5th WORKSHOP ON COMPILERS FOR PARALLEL COMPUTERS

University of Málaga, Málaga, Spain
June 28-30th 1995

PROGRAM

ABOUT THE WORKSHOP

This workshop is the fifth in a series of workshops on Compilers for Parallel Computers. Previous workshops have been held in Oxford (1989), Paris (1990), Vienna (1992) and Delft (1993). The program will contain both standard presentations and in-depth reviews of recent research and developments in the field of compiling for parallel computers, including run-time environments for language support on parallel machines and software engineering aspects of compilers. Relevant performance issues will also be covered.

GENERAL INFORMATION

Dates

Workshop dates:
June 28th-30th, 1995
Registration: Wednesday June 28th at 8:30 - 9:00 am

Workshop Venue

Hotel Melia Costa de Sol
Paseo Maritimo de Torremolinos, playa del Bajondillo.
Tel. +34 - 5 238 6677

Travel

The workshop venue is located nearby the beach in Torremolinos, a touristic village which is 7 Km away from the centre of Malaga and only 10 minutes taxi ride from the airport. The village is well communicated with a highway link to Malaga.

Travelling to Malaga

Malaga is situated in the south of Spain, about 500 Km south of Madrid.
By air:
Malaga has an important international airport linked with most of the European important cities. There are also several daily flight connections with Madrid.

Climate

Malaga has a typical mediterranean climate very influenced by its location on the seaside. Winters are warm and summers are hot, but not excessive.
By end of June, temperature ranges between 18º C at nights and 35º C on hot days, and days are usually sunny and almost always dry.

Registration

Kindly fill in a copy of the Enclosed registration form. Please, ensure that all relevant dates are completed and return the form together with the appropiate fees to the organisers address as soon as possible. The registration fees are quoted in Spanish pesetas (PTS.). Registration fee includes scientific session, lunches, coffee server during the breaks, dinner and a copy of the proceedings.

Accomodation

The Hotel Melia Costa del Sol is a four star hotel located nearby the beach in the village of Torremolinos. The workshop will take place in the conference rooms of the same hotel.

In the last page of the program an Accommodation Reservation Form is included. Please, fill in your accommodation needs in this form and send it directly to the agency **Viajes Intersol S.A., Avda. Carlota Alessandri s/n, Torremolinos (Malaga) E-29620, SPAIN**.
Please, don't contact the hotel directly, as the agency offers a special price for attendants to the meeting.
It is also recommended that you sent the Accommodation Reservation form both by fax and by mail, because June is a main touristic season in Malaga and early reservation is needed to avoid problems.

Other events

The organisation has planned a one-day tour for the Workshop participants to Granada. Prices and conditions are specified in the Accommodation Reservation form.

Tour to Granada - La Alhambra: Saturday, July 1st, 1995 9.00 am to 7.00 pm
Departure from the Hotel by coach. The tour will get to the city of Granada (128 Km away from Málaga) where is locate the Hispanic-arabish palace-fortress *La Alhambra*. This astonishing set of fortress, palaces and gardens was built by arabs more than 700 years ago, by the time they lived in the southern part of Spain (*Al Andalus* - now Andalucia). Now it remains as one of the biggest and most beautiful palaces in the arabish world.

REFERENCE ADDRESSES

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TECHNICAL PROGRAM

Wednesday
June 28th 1995

8:30 - 9:00 - Registration

9:00 - 10:40
Session 1
High Performance Fortran (HPF)

Beyond HPF1 - The language extensions for HPF2
Barbara Chapman (University of Vienna - AU)

Improving Performance of HPF Compilers
Ko-Yang Wang, Wei-Min Ching, Manish Gupta, Sam Midkiff, Edith Shchonberg, Dave Shields (IBM T.J. Watson Research Center - USA)

HPF(F90) Compiler Optimizations
Marina Chen (Boston University - USA), James Cowie (Cooperating Systems Corporation - USA), Jan-Jan Wu (Yale University - USA)

Optimization Strategies within a HPF Compilation System
Thomas Brandes (GMD - GE)

10:40 - 11:05 - Coffee

11:05 - 13:00
Session 2
Irregularly Structured Computations

Compiler-Directed Communication for Irregular Computations
Thomas Gross (CMU - USA)

Sparse Matrix Features in Compiler for Parallel Computers
M. Ujaldon, E. L. Zapata (University of Malaga - ES)

Compiler Analysis and Optimization of Indirect Array Accesses
Gagan Agrawal, Raja Das, Paul Havlak, Ken Kennedy, Joel Saltz, Alan Sussman (University of Maryland - USA)

