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PLAY  
Photogrammetry and 3D Laser for virtual Architectural Laboratory



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IT : distribution



DRONEZINE  
LA PRIMA RIVISTA ITALIANA DEI DRONI

ARCHEOMATICA



UNMANNED systems  
TECHNOLOGY  
MAGAZINE

ME Università di Pavia  
Museo della  
Tecnica Elettrica



# D-SITE 2022

Drones -  
Systems of Information  
on culTural hEritage

International Seminar meeting

16th-17th-18th June 2022

Museum of Electrical Technology, Pavia Italy

## Programme of the activities



# 16 June 2022 Programme

## Workshop Day

- > Participation in the workshop is open to professionals, professors, researchers, students.
- > Participation in the event allows the accreditation of Professional Training Credits of the Order of Engineers and the Order of Architects

### Foyer

9:00 a.m. Participant Registration

### Room 1 Aula Tommazzoli

9:15 a.m. Openings  
> **Sandro Parrinello**  
*Director of DAda-LAB Laboratory, DICAr - UNIPV*  
> **Carlo Berizzi**  
*Director of the Museum of Electrical Technology, DICAr - Unipv*  
> **Riccardo Delise**  
*ENAC Process Management UAS and Advanced Air Mobility*

### Documentation activities and strategies for the enhancement of cultural heritage

9:40 a.m. UAVs tools for survey and documentation of Cultural Heritage  
> **Sandro Parrinello, Francesca Picchio**  
*DICAr - University of Pavia*

10:00 a.m. Digital documentation using UAV systems: techniques and methodologies compared  
> **Salvatore Barba, Marco Limongiello**  
*DICiv - University of Salerno*

10:20 a.m. National and international guidelines operational scenarios and aircraft certifications  
> **Giuseppe Ramalli**  
*Etruria Volo*

10:40 a.m. Piloting a drone in different scenarios, piloting strategies for photogrammetric acquisition  
> **Giuseppe Borloni**  
*Flyted*

11:00 a.m. **Coffee Break**

### Drones Piloting Area

#### Drones Piloting - Training Activity

11:30 a.m. Take-off and landing methods;  
horizontal, vertical and compound translations;  
turns up and down;  
approach circuits and methods;  
entry into the final;  
resource and emergency management training.

1:00 p.m. **Lunch**

2:00 p.m. Photographic and video shooting;  
design of flight plans and points of interest;  
data processing and post production.

All practical training activities will be held under the supervision of certified ENAC instructors

> **Daniele Pastore, Giuseppe Ramalli**  
*Etruria Volo*  
> **Giuseppe Borloni, Riccardo Trombetti**  
*Flyted, Milano Mongolfiere*

### Happy hour in a Balloon!

06:00 p.m. Up to the sky  
> **Sponsored by Milano Mongolfiere**

# 17 June 2022 Programme

## Conference Day

### Foyer

9:00 a.m. Participant Registration

### Room 1 Aula Tommazzoli

9:30 a.m. Openings

Chair: Sandro Parrinello D-SITE Organizer Committee, *University of Pavia*

- > **Alessandro Reali** *Director of Department of Civil Engineering and Architecture University of Pavia*
- > **Rossella Salerno** *UID Vice President - Unione Italiana Disegno*
- > **Andrea Maria Lingua** *President SIFET Società Italiana di Fotogrammetria e Topografia*
- > **Enrico Borgogno Mondino** *Official delegate AIT - Associazione Italiana Telerilevamento*

### Room 1 Aula Tommazzoli

Chair: Rossella Salerno - *Polytechnic University of Milan*  
Co-Chair: Gabriele Rossi - *Polytechnic University of Bari*

10:30 a.m.

**Caterina Palestini<sup>1</sup>, Alessandro Basso<sup>1</sup>, Maurizio Perticarini<sup>2</sup>**

*<sup>1</sup>University of Pescara "G. d'Annunzio", <sup>2</sup>University of Campania "Luigi Vanvitelli"*

3D modeling from UAV for the reconfiguration of oxidation systems in Abruzzo.

The case of the tower of Forca di Penne, an immersive archival resource for the lost Historical Heritage

10:45 a.m.

**Ramona Quattrini, Renato Angeloni, Benedetta Di Leo**

*Polytechnic University of Marche Region*

Data integration and optimization for Cultural Heritage fruition.

The case study of the Rail to Land Project

11:00 a.m.

