International Conference on

Parallel Architectures and Compilation Techniques

Barcelona, Spain
September 8-12, 2001

P A C T ’01

Invitation

The Organizing Committee of PACT’01 is pleased to announce its advance program. The purpose of the PACT series of conferences is to bring together researchers from the architecture and compiler communities to present ground-breaking research and debate key issues of common interest. This conference, the tenth in the series, will be held in lovely Barcelona. The city represents a unique combination of beauty, culture, history, charm and advanced technology, and fosters an ideal environment for the enjoyable and stimulating exchange of ideas.

Come to PACT'01 and see our high quality technical program, including three outstanding keynote speakers (Randall D. Isaac, IBM; Justin Rattner, Intel; Joel Emer, Compaq), 26 cutting-edge research papers, and a special session on Work in Progress. Attend the workshops on OpenMP, Binary Translation, Memory Access Decoupled Architectures, Compilers and Operating Systems for Low Power, and Ubiquitous Computing. Attend the tutorials on 3G Wireless Architecture, and the IBM Research Jalapeno JVM. Meet the experts in the field!

After that, spend some days in Barcelona. From the old-world allure of the gothic quarter to the more modern, abstract appeal of the works of Gaudi, Barcelona will captivate you with a diversity of interesting places and museums to visit, charming people to meet, peaceful places to relax or simply enjoy the weather relaxing in the beautiful Mediterranean beaches. Finally, the catalan cuisine is one of the most select and varied in the Mediterranean area. We will try to bring you a piece of all that with our social program.

The conference hotel is the Barcelona Hilton. The hotel has agreed to hold a limited number of rooms for conference attendees at a special rate until August 25, 2001. The advance registration deadline is July 25, 2001. Students are strongly encouraged to attend PACT’01. The conference has received some funding for student travel grants through generous corporate sponsorship. Public institutions and corporations have also provided funds to sponsor the activities of the conference.

See you in Barcelona!

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Advance Program

Sunday, September 9th

20:00 - Welcoming Reception

Monday, September 10th

08:45 - Conference Opening

09:00 - Keynote Address

Randall D. Isaac (VP Science and Technology, IBM Research).

10:00 - Session 1: Simulation and Modeling

"Basic Block Distribution Analysis to Find Periodic Behavior and Simulation Points in Applications".
Tim Sherwood, Erez Perelman and Brad Calder, (University of California, San Diego)

"Modeling Superscalar Processors via Statistical Simulation".
Sebastien Nussbaum and James Smith (Dept. of Electrical and Computer Engineering,University of Wisconsin-Madison)

"Hybrid Analytical-Statistical Modeling for Efficiently Exploring Architecture and Workload Design Spaces".
Lieven Eeckhout and Koen De Bosschere (Department of Electronics and Information Systems, Ghent University)

11:30 - Coffee Break

12:00 - Session 2: Efficient Caches

"Filtering Techniques to Improve Trace-Cache Efficiency".
Roni Rosner, Avi Mendelson and Ronny Ronen (Israel Design Center, Intel)

"Reactive-Associative Caches".
Brannon Batson (1) and T. Vijaykumar (2).
(1) Compaq and (2) Purdue University

"Adaptive Mode Control: A Static-Power-Efficient Cache Design".
Huiyang Zhou, Mark Toburen, Eric Rotenberg and Thomas Conte (North Carolina State University)

13:30 - Lunch Break

15:00 - Session 3: Specialized Instruction Sets

"Implementation and Evaluation of the Complex Streamed Instruction Set".
Ben Juurlink (1), Dmitri Tcheressiz (2), Stamatis Vassiliadis (1), Harry Wijshoff (2).
(1) Computer Engineering Laboratory, Electrical Engineering Department, Delft University of Technology, Delft. (2) Department of Computer Science, Leiden University, Leiden.

"On the Efficiency of Reductions in micro-SIMD media extensions".
Jesus Corbal, Roger Espasa, and Mateo Valero (Computer Architecture Department, UPC)

17:00 - Excursion to Montserrat and Reception at Cavas Vinery

Tuesday, September 11th

09:00 - Keynote Address

Justin Rattner (Intel Fellow and Director of Microprocessor Research Labs).

