Francesco Mele, Antonio Origlia and Antonio Sorgente (Eds.)

Proceedings of the

AI\*CH 2017

The 11th workshop on Artificial Intelligence for Cultural Heritage

Workshop co-located with AI\*IA 2017 Bari, Italy, November 14, 2017 http://smcm.isasi.cnr.it/AIxCH2017

Copyright  $\odot$  2017 for the individual papers by the papers' authors. Copying permitted for private and academic purposes. This volume is published and copyrighted by its editors.

Editors' addresses:

#### CNR-ISASI National Research Council

Institute of Applied Sciences and Intelligent Systems Semantic Multimedia and Cognitive Multimodal Systems Lab Via Campi Flegrei, 34 - Comprensorio "A. Olivetti", Ed. 70 80078 Pozzuoli (Naples) - Italy

f.mele@isasi.cnr.it (Francesco Mele) a.sorgente@isasi.cnr.it (Antonio Sorgente)

**LUxCID Lab** University of Naples "Federico II" URBAN/ECO Research Center via Tarsia, 31 80135 Napoli - Italy

antonio.origlia@unina.it (Antonio Origlia)

#### **Preface**

This volume contains the papers presented at AI\*CH 2017<sup>1</sup>, the 11th Workshop on Artificial Intelligence for Cultural Heritage co-located with 16th International Conference of the Italian Association for Artificial Intelligence (AI\*IA 2017<sup>2</sup>), held in Bari, Italy, on November 14, 2017.

The research paths of Cultural Heritage (CH) and Artificial Intelligence (AI) have increasingly found shared interests, leading to a fruitful fusion of these two disciplines. In fact, it requires sophisticated representation methods to formalise the intricate knowledge present in this domain, for exploring all levels of patrimonial knowledge, whether it is a work of art, an architectural artefact or a complex system like an area of the city. In this context, AI is the key discipline as it is an important promoter for the development of innovative technologies, tools and applications in most of the humanities area. In this moment, AI is providing into this domain a lot of new innovative services for documenting, managing, and visiting cultural heritage.

During the AI\*CH workshop, academic and industrial results in the application of AI methods and techniques in the domain of Cultural Heritage were presented. In particular, the papers were related to the topics such as valorization, conservation, promotion and gamification. Each proposal has been reviewed by members of the Program Committee of the Workshop, and on the basis of their recommendations 5 documents have been selected for publication and presentation at AI\*CH 2017. We would like to thank all the members of the Program Committee, and all authors of accepted papers for making AI\*CH 2017 possible.

December 2017 Francesco Mele, Antonio Origlia and Antonio Sorgente

<sup>&</sup>lt;sup>1</sup> http://smcm.isasi.cnr.it/AIxCH2017/

 $<sup>^2 \</sup>rm http://aiia2017.di.uniba.it/$ 

## Workshop Organization

#### Chairs

Francesco Mele ISASI - CNR, Napoli, Italy Antonio Origlia University of Naples, Italy Antonio Sorgente ISASI - CNR, Napoli, Italy

#### **Program Commitee**

Liliana Ardissono University of Turin, Italy

Luciana Bordoni ENEA, Italy

Paolo Bravi Conservatorio "G. P. Palestrina", Italy

Antonio Calabrese ISASI-CNR, Italy

Francesco Cutugno University of Naples, Italy

Cosimo Distante ISASI-CNR, Italy

Cristina Gena University of Turin, Italy Francesco Isgrò University of Naples, Italy Tsvi Kuflik University of Haifa, Israel

Francesco Mele
Paul Mulholland
Cataldo Musto
Antonio Origlia
Giovanni Semeraro

Oliversity of Hana, Israel
ISASI-CNR, Italy
Open University, UK
University of Bari, Italy
University of Naples, Italy
University of Bari, Italy

Antonio Sorgente ISASI-CNR, Italy Giuseppe Vettigli Centrica, UK

# Contents

### Regular Papers

An Efficient Visual Search Engine for Cultural Broadcast Archives	
Emanuele Caimotti, Maurizio Montagnuolo and Alberto Messina	1
In Codice Ratio: OCR of Handwritten Latin Documents using	
Deep Convolutional Networks	
Donatella Firmani, Paolo Merialdo, Elena Nieddu and Simone Scar-	
dapane	9
A Step Toward AI Tools for Quality Control and Musicological	
Analysis of Digitized Analogue Recordings: Recognition of	
Audio Tape Equalizations	
Edoardo Micheloni, Niccolò Pretto and Sergio Canazza	17
Route of the Ελευθερία: a Design Exercise for Museum-Centric	
Entertainment Systems	
Antonio Origlia and Maria Laura Chiacchio	25
A Framework for Creating Cultural Interactive Guides	
Antonio Sorgente, Antonio Calabrese, Gianluca Coda, Paolo Vanacore	
and Francesco Mele	33