**Andrea Pirinu, Raffaele Argiolas, Nicola Paba**

*University of Cagliari*

Design models and landscape form of Sardinian IIWW Heritage.

The Simbirizzi Lake in territory of Quartu Sant'Elena

11:15 a.m.

**Marco Saccucci<sup>1</sup>, Virginia Miele<sup>2</sup>, Assunta Pelliccio<sup>1</sup>**

*<sup>1</sup>University of Cassino and Southern Lazio, <sup>2</sup>Silesian University of Technology, Gliwice*

UAVs for the analysis of geometrical deformation of fortresses and castles.

The case study of Sora Castle

11:30 a.m.

Coffee Break



# 17 June 2022 Programme

## Conference Day

### Room 2 Sala Cinema

Chair: Stefano Bertocci - *University of Florence*

Co-Chair: Valeria Cera - *University of Naples "Federico II"*

10:30 a.m.

**Caterina Grassi<sup>1</sup>, Diego Ronchi<sup>2</sup>, Daniele Ferdani<sup>2</sup>, Giorgio Franco Pocobelli<sup>2</sup>, Rachele Manganelli Del Fa<sup>2</sup>**

<sup>1</sup>*La Sapienza University of Rome*, <sup>2</sup>*CNR-ISPC*

A 3D Survey in Archeology. Comparison among software for image and range-based data integration

10:45 a.m.

**Giorgia Potestà<sup>1</sup>, Vincenzo Gelsomino<sup>2</sup>**

<sup>1</sup>*La Sapienza University of Rome*, <sup>2</sup>*Mediterranea University of Reggio Calabria*

Experience of integrated survey by drone for archaeological sites.

Documentation, study, and enhancement of the Italic Sanctuary of Pietrabbondante

11:00 a.m.

**Ornella Zerlenga, Gianfranco De Matteis, Sergio Sibilio, Giovanni Ciampi, Vincenzo Cirillo, Riccardo Miele, Yorgos Spanodimitriou, Rosina Iaderosa**

*University of Campania "Luigi Vanvitelli"*

Open source procedure for UAV- based photogrammetry and infrared thermography in the survey of masonry bell towers

11:15 a.m.

