Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering 215

Editorial Board

Ozgur Akan
Middle East Technical University, Ankara, Turkey
Paolo Bellavista
University of Bologna, Bologna, Italy
Jiannong Cao
Hong Kong Polytechnic University, Hong Kong, Hong Kong
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
Sartaj Sahni
University of Florida, Florida, USA
Xuemin Sherman Shen
University of Waterloo, Waterloo, Canada
Mircea Stan
University of Virginia, Charlottesville, USA
Jia Xiaohua
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

Yoram Chisik · Jussi Holopainen
Rilla Khaled · José Luis Silva
Paula Alexandra Silva (Eds.)

Intelligent Technologies for Interactive Entertainment

9th International Conference, INTETAIN 2017 Funchal, Portugal, June 20–22, 2017 Proceedings

Springer

Editors
Yoram Chisik
Madeira Interactive Technologies Institute
Funchal
Portugal

Jussi Holopainen
School of Computer Science
University of Lincoln
Lincoln
UK

Rilla Khaled
Concordia University
Montreal, QC
Canada

José Luis Silva
University Institute of Lisbon
Lisbon
Portugal

Paula Alexandra Silva
National University of Ireland
Maynooth
Ireland

ISSN 1867-8211 ISSN 1867-822X (electronic)
Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering
ISBN 978-3-319-73061-5 ISBN 978-3-319-73062-2 (eBook)
https://doi.org/10.1007/978-3-319-73062-2

Library of Congress Control Number: 2017962879

© ICST Institute for Computer Sciences, Social Informatics and Telecommunications Engineering 2018
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, express 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.

Printed on acid-free paper

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

Preface

When Anton Nijholt asked me to chair the 2017 edition of Intetain I liked the idea of holding a small conference on a small island as the ocean affords plenty of room for big ideas to grow. Intetain is a celebration of the future of interactive entertainment. We invited researchers to submit contributions around developments and insights in art, design, science, and engineering regarding novel entertainment-focused devices, paradigms, reconceptualizations, and reconfigurations of entertainment experiences and we were not disappointed, as the submissions although low in number were high in content and concepts crossing the full range of interactive entertainment from physical play to virtual reality and from digital storytelling to email, or are they one and the same?

In *Computer Lib/Dream Machines*, Ted Nelson wrote that "everything is deeply intertwingled" and digital technologies have very deeply intertwingled into the very fabric of our everyday existence with the past distinction between private and public spaces, fact and fiction, tangible and intangible getting more and more blurry by the day. Advances in sensors, actuators, and displays have enabled us to develop new interactive surfaces and new forms of display. While in the past certain objects or locales, be they cave walls, theater stages, cinema screens, statues, or radio receivers, acted as focal points with limited interactivity, now almost any surface can become an interactive device responding to direct and indirect interactions and/or environmental stimuli. Furthermore, we are no longer just looking at screens, they are looking back at us, this has many opportunities but also dangers such as predatory media or predatory state agencies and one of the main challenges for us is to understand how to use this technology as a force for good and how to enable people to counter and control the potential harmful and dangerous aspects of this technological evolution.

Our vision of Intetain is that of a catalyst, a convivial environment for the sharing and germination of ideas and it is our hope that the set of papers presented in this volume will act as a spark for further thought and deliberation long after the sounds emanating from the conference hall have quieted down.

December 2017 Yoram Chisik

Organization

Steering Committee

Imrich Chlamtac	Create-Net, Italy
Anton Nijholt	University of Twente, The Netherlands and Imagineering Institute, Malaysia
Antonio Camurri	University of Genoa, Italy

Organizing Committee

General Chair

Yoram Chisik	M-ITI, Madeira Interactive Technologies Institute, Portugal

Program Chairs

Rilla Khaled	Concordia University, Canada
Jussi Holopainen	University of Lincoln, UK

Workshops Chairs

Paula Alexandra Silva	Maynooth University, Ireland
Anton Nijholt	University of Twente, The Netherlands and Imagineering Institute, Malaysia

Web, Publicity and Social Media Chair

Luis Ferreira	M-ITI, Madeira Interactive Technologies Institute, Portugal

Publications Chair

Jose Luis Silva	ISCTE – University Institute of Lisbon, Portugal

Local Arrangements Chair

Ana Lúcia dos Santos Faria	University of Coimbra and M-ITI, Madeira Interactive Technologies Institute, Portugal

Conference Manager

Dominika Belisová	EAI, European Alliance for Innovation

Technical Program Committee

Anton Nijholt	University of Twente, The Netherlands and Imagineering Institute, Malaysia
Clara Mancini	Open University, UK
Dennis Reidsma	University of Twente, The Netherlands
Lindsay Grace	American University, USA
Regina Bernhaupt	Institut de Recherche en Informatique de Toulouse (IRIT), France
Sergi Bermúdez	University of Madeira and Madeira Interactive Technologies Institute (M-ITI), Portugal
Staffan Björk	University of Gothenburg, Sweden
Teresa Romão	Universidade NOVA de Lisboa, Portugal
Wolmet Barendregt	University of Gothenburg, Sweden

