DESIRÉE LEOPOLDO DA SILVA OTTONI

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Interests

- Compiler techniques for parallelization, code generation, optimization
- Programming Languages for Dynamic Networks
- Computer architecture, including embedded, VLIW, and multi-threaded processors

Education

RUTGERS UNIVERSITY — Piscataway, USA
Ph.D., Computer Science (in progress, since August 2005).

STATE UNIVERSITY OF CAMPINAS (UNICAMP) — Campinas, Brazil
M.Sc., Computer Science, 2004.
Thesis: Offset Assignment Algorithms Based on Variable Coalescing for DSPs
Advisor: Prof. Guido Araujo

FEDERAL UNIVERSITY OF RIO GRANDE (FURG) — Rio Grande, Brazil
B.Sc., Computer Engineering, *with honors*, 2001.

TECHNICAL AND INDUSTRIAL HIGH SCHOOL OF FURG — Rio Grande, Brazil
Data Processing Technician (high school), 1995.

Research Experience

EEL LABORATORY, RUTGERS UNIVERSITY, 2006 - present — Piscataway, US

I am working under the supervision of Prof. Ulrich Kremer in a joint project between Rutgers University and Princeton University called SARANA system architecture. This project's goals are to provide language and system-layer support for expressing and optimizing distributed, highly-dynamic spatial-aware applications. My role in this project is both to design the programming language, which allows users to express the spatial computation and desired quality of results, and also to write a compiler for this language, which can optimize the program so it uses resources more efficiently.

PSL GROUP, INTEL CORP, June to September 2006 — Santa Clara, US
I worked as an intern of the Programming, Systems Lab doing research on techniques to do transient error detection and recovery on CMP.

COMPUTER SYSTEMS LABORATORY, IC-UNICAMP, 2002 - 2004 — Campinas, Brazil
Research Assistant, worked on the M.Sc. thesis project on compiler optimization, especially for embedded processors. Proposed novel algorithms to improve the offset assignment of local variables on the stack. These techniques were based on variable coalescing, and enormously reduced the cost of addressing instructions necessary for processors with restricted addressing modes and few registers. This work has been published in [1, 2], and its great contributions to a well-studied problem granted it a Best Paper Award (paper [2]). I also worked on a global technique for reducing spills during graph coloring register allocation for general-purpose processors.

APPLIED MATHEMATICS LABORATORY, FURG, 2001 — Rio Grande, Brazil
Worked on the final project "A System for Tracing Terrestrial Artificial Satellites and Control of Receiving Antenna Positioning at Fixed Stations", designing and implementing large portions of the software to simulate and trace artificial terrestrial satellites, and also to control the positioning of the receiving antenna. This work was published in [3].

DEPARTMENT OF MATHEMATICS, FURG, 2000 — Rio Grande, Brazil
Worked on the implementation of a numerical simulator for turbulent mixing convection in bi-dimensional cavity. This work was published in [4].

Work Experience

INTEL CORP. Santa Clara, USA
June to September 2006
Internship. Worked on detection and recovery of transient errors.

DATA PROCESSING CENTER OF FURG Rio Grande, Brazil
April to June 2001
Internship. Worked on software development to port mainframe applications to the Web.

Teaching Experience

RUTGERS UNIVERSITY Piscataway, USA
Sep 2005 to May 2006
Teaching Assistant for the graduate and undergraduate Computer Architecture courses, taught by Prof. Daniel Jiménez. Taught weekly precepts, graded homework and exams.

Publications

[1] D. Ottoni, G. Ottoni, G. Araujo, R. Leupers. Offset Assignment Using Simultaneous Variable Coalescing. **ACM Trans. on Embedded Computing Systems**, to appear (accepted Dec. 2005).

[2] D. Ottoni, G. Ottoni, G. Araujo, R. Leupers. Improving Offset Assignment through Simultaneous Variable Coalescing. In Proc. of the 7^{th} **International Workshop on Software and Compilers for Embedded Systems (SCOPES'03)**. Springer LNCS 2826, 285-297. Sep. 2003.
(**Best Paper Award**)

[3] S. Gomes, V. Rosa, D. Silva, M. Medeiros and F. Renon, SIMSAT: a System for Terrestrial Artificial Satellite Tracing and Image Reception. In Proc. of the **II Brazilian Conference of Mechanical Engineering**, Aug. 2002. (in Portuguese)

[4] C. Guerreiro, D. Silva, E. Carvalho and J. Silvestrini. Numerical Simulation of Turbulent Mixing Convection in Bi-dimensional Cavity with 4th Order Schemes. In Proc. of the **XXIV Brazilian Conference on Applied and Computational Mathematics**. Sep. 2001.

Distinctions

Best Paper Award – SCOPES 2003 Vienna, Austria

Rutgers University Fellowship Award for Academic Merit, 2005-2007 Piscataway, USA
Awarded by the Graduate School of Rutgers University to outstanding incoming students.

FAPESP Master's Degree Fellowship, 2002-2004 Campinas, Brazil

First Student in the 2001 Computer Engineering Class at FURG Rio Grande, Brazil
Finished the program with the highest GPA (9.0 in a 0–10 scale) in the class.

Graduate Courses

For my Ph.D.:

- Compilation for Chip Multiprocessors (at Princeton University)
- Programming Languages and Compilers I
- Programming Languages and Compilers II
- Design And Analysis of Data Structures and Algorithms I
- Advanced Computer Architecture
- Numerical Analysis

For my M.Sc.:

- Computer Architecture I
- Programming Languages Implementation II
- Introduction to Artificial Intelligence I
- Complexity of Algorithms I
- Graph Theory

Skills Summary

Languages: C, C++, Java, Pascal, Delphi, Prolog, ML
Operating Systems: Linux, Windows, MS-DOS

Visa Status F-1, Citizen of Brazil