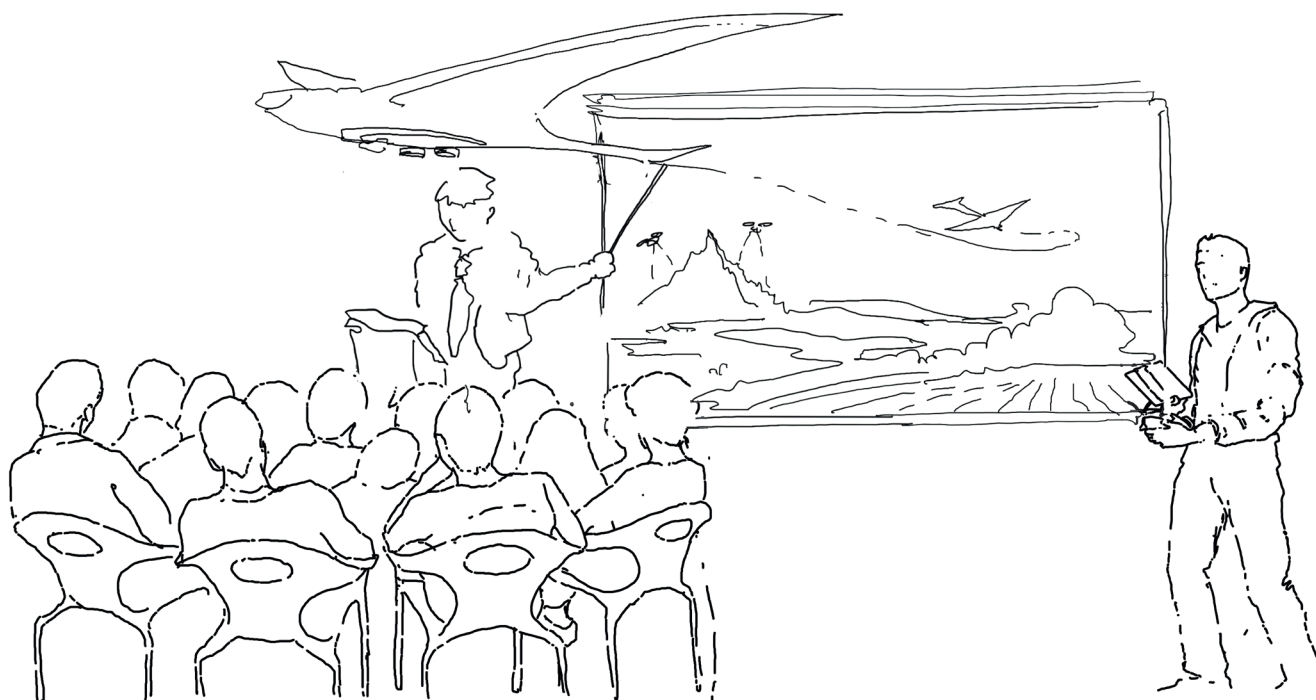
**Alberto Pettineo**

*University of Pavia*

Videogrammetry for the virtual philological reconstruction of the Scaliger fortifications in the territory of Verona. The case study of Montorio Castle

11:30 a.m.

Coffee Break



# Video Session

## Room 3 Spazio Lab 2

From 10:30 a.m.

Curators: Andrea di Filippo, *University of Salerno*; Silvia La Placa, *University of Pavia*

### **Silvana Salazar**

*Universidad Nacional de Córdoba*

La fotogrametría aérea: experiencias académicas y la utilización de drones como herramienta para la reconstrucción dominial de espacios intervenidos en Argentina

### **Cristiana Bartolomei, Cecilia Mazzoli, Caterina Morganti**

*University of Bologna*

The Woodpecker: virtual reconstruction of an abandoned discotheque in the Adriatic Coast

### **Ylenia Ricci, Andrea Pasquali**

*University of Florence*

From UAV photogrammetry to digital restitution, new process for the preservation of Cultural Heritage

### **Andrea Arrighetti <sup>1</sup>, Alfonso Forgione <sup>2</sup>, Andrea Lumini <sup>1</sup>**

<sup>1</sup>*University of Florence*, <sup>2</sup>*University of L'Aquila*

The Church of San Silvestro in L'Aquila. An integrated approach through TLS and UAV technologies for the architectural and archaeological documentation

### **Fabiana Guerriero**

*University of Campania "Luigi Vanvitelli"*

Methodologies for the protection of the Portuguese architectural heritage

### **Tomás E. Martínez Chao, Giuseppe Antuono, Pedro G. Vindrola, Pierpaolo D'Agostino**

*University of Naples "Federico II"*

Image-based segmentation and modelling of terraced landscapes

### **Salvatore Barba, Alessandro Di Benedetto, Margherita Fiani, Lucas Gujsk, Marco Limongiello**

*University of Salerno*

Automatic point cloud editing from UAV aerial images: applications in archaeology and Cultural Heritage

### **Valeria Cera, Massimiliano Campi**

*University of Naples "Federico II"*

Evaluation of unconventional sensors for the photogrammetric survey of underwater historical sites

# 17 June 2022 Programme

## Conference Day

### Room 1 Aula Tommazzolli

Chair: Filiberto Chiabrando - *Polytechnic University of Turin*  
Co-Chair: Cettina Santagati - *University of Catania*

11:45 a.m.

**Rita Valenti, Emanuela Paternò, Graziella Cusmano**

*University of Catania*

UAS applications for the protection of archaeological heritage.  
From the interpretative complexity of the absence to the 3d visualization of euryalus castle

12:00 a.m.

**Giovanni Pancani, Matteo Bigongiari**

*University of Florence*

The aerial photogrammetric survey for the documentation of the cultural heritage:  
the Verruca fortress on the Pisan Mountains

12:15 a.m.

**Elena Madalina Cantea, Anna Dell'Amico**

*University of Pavia*

Application of fast survey technologies for knowledge, valorization and conservation:  
the case study of Rondella delle Boccare

12:30 a.m.

**Pietro Becherini<sup>1</sup>, Rolando Volzone<sup>2</sup>, Anastasia Cottini<sup>1</sup>**

<sup>1</sup>*University of Florence*, <sup>2</sup>*ISCTE-Instituto Universitário de Lisboa*

A 3D model for architectural analysis, using aerial photogrammetry, for the digital documentation of the convent of Santa Maria da Insua, on the northern boarder between Portugal and Spain

### Room 2 Sala Cinema

Chair: Riccardo Florio - *University of Naples "Federico II"*  
Co-Chair: Marco Limongiello - *University of Salerno*

11:45 a.m.

