

Author/ Affiliation

Editor(s): Filippo Stanco; Sebastiano Battiato, *University of Catania, Italy*;
Giovanni Gallo, *University of Catania, Italy*

Series:

- Digital Imaging and Computer Vision

Features:

- Surveys the latest techniques, algorithms, and solutions for digital imaging and computer graphics-driven cultural heritage preservation
- Summarizes recent advances in 3D reconstruction of archaeological sites
- Provides an overview of the state-of-the-art research in contributed articles from recognized experts in the field
- Contains numerous examples, illustrations and figures summarizing the results of experimentation on real data
- Includes a table of contents, illustrations and figures, summary, and bibliography for further reading in each chapter

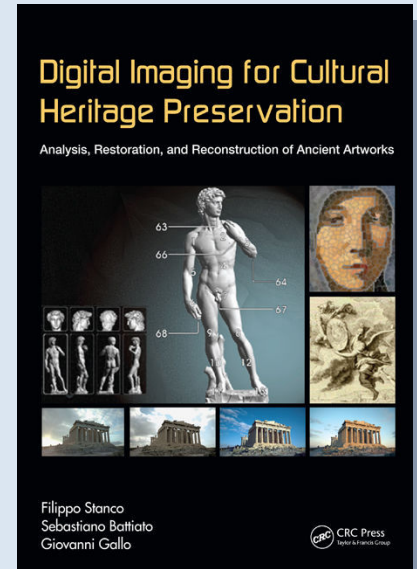
About the Book:

This edition presents the most prominent topics and applications of digital image processing, analysis, and computer graphics in the field of cultural heritage preservation. The text assumes prior knowledge of digital image processing and computer graphics fundamentals. Each chapter contains a table of contents, illustrations, and figures that elucidate the presented concepts in detail, as well as a chapter summary and a bibliography for further reading.

Well-known experts cover a wide range of topics and related applications, including spectral imaging, automated restoration, computational reconstruction, digital reproduction, and 3D models.

Select Content:

(*See reversed side.)



Price: \$139.95
Cat. #: K11154
ISBN: 9781439821732
July 2011

Order online at:

www.crcpress.com

Save 20%!
Enter code 181AE at time of checkout. Plus, receive Free shipping!

SIGN UP ONLINE AND RECEIVE INFORMATION ABOUT OUR LATEST OFFERINGS AND SPECIAL DISCOUNTS!

Select Content:

Experiencing the Past: Computer Graphics in Archaeology, F.

Stanco and D. Tanasi

The Past and the Future: Archaeology and Computer Science
From the Field to the Screen: 3D computer graphics and the Archaeological Heritage

The Archeomatica Project
Archaeological 3D Modeling
Haghia Triada, Crete

Polizzello Mountain, Sicily
Digital Restoration
Dealing with Image Data in Archaeology: New Perspectives

Using Digital 3D Models for Study and Restoration of Cultural

Heritage Artifacts, M. Dellepiane, M. Callieri, M. Corsini, and R. Scopigno

Visual Communication of Art
Art Catalogs and Digital Repositories
Digital 3D as a Tool for Art Scholars
Physical Reproduction from the Digital Model
Virtual Reconstruction and Reassembly
Supporting the Restoration Process

Processing Sampled 3D Data: Reconstruction and Visualization

Technologies, M. Callieri, M. Dellepiane, P. Cignoni, and R. Scopigno

Basic Geometric Processing of Scanned Data
Color Sampling and Processing
MeshLab: An Open Source Tool for Processing 3D Scanned Data
Efficient Visualization and Management of Sampled 3D Data
3D Digitization: How to Improve Current Procedures and Make It More Practical and Successful

ARC3D: A PublicWeb Service that Turns Photos into 3D Models, D.

Tingdahl, M. Vergauwen, and L. Van Gool

System Overview
Automatic Reconstruction Pipeline
Practical Guidelines for Shooting Images
Case Study: Reconstruction of the Mogao Caves of Dunhuang
Examples

Accurate and Detailed Image-Based 3D Documentation of Large Sites and Complex Objects, F. Remondino

Reality-Based 3D Modeling
Photogrammetry

Digitizing the Parthenon: Estimating Surface Reflectance under Measured Natural Illumination, P. Debevec, C. Tchou, A. Gardner, T.

