Association for
Computing Machinery

Advancing Computing as a Science & Profession

SMI'13

Proceedings of the 2013 ACM Workshop on
Smart Material Interfaces:
Another Step to a Material Future

Association for Computing Machinery

Advancing Computing as a Science & Profession

Notice to Past Authors of ACM-Published Articles
ACM intends to create a complete electronic archive of all articles and/or other material previously published by ACM. If you have written a work that has been previously published by ACM in any journal or conference proceedings prior to 1978, or any SIG Newsletter at any time, and you do NOT want this work to appear in the ACM Digital Library, please inform permissions@acm.org, stating the title of the work, the author(s), and where and when published.

Additional copies may be ordered prepaid from:

ACM Order Department
PO Box 30777
New York, NY 10087-0777, USA

Phone: 1-800-342-6626 (USA and Canada)
+1-212-626-0500 (Global)
Fax: +1-212-944-1318
E-mail: acmhelp@acm.org
Hours of Operation: 8:30 am – 4:30 pm ET

Printed in the USA

Preface

These are the proceedings of the second international workshop on Smart Material Interfaces`(SMI 2013), held in Sydney, Australia on December 13th. This second workshop is held in conjunction with the 15th ACM International Conference on Multimodal Interaction (ICMI 2013). The first workshop on Smart Material Interfaces (SMI 2012) was held during ICMI 2012, in Santa Monica, California, USA.

The objective of this workshop is to draw attention to the emerging field of smart material interfaces which spans the areas of design, engineering and architecture. These novel composites, which in some cases are already celebrated as the answer for the 21st century's technological needs, are generally referred to as materials that are capable of sensing the environment and actively responding to environmental changes by changing their physical properties. This allows the control of physical properties such as shape, size and color by using certain stimuli (electric or magnetic fields, light, temperature or stress). Some common smart materials appear in the form of polymers, ceramics, memory metals or hydro gels. The workshop aims at stimulating research and development in interfaces that make novel use of such smart materials, and will provide a platform for state-of-the-art design of smart material interfaces.

The proposed topics for the workshop included but were not limited to the following: reality-based interfaces, tangible interfaces, organic user interfaces, programmable matter, electronic textiles, computational textiles, smart textiles, robotics, and relevant developments in materials science, mechanical engineering, chemistry, biological engineering, nanotechnology, electrical engineering, textile engineering, and other fields, coupled with thoughtful speculation about applications.

Many of these topics were covered by the first workshop (see ACM Digital Library for these papers), and are again covered by this second workshop. In addition to a methodological survey of Smart Materials and how to use them in interfaces, the topics that are covered by the current papers include the use of thermo-chromic and conductive ink for the design of 'electronic' Origami, the design of smart hair controlled by shape memory alloys, the use of silk as a programmable biomarker for on-body and in-body health monitoring, and the use of deformable Smart Materials that interact with the human skin.

We thank the authors for their papers and the program committee members for their reviews and feedback to the authors. SMI 2013 is organized by the Human Media Interaction Department of the University of Twente, Enschede (The Netherlands), together with the Materiability Research Network of the Department for Architecture of ETH Zürich (Switzerland).

Andrea Minuto
Manuel Kretzer
Anton Nijholt
SMI 2013 Program Chairs

Table of Contents

Papers
Session Chair: Andrea Minuto *(University of Twente)*

2013 2nd Workshop on Smart Material Interfaces
Another Step to a Material Future

Program Chairs: Anton Nijholt *(University of Twente, Human Media Interaction group, The Netherlands)*
Manuel Kretzer *(Chair for CAAD, Swiss Federal Institute of Technology Zürich, Switzerland)*
Andrea Minuto *(University of Twente, Human Media Interaction group, The Netherlands)*
Leonardo Giusti *(MIT – Mobile Experience Lab Cambridge, Massachusetts, USA)*

Program Committee: Jason Alexander *(Lancaster University, Lancaster, UK)*
Huihui Wang *(Jacksonville University, FL, USA)*
Wim Poelman *(Delft University of Technology, Delft, NL)*
Akira Wakita *(Keio University SFC, Fujisawa, Japan)*
Orkan Telhan *(University of Pennsylvania, Philadelphia, USA)*
Dhaval Vyas *(ABB Corporate Research, Bangalore, India)*
Patrizia Marti *(University of Siena, Italy and Technical University Eindhoven, NL)*
Andres Lucero *(Nokia Research Centre, Tampere, Finland)*
Kasper Hornbæk *(Dept. of Computer Science, University of Copenhagen, DK)*
Letizia Jaccheri *(NTNU, Norway)*
Augusto Celentano *(Ca' Foscari University, Venice, Italy)*
Fabio Pittarello *(Ca' Foscari University, Venice, Italy)*
Federico Casalegno *(MIT - Mobile Experience Lab Cambridge, Massachusetts, USA)*
David Coyle *(University of Bristol, UK)*
Anne Roudaut *(University of Bristol, UK)*

Sponsor:

In cooperation with: