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Publication date:
2009

Document Version:
Publisher's PDF, also known as Version of record

[Link to publication](#)

Citation for pulished version (APA):

Mossé, A. (2009). *Smart Textiles as actors and actuators of the domestic space*. Abstract from UbiComp 09 - Archibots workshop, Orlando, Florida, United States.
http://workgroups.clemson.edu/AAH0503_ANIMATED_ARCH/archibots/Mosse_ARCHIBOTS09_2pp.pdf

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Smart textiles as actors and actuators of the domestic space

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Introduction

In recent years the textile sector has undergone dramatic changes with the development of high-performances fabrics, smart textiles. While geofabrics – used for earthworks in large scale landscape construction - allow textiles to operate at a building scale, smart textiles, soft technologies are encouraging the invisible integration of sensors and actuators into the environment, extending the limits of where computation can operate [3]. These technological innovations are rapidly transforming the nature of textile design, opening new horizons for textiles to take a leading role in redefining our environments. At the same time, architecture shows a revival of interest for textiles. While they have always been used in tensile structures and within the interior, textiles concepts are increasingly used to inform architectural and building practices.

Abstract

This paper explores this relationship between textile and architecture, arguing for a reconsideration of textiles' capability to deal with the creation of space. Addressing more specifically the role smart textiles can play in a domestic context, this paper engages with the current state of my research looking at tectonic textiles to develop energy-harvesting & self-actuated textiles

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UbiComp 2009, Sep 30 – Oct 3, 2009,
Orlando, FL, USA**

for the home. Initially, it exposes the conceptual framework of the research, arguing for a greater convergence of textiles, architectural design and robotics; advocating a more sensible, less-hermetic and more responsive perspective for the domestic environment. In a second time, the focus is given on the Photovoltaic Mashrabiya, first and on-going design experimentation of the research, exploring the design and making of a soft solar-responsive membrane. By questioning how smart textiles can lead to a new understanding of the domestic space and by exploring how they can contribute to the making of a behaving architecture, this paper hope to highlight there is a space for smart textiles to become the actuators of a more sensible and holistic home.

Keywords

Architectural textiles, smart textiles, responsive environments

ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Acknowledgements

This research is supported by the Danish government via a PhD position undertaken in CITA, Centre for IT & Architecture, Copenhagen, in collaboration with TFRG, Textile Futures Research Group, London.

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