10:00 - Session 4: Prediction and Recovery

"Boolean Formula-based Branch Prediction for Future Technologies".
Daniel Jimenez (1), Heather Hanson (2) and Calvin Lin (1).
(1) Department of Computer Sciences, The University of Texas at Austin. (2) Department of Electrical & Computer Engineering, The University of Texas at Austin.

"Using Dataflow Based Context for Accurate Value Prediction".
Renju Thomas and Manoj Franklin (University of Maryland)

"Recovery mechanism for latency misprediction".
Enric Morancho, Jose Maria Llaberia and Angel Olive (Computer Architecture Department, UPC)

11:30 - Coffee Break

12:00 - Session 5: Memory Optimization

"A Cost Framework for Evaluating Integrated Restructuring Optimizations".
Bharat Chandramouli, John Carter, Wilson Hsieh and Sally McKee (University of Utah)

"Compiling for the Impulse Memory Controller".
Xianglong Huang, Zhenlin Wang and Kathryn McKinley (Computer Science Dept., University of Massachusetts, Amherst)

"On the Stability of Temporal Data Reference Profiles".
Trishul Chilimbi (Microsoft Research)

13:30 - Lunch Break

15:00 - Session 6: Program Optimization

"Code Reordering and Speculation Support for Dynamic Optimization Systems".
Erik Nystrom, Ronald Barnes, Matthew Merten and Wen-mei Hwu (University of Illinois)

"A Unified Modulo Scheduling and Register Allocation Technique for Clustered Processors".
Josep Codina, Jesus Sanchez and Antonio Gonzalez (Computer Architecture Department, UPC)

"Cache-Friendly Implementations of Transitive Closure".
Michael Penner and Viktor Prasanna (University of Southern California)

16:30 - Coffee Break

17:00 - Session 7: Technology Implications

"The Effect of Technology Scaling on CMP Throughput".
Jaehyuk Huh, Doug Burger and Stephen Keckler (University of Texas at Austin)

"Area and System Clock Effects on SMT/CMP Processors".
James Burns (Intel) and Jean-Luc Gaudiot (USC)

18:15 - Work In Progress Session

21:00 - Conference Banquet (Hilton Hotel)

Wednesday, September 12th

09:00 - Keynote Address

Joel Emer (Compaq Staff Fellow).

10:00 - Session 8: Parallel Machines

"Limits on Speculative Module-level Parallelism in Imperative and Object-oriented Programs on CMP Platforms".
Fredrik Warg and Per Stenstrom (Chalmers University of Technology)

"Compiler and Runtime Analysis for Efficient Communication in Data Intensive Applications".
Renato Ferreira (1), Gagan Agrawal (2) and Joel Saltz (1).
(1) University of Maryland, (2) University of Delaware

"Architectural Support for Parallel Reductions in Scalable Shared-Memory Multiprocessors".
Maria Jesus Garzaran (1), Milos Prvulovic (2), Ye Zhang (2), Alin Jula (3), Hao Yu (3), Lawrence Rauchwerger (3) and Josep Torrellas (2).
(1) Universidad de Zaragoza, Spain, (2) University of Illinois at Urbana-Champaign, (3) Texas A&M University

11:30 - Coffee Break

12:00 - Session 9: Data Prefetching

"Optimizing Software Data Prefetches with Rotating Registers".
Gautam Doshi, Rakesh Krishnaiyer and Kalyan Muthukumar (Intel Corporation)

"Multi-Chain Prefetching: Effective Exploitation of Inter-Chain Memory Parallelism for Pointer-Chasing Codes".
Nicholas Kohout (1), Seungryul Choi (2), Dongkeun Kim (3), Donald Yeung (3).
(1) Intel Corp., (2) Department of Computer Science, University of Maryland at College Park, (3) Department of Electrical and Computer Engineering, University of Maryland at College Park

"Data Flow Analysis for Software Prefetching Linked Data Structures in Java".
Brendon Cahoon and Kathryn McKinley (University of Massachusetts)

"Comparing and Combining Read Miss Clustering and Software Prefetching".
Vijay Pai (1) and Sarita Adve (2).
(1) Rice University, (2) University of Illinois

14:00 - Final Conference Address

Workshops

Saturday, September 8th

EWOMP'01 (full day).
European Workshop on OpenMP.

WBT'01 (full day).
Workshop on Binary Translation.

MEDEA'01 (half day, morning).
Workshop on Memory Access Decoupled Architectures.

