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Editorial

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Biographical notes: S.S. Pande is a Professor of Mechanical Engineering at Indian Institute of Technology Bombay, India. He was a Visiting Professor at the University of Cincinnati, USA. His research interests include computer aided design and manufacturing (CAD/CAM) with focus on product modelling, algorithms for rapid prototyping, CNC machining and computational metrology, artificial intelligence techniques, manufacturing process modelling and internet based collaborative product development. He has published about 140 research papers in various refereed international journals and conferences and has authored a book titled *Computer Graphics and Product Modeling for CAD/CAM*. He is on the editorial board of *International Journal of Precision Technology*, Inderscience, UK.

Uday S. Dixit obtained his PhD in Mechanical Engineering from IIT Kanpur. He is working as a faculty member in the Department of Mechanical Engineering, Indian Institute of Technology Guwahati since 1998. He is actively engaged in carrying out research in the modelling of manufacturing processes using finite element methods as well as soft computing techniques for the last 23 years. He has published a number of research papers and five books related to manufacturing and finite element method. He has also edited three books related to manufacturing. He has guest-edited several special issues of journals and is currently an Associate Editor of the *Journal of Institution of Engineers (India) Series C*. He has guided several doctoral and master's students. He also has more than four years experience in manufacturing industry. He was the organising secretary of prestigious AIMTDR conference held at IIT Guwahti in December 2014.

Product development activities worldwide are facing newer challenges such as shorter product life cycles, stiff global competition as well as the need for higher product quality and reliability. During the past 15 years, the focus of research is shifting to miniaturisation, intelligent product design and control.

Following this global trend, researchers from premier academic institutions and research laboratories in India have been steadily contributing to these areas. This special issue of *International Journal of Mechatronics and Manufacturing Systems* aims to present the state-of-the-art research being carried out in India.

Enhanced versions of five research papers presented at the 5th International and 26th All India Manufacturing Technology, Design and Research (AIMTDR) conference held at Indian Institute of Technology, Guwahati, India during 12–14 December 2014 have been selected for the special issue. They broadly focus on the development of precision micro/nano assembly/positioning systems as well as the use of artificial intelligence (AI) techniques for product-process design and control.

Jain et al. report prototype development of a novel compliant piezo actuator based micro gripper for robotic assembly of miniature parts. Vithun et al. proposed and carried out FEA analysis of a precision flexure mechanism for a nano polishing stage for metrology applications. The mechanism has good working range, high resonant frequency and minimum cross-axis motion. A comprehensive CAD system was developed by Kumar and Madan for multi cavity die casting die design, addressing several issues in core, cavity and gating design. Aich et al. report an intelligent support vector machine (SVM)-based process model for abrasive water jet machining to predict material removal rate (MRR) and depth of cut from the process parameters. Particle swarm optimisation technique was used to get optimum process parameters which were validated through experiments. Nithyanandam and Pezhinkattil developed an intelligent control system for CNC milling to reduce part dimensional errors in real time using artificial neural network (ANN). The system was successfully tested for large aircraft parts.

We hope that the papers included in this issue will be useful to both academic researchers as well as practicing engineers.

We are grateful to Prof. T. Özel, Editor-in-Chief, *Intl. Journal of Mechatronics and Manufacturing Systems* for his valuable suggestions and guidance during the process of bringing out this special issue. We sincerely thank the reviewers for their dedicated support in the timely review of the papers. Finally, we acknowledge the professional support of Inderscience publishing team during the preparation of this issue.