

Interactive Garments: Flexible Technologies for Textile Integration

Authors : Anupam Bhatia

Abstract : Upon reviewing the literature and the pragmatic work done in the field of E- textiles, it is observed that the applications of wearable technologies have found a steady growth in the field of military, medical, industrial, sports; whereas fashion is at a loss to know how to treat this technology and bring it to market. The purpose of this paper is to understand the practical issues of integration of electronics in garments; cutting patterns for mass production, maintaining the basic properties of textiles and daily maintenance of garments that hinder the wide adoption of interactive fabric technology within Fashion and leisure wear. To understand the practical hindrances an experimental and laboratory approach is taken. "Techno Meets Fashion" has been an interactive fashion project where sensor technologies have been embedded with textiles that result in set of ensembles that are light emitting garments, sound sensing garments, proximity garments, shape memory garments etc. Smart textiles, especially in the form of textile interfaces, are drastically underused in fashion and other lifestyle product design. Clothing and some other textile products must be washable, which subjects to the interactive elements to water and chemical immersion, physical stress, and extreme temperature. The current state of the art tends to be too fragile for this treatment. The process for mass producing traditional textiles becomes difficult in interactive textiles. As cutting patterns from larger rolls of cloth and sewing them together to make garments breaks and reforms electronic connections in an uncontrolled manner. Because of this, interactive fabric elements are integrated by hand into textiles produced by standard methods. The Arduino has surely made embedding electronics into textiles much easier than before; even then electronics are not integral to the daily wear garments. Soft and flexible interfaces of MEMS (micro sensors and Micro actuators) can be an option to make this possible by blending electronics within E-textiles in a way that's seamless and still retains functions of the circuits as well as the garment. Smart clothes, which offer simultaneously a challenging design and utility value, can be only mass produced if the demands of the body are taken care of i.e. protection, anthropometry, ergonomics of human movement, thermo- physiological regulation.

Keywords : ambient intelligence, proximity sensors, shape memory materials, sound sensing garments, wearable technology

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