Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering

367

Editorial Board Members

Ozgur Akan

Middle East Technical University, Ankara, Turkey

Paolo Bellavista

University of Bologna, Bologna, Italy

Jiannong Cao

Hong Kong Polytechnic University, Hong Kong, China

Geoffrey Coulson

Lancaster University, Lancaster, UK

Falko Dressler

University of Erlangen, Erlangen, Germany

Domenico Ferrari

Università Cattolica Piacenza, Piacenza, Italy

Mario Gerla

UCLA, Los Angeles, USA

Hisashi Kobayashi

Princeton University, Princeton, USA

Sergio Palazzo

University of Catania, Catania, Italy

Sartai Sahni

University of Florida, Gainesville, USA

Xuemin (Sherman) Shen

University of Waterloo, Waterloo, Canada

Mircea Stan

University of Virginia, Charlottesville, USA

Xiaohua Jia

City University of Hong Kong, Kowloon, Hong Kong

Albert Y. Zomaya

University of Sydney, Sydney, Australia

More information about this series at http://www.springer.com/series/8197

Anthony Brooks · Eva Irene Brooks · Duckworth Jonathan (Eds.)

Interactivity and Game Creation

9th EAI International Conference, ArtsIT 2020 Aalborg, Denmark, December 10–11, 2020 Proceedings



Editors
Anthony Brooks
Department of Software and Media
Aalborg University
Aalborg, Denmark

Duckworth Jonathan D RMIT University Melbourne, VIC, Australia Eva Irene Brooks D Aalborg University Aalborg, Denmark

ISSN 1867-8211 ISSN 1867-822X (electronic) Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering ISBN 978-3-030-73425-1 ISBN 978-3-030-73426-8 (eBook) https://doi.org/10.1007/978-3-030-73426-8

© ICST Institute for Computer Sciences, Social Informatics and Telecommunications Engineering 2021 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.

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.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, expressed or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

This Springer imprint is published by the registered company Springer Nature Switzerland AG The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Preface

The ArtsIT team are delighted to introduce the proceedings of the 9th European Alliance for Innovation (EAI) International Conference on Arts and Technology, Interactivity, and Game Creation (ArtsIT 2020), held as an online virtual conference in Cyberspace, December 10–11, 2020.

ArtsIT is a place where people in the arts, design and technology meet – unfortunately, due to the COVID-19 situation, the 2020 edition of this 'meeting' had to take place remotely via a live video stream of presentations, which is now archived for viewing at the URL https://www.youtube.com/watch?v=vBVugi9RpX8&t=31s.

Opening the proceedings was a first-class keynote given by Portuguese international artist João Martinho Moura. Moura is a media artist and researcher, interested in electronic art and embodiment, virtual environments, computer music, and computational aesthetics. For the past 20 years, he has been adopting new ways to present the body and space in digital media. He has a particular interest in art and science, perception, visualization, and the intersections between art and technology. Since the 2000s, his work has been presented internationally, several times, in more than 18 countries, including some city-scale exhibitions. João has authored numerous publications in and across the fields of media arts, interfaces, embodiment, virtual reality, and visualization. As a media artist, he has collaborated with a number of renowned international institutions, such as the European Space Agency (ESA), the International Iberian Nanotechnology Laboratory (INL), the North Atlantic Treaty Organization (NATO), and the United Nations Educational, Scientific and Cultural Organization (UNESCO), and was selected as an artist in residence for the European Commission's STARTS and MindSpaces initiatives. In 2013, João Martinho Moura received the National Multimedia Art and Culture Award in Lisbon for his contributions to the field of digital arts in Portugal. A feature in João's ArtsIT keynote presentation was his most recent avant-garde works within dance performance and installation where he explores at and beyond the cutting edge of domains by experimenting with virtual and extended realities. Through this it was clear how he is offering and creating new actor and audience experiences, bridging established divides and confines, so as to establish new performer/audience virtual interactive spaces pushing the limits of the state of the art in the field. We are also grateful for and acknowledge the important contribution by João as webmaster for the conference website.

Following the keynote, a full day of paper presentations was broadcast until well into the evening. These are presented herein in their text form and as oral presentations archived at the given URL. Thus, in this edition of the book series Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering (LNICST) published by Springer, proceedings from ArtsIT are presented. We sincerely hope that this volume will be well received by those who authored papers as well as others who read the work herein. We also hope that this volume may inspire those who have published in this (near) annual series, now in its eleventh year, to return

Preface

and encourage other readers to consider the events as worthy in their targeted publications. Hence, we encourage all authors and would-be-authors to regularly check the event web pages for calls to submit for upcoming editions. We, as the managing/organizing/editing team, would like to express our thanks to EAI for the continued support as well as to all delegates who attended the December 2020 event, either as presenting authors or as part of the audience. We express our thanks to Aalborg University which supported us in numerous ways and again sponsored the event. Finally, the ArtsIT 'family' all look forward to physically meeting you at ArtsIT or another academic or social occasion in the future.

