Lecture Notes in Computer Science

Commenced Publication in 1973 Founding and Former Series Editors: Gerhard Goos, Juris Hartmanis, and Jan van Leeuwen

Editorial Board

David Hutchison Lancaster University, UK Takeo Kanade Carnegie Mellon University, Pittsburgh, PA, USA Josef Kittler University of Surrey, Guildford, UK Jon M. Kleinberg Cornell University, Ithaca, NY, USA Alfred Kobsa University of California, Irvine, CA, USA Friedemann Mattern ETH Zurich, Switzerland John C. Mitchell Stanford University, CA, USA Moni Naor Weizmann Institute of Science, Rehovot, Israel Oscar Nierstrasz University of Bern, Switzerland C. Pandu Rangan Indian Institute of Technology, Madras, India Bernhard Steffen TU Dortmund University, Germany Madhu Sudan Microsoft Research, Cambridge, MA, USA Demetri Terzopoulos University of California, Los Angeles, CA, USA Doug Tygar University of California, Berkeley, CA, USA Gerhard Weikum Max Planck Institute for Informatics, Saarbruecken, Germany

Information Technologies for Performing Arts, Media Access, and Entertainment

Second International Conference, ECLAP 2013 Porto, Portugal, April 8-10, 2013 Revised Selected Papers



Volume Editors

Paolo Nesi University of Florence Department of Information Engineering, DINFO Via Santa Marta, 3, 50139 Florence, Italy E-mail: paolo.nesi@unifi.it

Raffaella Santucci Sapienza, University of Rome Ex Vetrerie Sciarra, Via dei Volsci, 122, 00185 Rome, Italy E-mail: raffaella.santucci@uniroma1.it

ISSN 0302-9743 e-ISSN 1611-3349 ISBN 978-3-642-40049-0 e-ISBN 978-3-642-40050-6 DOI 10.1007/978-3-642-40050-6 Springer Heidelberg Dordrecht London New York

Library of Congress Control Number: 2013944292

CR Subject Classification (1998): J.5, H.5, H.2, K.3, K.4

LNCS Sublibrary: SL 3 – Information Systems and Application, incl. Internet/Web and HCI

© Springer-Verlag Berlin Heidelberg 2013

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed. Exempted from this legal reservation are brief excerpts in connection with reviews or scholarly analysis or material supplied specifically for the purpose of being entered and executed on a computer system, for exclusive use by the purchaser of the work. Duplication of this publication or parts thereof is permitted only under the provisions of the Copyright Law of the Publisher's location, in its current version, and permission for use must always be obtained from Springer. Permissions for use may be obtained through RightsLink at the Copyright Clearance Center. Violations are liable to prosecution under the respective Copyright Law.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

While the advice and information in this book are believed to be true and accurate at the date of publication, neither the authors nor the editors nor the publisher can accept any legal responsibility for any errors or omissions that may be made. The publisher makes no warranty, express or implied, with respect to the material contained herein.

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Preface

Welcome to the proceedings of ECLAP 2013, the second international conference on Information Technologies for Performing Arts, Media Access and Entertainment.

Information technologies have made possible many unexpected changes in the field of cultural heritage and performing arts; they continue to provide dynamic and exciting media platforms through which new possibilities perpetually emerge. This wave of changes has been particularly significant for the field of the performing arts, where a wide range of possibilities for digital exploitation continue to present itself to users, constantly opening the doors to new and asyet-unexplored synergies. Many technological developments concerning content access and fruition, the renovation of digital libraries, the creation of new ways for media entertainment and the facilitation of education are proposed, applied, and utilized by the public.

ECLAP is a best practice network co-funded through the ICT Policy Support Programme of the European Commission. ECLAP aims to stimulate exploitation of new ICT technologies for digital content access to performing arts resources, and to provide guidelines on the adoption of metadata standards for indexing, searching, and browsing content. ECLAP is providing access to performing arts collections and archives by means of social media tools and content aggregation tools derived from research activity. The performing arts institutions involved are prestigious and leading in the field. An ever-growing fund of digital resources is becoming accessible through a common, multilingual, easy-to-use ECLAP service. The ECLAP metadata are progressively being made available on Europeana, a European multilingual online collection of millions of digitized items from museums, libraries, archives, and multimedia collections.

The ECLAP conference aims to function as a forum in which progressoriented individuals and institutions find a place to collaborate and present results. It also aims to provide an overview of the state of the art for performing arts digital collections within the framework of the following best-practice themes: digital library tools, education and research facilities, IPR issues, cultural heritage and technologies.