Data Locality and Load Balancing for Parallel Neural Network Learning
Lutz Prechelt (University of Karlsruhe - GE)

13:00 - 16:30 - Lunch

16:30 - 18:10
Session 3
Vectorisation and Performance

Vectorizing/Parallelizing Compilers V-Pascal Version 3
Takao Tsuda, Yoshitoshi Kunieda, Tetsutaro UEHARA, Yasuo OKABE, Akihiro TSUKADA, Hideki KAGEMOTO, Hitoshi MURAI, Masayuki YAMAMOTO (Kyoto University - JP)

Performance of Workstation Clusters for Scientific Computing
Glenn R. Luecke (Iowa State University - USA)

On the Accuracy of Compile-time Performance Prediction
Arjan van Gemund (Delft Univ. of Technology - NL)

New Fast Algorithms for First-Order Linear Recurrences on Vector Computers
Motonori NAKAMURA, Yasuo OKABE, Takao TSUDA (Kyoto University - JP)

18:10 - 18:35 - Coffee

18:35 - 20:15
Session 4
Loop Partitioning and Transformations

A General Technique for Partitioning Loop Iterations to Eliminate False Sharing
Francois Bodin, Thierry Montaut (IRISA - FR), Elana Granston (Rice University - USA)

Revisiting Framework of Linear Loop Transformations
Jordi Torres, Eduard Ayguade, Jesus Labarta, Mateo Valero (UPC - ES)

Simplifying Loops
P. Knijnenburg, A. Bik (Leiden University - NL)

Data and Computation Transformations for Shared Memory Machines
Jennifer M. Anderson, Saman P. Amarasinghe, Chau-Wen Tseng, Monica S. Lam (Stanford University - USA)

20:45 - Wellcome Reception

Thursday
June 29th 1995

9:00 - 10:40
Session 5
Parallelising Compilers

Efficient Translation of Irregular Code by the PREPARE HPF Compiler
Arthur Veen (ACE - NL)

Experience with the Polaris Restructurer
David Padua (Univ. Illinois - USA)

Convergence in Compiling for Shared-Memory and Distributed-Memory Multiprocessors
Vivek Sarkar (IBM Santa Teresa Lab - USA)

Exact IN and OUT Region Analysis
Beatrice Creusillet (Centre de Recherche en Informatique - FR)

10:40 - 11:05 - Coffee

11:05 - 13:00
Session 6
Development Environments and Object Models

Programming Environments for HPF
Barbara Chapman (University of Vienna - AU)

Programming Environment for SVM on the Intel Paragon
Michael Gerndt (Research Centre Juelich - GE)

Computing With Recursive Object Structures
Tom Lake (Glossa - UK)

Generating Parallel Code from Object-Oriented Mathematical Models
Niclas Andersson, Peter Fritzson (Linkoping University - SW)

13:00 - 16:30 - Lunch

16:30 - 18:10
Session 7
Parallel Computational Models

An Application Specific Parallel Computation Model
Thomas Rauber, Gudula Ruenger (Saarbruecken University - GE)

The design of a calculus for the optimization of data-parallel languages
Henk Sips (Delft University of Technology - NL)

The Subspace Model: a Target Independent Theory of Shapes for Parallel Systems
Kathleen Knobe, William Dally (MIT - USA)

Compiling data-parallel languages for distributed memory multi-processors, is access subtyping the key to success?
Chris Jesshope (Surrey University - UK)

18:10 - 18:35 - Coffee

18:35 - 20:15
Session 8
Parallel I/O

A Distributed Array library to support HPF translation
Bryan Carpenter (University of Southampton - UK)

Support for Input/Output of Massive Data on Parallel Computers
Guillermo P. Trabado, E. L. Zapata (University of Malaga - ES)

Distributed Array Management Scheme for Data-parallel Compilers
Francoise Andre and Y. Mahe'o (IRISA - FR)

A Code Motion Framework for Improving Data Locality in Out-of-Core Data-parallel Programs
Rajesh Bordawekar, Alok Choudhary (Syracuse University - USA)

20:45 - Dinner

Friday
June 30th 1995

9:00 - 10:40
Session 9
Compilers

Fat Compilers
Thomas Gross (CMU - USA)

A Stencil Compiler for the Connection Machine Model CM-5
Ralph G. Brickner, Kathy Holian (Los Alamos National Laboratory - USA), Balaji Thiagarajan (Informix, Inc. - USA), S. Lennart Johnsson (Harvard University - USA)

Fork95 Language and Compiler for the SB-PRAM
Christoph Kessler (Universitaet des Saarlandes - GE)

