



Expanding Garment Functionality through Embedded Electronic Technology

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ABSTRACT

Electronic technology offers exciting new possibilities for functional clothing design. Technology allows a garment's functionality to become dynamically adaptable, changing in response to environmental or situational changes. However, there are many challenges to integrating electronic technology into a textile-based garment structure. This paper outlines some of the possibilities and challenges to apparel designers in this new field, and highlights the importance of the apparel design perspective in the successful design of wearable technology.

Keywords: Wearable technology, smart clothing, wearable computing, functional clothing, apparel design

1 Introduction

Electronically augmented clothing has the potential to meet the user's functional needs in a dynamic, efficient manner. However, the use of electronic and computing technologies is a relatively new tool for apparel designers. While electronic components create new design variables for apparel designers, at the same time the integration of electronics into the body space creates new variables for technology designers. Many current prototypes suffer from the divide between these two perspectives. An iterative, aware design process can in theory help to form a complete design perspective, but in practice it is often difficult for designers to imagine

influencing variables that lie outside their scope of experience.

This overview seeks to introduce to apparel designers some of the important and challenging new issues that arise in wearable technology design.

2 Textile Foundations

Historically, functional clothing has utilized mechanical means or passive textiles to achieve its functional goals. (Watkins, 1995) For instance, cold-weather clothing has relied on the textile's and garment's ability to retain the heat produced by the wearer's body by reducing conductive, convective, or radiant heat