Preface

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Biographical notes: Xianyi Zeng is currently a Full Professor at the ENSAIT Textile Institute, France. He obtained his BEng degree at the Department of Science and Technology of Tsinghua University in 1986 and his PhD degree at Centre d'Automatique of University of Science and Technology of Lille, France in 1992. Since 2000, he leads one research team on Human Centered Design in ENSAIT. His research interests include development of intelligent systems for design of advanced materials; and modelling and analysis of human perception and cognition on industrial products. He has published two scientific books, more than 160 papers at reviewed international journals and international conference proceedings.

Ludovic Koehl graduated from the Ecole Nationale Supérieure des Arts et Industries Textiles (ENSAIT), Textiles Engineering Institution (France) in 1994 and received his PhD in Automation from the Université des Sciences et Technologies de Lille, France, in 1998. Since 2010, he works as an Associate Professor and Professor at the ENSAIT Textile Engineering Institute, Roubaix, France. His research interests include pattern recognition, data mining, computer modelling and their applications in textile industry. Since 1999, he has been involved in a great number of projects dealing with optimisation of the quality and comfort of textiles by integrating physical measures and human knowledge, and has published 30 papers and attended 60 international conferences.

Kannan Govindan is an Associate Professor of Operations and Supply Chain Management at the Department of Business and Economics, University of Southern Denmark, Denmark. His research interests include supply chain management and reverse logistics. He received a gold medal for Best PhD Thesis Award. He is the Editor-In-Chief for *International Journal of Advanced Operations Management*, *International Journal of Business Performance and Supply Chain Modelling* and *International Journal of Industrial Engineering Practices*. He has published more than 50 papers in refereed international journals and more than 70 papers in conferences.

This special issue collects six papers mainly selected from the communications presented at FLINS2010 (The 9th International Conference on Foundations and Applications of Computational Intelligence), held from 2 to 4 August 2010 in Chengdu (China), and IFAC2010 HMS (11th IFAC Symposium on Analysis, Design, and Evaluation of Human-Machine Systems), held from 31 August to 2 September 2010 in Valenciennes (France).

These papers are focused on human-centred product design, dealing with sensory science (study of five human senses), consumer science or marketing study, Kansei engineering (study of human emotions), human professional knowledge modelling and management, and industrial decision making with uncertainty. These reviewed high quality contributions provide theoretical/analytical solutions to the problems of real interest in intelligent techniques possibly combined with other traditional tools, for integrating human knowledge, human body and human perception elements into industrial design in order to develop new personalised products meeting specific requirements of consumers. Academic and applied researchers and research students working on product design and human factor characterisation can directly benefit from these papers.

In this special issue, the papers have been written by 16 co-authors from four countries (France, Belgium, China, and Turkey) in the field of product design, energy strategy management and medical diagnosis in conjunction with intelligent systems.

The first paper aims at integrating knowledge of medical experts into the automatic tissue classification procedure in order to obtain more physically significant segmented tissues. The second and third papers deal with clothing design in terms of fashion styles and colours. The fourth paper permits to characterise and model costumer perception and integrate costumer perception into the personalised product design process. The fifth paper proposes an original method for long-term sustainable energy policy multi-criteria evaluation. The sixth paper also deals with personalised clothing design by modelling human body shape perception in terms of fashion themes.

In this special issue, the main intelligent techniques applied to different projects include fuzzy logic, neural network and data aggregation. Especially, fuzzy logic has been shown to be a powerful tool for dealing with human related uncertain and imprecise factors.

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