Editorial

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Biographical notes: Daizhong Su is a Professor of Design Engineering and Head of the Advanced Design and Manufacturing Engineering Centre at Nottingham Trent University, UK. His research interests include product/engineering design, integrated manufacturing, CAD/CAM/CAE and internet-based engineering. His research has been supported by grants from various founding organisations including European Union, UK government and Research Councils, Royal Society, East Midlands Development Agents, international organisations and industries. He is the Editor of *International Journal of Design Engineering* and Editorial Board Member of six refereed scientific journals. He has been involved in organising about 10 international conferences as Conference Chair, Co-chair and international/committee chairs.

Shifan Zhu is a Professor and Head of Industrial Design Department, Harbin Engineering University, China. He is the member of the Mechanical Science Education Committee of China Education Ministry. He was the Main Organiser of two prestigious conferences held in 2006: the *International Conference on Advanced Design and Manufacture and the Industrial Design Education Conference and Exhibition*. His research interests include computer integrated manufacturing system, green design and virtual design and manufacturing.

The papers of this Special Issue were initially selected from those presented at the *International Conference on Advanced Design and Manufacture (ADM)* held at Harbin, China, 2006. After considerable amount of work on expansion, updating and modification of the initial papers, each of the revised papers was reviewed by at least two referees. Based on the referee's comments, the papers were further revised to the journal standard and finally published as current version presented in this Special Issue.

The authors' and referees' efforts for enhancing the quality of this paper are greatly appreciated, without which the high quality of the papers cannot be ensured.

The ADM conference was coorganised by Harbin Engineering University, China, Nottingham Trent University, UK and the consortia of European Commission's Asia IT&C project (contract No. ASI/B7-301/3152-99/71553) and Asia Link project (contract No. ASI/B7-301/98/679-023). As a prestigious conference, the calls for abstracts and papers stimulated an excellent response of submissions with more than 600 abstracts, amongst which the authors of about 250 abstracts were invited for submission of full papers. All the papers submitted were refereed, and, based on the referees' comments, 185 papers were finally selected for conference presentation and inclusion in the conference proceedings, from which 15 papers were chosen as candidates for this Special Issue and seven of them were finally selected based on the Special Issue review panel's comments.

As the collection of the papers expanded from their original conference presentations, this Special Issue reflects the main schemes of the ADM conference, including engineering/product design, manufacture, CAD/CAM/CAE, collaborative design and manufacture, automation and control, web/internet based collaboration, application of artificial intelligence and smart computing, management and supply chain.

The first paper by D. Wan, D. Hu and H. Wang presents an algorithm for feed rate scheduling and jerk control for high speed CNC machining. High speed CNC machining usually slows down around corners and produces vibration because of the limitation on processing a large amount of consecutive small line blocks with a high speed and the difficulties to change directions quickly. The algorithm proposed by the authors adjusts the feed rate automatically and provides smooth acceleration to achieve maximum productivity.

Condition monitoring systems of manufacturing processes have been recognised in the recent years as one of the key technologies that provide competitive advantages in manufacturing environments. The second paper by A.F. Al-Habaibeh, A. Al-Azmi and J. Redgate presents an approach for the design of condition monitoring systems for turning operations using novelty detection algorithm.

The third paper by X. Lai, C. Yan and B. Ye is also dealing with machining operation. Combining information entropy and wavelet analysis, a neural network adaptive system has been developed, which replaces the mean square error criterion of back propagation algorithm with the generalised entropy square error function. The proposed system is applied to online control the cutting force with variable cutting parameters.

Acoustic monitoring is a popular tool for determining the working condition of a machine, thus allowing maintenance to be scheduled to minimise any process down time. The fourth paper by T. Tyler and E. Lai reports the development of a probing system used to study the number of asperity contacts during sliding friction and gives insight into the behaviour of two acoustic parameters, namely acoustic energy and count rate under different loading conditions.

With the rapid development of space technologies, space systems play more and more important roles in the field of politics, military and economics. The authors of the fifth paper, Z. Deng, B. Wu, X. Wu and H. Zhang, designed a new type mechanism to lock and unlock space borne flexible appendages of various shapes. The mechanism avoids producing space wastes and has less influence on the position and attitude of the

satellite when unlock happens. The main part of this mechanism has been optimised based on the natural frequencies and the finite element analysis models.

The sixth paper by Z. Xiong and J. Nie investigated the impact of advertisement on the competitiveness of supply chains with a price and advertising sensitive linear deterministic demand. The investigation was conducted with two supply chains, where two retailers compete for supply to customers and two manufacturers compete for advertisement.

Nowadays, motion controllers are being widely used, and most of the motion controllers adopt the Proportional-Integral-Differential (PID) control system. The last paper by K. Xue, P. Wang and W. Zhao presents a robust method for PID controllers using fuzzy logic to auto-tune their gains, which offers robust precision for a non-linear system.

At last, the guest editors would like to thank Dr. M. Dorgham, the Editor in-Chief of *IJMTM* and Mr. Jim Corlett for their kind support, without which this Special Issue would not have been possible.