**Cèlia Mallafrè-Balsells<sup>1,2</sup>, David Moreno-Garcia<sup>1</sup>, Jordi Canela-Rion<sup>1</sup>**

<sup>1</sup>*Rovira I Virgili University*, <sup>2</sup>*Fundació el Solà*

Photogrammetric comparison between different drone survey methodologies:  
dry stone as a case study

12:00 a.m.

**Diego Martín de Torres, Julián de la Fuente Prieto, Enrique Castaño Perea**

*University of Alcalá*

Scars in the landscape: photogrammetry and analysis of the trenches of the Spanish Civil War

12:15 a.m.

**Corrado Castagnaro, Domenico Crispino**

*University of Campania "Luigi Vanvitelli"*

Drone flight as a knowledge tool for Cultural Heritage

12:30 a.m.

**Elena Gómez Bernal, Pablo Alejandro Cruz Franco, Adela Rueda Márquez de la Plata**

*Universidad de Extremadura*

Drones in architecture research: methodological application of the use of drones for the accessible intervention in a roman house in the Alcazaba of Mérida (Spain)

12:45 a.m.

Lunch

# 17 June 2022 Programme

## Conference Day

### Room 1 Aula Tommazzoli

Chair: Marco Canciani - *Roma Tre University*  
Co-Chair: Tommaso Empler - *La Sapienza University of Rome*

03:00 p.m.

**Lorenzo Teppati Losè, Filiberto Chiabrando, Eleonora Pellegrino**  
*Polytechnic University of Turin*  
UAS photogrammetry and SLAM for the HBIM model of the Montanaro Belltower

03:15 p.m.

**Carlo Costantino, Anna Chiara Benedetti, Giorgia Predari**  
*University of Bologna*  
UAV photogrammetric survey as a fast and low-cost tool to foster the conservation of small villages. The case study of San Giovanni Lipioni

03:30 p.m.

**Luca Vespasiano, Luca Cetra, Stefano Brusaporci**  
*University of L'Aquila*  
Experience of indoor droning for Cultural Heritage documentation

03:45 p.m.

**Riccardo Florio, Raffaele Catuogno, Teresa Della Corte, Victoria Cotella, Marco Aprea**  
*University of Naples "Federico II"*  
Multi-source data framework: integrated survey for 3D texture mapping on archeological sites

04:00 p.m.

**Djordje Djordjevic, Mirjana Devetakovic, Djordje Mitrovic**  
*University of Belgrade*  
Regulatory and controlling mechanisms on UAV/UAS that influence efficient architectural heritage praxis: actual situation in Serbia

04:15 p.m.

**Antonio Conte, Antonio Bixio**  
*University of Basilicata*  
Privileged documentary observations of surveying of "fragile heritage" in emergency conditions: the case studies of Pomarico landslide and of Montescaglioso abbey

### Room 2 Sala Cinema

### Thematic Session 1 Remote Sensing in agriculture and forestry

Chair: Mirco Boschetti - *IREA-CNR*  
Co-Chair: Enrico Borgogno Mondino - *University of Turin*

03:00 p.m.

**Claudio Spadavecchia<sup>1</sup>, Elena Belcore<sup>1</sup>, Marco Piras<sup>1</sup>, Milan Kobal<sup>2</sup>**  
<sup>1</sup>*Polytechnic University of Turin*, <sup>2</sup>*University of Ljubljana*  
Forest change detection using multi-temporal aerial point clouds

03:15 p.m.

**Ramin Heidarian Dehkordi, Mirco Boschetti**  
*Institute for Electromagnetic Sensing of the Environment, Italian National Research Council*  
Exploring the relationship between soil organic carbon and crop water stress across century-old biochar patches within agricultural fields by combining UAV thermal, multispectral, and RGB images

03:30 p.m.

**Giorgio Impollonia<sup>1</sup>, Michele Croci<sup>1</sup>, Andrea Marcone<sup>1,2</sup>, Giulia Antonucci<sup>1</sup>, Henri Blandinières<sup>1</sup>, Stefano Amaducci<sup>1,2</sup>**  
<sup>1</sup>*Catholic University of Sacro Cuore*, <sup>2</sup>*CITIMAP S.C. a R.L.*  
UAV-based remote sensing to evaluate nitrogen and irrigation effects on LAI and LCC dynamics combining PROSAIL model and GAM

03:45 p.m.

