Best Paper Award 2001–2002

The EURASIP Advisory Committee recently decided to install and support an *Annual Best Paper Award* for the EURASIP Journal on Applied Signal Processing, in recognition of the continued growth of the journal as well as the quality of the papers it publishes.

The first EURASIP JASP Best Paper Award covers the period 2001–2002, where over 160 papers were published. From 2003 on, the award will be given each year. Both the 2001–2002 and the 2003 awards will be presented at the EUSIPCO 2004 Awards Ceremony, September 2004.

The 2001–2002 Best Paper Award Committee was appointed by former Editor-in-Chief Prof. K. J. Ray Liu (University of Maryland, College Park, MD, USA) and consisted of EURASIP JASP Editorial Board Members *Prof. Bastiaan Kleijn*, Chair of the Committee (Royal Institute of Technology, Stockholm, Sweden), *Prof. Phillip Regalia* (Institut National des Télécommunications, Evry, France), and *Prof. Hideaki Sakai* (Kyoto University, Kyoto, Japan).

From a short list of five outstanding papers nominated by the members of the Editorial Board and/or Guest Editors of the special issues, the Award Committee unanimously decided to give the 2001–2002 Best Paper Award to the paper entitled *Design and DSP Implementation of Fixed-Point Systems* by *Martin Coors, Holger Keding, Olaf Lüthje, and Heinrich Meyr* which appeared in EURASIP JASP, vol. 2002, no. 9 (September 2002), pp. 908–925.

I sincerely congratulate the authors for this award, and at the same time I wish to thank all the other EURASIP JASP authors for submitting their fine papers to our journal. I hope this award will be a true stimulus for everyone to continue to view EURASIP JASP as a proper place to publish his/her research results.

I would also like to thank the EURASIP AdCom and especially EURASIP President Prof. Ferran Marqués for their support, Prof. Giovanni L. Sicuranza for his smooth coordination of the annual EURASIP Best Paper Award activities, and last but by no means least the EURASIP JASP Award Committee for their outstanding selection work.

Marc Moonen
Editor-in-Chief

Design and DSP Implementation of Fixed-Point Systems

*Martin Coors, Holger Keding, Olaf Lüthje,
and Heinrich Meyr*

This article is an introduction to the FRIDGE design environment which supports the design and DSP implementation of fixed-point digital signal processing systems. We present the tool-supported transformation of signal processing algorithms coded in floating-point ANSI C to a fixed-point representation in SystemC. We introduce the novel approach to control and data flow analysis, which is necessary for the transformation. The design environment enables fast bit-true simulation by mapping the fixed-point algorithm to integral data types of the host machine. A speedup by a factor of 20 to 400 can be achieved compared to C++-library-based bit-true simulation. FRIDGE also provides a direct link to DSP implementation by processor specific C code generation and advanced code optimization.

Martin Coors received the diploma in electrical engineering from Aachen University of Technology (RWTH), Aachen, Germany. In 1997, he joined the Institute for Integrated Signal Processing Systems (ISS) at RWTH Aachen as a research assistant. His research interests include DSP code optimization techniques, fixed-point design methodologies, and code generation for embedded processors.

Olaf Lüthje received the diploma in electrical engineering from Aachen University of Technology (RWTH), Aachen, Germany, and is currently working towards the Ph.D. degree in electrical engineering at the same institute. His research interests focus on fixed-point design methodology and data flow analysis.

Holger Keding received the diploma in electrical engineering from Aachen University of Technology (RWTH), Aachen, Germany. From 1996 to 2001 he was with ISS to work towards his Ph.D. thesis. Having finished his Ph.D., he joined the system level design group of Synopsys as a senior corporate application engineer. His research interests include fast bit-true simulation and fixed-point and system-level design methodology.

Heinrich Meyr received his M.S. and Ph.D. from ETH Zurich, Switzerland. He spent over 12 years in various research and management positions in industry before accepting a professorship in electrical engineering at Aachen University of Technology (RWTH Aachen) in 1977. He has worked extensively in the areas of communication theory, synchronization, and digital signal processing for the last thirty years. His research has been applied to the design of many industrial products. At RWTH Aachen he heads an institute involved in the analysis and design of complex signal processing systems for communication applications. He was a cofounder of CADIS GmbH (acquired 1993 by Synopsys, Mountain View, California), a company which commercialized the tool suite COSSAP extensively worldwide used in industry. He is a member of the Board of Directors of two companies in the communications industry. Dr. Meyr has published numerous IEEE papers. He is author together with Dr. G. Ascheid of the book "Synchronization in Digital Communications," Wiley 1990, and of the book "Digital Communication Receivers." He is also the author of "Synchronization, Channel Estimation, and Signal Processing" (together with Dr. M. Moeneclaey and Dr. S. Fechtel), Wiley, October 1997. He holds many patents. He served as a Vice President for International Affairs of the IEEE Communications Society and is a Fellow of the IEEE.