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Computer Techniques in Design and Manufacturing of Soft Products

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Computer techniques have been widely investigated and employed in the design and manufacturing of engineering products in industries. Most commercial CAD/CAM software systems are focused on mechanical parts. However, computer techniques to support creation and fabrication of soft products recently have a strong need in various applications like apparels, toys, jewellery, shoes, glass, furniture, and art. Construction of these objects by computer is quite different from feature-based design or solid modelling in conventional CAD. It emphasizes more on styling, innovation, value-addition, and human-machine interactions, which requires new 3D modelling paradigms. Their making processes involve diversified manufacturing technologies, in which automation and design for manufacturability issues are not limited in NC machining, molding, or CAPP. Therefore, new computer-based techniques need to be studied in order to enable design of soft products, facilitate their manufacturing, as well as to ensure the product quality.

This special issue will provide a venue for investigating computer-aided design and manufacturing methodologies in the development of soft products. Original papers on the state-of-the-art research and development, new modelling methods, solutions integration, novel applications, and empirical studies of computer tools for this purpose are solicited. The special issue covers a range of topics including (but not limited to):

- Geometric modelling for soft products;
- Design automation of soft products;
- Shape and topology optimization of soft products;
- Human-centric soft product design;
- Physical modelling in soft product design;
- Reverse engineering for soft products;
- Manufacturing techniques for soft products;
- Collaborative design and manufacture of complex soft products;
- Design for manufacturability in soft products;
- Tolerance control in computer-aided design and manufacturing of soft products;
- Human-machine interfaces for computer-aided design and manufacturing of soft products.

Authors are invited to submit their recent research work on the themes, as well as survey papers related to those areas. Full electronic manuscript (in PDF file format) should be submitted to the guest editors at softcadcam@mae.cuhk.edu.hk by March 31, 2008. Prospective authors may wish to contact the guest editors with abstracts for an early feedback on possible topics covered by the special issue.

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