**Carlos Carbone, Mulham Fawakerji, Vito Trianni, Daniele Nardi**  
*La Sapienza University of Rome*  
Photorealistic simulations of crop fields for remote sensing with UAV swarms

# 17 June 2022 Programme

## Conference Day

04:00 p.m.

**Bianca Ortuani<sup>1</sup>, Alice Mayer<sup>1</sup>, Giovanna Sona<sup>2</sup>, Arianna Facchi<sup>1</sup>**

<sup>1</sup>University of Milan, <sup>2</sup>Polytechnic University of Milan

Use of vegetation indices from Sentinel2 and UAV in precision viticulture applications

04:15 p.m.

**Filippo Sarvia, Samuele De Petris, Alessandro Farbo, Enrico Borgogno Mondino**

University of Turin

Geometric vs Spectral Content of RPAS Images in the Precision Agriculture Context

04:30 p.m.

**Giovanna Scardapane, Federica Mastracci, Antonello Cedrone, Lilian Valette**

Telespazio SpA

T-DROMES®, Drone-as-a-Service solutions for Smart Farming

04:45 p.m.

**Francesca Giannetti<sup>1</sup>, Giovanni D'Amico<sup>1</sup>, Francesco Chianucci<sup>2</sup>, Gherardo Chirici<sup>1</sup>**

<sup>1</sup>University of Florence, <sup>2</sup>CREA – Research Centre for Forestry and Wood

UAV forest application supporting sustainable forest management

### Room 3 Spazio Lab 2

#### Thematic Session 2

#### Geology and UAV: research, experiences and future perspectives

Chair: Francesco Zucca - University of Pavia

Co-Chair: Niccolò Menegoni - University of Pavia

03:00 p.m.

**Alberto Bosino<sup>1</sup>, Niccolò Menegoni<sup>2</sup>, Elisa Ferrari<sup>3</sup>, Claudia Lupi<sup>2</sup>, Cesare Perotti<sup>2</sup>**

<sup>1</sup>University of Milano-Bicocca, <sup>2</sup>University of Pavia, <sup>3</sup>University of Parma

Art and Drones: retracing the paths of Torquato Taramelli 100 years later

03:15 p.m.

**Niccolò Menegoni<sup>1</sup>, Daniele Giordan<sup>2</sup>, Cesare Perotti<sup>1</sup>**

<sup>1</sup>University of Pavia, <sup>2</sup>IRPI-CNR Turin

Uncrafted Aerial Vehicle-based rock slope stability analysis of Baveno granite quarry area: the tailing and waste rock extractive site of Ciana-Tane Pilastretto (Montorfano)

03:30 p.m.

**Davide Fugazza<sup>1</sup>, Marco Scaioni<sup>2</sup>, Valeria Belloni<sup>3</sup>, Martina Di Rita<sup>4</sup>, Fabiano Ventura<sup>5</sup>, Fabrizio Troilo<sup>6</sup>, Guglielmina Adele Diolaiuti<sup>1</sup>**

<sup>1</sup>University of Milan, <sup>2</sup>Polytechnic University of Milan, <sup>3</sup>La Sapienza University of Rome, <sup>4</sup>Leica Geosystem, <sup>5</sup>MacroMicroAss, <sup>6</sup>Fond. Montagna Sicura

UAVs in cryospheric studies: experiences from Alpine glaciers

03:45 p.m.

**Marco La Salandra**

University of Bari

Application of UAV system and SfM techniques to address the hydro-geomorphological hazard in a fluvial system

04:00 p.m.

**Daniele Giordan, Martina Cignetti, Danilo Godone, Aleksandra Wrzesniak**

IRPI-CNR Turin

Structure from motion multi-source application for landslide characterization and monitoring

04:15 p.m.

**Fabrizio Troilo<sup>1</sup>, Niccolò Dematteis<sup>2</sup>, Daniele Giordan<sup>2</sup>, Francesco Zucca<sup>3</sup>**

<sup>1</sup>Fond. Montagna Sicura, <sup>2</sup>IRPI-CNR Turin, <sup>3</sup>University of Pavia

UAV observation of the recent evolution of the Planpincieux glacier (Mont Blanc)

04:30 p.m.