Sunday, September 9th

EWOMP'01 (full day).
Continuation from previous day.

COLP'01 (full day).
Workshop on Compilers and Operating Systems for Low Power.

WUCC'01 (half day, morning).
Workshop on Ubiquitous Computing and Communication.

Tutorials

Saturday, September 8th. "3G Wireless Infrastructure: Architecture, Algorithms, and Applications". Allan Berenbaum, Nevin Heintze, Stefanos Kaxiras, Girija Narlikar.

Sunday, September 9th. "The Design and Implementation of the Jalapeño JVM". Michael Hind, IBM Research.

Registration Information

Early registration fees are valid up to July 25, 2001. To benefit from the "member" discount, you must indicate your ACM/IEEE/IFIP membership number. To benefit from the "full-time student" discount, you must send via fax a letter from the appropriate institution that demonstrates your position. The student discount only applies to the conference fee.

1. Conference registration fees

The Conference registration fees include attendance in the Conference from September 10-12, coffee breaks, a copy of the conference proceedings, the welcoming reception (September 9), the excursion and conference reception (September 10), and the banquet (September 11).

	Early	Late/On-site
Member	81700 Ptas.	100700 Ptas.
Non member	103500 Ptas.	124450 Ptas.
Student	53200 Ptas.	57000 Ptas.

If you plan to come with one or more accompanying people, the price for the excursion and welcoming reception is 13500 Ptas. and the conference banquet is 13500 Ptas., for each accompanying guest.

2. Tutorial registration fees

The Tutorial registration includes attendance in one Tutorial on September 8 or 9, coffee breaks, and a copy of the notes.

	Early	Late/On-site
Member	29450 Ptas.	36100 Ptas.
Non member	36100 Ptas.	44650 Ptas.

3. Workshop registration fees

These fees apply to delegates who plan to attend both the workshops and the conference. The fees include a small discount assuming combined conference and workshop registration.

EWOMP'01 Workshop (Two days)

The Workshop registration fee includes attendance in EWOMP'01 on September 8 and 9, coffee breaks, the workshop dinner and a copy of the workshop proceedings.

	Early	Late/On-site
Member	19000 Ptas.	23750 Ptas.
Non member	23750 Ptas.	29450 Ptas.

One-day Pass

The One-day Pass entitles you to attend any workshop held during September 8 or 9. The fee includes attendance in the workshops, coffee breaks, and a copy of one of the workshop proceedings.

	Early	Late/On-site
Member	9500 Ptas.	15200 Ptas.
Non member	15200 Ptas.	19000 Ptas.

Hotels

The Conference will be held at the Hilton Barcelona Hotel. The Hotel is located in the business, commercial and shopping district of the city, 15 minutes from Barcelona International Airport.

Hilton provides PACT'01 attendees with a **limited number of rooms** at special rates. The rate is 25.500 Ptas. for a single room and 27.500 Ptas. for double room (breakfast included, 7% tax not included). The reservation cut-off date will be August 25, 2001.

We have also reserved some additional rooms in other hotels nearby:

- Hotel Husa l'Illa ****
  23.000 Ptas. (single) / 26.000 Ptas. (double)
- Hotel Husa Arenas ****
  15.500 Ptas. (single) / 18.000 Ptas. (double)
- Hotel Viladomat ***
  16.000 Ptas. (single) / 17.500 Ptas. (double)
- Hotel Husa Bonanova ***
  10.850 Ptas. (single) / 14.300 Ptas. (double)

All prices include breakfast. 7% tax not included. Please use the reservation form available at the conference web site for each hotel and send if by fax.

Important: We strongly suggest that you make your room reservation in advance.

Student travel grants

A limited number of grants are available for students to travel to PACT'01. An application form can be downloaded from the conference web site. Applicants must submit the form by July 15, 2001. These travel grants are provided by Hewlett-Packard HPL, IBM Research, Intel and Microsoft Research.

Supporting Organizations

The Organizing Committee of PACT'01 gratefully acknowledges the support received from public institutions (Spanish Ministry of Education through the CICYT, Catalan Government through the CIRIT, Technical University of Catalunya UPC) and corporations (Compaq, IBM and SGI).

For additional information about PACT'01 conference and workshops, please visit www.ac.upc.es/pact01