzulino, A.; Simonelli, R.; Zangheri, F.
  - 3D DATA PROCESSING TOWARD MAINTENANCE AND CONSERVATION. THE INTEGRATED DIGITAL DOCUMENTATION OF CASA DE VIDRO  
Balzani, M.; Maietti, F., Rossato, L.
  - THE SUITABILITY OF TERRESTRIAL LASER SCANNING FOR BUILDING SURVEY AND MAPPING APPLICATIONS  
Russhakim, N. A. S.; Ariff, M. F. M.; Majid, Z.; Idris, K. M.; Darwin, N.; Abbas, M. A.; Zainuddin, N. K.; Yusoff, A. R.
  - 3D CAMERAS ACQUISITIONS FOR THE DOCUMENTATION OF CULTURAL HERITAGE  
Pulcrano, M.; Scandurra, S.; Minin, G.; di Luggo, A.

- FROM THE INTEGRATED SURVEY OF HISTORIC SETTLEMENTS TO THE PATTERN BOOK WITHIN THE BIM  
Bianconi, F.; Filippucci, M.; Amoruso, G.; Bertinelli, M.
- VIRTUAL HERITAGE FOR THE DISSEMINATION OF THE BARATTI IN 3D PROJECT  
Nicastro, G.; Puma, P.

**POSTERS PRESENTATIONS THURSDAY, February 7<sup>th</sup> 2019, 14:00-15:30**

- THE INTEGRATED SURVEY OF NARROW SPACES AND UNDERGROUND ARCHITECTURE: THE CASE STUDY OF CAMPANA CAVES BAS-RELIEFS  
Clini, P.; Nespeca, R.; Angeloni, R.; Mammoli, R.
- REVERSE MODELING OF CULTURAL HERITAGE: PIPELINE AND BOTTLENECKS  
Camagni, F.; Colaceci, S.; Russo, M.
- FROM SURVEY TO MODEL AND RETURN. THE CASE OF THE PARMA BAPTISTERY  
Zerbi, A.; Mikolajewska, S.
- UAV PHOTOGRAMMETRY FOR CULTURAL HERITAGE PRESERVATION: MODELING AND MAPPING VENETIAN WALLS OF BERGAMO  
Azzola, P.; Cardaci, A.; Mirabella Roberti, G.; Nannei, V. M.
- INTEGRATION OF SURVEYING TECHNIQUES TO DETECT THE IDEAL SHAPE OF A DOME: THE CASE OF THE ESCUELAS PÍAS CHURCH IN VALENCIA  
Artese, S.; Lerma, J. L.; Aznar Molla, J.; Sánchez, R. M.; Zinno, R.
- AUGMENTED TURIN BAROQUE ATRIA: AR EXPERIENCES FOR ENHANCING CULTURAL HERITAGE  
Palma, V.; Spallone, R.; Vitali, M.
- PHOTOGRAMMETRIC SURVEY WITH FISHEYE LENS FOR THE CHARACTERIZATION OF THE LA SASSA CAVE  
Alessandri, L.; Baiocchi, V.; Del Pizzo, S.; Rolfo, M. F.; Troisi, S.
- INTERACTIVE ONLINE VISUALIZATION OF COMPLEX 3D GEOMETRIES  
Boutsi, A.M.; Ioannidis, C.; Soile, S.
- UAV FOR MAPPING HISTORIC BUILDINGS: FROM 3D MODELLING TO BIM  
Karachaliou, E.; Georgiou, E.; Psaltis, D. Stylianidis, E.
- A COMPARISON BETWEEN TLS AND UAV TECHNOLOGIES FOR HISTORICAL INVESTIGATION  
Valenti, R.; Paternò, E.
- 3D MODELING OF GIRIFALCO FORTRESS  
Masiero, A.; Chiabrande, F.; Lingua, A. M.; Marino, B. G.; Fissore, F.; Guarnieri, A.; Vettore, A.
- EXISTING-BIM: INTEGRATED SURVEY PROCEDURES FOR THE MANAGEMENT OF MODERN ARCHITECTURE  
Monaco, S.; Siconolfi, M.; di Luggo, A.
- A REVIEW OF RECORDING TECHNOLOGIES FOR DIGITAL FABRICATION IN HERITAGE CONSERVATION  
Weigert, A.; Dhanda, A.; Cano, J.; Bayod, C.; Fai, S.; Santana Quintero, M.
- TO ACHIEVE REAL IMMERSION: THE 3D VIRTUAL AND PHYSICAL RECONSTRUCTION OF CAVE 3 AND CAVE 12 OF YUNGANG GROTTOS  
Changyu, D.; Zhirong, L.; Zhuo, Z.; Bo, N.; Yong, H.
- VIRTUAL REALITY TO ALLOW WHEELCHAIR USERS TOURING COMPLEX ARCHAEOLOGICAL SITES IN A REALISTIC MANNER. TOWARDS THEIR ACTUAL SOCIAL INTEGRATION  
Pérez, E.; Merchán, M. J.; Salamanca, S.; Merchán, P.
- CAPTURE AND DOCUMENTATION: KAGA PARK  
Morganti, C.; Bartolomei, C.
- 3D DIGITAL MODELS FOR A WIDESPREAD MUSEUM: THE RENON'S "BAUERNHÖFE"  
Luigini, A.; Brusaporci, S.; Vattano, S.; Tata, A.
- DIGITAL SURVEYS AND 3D RECONSTRUCTIONS FOR AUGMENTED ACCESSIBILITY OF ARCHAEOLOGICAL HERITAGE  
Campi, M.; Di Luggo, A.; Palomba, D.; Palomba, R.
- CONSIDERATIONS ON THE USE OF DIGITAL TOOLS FOR DOCUMENTING ANCIENT WALL GRAFFITI

