



POLITECNICO
MILANO 1863



FONDAZIONE
BRUNO KESSLER



3D-ARCH workshop

Siena, Italy: 21-23 February 2024



10th International ISPRS / CIPA Workshop



CIPA
Heritage
Documentation

"3D Virtual Reconstruction and Visualization of Complex Architectures"



QP NOVA



Venue: **S. Chiara Centre of the University of Siena**, Via Val di Montone 1, Siena (Italy)

21 February, Wednesday

8:00	REGISTRATION	
9:00	OPENING	
9:45-11:00	TECHNICAL SESSION 1 - LEARNING-BASED METHODS - Chair: Francesco Fassi (Politecnico di Milano, Italy)	
	DEEP-IMAGE-MATCHING: A TOOLBOX FOR MULTIVIEW IMAGE MATCHING OF COMPLEX SCENARIOS	Morelli_etal
	INCAD: 2D VECTOR DRAWINGS CREATION USING INSTANCE SEGMENTATION	Betsas_etal
	CLASSIFICATION AND OBJECT DETECTION FOR ARCHITECTURAL PATHOLOGY: PRACTICAL TESTS WITH TRAINING SET	Zhang_etal
	TOWARDS AUTOMATIC DEFECTS ANALYSES FOR 3D STRUCTURAL MONITORING OF HISTORIC TIMBER	Chizhova_etal
11:00-11:30	COFFEE BREAK	

11:30-13:00	TECHNICAL SESSION 2 - 3D DOCUMENTATION_1 - Chair: Stefano Campana (University of Siena, Italy)	
	ENHANCING TERRESTRIAL POINT CLOUDS USING UPSAMPLING STRATEGY: FIRST OBSERVATION AND TEST ON FARO FLASH TECHNOLOGY	Sammartano_etal
	STRATEGIES AND EXPERIMENTS FOR MASSIVE 3D DIGITALIZATION OF THE REMAINS OF THE NOTRE DAME DE PARIS' FIRE	Comte_etal
	MULTI-MODAL/MULTI-RESOLUTION 3D DATA ACQUISITION AND PROCESSING FOR A NEW UNDERSTANDING OF THE HISTORICAL CITY OF SIENA (ITALY)	Pansini_eta
	A LIVING LAB APPROACH FOR CONCURRENT 3D DOCUMENTATION OF AN ARCHITECTURAL RENOVATION PROJECT - A SHOWCASE OF GUNSAN CIVIC CULTURAL CENTER	Hwang_etal
	THE 3D RECONSTRUCTION OF THE SANSEVERO CHAPEL ANATOMICAL MACHINES: A GEOMATICS CHALLENGE	DelPizzo_etal
13:00-14:30	LUNCH BREAK + POSTERS	
14:30-15:15	KEYNOTE #1: "Parasitic pixels: How cameras (and their settings) can jeopardise image-based 3D modelling" - Geert Verhoeven (University of Vienna, Austria)	
15:15-16:00	TECHNICAL SESSION 5 - 3D MODELING AND VR/AR - Chair: Elisa Farella (FBK Trento, Italy)	
	DEVELOPMENT OF A VIRTUAL REALITY APPLICATION FOR A HISTORIC VILLA	Kersten_etal
	AR EXPLORATION OF THE PERSPECTIVE/ARCHITECTURAL SPACE PAINTED BY PERUGINO	Menconero
	THE CATHEDRAL OF SAN MASSIMO IN FORCONA (AQ): ARCHAEOLOGICAL ANALYSIS AND INTEGRATED DIGITAL EXPERIENCES FOR VR EXPLORATION AND SITE ENHANCEMENT	Arrighetti_etal
16:00-16:30	COFFEE BREAK	
16:30-17:30	TECHNICAL SESSION 4 - NERF - Chair: Arnadi Murtiyoso (ETH Zurich, Switzerland)	
	EVOLUTION OF RENDERING BASED ON RADIANCE FIELDS. THE PALERMO CASE STUDY FOR A COMPARISON BETWEEN NERF AND GAUSSIAN SPLATTING	Basso_etal
	NEURAL RADIANCE FIELDS (NERF) FOR MULTI-SCALE 3D MODELING OF CULTURAL HERITAGE ARTIFACTS	Croce_etal
	EVALUATION OF NERF 3D RECONSTRUCTION FOR ROCK ART DOCUMENTATION	Khairulazhar_etal
	NERF-DRIVEN ALGORITHMS APPLIED ON 360 IMAGES FOR 3D MODELLING OF HERITAGE ASSET IN VIRTUAL ENVIRONMENT	Condorelli_Luigini
17:45	POSTERS, DEMOS, WELCOME PARTY	

