



INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI  
SHORT ABSTRACT OF THESIS

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Thesis Title: Exploring integration of traditional and digital textiles and experimenting its role for non-verbal communication in the social space of users

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India has rich and extensive textile traditions across the country largely owing to its historical, geographical and cultural uniqueness. In recent times, textiles have been found to be an interesting medium for embedding electronics to impart augmented functionalities, beyond clothing or furnishing. With a gradual decline in craft practices of India over the decades, the plethora of crafting traditions provides immense opportunity to embed and explore possibilities of digitisation and to assess the impact it is likely to have on the Indian users. The problem that the present research addresses is that there is a gap that exists between the hierarchical textile crafts of India and technological advancements pertaining to smart materials at present. There is lack of research and exploration pertaining to e-textiles, scientific research on behavioural aspects of traditional clothing in India in comparison to extensive studies being conducted elsewhere. Combining wearable technology with traditional crafts, designers can create contemporary products for context specific applications to bridge the gap between crafts, fashion, technology and user acceptance. The focus of the research is to embed electronics seamlessly by replacing traditional elements with smart materials to enhance the functions of a static traditional textile. The work focusses on identifying how could craft based e-textile interfaces be designed and how could these interfaces be evaluated, which then generates a heuristic framework for other designers and researchers in similar domain. The user centric design research was conducted in three specific stages - (i) Understanding the users' perception towards traditional textiles and socialisation behavior; (ii) Design Exploration; and (iii) Experimentation and Validation. The research connects three primary domains of traditional textiles, smart technology and the users that use these smart products in their respective spaces of interaction, the social space. Quantitative and qualitative analysis of the findings of studies conducted reveal that traditional textiles of India strongly influence emotions, personality, attitude, opinion, preferences and self-expression of young Indian users. Users believe that textiles are a natural extension of their personality and it enhances their expressive capabilities. The findings also reveal that significant levels of emotions, feelings, boundaries and comfort levels are experienced by users in their social space. Thus, it was hypothesized that digitized textiles with augmented function could enhance nonverbal expression in the social space of users, which could be communicated subtly in specific scenarios and only when needed. Experimentation was conducted for non-verbal expression of emotions and feelings which validate that the digital textile wearable crafts iii have been found to significantly express emotions and feelings in the social space of the users. This ensures smooth interaction among users while maintaining a decorum in the social space enhancing the overall collective intelligence. It was also found that users have high preference for using digital craft textile wearables based on perceived usefulness and perceived ease of use. To summarise, the present research finds its inspirations in the elaborate textile crafting traditions of India and an inquisitiveness to merge it with smart materials for context specific applications which could bring them at par with technologically advanced e-textiles of present and benefit designers, researchers and crafts persons.