- Valente, R.; Barazzetti, L.; Previtali, M.; Roncoroni, F.
- 3D IMAGE BASED GEOMETRIC DOCUMENTATION OF A MEDIEVAL FORTRESS  
Tapinaki, S.; Skamantzari, M.; Chliverou, R.; Evgenikou, V.; Konidi, A. M.; Ioannatou, E.; Mylonas, A.; Georgopoulos, A.
  - THE VALUE OF KNOWLEDGE THROUGH H-BIM MODELS: HISTORIC DOCUMENTATION WITH A SEMANTIC APPROACH  
Parisi, P.; Lo Turco, M.; Giovannini E. C.
  - HBIM AND THE 20TH CENTURY STEEL BUILDING HERITAGE A PROCEDURE SUITABLE FOR THE CONSTRUCTION HISTORY IN ITALY  
Morganti, R.; Tosone, A.; Di Donato, D.; Abita, M.
  - REASSEMBLY OF ROCK SEGMENTS, THE CASE OF AREOPAGUS HILL  
Evgenikou, V.; Georgopoulos, A.; Korres, M.
  - FORENSIC ENGINEERING SURVEYS WITH UAV PHOTOGRAMMETRY AND LASER SCANNING TECHNIQUES  
Cappelletti, C.; Boniardi, M.; Casaroli, A.; De Gaetani, C. I.; Passoni, D.; Pinto, L.
  - THE INTEGRATED 3D SURVEY FOR UNDERGROUND ARCHAEOLOGICAL ENVIRONMENT  
Ebolese, D.; Lo Brutto, M.; Dardanelli, G.
  - TERRESTRIAL LASER SCANNER AND FAST CHARACTERIZATION OF SUPERFICIAL LESIONS IN ARCHITECTURAL DIAGNOSIS  
Costa-Jover, A.; Coll-Pla, S.; Queral Llaberia, J.; Moreno García, D.; Gas Llatge, A.
  - 3D MODELLING AND VIRTUAL REALITY FOR COMPLEX ARCHITECTURES: APPLICATION IN HOSPITALS' DOCUMENTATION AND DESIGN  
Chias, P.; Abad, T.; de Miguel, M.; García-Rosales, G.; Echeverria, E.
  - THREE-DIMENSIONAL RECORDING AND PHOTOREALISTIC MODEL RECONSTRUCTION FOR VIRTUAL MUSEUM APPLICATION – AN EXPERIENCE IN MALAYSIA  
Wei, O. C.; Majid, Z.; Halim, S.; Mohd, F.M.A.; Khairulnizam, M.I.; Nurhadija, D.; Ahmad, R.Y.; Khairulazhar, Z.

