

Table of Contents

Tool Demonstrations

LISA: An Interactive Environment for Programming Language Development	1
<i>Marjan Mernik, Mitja Lenič, Enis Avdičaušević, and Viljem Žumer</i>	
Building an Interpreter with Vmgen	5
<i>M. Anton Ertl and David Gregg</i>	
Compiler Construction Using LOTOS NT	9
<i>Hubert Garavel, Frédéric Lang, and Radu Mateescu</i>	

Analysis and Optimization

Data Compression Transformations for Dynamically Allocated Data Structures	14
<i>Youtao Zhang and Rajiv Gupta</i>	
Evaluating a Demand Driven Technique for Call Graph Construction	29
<i>Gagan Agrawal, Jinqian Li, and Qi Su</i>	
A Graph-Free Approach to Data-Flow Analysis	46
<i>Markus Mohnen</i>	
A Representation for Bit Section Based Analysis and Optimization	62
<i>Rajiv Gupta, Eduard Mehofer, and Youtao Zhang</i>	

Low-Level Analysis

Online Subpath Profiling	78
<i>David Oren, Yossi Matias, and Mooly Sagiv</i>	
Precise Exception Semantics in Dynamic Compilation	95
<i>Michael Gschwind and Erik Altman</i>	
Decompiling Java Bytecode: Problems, Traps and Pitfalls	111
<i>Jerome Miecznikowski and Laurie Hendren</i>	

Grammars and Parsing

Forwarding in Attribute Grammars for Modular Language Design	128
<i>Eric Van Wyk, Oege de Moor, Kevin Backhouse, and Paul Kwiatkowski</i>	

Disambiguation Filters for Scannerless Generalized LR Parsers 143
*Mark G. J. van den Brand, Jeroen Scheerder, Jurgén J. Vinju,
and Eelco Visser*

Invited Talk

Modular Static Program Analysis 159
Patrick Cousot and Radhia Cousot

Domain-Specific Languages and Tools

StreamIt: A Language for Streaming Applications 179
William Thies, Michal Karczmarek, and Saman Amarasinghe

Compiling Mercury to High-Level C Code 197
Fergus Henderson and Zoltan Somogyi

CIL: Intermediate Language and Tools for Analysis
and Transformation of C Programs 213
George C. Necula, Scott McPeak, Shree P. Rahul, and Westley Weimer

Energy Consumption Optimizations

Linear Scan Register Allocation in the Context of SSA Form
and Register Constraints 229
Hanspeter Mössenböck and Michael Pfeiffer

Global Variable Promotion:
Using Registers to Reduce Cache Power Dissipation 247
Andrea G. M. Cilio and Henk Corporaal

Optimizing Static Power Dissipation by Functional Units
in Superscalar Processors 261
Siddharth Rele, Santosh Pande, Soner Onder, and Rajiv Gupta

Influence of Loop Optimizations on Energy Consumption
of Multi-bank Memory Systems 276
Mahmut Kandemir, Ibrahim Kolcu, and Ismail Kadayif

Loop and Array Optimizations

Effective Enhancement of Loop Versioning in Java 293
*Vitaly V. Mikheev, Stanislav A. Fedoseev, Vladimir V. Sukharev,
and Nikita V. Lipsky*

Value-Profile Guided Stride Prefetching for Irregular Code	307
<i>Youfeng Wu, Mauricio Serrano, Rakesh Krishnaiyer, Wei Li, and Jesse Fang</i>	
A Comprehensive Approach to Array Bounds Check Elimination for Java	325
<i>Feng Qian, Laurie Hendren, and Clark Verbrugge</i>	
Author Index	343