

EDITORIAL

Dear readers,

You have at your desk the issue no. 1-2/2005 of the journal AUTOMATIKA. It contains eight invited original scientific papers, which span several areas in control, robotics and industrial electronics. The authors are from Croatia, France, Germany, Italy, Japan, Korea, Portugal, Spain, Turkey, United Kingdom and USA, and they were invited on the basis of very high quality of their manuscripts submitted to the **IEEE International Symposium on Industrial Electronics – ISIE 2005**, which was held on June 20–23, 2005 in Dubrovnik, Croatia. The ISIE is one of the major annual conferences organized by the IEEE Industrial Electronics Society attracting a large number of experts in the fields concerned by industrial electronics.

In the first paper, **Bilateral Motion Control for Abstraction and Reproduction of Real World Force Sensation**, Tomoyuki Shimono et al. propose a fundamental technology for development of the haptic database based on abstraction and reproduction methods on bilateral control of real world force sensation and reconstruction of real world environment as well. The second paper is **Sliding Modes in Motion Control Systems** by Asif Šabanović et al. in which the authors discuss the realization of motion control systems in the sliding mode control framework, which allows unified treatment of the both unconstrained and constrained motion control. In the third paper, **Modeling of Human Driving Behavior Based on Piecewise Linear Model**, Jong-Hae Kim et al. focus on the development of the modelling strategy of the human driving behaviour based on the expression as Piecewise Linear model. The fourth paper is **Real-Time Tracking of Multiple Moving Objects Using Particle Filters and Probabilistic Data Association** in which António Almeida et al. describe a method for detection and tracking of multiple moving objects using particle filters and joint probabilistic data association, where data are obtained with a laser range finder. In the fifth paper, **Vision-Guided Walking in a Structured Indoor Scenario**, Robert Cupec et al. present key ideas of a vision-based strategy for guidance of walking robots in structured scenarios, where computer vision techniques are employed for reactive adaptation of step sequences allowing a robot to step over or upon or walk around obstacles.

The sixth paper is **An MRAS Sensorless Technique based on the MCA EXIN + Neuron for High Performance Induction Motor Drives** by Maurizio Cirrincione et al. where the authors propose a new sensorless technique for induction motor drives based on a hybrid MRAS-neural technique. In the seventh paper, **New DTC Control Scheme for Induction Motors fed with a Three-level Inverter**, Xavier del Toro Garcia et al. describe a novel Direct Torque Control strategy, which is applied in the control of induction motors fed with a three-level voltage source inverter. The eighth paper is **Experimental Behavior of a Matrix Converter Prototype Based on New Power Modules** in which Domenico Casadei et al. describe the design and the solutions adopted for a matrix converter based on new integrated power modules.

I would like to take this opportunity to thank all authors for their contributions. I am deeply indebted to the reviewers for their time and expertise that ensured the highest quality of the papers. Finally, I would like to express my gratitude to Prof. Borivoje Rajković, the Editor-in-Chief of AUTOMATIKA, and Prof. Nedjeljko Perić, the ISIE 2005 General Chair, for giving me the opportunity and honour to serve as the guest editor of this issue.

Guest Editor
Prof. Ivan PETROVIĆ, PhD