Editorial

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Biographical notes: N P Mahalik received his UG, PG and PhD in the year 1989, 1993 and 1998, respectively. He completed his Postdoctoral Research during 2002 and worked as invited faculty in Moscow State Technological University, Russia and Gwangju Institute of Science and Technology (GIST), South Korea during 2001 and in 2004, respectively. He has published more than 80 papers and 5 books. He also served as Editor/Guest Editor and has been a Committee Member in several journals and conferences. He was a recipient of National Overseas Scholarship and Brain-Korea fellowships for pursuing research especially in the field of interdisciplinary areas. He is a Member of many professional societies.

Mo M. Jamshidi (F-IEEE,F-ASME,F-AAAS,F-NYAS,F-TWAS) received a PhD in Electrical Engineering from the University of Illinois at Urbana-Champaign in 1971. He received 3 honorary doctorate degrees and is Lutcher Brown Endowed Chaired Professor at the University of Texas System at San Antonio Campus, San Antonio, TX, USA. He was the Founding Director of Center for Autonomous Control Engineering (ACE) at the University. of new Mexico (UNM) and the Director of the National Consortium on System of Systems Engineering. He has over 550 technical publications including 58 books and edited volumes. He is the Founding Editor/Co-editor of Five journals and one magazine.

Advances in technology may indeed influence many kinds of automation and control systems in the most dramatic way. The scope of automation and control is vast. New principles and innovative technology has been emerging that can cater to the need for real-world applications. Methodology and design of automation and control systems represent a broad research topic with applications in many sectors such as industry, defense, home, transportation, space, computing, agriculture, environment and so on, based on the adoption of fundamental principles, specifications, characterisations, modelling, simulations and state-of-the-art technology. Nevertheless the technological research in this field is now expanding; its design phases appear to be highly complex and involve interdisciplinary approaches. The main objective of this journal is to provide

information on concepts, principles, characteristics, applications, latest technological developments and comparisons with regard to automation and control and their configurations. This journal incorporates research, development, tutorials and case studies. Academic and industrial research and developments in automation and control are being carried out at many different institutions around the world. The technological trends in this domain (e.g. design, integration, schemes, standards, methodology, application scenarios, pros and cons, etc.) need to be extensively disseminated so that the traditional as well as the advance automation and control can spread to serve society in a bigger way. In particular, the journal is intended to focus on describing the implicit concept and application of control theory, simulation, intelligent automation, instrumentation and process control, remote monitoring and control (DCS/SCADA) and real-time issues.

Keeping in view of the scope of the journal we present you the Inaugural Issue of this journal. On behalf of the Publisher and the Editorial team we must thank the contributing authors of this issue. Our special thanks go to the reviewers and the persons who are involved, directly or indirectly, in the process of bringing out this Inaugural Issue in time. Welcome, dear readers. As we near the end of finalising the first year of publication, we will be able to present you a good number of quality papers in its forthcoming issues.

It is customary to provide a short guide to the contents of this volume. We start with a most exciting paper that deals with the stability issues of a typical power system by the use of fuzzy logic. What more could be expected? This paper is considered as a blend of control theory, soft computing and a real-world practical application. The work presents an application of single-input fuzzy logic controller so as to determine the control signal of a STATCOM for improvement of power system stability. The authors claim that the compensation scheme is relevant to Flexible AC Transmission Systems (FACTSs) technology which has been used globally in order to improve the performance. STATCOM even can improve the damping of electromechanical oscillations when used in transmission systems. In the second paper, the authors argue that modern machining systems produces the parts which are quite independent from the final product build up from those parts for which the machining systems are more universal and have higher level of automation than the assembly systems, leaving assembly as a most expensive phase in the production. In the development of advance assembly systems finding a more flexible, efficient, robust system solution is of prime importance that allow much more reuse rate of assembly units. To fulfil this need a concept of Bionic Assembly System (BAS) has been proposed. The third paper presents research results in the field of Fault Detection and Isolation (FDI). In modern automation applications Distributed Control System (DCS) with monitoring from supervisory platform is implemented to achieve higher productivity and process reliability. The most important issue in FDI is the generation of residuals. It is concluded in this paper that for distributed analytical model based fault detection some additional signals besides those required for distributed process control are necessary to evaluate residuals. This paper suggests bond graph model based design of supervision algorithm for distributed fault tolerant control systems. Apparently, FDI has been a major research area within the automation and control domain. The fourth paper also studies the FDI issues. The slowly developing faults within electrical motor type actuator due to environmental factors, temperature, build variations, aging, etc. directly impart inaccuracies in the inverse model for which the performance of the system suffers. A multiparameter estimation is proposed and

stability of the scheme is evaluated. The fifth proposes a novel knowledge model-based adaptive intelligent control for a symbiotic human–robot system. The robotic system tries to adapt to various situations with different human requests with greater autonomous behaviour. The effectiveness of the proposed method is verified by the experiment using real-world platform. Recently, applications of Ultrasonic Motors (UM) are found in many fields. The author of the sixth paper have elaborately studied the stator part of the UM. Major issues such as its structure, the relationship between contact point, frequency, clockwise and counter-clockwise rotation have been investigated based on finite element mode interaction. The purpose of this research is to analyse the novel boundary configuration for the UM by mode concept and physical behaviours. Last but not the least the final paper of this issue presents work on issues with regard to modelling the Intrusion Tolerance System. In this paper, an intrusion model based on the state transition is presented in which the attackers' capability is achieved by correlating the information from the Intrusion Detection System (IDS) sensor alerts. The outcome is considered to be useful in home security applications.

The journal intends to bring out Special Issues on any specific research topic that fall well within the scope of the journal, regularly. For SI proposals are invited from the GEs. Moreover, the extended version of the scholarly selected papers from International Conferences can be published as a SI of the journal only after going through a peer-review process. A GE in this case is the coordinator, session chair and/or program/technical committee member.