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Development of a big data environment-based interactive fashion design platform for optimizing textile supply chains

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For a modern textile company, under the pressure of international competitions, making quick and reactive decisions on organization of production and supply network have been increasingly important and critical for obtaining competitive advantages. The development of information technologies, like cloud computing, big data and virtual reality, provides the possibility of transforming the classical labor intensive international supply chain into digital supply chains, composed of networked units for design and small series local production. These new supply chains should be organized around consumers' personalized requirements and facilitate connections and interactions between all concerned parties. In this context, this paper gives a summary of the recent work realized in our research group for building the digital interactive garment design platform in big data environment. The main force of this platform is to provide a series of data-based services, including a designer-oriented and a consumer-oriented recommendation system, an interactive virtual garment fitting process, a human body modeling and classification procedure, a normalized sensory virtual garment evaluation procedure, and a feedback mechanism for adjusting design parameters according to consumer's and designer's perception and learning from past successful design cases. The treatment of human perception and emotions related to fashion products and their ambiances has been integrated into these data services. The intelligent techniques, including fuzzy logic, design trees, rough sets, and cognitive maps have been successfully used for formalizing concepts and modeling complex relations at different stages.

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