22 February, Thursday

9:00-9:45	KEYNOTE#2 - "Digitizing sensitive heritage monuments in Antarctica"- Jonathan Westin (University of Gothenburg, Sweden)	
9:45-10:00	SPONSOR PRESENTATION - Gexcel	
10:00-11:00	TECHNICAL SESSION 3 - GNSS-SUPPORTED 3D DOCUMENTATION - Chair: Michele Russo (Univ. Sapienza, Italy)	
	LIVE PROCESSING AND FEEDBACK ON A COMBINED LASERSCANNING AND PHOTOGRAMMETRIC DOCUMENTATION WORKFLOW	Stampfer
	GNSS ASSISTED PHOTOGRAMMETRIC RECONSTRUCTION FROM COMBINED 360° VIDEO AND UAV IMAGES	Previtali_etal
	BEYOND GROUND CONTROL POINTS: COST-EFFECTIVE 3D BUILDING RECONSTRUCTION THROUGH GNSS-INTEGRATED PHOTOGRAMMETRY	Oniga_etal
11:00-11:30	COFFEE BREAK	
11:30-13:00	TECHNICAL SESSION 6 - 3D DOCUMENTATION_2 - Chair: Maarten Bassier (KU Leuven, Belgium)	
	PHOTOGRAMMETRIC SURVEY OF NARROW SPACES IN CULTURAL HERITAGE: COMPARISON OF TWO MULTI-CAMERA APPROACHES	Bruno_etal
	CRAFTING AND MODIFYING RHINE CASTLE MODELS WITH PARAMETRIC MODELING IN BLENDER	Sommer_etal
	FAST AND SMART 3D MODELLING: AN ALGORITHMIC TOOL BASED ON CHURCH TYPOLOGY	Scandurra_etal
	PROCESS OF CREATING AND COMPARING 4D MODELS OF RHENISH CASTLES IN DIFFERENT MODELING ENVIRONMENTS	Koehl_etal
	SPONSOR PRESENTATION - How VIS and Autonomous Systems influence the product development: a hazard management case (Leica)	
13:00-14:30	LUNCH BREAK + POSTERS	
14:30-16:00	TECHNICAL SESSION 7 - EU PROJECTS & ACTIVITIES - Chair: Geert Verhoeven (University of Vienna, Austria)	
	RESORTING TO VR FOR CH PROTECTION PURPOSES: FINDINGS FROM THE EU-FUNDED PROCULTHER-NET PROJECT	Vicario
	METHODS, DATA AND TOOLS FOR FACILITATING A 3D CULTURAL HERITAGE SPACE	Farella_etal
	DEVELOPING ENHANCED AND ENRICHED 3D MODELS OF CULTURAL HERITAGE ASSETS AS PART OF THE EU CO-FUNDED 5DCULTURE PROJECT	Corns_etal

	GUIDELINES, TRAINING AND CAPACITY BUILDING FOR 3D DIGITISATION AND DOCUMENTATION WITHIN THE 4CH PROJECT	Medici
17:30	GUIDED TOUR	
19:30	SOCIAL DINNER	

