

Dietmar Ebner

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I am a postdoctoral researcher at the Lawrence Livermore National Laboratory (LLNL) working on language interoperability for HPC systems at the Center for Applied Scientific Computing (CASC). My research interests are centered around compiler technology and combinatorial optimization. In particular, I have worked on map labeling problems, elevator scheduling, crossing minimization for graphs, compiler backends for embedded systems, and programming language interoperability frameworks.

Employment History

Postdoctoral Researcher since 08/09
Lawrence Livermore National Laboratory Livermore, CA
Research on language interoperability for scientific high-performance computing (Babel).

Research Assistant 10/05 - 06/09
Vienna University of Technology Vienna, Austria
Research on retargetable optimizing compiler backends for superscalar and VLIW architectures. Funded by OnDemand Microelectronics and the Christian Doppler Foundation.

Internship 03/05 - 09/05
Mitsubishi Electric Research Laboratories Cambridge, MA
Research on efficient approximation algorithms for elevator scheduling problems. Co-author of two patents as a result of the internship.

Research Visitor 03/04 - 09/04
University of La Laguna Tenerife, Spain
Institute for “*Estadística, Investigación Operativa y Computación*”
Research on exact algorithms for the crossing minimization problem based on integer linear programming.

C++ Developer 04/99 - 10/03
Alldata EDV-Systeme Vienna, Austria
Design and implementation of business software and intranet applications for an Austrian online bank (C++, Active Server Pages, Tuxedo, MS SQL Server, Oracle). Part-time during semesters.

Teaching

VU2 185.324 *Compilation Techniques for VLIW Architectures*
Dietmar Ebner and Florian Brandner
Vienna University of Technology, SS08

Education

Vienna University of Technology 10/05 - 08/09
Ph.D. in Computer Science

Thesis on SSA-based code generation techniques for embedded architectures (advised by Andreas Krall). Graduated with highest distinction.

Vienna University of Technology 10/99 - 03/2005
M.Sc. in Computer Science

Emphasis on efficient algorithms and datastructures, compiler optimizations, and internet security. Graduated with highest distinction.

Summer Schools

Fourth International Summer School on Advanced Computer Architecture and Compilation for Embedded Systems (ACACES'08), L'Aquila, Italy, July 2008

Second International Summer School on Advanced Computer Architecture and Compilation for Embedded Systems (ACACES'06), L'Aquila, Italy, July 2006

Languages

German (first language)

English (fluent)

Spanish (intermediate)

Tool Experience

Compilers and Tools: Babel, LLVM, gcc, binutils
Programming Languages: C/C++, Java, Haskell, various tools (Python, awk, ...)
Operating Systems: Linux, BSD, Mac OS X, Windows
Libraries / Frameworks: STL, boost/BGL, J2EE, LEDA, ILOG cplex/concert
Architectures: ARM, X86(_64), PowerPC, MIPS, Itanium

Publications

Static Single Assignment Handbook
Chapter “Code Selection”, To Appear
Dietmar Ebner, Andreas Krall, and Bernhard Scholz

Dietmar Ebner, Thomas G. Epperly
Fast Native Function Calls for the Babel Language Interoperability Framework
Submitted to PACT'10 (International Conference on Parallel Architectures and Compilation Techniques, Vienna, Austria)

Dietmar Ebner
SSA-Based Code Generation Techniques for Embedded Architectures
Ph.D. Thesis, 2009, Vienna University of Technology

Dietmar Ebner, Bernhard Scholz, and Andreas Krall

Progressive Spill Code Placement

In Proc. of CASES'09 (International Conference on Compilers, Architecture, and Synthesis for Embedded Systems, Grenoble, France)

Dietmar Ebner, Florian Brandner, Bernhard Scholz, Andreas Krall, Peter Wiedermann, and Albrecht Kadlec

Generalized Instruction Selection using SSA-Graphs

In Proc. of LCTES'08 (International Conference on Languages, Compilers, and Tools for Embedded Systems, Tucson, AZ)

Florian Brandner, Dietmar Ebner, and Andreas Krall

Compiler Generation from Structural Architecture Descriptions

In Proc. of CASES'07 (International Conference on Compilers, Architecture, and Synthesis for Embedded Systems, Salzburg, Austria)

Dietmar Ebner, Florian Brandner, and Andreas Krall

Leveraging Predicated Execution for Multimedia Processing

In Proc. of ESTIMEDIA'07 (5th International Workshop on Embedded Systems for Real-Time Multimedia, Salzburg, Austria)

Christoph Buchheim, Markus Chimani, Dietmar Ebner, Carsten Gutwenger, Michael Jünger, Gunnar W. Klau, Petra Mutzel, and René Weiskircher

A Branch-and-Cut Approach to the Crossing Number Problem

Journal on Discrete Optimization, Special Issue in memory of George B. Dantzig

Florian Brandner, Dietmar Ebner, Andreas Krall, Christian Thalinger

Static Verification of Global Heap References in Java Native Libraries

In SPACE'06 (Third Workshop on Semantics, Program Analysis, and Computing Environments for Memory Management, Charleston, South Carolina)

Christoph Buchheim, Dietmar Ebner, Michael Jünger, Gunnar W. Klau, Petra Mutzel, and René Weiskircher

Exact Crossing Minimization

In Proc. of GD'05 (13th International Symposium on Graph Drawing, Limerick, Ireland)

Roberto Tamassia, Editor

Handbook of Graph Drawing and Visualization

Chapter “*Crossings and Planarization*”, To Appear

Christoph Buchheim, Dietmar Ebner, Carsten Gutwenger, Michael Jünger, and Petra Mutzel

Dietmar Ebner

Optimal Crossing Minimization using Integer Linear Programming

Master's Thesis, 2005, Vienna University of Technology

Dietmar Ebner, Gunnar W. Klau, and René Weiskircher

Label Number Maximization in the Slider Model

In Proc. of GD'04 (12th International Symposium on Graph Drawing, New York, U.S.A.)