**Marco Dubbini<sup>1</sup>, Corrado Lucente<sup>2</sup>, Giacomo Uguccioni<sup>3</sup>**

<sup>1</sup>University of Bologna, <sup>2</sup>Agenzia regionale per la sicurezza territoriale e la protezione civile, <sup>3</sup>SAL Engineering srl

Photogrammetric monitoring by drone of San Leo landslide (Rimini)



# 17 June 2022 Programme

## Conference Day

### Room 1 *Aula Tommazzoli*

Chair: Ornella Zerlenga - *University of Campania "Luigi Vanvitelli"*  
Co-Chair: Valentina Castagnolo - *Polytechnic University of Bari*

05:00 p.m.

**Marco Canciani, Marco D'Angelico**

*University of Roma Tre*

A methodology for survey, documentation and virtual reconstruction of historical centers in seismic area: the case study of Arquata del Tronto

05:15 p.m.

**Raissa Garozzo, Davide Caliò, Mariateresa Galizia, Giovanna Pappalardo, Cettina Santagati**

*University of Catania*

Integration of remote surveying methodologies for geological risk assessment of masonry arch bridges

05:30 p.m.

**Fausta Fiorillo, Luca Perfetti, Giuliana Cardani**

*Polytechnic University of Milan*

Aerial-photogrammetric survey for supervised classification and mapping of roof damages

05:45 p.m.

**Raffaella De Marco, Elisabetta Doria**

*University of Pavia*

The processing of UAV 3D models for the recognition of coverages at the technological scale: opportunities for a strategy of conservation monitoring

06:00 p.m.

**Anna Sanseverino<sup>1</sup>, Carla Ferreyra<sup>2</sup>, Caterina Gabriella Guida<sup>2</sup>, Victoria Ferraris<sup>3</sup>**

<sup>1</sup>University of Pavia, <sup>2</sup>University of Salerno, <sup>3</sup>Universidad Nacional de Córdoba

Image-based georeferenced urban context reconstruction in a BIM environment: the case of the Crotone Fortress

### Thematic Session 3

### Aerial, Ground and Underwater Robotics for Cultural Heritage

### Room 2 *Sala Cinema*

Chair: Lorenzo Pollini - *University of Pisa*  
Co-Chair: Riccardo Costanzi - *University of Pisa*

05:00 p.m.

**Mathew Jose Pollayil, Franco Angelini, Manolo Garabini**

*University of Pisa*

UAV for environmental monitoring

05:15 p.m.

**Danila Germanese, Davide Moroni, Maria Antonietta Pascali, Marco Tampucci, Andrea Berton**

*Italian National Research Council*

Exploring UAVs for structural health monitoring

05:30 p.m.

**Benedetto Allotta, Alessandro Ridolfi, Nicola Secciani**

*University of Florence*

Autonomous Underwater Vehicles for Underwater Cultural Heritage: some experiences from the University of Florence

05:45 p.m.

**Fabio Bruno, Antonio Lagudi, Umberto Severino**

*University of Calabria*

Autonomous Surface Vehicles to support underwater archaeologists in survey and documentation

06:00 p.m.

**Fabrizio Giulietti<sup>1</sup>, Emanuele Luigi de Angelis<sup>1</sup>, Gianluca Rossetti<sup>2</sup>, Matteo Turci<sup>2</sup>**

<sup>1</sup>University of Bologna, <sup>2</sup>Zephyr s.r.l.

High-range/high endurance rotary wing aircraft for environmental protection and Cultural Heritage valorisation

08:30 p.m.

Gala Dinner at Restaurant Hall

Second Floor of Pavia Tennis Club, S. Lanfranco Beccari Street, n.2, 27100, Pavia

# 18 June 2022 Programme

## Conference Day

### Room 1 Aula Tommazzoli

Chair: Andrea Giordano - *University of Padua*  
Co-Chair: Assunta Pelliccio - *University of Cassino and Southern Lazio*

09:30 a.m.

**Silvia La Placa, Francesca Picchio**

*University of Pavia*

Fast survey technologies for the documentation of the canalization systems.  
The case study of the settlement "Il Cassinino" in the Navigli Pavese Surrounding

09:45 a.m.

**Tommaso Emler, Adriana Caldarone, Maria Laura Rossi**

*La Sapienza University of Rome*

Fast assessment survey for protected architectural and environmental site

10:00 a.m.

**Massimo Leserri <sup>1</sup>, Gabriele Rossi <sup>2</sup>**

<sup>1</sup>*University of Salerno*, <sup>2</sup>*Polytechnic University of Bari*

Salento baroque spires survey. Integrating TLS and UAV photogrammetry

10:15 a.m.