Reviewers

A. Augusto Sousa	University of Porto, Portugal
A. Eduardo Dias	Universidade Nova de Lisboa, Portugal
Albert Ali Salah	Boğaziçi University, Turkey
Alejandro Catala	University of Twente, The Netherlands
Alexander Muir	Ammachi Labs, Amrita University, India
Anna Zamansky	University of Haifa, Israel
Bill Rogers	The University of Waikato, New Zealand
Carlos Martinho	Instituto Superior Técnico, University of Lisbon, Portugal
Chris Geiger	University of Applied Sciences Düsseldorf, Germany
Cristina Sylla	University of Minho, Portugal
Daniel Fabry	Joanneum University of Applied Sciences, Austria
Daniel Fitton	University of Central Lancashire, UK
Elena Márquez Segura	University of California Santa Cruz, USA
Emma Zhang	City University London, UK and Imagineering Institute, Malaysia
Eva Cerezo	University of Zaragoza, Spain
Fabrizio Lamberti	Politecnico di Torino, Italy
Fabrizio Valpreda	Politecnico di Torino, Italy
Gavin Sim	University of Central Lancashire, UK
Gilang Andi Pradana	City University London, UK and Imagineering Institute, Malaysia
Helmut Hlavacs	University of Vienna, Austria
Ido Iurgel	Rhine-Waal University of Applied Science, Germany
Ilyena Hirskyj-Douglas	University of Central Lancashire, UK
James Manning	Royal Melbourne Institute of Technology (RMIT), Australia
Javier Jaen	Politechnical University of Valencia, Spain
Jerry Fails	Boise State University, USA

Jesús Ibáñez Martínez	Escola Municipal d'Art i Disseny, Spain
Jorge Cardoso	University of Coimbra, Portugal
Jos van Leeuwen	The Hague University of Applied Sciences, The Netherlands
Josef Gründler	Joanneum University of Applied Sciences, Austria
Kati Alha	University of Tampere, Finland
Kenneth Feinstein	Sunway University, Malaysia
Maarten Van Mechelen	KU Leuven, Belgium
Maria Roussou	University of Athens, Greece
Merijn Bruijnes	University of Twente, The Netherlands
Mónica Cameirão	University of Madeira and Madeira Interactive Technologies Institute (M-ITI), Portugal
Neha Kumar	Georgia Tech, USA
Nuno Correia	Universidade NOVA de Lisboa, Portugal
Nuno Correia	University of Madeira and Madeira Interactive Technologies Institute (M-ITI), Portugal
Patricia Pons	Politechnical University of Valencia, Spain
Pedro Ribeiro	Rhine-Waal University of Applied Science, Germany
Rainer Malaka	Bremen University, Germany
Robby Vande Delden	University of Twente, The Netherlands
Ronald Poppe	Utrecht University, The Netherlands
Rosella Gennari	Free University of Bozen-Bolzano, Italy
Ruben Pereira	Instituto Superior Técnico, University of Lisbon, Portugal
Sylvain Marchand	University of La Rochelle, France
Terry Trickett	Trickett Associates, UK
Theresa-Marie Rhyne	Independent Consultant, USA
Wim Van Eck	Leiden University, The Netherlands
Yongsoon Choi	Sogang University, Korea
Yuan Feng	Eindhoven University of Technology, The Netherlands

Contents

Player Expectations of Animal Incorporated Computer Games 1
Wim van Eck and Maarten H. Lamers

Reaper Tournament System 16
Nhien Pham Hoang Bao, Shuo Xiong, and Hiroyuki Iida

Analysis of Average Hand-Drawing and Its Application. 34
Shinjiro Niino, Nanae Hagiwara, Satoshi Nakamura, Masaaki Suzuki, and Takanori Komatsu

Dynamorph: Montessori Inspired Design for Seniors with Dementia Living in Long-Term Care Facilities 49
Yuan Feng, Ruud van Reijmersdal, Suihuai Yu, Matthias Rauterberg, Jun Hu, and Emilia Barakova

AR Sound Sandbox: A Playful Interface for Musical and Artistic Expression 59
Bastian Dewitz, Roman Wiche, Chris Geiger, Frank Steinicke, and Jochen Feitsch

Kessel Run - A Cooperative Multiplayer SSVEP BCI Game 77
Inês Cruz, Carlos Moreira, Mannes Poel, Hugo Ferreira, and Anton Nijholt

Persuasive Games for Intergenerational Social Interaction in Urban Environments 96
Mark Mushiba, Vincenzo D'Andrea, and Antonella De Angeli

Trampoline Jumping with a Head-Mounted Display in Virtual Reality Entertainment 105
Marcel Tiator, Okan Köse, Roman Wiche, Christian Geiger, and Fritz Dorn

Exploring Children's Use of a Remotely Controlled Surfacebot Character for Storytelling 120
Alejandro Catala, Mariët Theune, Dennis Reidsma, Silke ter Stal, and Dirk Heylen

MuMail – A Simple Multimedia Email Client 130
Peter Boros and Helmut Hlavacs

Enabling Augmented Sense-Making (and Pure Experience) with Wearable Technology 136
Michel Witter and Licia Calvi

G:RASS – Experiencing a City Through an Artist's Eyes 142
Anastasia Treskunov, Christoph Vogel, Marta Wróblewska, Michael Bertram, Fabian Büntig, and Christian Geiger

Placemaking Across Platforms: Playing to Circulate Stories in the Smart City 146
Benjamin Stokes, Karl Baumann, and François Bar

Smart Magic City Run: Exploring the Implications of Public Augmented Reality Games 151
Daniel Pargman, Tina Ringenson, Miriam Börjesson Rivera, Lisa Schmitz, Maria Krinaki, Nino Prekratic, and Björn Lundkvist

Beating the City: Three Inspirational Design Patterns to Promote Social Play Through Aligning Rhythms 159
Robb Mitchell and Thomas Olsson

Author Index 165