23 February, Friday

9:00-10:30	TECHNICAL SESSION 8 - 3D CLASSIFICATION - Chair: Andreas Georgopoulos (NTUA, Greece)	
	COMBINING IMAGE AND POINT CLOUD SEGMENTATION TO IMPROVE HERITAGE UNDERSTANDING	Bassier_etal
	POINT CLOUD SEGMENTATION IN HERITAGE PRESERVATION. ADVANCED DIGITAL PROCESS FOR HISTORICAL HOUSES	Nespeca_etal
	UNVEILING THE POTENTIAL OF 3D HERITAGE POINT CLOUDS WITH A ROBUST ONTOLOGY FRAMEWORK	Codiglione_etal
	SPONSOR PRESENTATION - New FARO ORBIS: the unique SLAM <i>All-in One</i> on the market (Microgeo) - New solutions for the Reality Capture (Dynatech)	
10:30-11:00	COFFEE BREAK	
11:00-12:30	TECHNICAL SESSION 9 - INVESTIGATIONS IN IMAGE-BASED METHODS - Chair: Pierre Grussenmeyer (INSA, France)	
	MULTIMEDIA PHOTOGRAMMETRY 2.0. A FIRST STEP FOR UNDERWATER CULTURAL HERITAGE APPLICATION	Russo_etal
	COMPARISON OF STATE-OF-THE-ART MULTI-VIEW STEREO SOLUTIONS FOR CLOSE RANGE HERITAGE DOCUMENTATION	Murtiyoso_etal
	FLATTENING COMPLEX ARCHITECTURAL SURFACES: PHOTOGRAMMETRIC 3D MODELS CONVERTED INTO 2D MAPS	Barazzetti_etal
	BUILT-IN LENS CORRECTION PROFILES IN LOW-COST CAMERAS – AN ISSUE FOR PHOTOGRAMMETRIC APPLICATIONS?	Perfetti_etal
12:30	CLOSING & LIGHT LUNCH	

DEMOS (Wednesday afternoon)

#1 - VR tools as an opportunity of photorealistic visualization of the photogrammetric process	Vasili Manfredi - Politecnico of Milano, Italy
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#2 - Rural Revival in Web 3: A Demo of Immersive Metaverse Experience	Nikolai Abramov - Politecnico of Milano, Italy
#3 - Deep-image-matching: a deep learning toolbox for finding image correspondences	Luca Morelli - FBK Trento, Italy
#4 - TechCapsule	Jie-Eun Hwang - University of Seoul, Korea
#5 - Narrating Ghesc: A Point Cloud-Based Multiplatform Application to Support the Conservation Project of Medieval Stone Architecture	Yuxin Lei - Politecnico of Milano, Italy
#6 - VR demo of a historic villa using Pico 4	Thomas Kersten - HafenCity University Hamburg, Germany

POSTER PRESENTATIONS (Wednesday and Thursday)	
TECHNICAL DRAWINGS TO SUPPORT AUTOMATED CLASSIFICATION OF BUILDING FACADES	Trivi_etal
DIGITAL REPRESENTATIONS IN HERITAGE CONSERVATION. PILOT STRATEGIES FOR THE FORMER CHURCH OF SAN FRANCESCO IN FANO	Clini_etal
A SCALABLE APPROACH FOR AUTOMATING SCAN-TO-BIM PROCESSES IN THE HERITAGE FIELD	Avena_etal
3D PHOTOGRAMMETRIC MODELS FROM HDR IMAGES: THE CASE STUDY OF THE FONTANONE VISCONTEO IN BERGAMO	Cardaci_etal
THE CASE STUDY OF ERCOLANO'S MULTISCALE, MULTI-MATERIAL 3D SURVEY OF 2700 ARTIFACTS	Pacchetti_Petrozza
FROM 3D SURVEY TO DIGITAL REALITY OF A COMPLEX ARCHITECTURE: A DIGITAL WORKFLOW FOR CULTURAL HERITAGE PROMOTION	Fascia_etal
GIS-LIKE ENVIRONMENTS AND HBIM INTEGRATION FOR ANCIENT VILLAGES MANAGEMENT AND DISSEMINATION	Barrile_Genovese
EXPLORING 4D AND 5D ANALYSIS IN BIM ENVIRONMENT FOR INFRASTRUCTURES: A CASE STUDY	Inzerillo_etal
HBIM STRUCTURAL MODEL TO EVALUATE BUILDING EVOLUTION AND CONSTRUCTION HYPOTHESES: PRELIMINARY RESULTS	Fazion_etal
FROM 3D METRIC SURVEY TO HBIM MODEL. TESTING OF DIFFERENT SCAN2BIM APPROACHES FOR THE ARCHAEOLOGICAL DOCUMENTATION	Teppati_etal
AN INTEGRATED HBIM-GIS DIGITAL ENVIRONMENT FOR HERITAGE PRESERVATION AND ENHANCEMENT IN THE INNER ITALIAN TERRITORY	Pozzoni_etal
TOWARDS MASTER DATA MANAGEMENT FOR CULTURAL HERITAGE: THE SACRI MONTI WEB PLATFORM	Spettu_etal
DIGITAL DOCUMENTATION AND FAST CENSUS FOR MONITORING THE UNIVERSITY'S BUILT HERITAGE	LaPlaca_Doria