**Xin Wu <sup>3</sup>, Marianna Calia <sup>1</sup>, Lingyun Liao <sup>2</sup>, Zhuowei Lin <sup>3</sup>, Shanshan Song <sup>3</sup>, Qiuyan Zhu <sup>3</sup>**

<sup>1</sup>*University of Basilicata*, <sup>2</sup>*Fujian Agriculture and Forestry University*, <sup>3</sup>*Fuzhou University*

The Preventive Conservation of the UNESCO Mixed Heritage Site of Wuyi Mountain:  
the Han City and the Cliff-Burial sites

10:30 a.m.

**Sara Antinozzi, Andrea di Filippo, Angelo Lorusso, Marco Limongiello**

<sup>1</sup>*University of Salerno*

Toward a virtual library experience based on UAV and TLS survey data

10:45 a.m.

Coffee Break

### Room 2 Sala Cinema

Chair: Antonio Conte - *University of Basilicata*  
Co-Chair: Pierpaolo D'Agostino - *University of Naples "Federico II"*

09:30 a.m.

**Valentina Castagnolo, Anna Christiana Maiorano, Remo Pavone**

*Polytechnic University of Bari*

Immersive environments and heritage digitization. The virtual image of a medieval cathedral

09:45 a.m.

**Luca Formigari, Veronica Vona, Marco Zuppioli**

*University of Ferrara*

Towards an "allround" control of the restoration project: 3D modelling as a real-time monitoring system for the design outcome

10:00 a.m.

**Davide Carleo <sup>1</sup>, Martina Gargiulo <sup>1</sup>, Giovanni Ciampi <sup>1</sup>, Michelangelo Scorpio <sup>1</sup>, Pilar Chias Navarro <sup>2</sup>**

<sup>1</sup>*University of Campania "Luigi Vanvitelli"*, <sup>2</sup>*Universidad de Alcalá de Henares*

Immersive virtual model accuracy and user perception: preliminary results of a case study with low cost photogrammetric survey method by drone

10:15 a.m.

**Hangjun Fu**

*University of Pavia*

UAV Survey for 3D printing digital modeling for the representation and enhancement of Nativity Church on the urban and architectural scales

# 18 June 2022 Programme

## Conference Day

**10:30 a.m.** **Chiara Rivellino<sup>1</sup>, Marco Ricciarini<sup>2</sup>**  
*<sup>1</sup>University of Pavia, <sup>2</sup>University of Florence*  
Testing the reliability of mini-UAVs acquisition campaign on detailed bas-reliefs.  
The case study of sculpturing elements of Donatello's Pulpit

**10:45 a.m.** **Andrea Campotaro**  
*University of Pavia*  
Documenting the evolution of a Lilong neighborhood in contemporary Shanghai through mini-UAV-based photogrammetry surveys

**11:00 a.m.** Coffee Break

### Room 1 Aula Tommazzoli

Chair: **Alessandro Luigini** - *Free University of Bolzano*  
Co-Chair: **Francesca Picchio** - *University of Pavia*

**11:30 a.m.** **Alessio Cardaci<sup>1</sup>, Pietro Azzola<sup>1</sup>, Antonella Versaci<sup>2</sup>**  
*<sup>1</sup>University of Bergamo, <sup>2</sup>University of Enna 'Kore'*  
The Astino Valley in Bergamo: multispectral aerial photogrammetry for the survey and conservation of the cultural landscape and biodiversity

**11:45 a.m.** **Raffaella Fiorillo, Angelo De Cicco**  
*University of Campania "Luigi Vanvitelli"*  
The Port of Fiskardo: architecture, history and innovation

**12:00 a.m.** **Guiye Lin<sup>1</sup>, Pablo Angel Ruffino<sup>2</sup>, Andrea Giordano<sup>1</sup>, Luigi Stendardo<sup>2</sup>, Rachele A. Bernardello<sup>1</sup>**  
*<sup>1</sup>University of Padua, <sup>2</sup>University of Naples "Federico II"*  
Application of UAV photogrammetry technology in the process of architectural heritage preservation

**12:15 a.m.** **Emanuele Garbin**  
*Iuav - University of Venice*  
On phenomenology of remote vision: the panoramas of the first lunar probes

**12:30 a.m.** **Francesca Galasso, Alessia Miceli**  
*University of Pavia*  
The documentation of the decorative system of the Ark of Mastino II in Verona.  
Comparative analysis of photogrammetric data obtained from UAV systems

**12:45 a.m.** Lunch