Anthony Brooks Eva Irene Brooks Duckworth Jonathan

Conference Organization (ArtsIT)

Steering Committee

Imrich Chlamtac (Chair) University of Trento, Italy
Anthony Brooks (Co-chair) Aalborg University, Denmark

Organizing Committee

General Chair

Anthony Brooks Aalborg University, Denmark

Technical Program Committee Chairs

Mark Palmer University of the West of England, United Kingdom

Irene Mavrommati Hellenic Open University, Greece Stephen J. Wang Hong Kong Polytechnic University

Demos and PhD Track Chair

Anthony Brooks Aalborg University, Denmark

Web Chair

João Martinho Moura Polytechnic Institute of Cávado and Ave, Portugal

Panels and Demos Chair

Anthony Brooks Aalborg University, Denmark

Publications Chair

Jonathan Duckworth RMIT University, Australia

Workshops Chairs

Thomas Westin Stockholm University, Sweden
Anton Nijholt University of Twente, Netherlands
Anthony Brooks Aalborg University, Denmark

Publicity and Social Media Chair

João Martinho Moura Polytechnic Institute of Cávado and Ave, Portugal

Sponsorship and Exhibit Chair

Anthony Brooks Aalborg University, Denmark

Local Chair

Tine Skjødt Andreasen Aalborg University, Denmark Anthony Brooks Aalborg University, Denmark

Technical Program Committee

Margaret Schedel Stony Brook University, USA
Mel Krokos University of Portsmouth, UK
Zoi Karageorgiou Hellenic Open University, Greece
Cecília Sik-Lanyi University of Pannonia, Hungary

Stuart Cunningham Manchester Metropolitan University, UK

Sue Gollifer Brighton University, UK

Chamari Edirisinghe Imagineering Institute, Malaysia Stefania Serafin Aalborg University, Denmark

Bruno Herbelin Ecole Polytechnique Fédérale de Lausanne (EPFL),

Switzerland

Mirian Tavares University of Algarve, Portugal

Dimitris Grammenos FORTH, Greece

Antonio Camurri University of Genoa, Italy

Damianos Gavalas University of the Aegean, Greece Jack Ox University of New Mexico, USA

Christos Bouras Computer Technology Institute and Press, Greece

Jean Detheux
George Raptis
Christos Sintoris
Pirkko Raudaskoski
Dimosthenis Manias
Spiros Siakas
Independant painter/filmmaker
University of Patras, Greece
University of Patras, Greece
Hellenic Open University, Greece
University of West Attica, Greece
Sapienza Universita di Roma, Italy

Elissavet Georgiadou Aristotle University of Thessaloniki, Greece Georgios Mylonas Computer Technology Institute and Press, Greece

Modestos Stavrakis University of the Aegean, Greece
Thanos Balafoutis Hellenic Open University, Greece
Theodora Moulou Hellenic Open University, Greece
Iro Laskari Hellenic Open University, Greece

Contents

Art, Installation and Performance	
Embodiment in Virtual Reality Performance	3
Designing Context-Aware Mobile Systems for Self-guided Exhibition Sites	21
Designing the Exhibition Modus of Virtual Experiences: Virtual Reality Installations at Film Festivals	45
(AB)USE ME: A Mixed Reality Performance Installation Exploring Use of the Body as a Mediating Object	64
Acetate - Impermanence and Destruction Within Sound Art	85
Effect of Dramatic Elements on Engagement in an Augmented Reality Experience for a Museum	100
Space Pace: Method for Creating Augmented Reality Tours Based on 360 Videos	119
Games	
The Time Machine and the Voodoo Doll: Exploring Customized Computer Game Controllers and Their Influence on the Experience of Play Oliver Wolter Nielsen, Miriam Krebs, Jake Sølberg, Michael Holton Hovgaard, Nicolai Staal Hansen, Bjørn Dalsgaard Hansen, and Lasse Juel Larsen	141
The World Is Your Playground: A Bibliometric and Text Mining Analysis of Location-Based Game Research	160

A Matrix for Gamifying Development Workshops	180
Creative Process of Pre-production of Video Games: Multidisciplinary Model Approach of Historical Imaginary that Contributes to Generate Engagement	198
Video Game Development Processes that Generate Engagement in the Players: A Case Study of Don't Starve	212
Collaborative Game Design for Learning: The Challenges of Adaptive Game-Based Learning for the Flipped Classroom	228
Enhancing the Educational Value of Tangible and Intangible Dimensions of Traditional Crafts Through Role-Play Gaming	243
Design	
Context-Based Visual Design Language for Shape Generation	257
Synergia: A Multimodal Virtual Reality System for Creative Expression and Positive Change Through Cognitive Flow	271
Evaluating Consumer Interaction Interfaces for 3D Sketching in Virtual Reality	291
3D Localisation of Sound Sources in Virtual Reality	307
Optimizations of VR360 Animation Production Process	320

TeMoG – An Accessible Tool for Creating Custom Soft Robotics Parts <i>Jonas Jørgensen</i>	331
Evolutionary Typesetting: An Automatic Approach Towards the Generation of Typographic Posters from Tweets	343
Intelligence and Creativity in Healthcare, Wellbeing and Aging	
Data City: Leveraging Data Embodiment Towards Building the Sense of Data Ownership	365
Bio-related Design Genres: A Survey on Familiarity and Potential Applications	379
IoT Product Pleasurability - Investigating the Pleasurable User Experiences Between Conventional Products and IoT Products Through Watches Zidong Lin, Bjorn Sommer, and Saeema Ahmed-Kristensen	394
A Budget Setting Design Intervention for Reducing Personal Expenses for Chinese Young Generation	409
Bukas: Material Messages for Filipino Migrant Workers and Their Transnational Families	425
The Design Intervention Opportunities to Reduce Procedural-Caused Healthcare Waste Under the Industry 4.0 Context – A Scoping Review Pranay Arun Kumar and Stephen Jia Wang	446
Effects of Virtual Reality in the Area of Responsible Decision-Making Training on Adolescents	461
Author Index	477