

From Scilab to Multicore Embedded Systems: Algorithms and Methodologies

(Invited Paper)

George Goulas, Panayiotis Alefragis,
Nikolaos S. Voros, Christos Valouxis
Technological Educational Institute of Mesolonghi, Greece
{ggoulas, alefrag, voros}@teimes.gr, valouxis@ece.upatras.gr

Christos Gogos
Technological Educational Institute of Epirus, Greece
cgogos@teiep.gr

Nikolaos Kavvadias, Grigoris Dimitroulakos,
Kostas Masselos
University of Peloponnese, Greece
{nkavv, dhmhgre, kmas}@uop.gr

Diana Goehringer
Fraunhofer-Institute of Optronics, System Technologies
and Image Exploitation, Germany
diana.goehringer@iosb.fraunhofer.de

Steven Derrien, Daniel Ménard, Olivier Sentieys
Université de Rennes I, INRIA Research Institute, France
{steven.derrien, daniel.menard, olivier.sentieys}@irisa.fr

Michael Huebner
Ruhr-University of Bochum, Germany
michael.huebner@rub.de

Timo Stripf, Oliver Oey, Juergen Becker
Karlsruhe Institute of Technology, Germany
{stripf, oliver.oey, becker}@kit.edu

Gerard Rauwerda, Kim Sunesen
Recore Systems, The Netherlands
{gerard.rauwerda, kim.sunesen}@recoresystems.com

Dimitrios Kritharidis, Nikolaos Mitas
Intracom S.A. Telecom Solutions, Greece
{dkri, nmitas}@intracom.gr

Abstract—While advances in processor architecture continues to increase hardware parallelism, parallel software creation is hard. There is an increasing need for tools and methodologies to narrow the entry gap for non-experts in parallel software development as well as to streamline the work for experts. This paper presents the methodology and algorithms for the creation of parallel software written in Scilab source code for multicore embedded processors in the context of the “Architecture oriented parallelization for high performance embedded Multicore systems using scilab” (ALMA) EU FP7 project. The ALMA parallelization approach in a nutshell attempts to manage the complexity of the task by alternating focus between very localized and holistic view program optimization strategies.