



Editorial

Automatica Prize Paper Awards 2008

IFAC Automatica Prize Paper Awards have been given since 1981, for outstanding contributions to the theory and/or practice of control engineering or control sciences, documented in a paper published in *Automatica*. Triennially three papers are selected for the award, in the categories of Survey, Theory/Methodology, and Applications. The funds for the three prizes are provided by the publisher of *Automatica*, Elsevier Ltd. The selection is made by the Automatica Prize Paper Awards Selection Subcommittee from among the papers published in *Automatica* in the previous triennium (in the present case, years 2005, 2006, and 2007, corresponding to volumes 41, 42, and 43) and Prizes are presented during the IFAC Congress. The subcommittee is formed under the IFAC Awards Committee after each IFAC Congress, held triennially. For the 2008 awards, Masayoshi Tomizuka, University of California, Berkeley, and David Clarke, Oxford University, had been appointed as chairs of the IFAC Awards Committee and of Automatica Prize Paper Awards Selection Subcommittee, respectively. The members of the 2008 Automatica Prize Paper Awards Subcommittee were Robert Bitmead, Sergio Bittanti, Hang Chang Chieh, David Clarke (Chair), Romeo Ortega, Akira Sano, Roberto Tempo, and Tamer Başar. Automatica Editors were asked to identify candidate papers (based also on recommendations of reviewers), and additional nominations were sought from the subcommittee members. As a result of this process, the subcommittee arrived at recommendations forwarded to the IFAC Awards Committee, which in turn selected the three papers listed below for the 2008 IFAC Automatica Prize Paper Award in the categories of Survey, Theory/Methodology, and Applications, respectively. Authors of winning papers received their awards at the IFAC Journal Awards Ceremonies on July 8, 2008, during the IFAC World Congress held in Seoul, Korea (July 6–11, 2008). The three award-winning papers are listed below along with a brief summary of contributions in each case.

“Bilateral teleoperation: An historical survey” by Peter F. Hokayem and Mark W. Spong (Survey). *Automatica* 42(12), 2035–2057, December 2006.

Summary of contribution: This survey paper covers the historical development of bilateral teleoperation, most notably for remote robotic applications. The historical analysis - and particularly its connection to circuit theoretic ideas of impedance, scattering, matching, and passivity - is revealing of the tech-

niques underpinning modern studies involving control over communications networks. The paper provides access to the sophisticated methods currently under study through the drawing together of the successful themes forming the historical development.

“Optimal control of switching systems” by Sorin C. Bengea and Raymond A. DeCarlo (Theory/Methodology). *Automatica* 41(1), 11–27, January 2005.

Summary of contribution: This paper describes a novel solution approach to a general problem of optimal control of switching systems through its recasting as a higher-dimensional optimal control problem in which the switching variable is replaced by a continuous control, but which is also known to possess a bang-bang optimal control. Since this higher dimensional problem is of more standard type than the original switching problem, results can be obtained concerning the properties and computation of the solution. Originality is in the realization that the switching problem could be embedded in a more regular optimal control problem, which is known to have a bang-bang and therefore naturally switching solution.

“Static H_∞ loop shaping control of a fly-by-wire helicopter” by Emmanuel Prempain and Ian Postlethwaite (Applications). *Automatica* 41(9), 1517–1528, September 2005.

Summary of contribution: The target application area in this paper is helicopter flight control, which is addressed through an H -infinity design using a novel approach focused on delivering a low-complexity controller. The design, tuning, and testing of the controller is described in an enlightening and transferable manner. The performance is compared to other control approaches using both objective metrics and subjective measures determined by the pilots. The paper reveals important aspects of advanced controller implementation with user acceptance, and objectively describes significant translational research.

Congratulations to all the award winners!

Editor-in-Chief
Tamer Başar

Available online 20 August 2008