#### POSTERS PRESENTATIONS - FRIDAY, February 8<sup>th</sup> 2019, 14:00-15:00

- VIRTUALIZE TO VALORIZE HIDDEN HERITAGE - THE VIRTUALARCH PROJECT  
Farella, E.; Remondino F.; Lobinger, C.; Hemker, C.; Schulenkorf, P.
- TOWARDS A DIGITAL ARCHAEOLOGICAL ARCHIVE: THE CASE STUDY OF THE ARTEFACTS OF THE AREA OF FORI IMPERIALI  
Calisi, D.; Molinari, M.
- A LAYERED-WEB INTERFACE BASED ON HBIM AND 360° PANORAMAS FOR HISTORICAL, MATERIAL AND GEOMETRIC ANALYSIS  
Banfi, F.; Previtali, M.; Stanga, C.; Brumana, R.
- RECONSTRUCTION OF URBAN SITES FROM PHOTOS  
Agnello, F.
- EXTRACTION OF PRIMITIVES AND OBJECTS FROM HSHAPES  
Bolognesi, C.; Caffi, V.
- THE COMPARISON OF 2D AND 3D DETECTORS FOR TLS DATA REGISTRATION – PRELIMINARY RESULTS  
Markiewicz, J. S.; Markiewicz, Ł.; Foryś, P.
- THE VIRTUAL BATCAVE: A PROJECT FOR THE SAFEGUARD OF A UNESCO WHL FRAGILE ECOSYSTEM  
Aiello, D.; Basso, A.; Spena, M. T.; D'Agostino, G.; Montedoro, U.; Galizia, M.; Grasso, R.; Santagati, C.
- DEVELOPMENT OF VIRTUAL REALITY APPLICATION FOR CULTURAL HERITAGE VISUALIZATION FROM MULTI-SOURCE 3D DATA  
Choromański, K.; Łobodecki, J.; Puchała, K.; Ostrowski, W.
- A REVIEW OF 3D GIS FOR USE IN CREATING VIRTUAL HISTORIC DUBLIN  
Chenau, A.; Murphy, M.; Pavia, S.; Fai, S.; Molnar, T.; Cahill, J.; Lenihan, S.; Corns, A.

- SCAN-TO-BIM vs 3D IDEAL MODEL HBIM: PARAMETRIC TOOLS TO STUDY DOMES GEOMETRY  
Capone, M.; Lanzara, E.
- 3D STRUCTURE ANALYSIS: ARCHITECTURE AS AN EXPRESSION OF THE TIES BETWEEN GEOMETRY AND PHILOSOPHY  
Bellone, T.; Mussio, L.; Porporato, C.
- REPRESENTATION OF SYNTHETIC SHADOWS ON 3D DIGITAL MODELS FOR THE VOLUMETRIC INTERPRETATION ON CONCAVE-CONVEX ARCHAEOLOGICAL ARTIFACTS  
Garcia-Fernandez, J.; Medeiros, L.; Pernão, J.
- THE TOMB OF IPI: 3D DOCUMENTATION IN A MIDDLE KINGDOM THEBAN NECROPOLIS (EGYPT, 2000 BCE)  
Echeverría, E.; Celis, F.; Morales, A.; da Casa, F.
- THE SURVEY OF THE SAN FRANCESCO BRIDGE BY SANTIAGO CALATRAVA IN COSENZA, ITALY  
Artese, S.
- HBIM FOR ARCHAEOLOGICAL SITES: FROM SFM BASED SURVEY TO ALGORITHMIC MODELING  
Argiolas, R.; Bagnolo, V.; Cuccu, A.
- INFORMATION MODELING AND LANDSCAPE: INTERVENTION METHODOLOGY FOR READING COMPLEX SYSTEMS  
Cianci, M. G.; Molinari, M.
- VIRTUAL REALITY FOR HISTORICAL ARCHITECTURE  
Agnello, F.; Avella, F.; Agnello, S.
- THE USE OF DIGITAL TOOLS FOR THE PRESERVATION OF ARCHITECTURAL, ARTISTIC AND CULTURAL HERITAGE, THROUGH THREE-DIMENSIONAL SCANNING AND DIGITAL MANUFACTURING  
Moreno Gata, K.; Echeverría Valiente, E.
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