# Table of Contents

## Invited Talk

The New Economics of Embedded Systems ................................. 1  
*Michael Uhler*

## Application Specific (Co)Design

A Framework for Architectural Description of Embedded System .... 2  
*Daniela Cristina Cascini Peixoto and Diógenes Cecílio da Silva Júnior*

Automatically Customising VLIW Architectures  
with Coarse Grained Application-Specific Functional Units .......... 17  
*Diviya Jain, Anshul Kumar, Laura Pozzi, and Paolo Ienne*

ASIP Architecture Exploration for Efficient Ipsec Encryption:  
A Case Study ........................................................... 33  
*Hanno Scharwaechter, David Kammler, Andreas Wieferink,  
Manuel Hohenauer, Kingshuk Karuri, Jianjiang Ceng, Rainer Leupers,  
Gerd Ascheid, and Heinrich Meyr*

## System and Application Synthesis

Compact Procedural Implementation in DSP Software Synthesis  
Through Recursive Graph Decomposition ............................... 47  
*Ming-Yung Ko, Praveen K. Murthy, and Shuvra S. Bhattacharyya*

An Integer Linear Programming Approach  
to Classify the Communication in Process Networks .................. 62  
*Alexandru Turjan, Bart Kienhuis, and Ed Deprettere*

Predictable Embedded Multiprocessor System Design .................. 77  
*Marco Bekooij, Orlando Moreira, Peter Poplavko, Bart Mesman,  
Milan Pastrnak, and Jef van Meerbergen*

## Data Flow Analysis

Suppression of Redundant Operations in Reverse Compiled Code  
Using Global Dataflow Analysis ...................................... 92  
*Adrian Johnstone and Elizabeth Scott*

Fast Points-to Analysis for Languages with Structured Types ....... 107  
*Michael Jung and Sorin Alexander Huss*
## Data Partitioning

An Automated C++ Code and Data Partitioning Framework for Data Management of Data-Intensive Applications .......................... 122

_Athanasios Milidonis, Grigoris Dimitroulakos, Michalis D. Galanis, George Theodoridis, Costas Goutis, and Francky Catthoor_

Combined Data Partitioning and Loop Nest Splitting for Energy Consumption Minimization ........................................ 137

_Heiko Falk and Manish Verma_

On the Phase Coupling Problem Between Data Memory Layout Generation and Address Pointer Assignment ...................... 152

_Bernhard Wess and Thomas Zeitlhofer_

## Task Scheduling

Dynamic Mapping and Ordering Tasks of Embedded Real-Time Systems on Multiprocessor Platforms .................................... 167

_Peng Yang and Francky Catthoor_

Integrated Intra- and Inter-task Cache Analysis for Preemptive Multi-tasking Real-Time Systems ................................. 182

_Yudong Tan and Vincent Mooney_

A Fuzzy Adaptive Algorithm for Fine Grained Cache Paging .......... 200

_Susmit Bagchi and Mads Nygaard_

## Code Generation

DSP Code Generation with Optimized Data Word-Length Selection ...... 214

_Daniel Menard and Olivier Sentieys_

Instruction Selection for Compilers that Target Architectures with Echo Instructions ............................................... 229

_Philip Brisk, Ani Nahapetian, and Majid Sarrafzadeh_

A Flexible Tradeoff Between Code Size and WCET Using a Dual Instruction Set Processor ....................................... 244

_Sheayun Lee, Jaejin Lee, Chang Yun Park, and Sang Lyul Min_

## Author Index

............................................................................ 259
Software and Compilers for Embedded Systems
8th International Workshop, SCOPES 2004, Amsterdam,
The Netherlands, September 2-3, 2004, Proceedings
Schepers, H. (Ed.)
2004, X, 266 p., Softcover
ISBN: 978-3-540-23035-9