A METHODOLOGICAL APPROACH FOR AN AUGMENTED HBIM EXPERIENCE THE ARCHITECTURAL THRESHOLDS OF THE MOSTRA D'OLTREMARE	Antuono_etal
INTEGRATION OF HBIM, XR AND BEACONS FOR CULTURAL MEDIATION OF HISTORICAL HERITAGE: THE CASE OF "AL-QUARAOUYINE MOSQUE" IN FES	Harmouche_etal
3D SURVEY POINT CLOUD DATA AS DIRECT RENDERING ASSETS FOR VISUALIZING COMPLEX HERITAGE IN VIRTUAL APPLICATIONS	Lei_etal
3D MODELLING AND VIRTUAL REALITY FOR MUSEUM HERITAGE PRESENTATION: CONTEXTALISATION OF SCULPTURE FROM THE TANG ERA	Spallone_etal
V-SLAM-AIDED PHOTOGRAMMETRY TO PROCESS FISHEYE MULTI-CAMERA SYSTEMS SEQUENCES	Elalailyi_etal
ANALYSIS OF THE SPATIAL-SEMANTIC COHERENCE IN THE GETTY AAT VOCABULARY DATA STRUCTURE - AN EDUCATIONAL EXPERIENCE	Bonora_etal
3D EDGE DETECTION BASED ON NORMAL VECTORS	Makka_etal
BSDD FOR ARTWORKS IN HBIM OPEN AND STANDARD ORIENTED DOCUMENTATION	Scandurra_etal
INTEGRATION OF 3D SPATIAL INFORMATION FOR MULTI-MODAL EXPERIENCE OF THE URBAN ARCHIVE	Kim_Hwang
ACCURACY RESEARCH OF THE EFFECT OF LOCAL SURFACE MODELING METHODS ON THE GENERATION OF 3D MODELS OF HISTORICAL OBJECTS WITH ROCK-BASED BUILDING STRUCTURES USING OPEN-SOURCE SOFTWARE	Ariff_etal
ACCURATE 3D MODEL OF VENICE: PRESERVING HISTORICAL DATA AND INTRODUCING SLAM IMMS FOR CHANGE DETECTION AND UPDATING PROCEDURES	Vassena_etal
AN INTERDISCIPLINARY SPATIAL HUMANITIES APPROACH TO STUDY THE TRANSFORMATIONS OF THE SOUTH FAÇADE OF THE SALA DEI CINQUECENTO OF PALAZZO VECCHIO IN FLORENCE	Corazzini_etal
CONNECTING EMBEDDED HISTORY OF THE URBAN INFRASTRUCTURE TO THE CONTEMPORARY CITY: A CASE STUDY OF GWANGHWAMUN WOLDAE RESTORATION	Kang_Hwang
OPTIMIZATION OF VR APPLICATION IN TEXTURING CULTURAL HERITAGE	Bolognesi_Manfredi
A COMPARISON BETWEEN TERRESTRIAL LASER SCANNING AND HAND-HELD MOBILE MAPPING FOR THE DOCUMENTATION OF BUILT HERITAGE	Conti_etal
AN EFFECTIVE APPROACH FOR POINT CLOUD DENOISING IN INTEGRATED SURVEYS	DiFilippo_etal
METAMORPHOSIS: A DIGITAL APPROACH TO TRANSFORMING COMMUNITIES THROUGH PHOTOGRAMMETRY AND METAVERSE	Abramov_etal