The ECLAP 2013 event comprised a set of sessions and panels conforming to our standard of excellence. We hosted a keynote speaker line-up consisting of some of the most salient voices in the field: Luis Ferrão, European Commission — DG Communications Networks, Content and Technology — Creativity Unit; Bertha Bermudez, Researcher, performer and project manager education at ICK Amsterdam; David Giaretta, Director of Alliance Permanent Access to the Records of Science in Europe Network; Amanda Rigali, Director, Combined arts and touring, Arts Council England. The ECLAP 2013 conference international committee selected only the best proposals. Thus, only the 40% of the submitted contributions were accepted as full research papers. ECLAP 2013 featured more than 25 presentations coming from several countries: USA, Israel, UK, The Netherlands, Italy, Spain, Germany, Hungary, etc.

The conference is open to researchers, professionals, industries, institutions, technicians, and practitioners in the area of performing arts and information technologies, media-based entertainment, technology-enhanced learning, intelligent-media systems, acoustic systems, cultural heritage, and digital libraries.

The ECLAP 2013 conference aimed to be a place in which institutions, industries, the European Commission, and Europeana family projects in the areas of cultural heritage could find a wealth of opportunities for networking, debating, and sharing ideas and best practices.

As General Chair, it is a pleasure to express my gratitude to the keynote speakers, the dedicated Program Co-chairs, committee members, and conference support staff who contributed to making ECLAP a success. We hope that you will find the conference proceedings interesting.

Paolo Nesi

Message from the Organizing Chair

This second international ECLAP conference in Portugal was an exciting and stimulating experience for both the organizers and the participants.

The event served as confirmation that the ECLAP community, after almost three years, continues to grow steadily in strength and quality.

Interest in the project is high and growing: we received strong proposals from many excellent candidates, and were thus forced to turn down some very worthy and interesting submissions.

All the talks presented during the conference confirmed to us our belief that an interdisciplinary approach to the application of IT to the performing arts is both challenging and necessary.

It is difficult to meaningfully study all the ramifications of the sometimestroublesome marriage of IT with performing arts. On the one hand, the risk is that humanities scholars may ignore, overlook, or oversimplify technical issues; on the other hand, IT professionals are not necessarily aware of the unique problems and needs facing the performing arts.

Our hope is that gatherings such as the ECLAP 2013 Conference will further promote dialog between specialists in the different fields, and spark fruitful future collaborations.

Other stated goals of the conference are the promotion of networking and knowledge transfer between the various EC projects belonging to the Europeana family.

I wish to thank those who enriched the ECLAP 2013 Conference through their contribution, as well as Springer for the publication of this volume.

Finally, I wish to thank all those who made the conference possible through their dedication and work.

Raffaella Santucci

Organization

General Chair

Paolo Nesi

University of Florence, Italy

Organizing Committee

Raffaella Santucci	University of Rome "La Sapienza", Italy
Nicola Mitolo	AXMEDIATECH S.r.l., Italy
Katia Maratea	Fondazione Rinascimento Digitale, Italy

Program Committee

Nicola Aloia Lotte Belice Baltussen	I I
Alvaro Barbosa	τ
Jérôme Barthélemy Sarah Bay-Cheng	(1
Pierfrancesco Bellini Emanuele Bellini Ivan Bruno Antonio Camurri Vittore Casarosa Daniele Cenni Shi-Kuo Chang Daniela Coimbra	U H U U U H
David Crombie Ernesto Damiani Fabrizio Deriu Peter Eversmann Carla Fernandes David Luigi Fuschi Christiane Grün Rui Guerra Sorin Hermon	U U U U U U U U U U U U U U U U U U U

ISTI CNR. Italy Netherlands Institute for Sound and Vision, The Netherlands University of Saint Joseph (USJ) in Macau SAR. China Groupe Articque Solutions, France Department of Theatre & Dance, University at Buffalo, New York, USA University of Florence, Italy Fondazione Rinascimento Digitale, Italy University of Florence, Italy University of Genoa, Italy ISTI CNR Italy University of Florence, Italy University of Pittsburgh, Pittsburgh, USA ESMAE – Instituto Politécnico do Porto, Portugal Utrecht School of the Arts, The Netherlands University of Milano, Italy University of Teramo. Italy University of Amsterdam, The Netherlands Centro de Linguística da Universidade Nova de Lisboa (CLUNL), Portugal Brunel University, United Kingdom Deutsche Kinemathek, Germanv INTK. The Netherlands The Cyprus Institute, Cyprus

Gabriella Ivacs

Marisa Keuris Benjamin Knapp

Breandan Knowlton Marc Leman Hervé L'Hours Lillian Manzor Michal Masa Gabriele Meßmer Kia Ng Johan Oomen

Michela Paolucci Sonia Aran Ramspott

Silvio Salza Raffaella Santucci Josefien Schuurman Sharon Shapira-Glaubach

Jorge Solis Peter L. Stanchev Annamaria Tammaro Francesco Tisato Yannis Tzitzikas Renè Van Horik

