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Preface

Ergonomics in product design

During the last decade, competition in the consumer product market has become very fierce. Innovation and responsiveness to consumer needs are key factors to product success. To meet consumer needs, product development requires a human-centered design approach. The essence of human-centered design is to integrate technology and other resources in ways to support users in fulfilling their needs (Rouse, 1991).

This special issue, "Ergonomics in product design", highlights the progress of ergonomic applications in the Pacific Rim, one of the world's largest product design and manufacturing centers. Six papers were collected in this issue. Of these six, the first two papers deal with design for comfort. Goonetilleke and Feizhou argue against the notion that seat depth is primarily governed by anthropometric data. Instead, they develop a methodology, consisting of both objective and subjective measurements, to evaluate useful seat depth. By systematically measuring both seat edge protrusion and acceptability/overall discomfort rating of various seat depths, they identify appropriate seat depth for Chinese population in the South China region. Moreover, Kubo et al. explore the relations between physical reactions to vibration and the resulting psychological and physiological reactions to that vibration. They construct a model to predict psychological and physiological reactions to vibration. This model can be applied to determine an optimal structure design for automobiles that can result in comfortable rides.

Kansei engineering addresses the issue of consumers' feeling towards the product (see Nagamachi and Imada, 1995). The next two papers apply Kansei engineering to the form design of high-tech products. Chuang and Ma explore the relationship between form and product image of microelectronic products. By doing so, they develop a perceptual map that can be used as a design reference to reduce the perceptual gap between designers and users. In another study, Chuang, Chang, and Hsu identify user-preferred design trends for mobile phones by using a similar approach.

Finally, the last two papers address the issue of design methodology. Lin and Kreifeldt propose a Man–Tool system design model. They use a conceptual hi-tech product, i.e., a wearable computer, as an example to illustrate the application of this methodology to the design of the product. In addition, Lee et al. present a design strategy, called "High Touch", to systematically explore consumer's needs and incorporate those needs into product design. They report several successful cases of this design strategy in the design of home appliances.

This special issue covers the major themes of successful product design: Innovation, Appealing (aesthetics, or appearance), and Comfort. I hope that the contents presented in this issue are informative and stimulating to the readers. I am very grateful to the editor-in-chief, Professor Anil Mital, for giving me such an opportunity. It has been a valuable experience for me. Also, I would like to thank all the contributors, both authors and referees, for their efforts and patience in helping to bring this issue to print.

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