Hawkins, C. Poullis, J. Stumpf, A. Jones, N. Yun, P. Einarsson, T. Lundgren, M. Fajardo P. Martinez
Background and Related Work
Data Acquisition and Calibration
Reflectometry
Results
Discussion and Future Work

Applications of Spectral Imaging and Reproduction to Cultural

Heritage, S. Bianco, A. Colombo, F. Gasparini, R. Schettini, S. Zuffi

Colorimetric and Multispectral Color Imaging
Capturing a Multispectral Image
Imaging and Signal Processing Techniques
Recovery Multispectral Information from RGB Images
Storing a Multispectral Image
Evaluating System Performance
Multispectral Image Reproduction
Final Remarks

Did Early Renaissance Painters Trace Optically Projected Images?

The Conclusion of Independent Scientists, Art Historians, and

Artists, D.G. Stork, J. Collins, M. Duarte, Y. Furuichi, D. Kale, A. Kulkarni, M.D. Robinson, S.J. Schechner, C.W. Tyler, N.C. Williams

The Projection Theory
Image Evidence
Documentary Evidence
Material Culture and Re-Enactments
Non-Optical Contexts
The "Value" in Tracing

Scholarly Consensus

A Computer Analysis of the Mirror in Hans Memling's Virgin and

Child and Maarten van Nieuwenhove, S. Savarese, D.G. Stork, A. Del

Pozo, R. Spronk
Memling's Diptych
Computer Vision Analysis
Modeling Reflections Off a Mirror Surface
Results

Virtual Restoration of Antique Books and Photographs, F. Stanco, A.

Restrepo Palacios, G. Ramponi
Detection of the Defects
Virtual Restoration of Antique Photographic Prints Affected by Foxing and Water Blotches
Restoration of the Fragmented Glass Plate Photographs
Restoration of Yellowing and Foxing in Antique Books
On Image Quality

Advances in Automated Restoration of Archived Video, A. Kokaram,

F. Pitie, D. Corrigan D. Vitulano, V. Bruni, A. Crawford
Dirt and Missing Data
Semi-transparent Defects
Line Scratches
Global Defects
An Evolving Industry

Computational Analysis of Archaeological Ceramic Vessels and Their Fragments, A.R. Willis

Artifact Reconstruction Systems: Basic Components and Concepts
Computational Models for Vessels and Their Fragments
Vessel Reconstruction by Sherd Matching: 3D Puzzle Solving
Current Trends in Computational Artifact Reconstruction

Digital Reconstruction and Mosaicing of Cultural Artifacts, E.

Tsamoura, N. Nikolaidis, I. Pitas
The Three-Step Object Reconstruction Procedure
Approaches for Object Reconstruction
Automatic Color-Based Reassembly of Fragmented Images and Paintings
Reduced Complexity Image Mosaicing Utilizing Spanning Trees

Analysis of Ancient Mosaic Images for Dedicated Applications, L.

Benyoussef, S. Derrode
Recent Image-Processing Projects Concerned with Mosaics
Tesserae Extraction
Tessera-based Segmentation and Coding
Guidelines Estimation for Mosaic Structure Retrieval
Open Issues and Research Directions in Mosaic Image Analysis

Digital Reproduction of Ancient Mosaics, S. Battiato, G. Gallo, G.

Puglisi G. Di Blasi
Art and Computer Graphics
History of Ancient Mosaics
The Digital Mosaic Problem
The Crystallization Mosaics
The Ancient Mosaics
The Ancient Mosaics in a 3D Environment
Final Discussions

Pattern Discovery from Eroded Rock Art, Y. Cai

Surface Imaging Methods
Pattern Discovery Methods
From Reconstruction to Knowledge
Interaction Design

Copyright Protection of Digital Images of Cultural Heritage, V.

Cappellini, R. Caldelli, A. Del Mastio, F. Uccheddu
2D Watermarking
3D Watermarking