Elliott Visconsi Robert Wechsler Tillman Weyde Sarah Whatley Andrea Zanni Open Society Archives (OSA) Archivum, Central European University, Hungary University of South Africa, South Africa Institute for Creativity, Arts, and Technology (ICAT). Virginia Tech, USA Europeana, The Netherlands Gent University, Belgium UK Data Archive, United Kingdom University of Miami, Florida, USA CIANT, Czech Republic Bavarian State Library, Munich, Germany University of Leeds, United Kingdom Netherlands Institute for Sound and Vision. The Netherlands University of Florence, Italy Centre de Cultura Contemporània de Barcelona, Spain University of Rome, Italy University of Roma La Sapienza, Italy University of Amsterdam, The Netherlands Younes & Sorava Nazarian Library, University of Haifa, Israel Karlstad University, Karlstad, Sweden Kettering University, Michigan, USA University of Parma, Italy University of Milano-Bicocca, Italy University of Crete and FORTH-ICS. Greece DANS - Data Archiving and Networked Services, The Netherlands University of Notre Dame, Indiana (USA) Palindrome Dance Company, Germany City University London, United Kingdom Coventry University, United Kingdom Wikimedia Italia, Italy

Culture and Creativity in the Digital Realm: A Boost from the Past

Luis Ferrão

European Commission - DG Communications Networks, Content and Technology - Creativity Unit Luis.Ferrao@ec.europa.eu

Biography

Luis Manuel Chaves da Fonseca Ferrão, 59, university studies in Economic and Social Sciences (ULB, Brussels, 1969-1970), Law (University of Lisbon, 1971-1976), First graduate of the Portuguese Training Centre for Judges (Centro de Estudos Judiciários, Lisbon, 1980-1983), Judge in various courts in Portugal (1983-1987), LL.M. European Judicial Law (EIPA/Maastricht-Luxembourg, University of Nancy, University of Thessalonica, 1994), Member of the First Board of Appeal of the OHIM in Alicante (1996-1999), Principal Administrator of the European Commission, in charge of the EU digital libraries and re-use policies and related intellectual property issues (2003-2012), currently in DG Communications Networks, Content and Technology of the European Commission, Creativity Unit, in charge of i. a. the legal and policy aspects connected with digitisation and online accessibility of cultural heritage through Europeana and similar platforms.

Multimodal Glossaries: A New Entrance to Artistic Insights of Dance Praxis

Bertha Bermudez

Researcher, Performer and Project Manager Education at ICK Amsterdam Bertha@ickamsterdam.nl

Abstract. Through different multimedia examples, of websites, DVD-ROM titles and the description and aims of the research project Prechoreographic elements based on the work of Emio Greco — PC, this lecture focuses on the potential of multimodal glossaries as tools for representation of choreographic praxis.

The role of practitioners is key to this proposal, where special emphasis is placed on the terminology used by the artists within their own creative process. Terms reveal the way concepts and ideas are appropriate to the artist, they provide an entrance into their artistic cognitive map while offering a resourceful content from which to derive interfaces and semantic relations. This approach aims at opening the artistic processes of creation from the perspective of those involved, dancers, dramaturges, and choreographers.

The collection of different media such as text, images, and sounds linked to specific principles used by choreographers in their praxis can become a fruitful way of displaying, teaching, acquiring, browsing, and sharing dance knowledge.

Keywords: dance, multimodal glossaries, terminology, cognition, transfer.

Biography

Bertha Bermúdez Pascual was a dancer in some of Europe's leading dance companies, including Frankfurt Ballet, Compañia Nacional de Danza in Madrid, and Emio Greco — PC. In 2005 she stopped performing and started working for Emio Greco — PC, transmitting their work and doing research around dance notation. Having turned toward research work, Bermudez has coordinated the interdisciplinary research projects (Capturing) Intention and Inside Movement Knowledge, both focusing on new modes of notating, documenting, and transmitting dance. Between 2007 and 2011 Bermúdez became an associate researcher at the Art Practice And Development Research Group, headed by Marijke Hoogenboom. Since 2009, Bermúdez has coordinated the academy pillar of ICK, which encompasses all research and exchange projects of the center. She is currently coordinating the research project Pre-Choreographic Elements and the development of the Performance Documentation Model.

The Space Project, a Partnership between Arts Council England and the BBC: Update and Initial Findings

Amanda Rigali

Director, Combined arts and touring, Arts Council England Amanda.Rigali@artscouncil.org.uk

Abstract. Amanda Rigali presented The Space, the innovative digital project initiated by Arts Council England in partnership with the BBC. Dr. Rigali drew upon her experiences as Business Manager for The Space since November 2011 to discuss the impact of the project on the performing arts sector to date, and some of the issues faced by the delivery team and organizations commissioned to deliver work. Dr. Rigali discusses this within the wider context of her role as Director of Combined Arts and Touring, running a national touring programme and holding a strategic overview of key major live performing arts events that took place across England as part of the Cultural Olympiad.

Biography

Amanda's career in the arts began in research and teaching, first at Exeter University and then with an MA from King's College London and RADA. While studying for her PhD., she taught English and drama courses for the Open University and London University.

After working at the Almeida Theatre, Amanda became General Manager of Sphinx, a touring theater company that profiled work by women writers. She then became General Manager of the dance company DV8, Physical Theatre. While at DV8, Amanda worked on an international tour, a site-specific performance at Tate Modern, and an award-winning dance film for Channel 4, "The Cost of Living".

Amanda joined the Arts Council in 2004, first working within the Touring Department and then taking on the wider remit of combined arts and touring within the Head Office Arts Team. Amanda developed and launched the Arts Council's £45 million Strategic Touring Programme in 2011, and manages the Arts Council's national Artistic Assessment Programme. She has also acted as Business Manager for The Space, the innovative digital project Arts Council England launched in 2012 in partnership with the BBC.

Table of Contents

Perspectives and (Digital) Strategies for Cultural Heritage Institutions

Bringing New Life to Video Narratives for Exploring Cultural	1
Heritage Uros Damnjanovic, Sorin Hermon, Adolfo Roitman, Susan Hazan, Tirza Deutscher, and Haya Scheffer	1
A Linked Open Data Service for Performing Arts Pierfrancesco Bellini and Paolo Nesi	13
A New Generation Digital Content Service for Cultural Heritage Institutions	26
How to Catalogue the Cultural Heritage "Spectacle" Donatella Gavrilovich	39
Contemporary Italian Theatre on the Web: A Short History and Some Perspectives	50
Open Creative Framework for a Smart Cultural City: Bologna Porticoes and the Involvement of Citizens for a UNESCO Candidacy Antonella Guidazzoli, Maria Chiara Liguori, and Mauro Felicori	58
Trust, Quality and Tools for Cultural Heritage Digital Libraries	
Preserving Authenticity Evidence to Assess Provenance and Integrity of Digital Resources Luigi Briguglio, Silvio Salza, and Maria Guercio	66
Applicability of Digital Library Descriptive Metadata to the Contemporary Artworks: The Sapienza Digital Library Case Study Angela Di Iorio and Marco Schaerf	78
Metadata Quality Assessment Tool for Open Access Cultural Heritage Institutional Repositories Emanuele Bellini and Paolo Nesi	90

Validating the Digital Documentation of Cultural Objects Achille Felicetti and Franco Niccolucci	104
A Workflow Model and Architecture for Content and Metadata Management Based on Grid Computing <i>Pierfrancesco Bellini, Ivan Bruno, and Paolo Nesi</i>	118
A Unified Test Procedure Designed for Monitoring the Experimental Settings Ensuring Quality Assurance in 3D and Stereoscopic Productions	
Educational Services for the Performing Arts	

Cuban Theater Digital Archive: A Multimodal Platform for Theater Documentation and Research 138Lillian Manzor, Kyle Rimkus, and Mitsunori Ogihara How Are On-Line Digital Libraries Changing Theatre Studies and Memories? 151Maia Giacobbe Borelli Multimedia Performance Reconstruction as a Challenge to Theatre History Writing: Using Interactive Models of Historical Theatre Performances in the Education of Performing Arts 164Attila Szabó Education-Performing Arts-Information Technology: An Impossible Triangle? 175Peter Eversmann

Dance in the World of Data and Objects

Dance in the World of Data and Objects	192
The TKB Project: Creative Technologies for Performance Composition, Analysis and Documentation <i>Carla Fernandes</i>	
The Challenge of the <i>Inter</i> in the Preservation of Cultural Heritage; The Intangibility of the Material and Immaterial Dancing Body in Performance	218

Acting and Natural Interaction

MultiStage: Acting across Distance	227
Fei Su, Giacomo Tartari, John Markus Bjørndalen,	
Phuong Hoai Ha, and Otto J. Anshus	
Networked Performances and Natural Interaction via LOLA: Low	
Latency High Quality A/V Streaming System	240
Carlo Drioli, Claudio Allocchio, and Nicola Buso	

Music and Opera of a Digital Generation

Algorithmic Generation of Music Tunes for an iPhone [®] Game Adriano Baratè and Luca Andrea Ludovico	251
Feature Matching of Simultaneous Signals for Multimodal Synchronization Matt Benatan and Kia Ng	266
Augmented Opera Performance Joanne L. Armitage and Kia Ng	276
Author Index	289