ParTDF: Compiling Concurrency and Distribution
Ben Sloman (Glossa - UK)

10:40 - 11:05 - Coffee

11:05 - 13:00
Session 10
Task Parallelism

Data Localization for Fortran Macro-dataflow Computation Using Static Macrotask Fusion
Hironori Kasahara, Akimasa Yoshida (Waseda University - JP)

Integrating Task Parallelism and Data Parallelism in the Vienna Fortran Compilation System
Hans Zima (University of Vienna - AU)

Runtime Support for Coarse Grained Data Parallel Tasks
Piyush Mehrotra (ICASE, USA)

Automatic Large-Grain Task Partitioning for Scientific Programming
Robert Babb (University of Denver - USA), Carlo Margio, Burkhard Plache (Optimax Software - USA)

13:00 - 16:30 - Lunch

16:30 - 18:10
Session 11
Scheduling and Register Allocation

Generating a periodic pattern for VLIW
C.Barrado, J.Labarta, E. Aiguade, M. Valero (UPC - ES)

Loop cyclic register allocation
Christine Eisenbeis, Sylvain Lelait, Bruno Marmol (INRIA - FR)

Dynamic Scheduling on Distributed Memory Multiprocessors
Oscar Plata (University of Santiago de Compostela - ES)

Bidirectinal Scheduling to Minimize Register Requirements
Josep Llosa, M. Valero, E. Ayguade (UPC - ES)

18:10 - 18:35 - Coffee

18:35 - 20:15
Session 12
Data Transformations

An HPF translation system with efficient calculation placement
John Merlin (University of Southampton - UK)

Automatic data distribution for massively parallel computers
Alexis PLATONOFF (Centre de Recherche en Informatique - FR)

Interprocedural Analysis for Automatic Parallelization: Design and Experience
Mary W. Hall (California Institute of Technology), Saman Amarasinghe, Brian Murphy, Monica Lam (Stanford University - USA)

Code Generation and Optimization for HPF
A. Thirumalai and J. Ramanujam (Louisiana State Univesity - USA)

20:15 - Closing of the Workshop

21:30 Social Event

Registration Form CPC95

5th Workshop on Compilers for Parallel Computers, June 28-30th, 1995, Málaga, Spain

Please, return this form as soon as possible to:
CPC95
Attn. Mr. Guillermo P. Trabado
Dept. Arquitectura de Computadores
Universidad de Malaga
Plaza El Ejido s/n
Malaga E-29013
SPAIN
Telefax: +34 - 5 213 1413 ; E-mail: cpc95@atc.ctima.uma.es

Please, print or type

Name

Company/University

Department

Address

City

Country

Telephone

Telefax

E-mail

Date

Signature

Registration fee:

The registration fees are quoted in Spanish pesetas (PTS.)

	before June 3rd	after June 3rd
❑ Normal registration	PTS. 40000	PTS. 48000
❑ Student registration	PTS. 20000	PTS. 20000

Cancellations up to June 19th, 1995: Full registration minus 8000 PTS. (handling charges).

Payment made:

❑ Charge my credit card (**only VISA card**):

Number:

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Valid until

Name of cardholder

Signature of cardholder

❑ By bankdraft (free of charge for destiny):

Transfer PTS.

From bank

Accountnr.

to accountnr. 0030 4078 18 0888.898.271 of the University of Malaga, Banesto Bank, Malaga, Spain.
*Please, specify concept **CPC95**, and indicate participants name(s) and company name(s) on bankdraft.*

Accommodation Reservation Form

5th Workshop on Compilers for Parallel Computers, June 28-30th, 1995, Málaga, Spain

Please, return this form as soon as possible to:
Viajes INTERSOL S.A.
Avda. Carlota Alessandri s/n
Torremolinos (Malaga) E-29620
SPAIN
Telefax: +34 - 5 237 4082 ; Phone: +34 - 5 238 1971

Please, print or type

Name

Company/University

Address

City

Country

Telephone

Telefax

Hotel:

Hotel Melia Costa del Sol **** (also workshop venue).
Single room (PTS. / night): 6575
Double room (PTS. / night): 8690
(all prices include bed, breakfast and V.A.T)

Please, reserve ____ Double room(s) ____ Single room(s)
Arrival date _____ Departure date _____
Name of accompanying person(s) _____
_____.

Tour to Granada - La Alhambra, July 1st, 1995

The proposed tour will be organised for a minimum number of 26 participants. The cost of the tour (including lunch, entrance to La Alhambra and V.A.T.) is PTS.7100 per person. The deposit will be fully refunded if tour is cancelled by organizers.

Please reserve _____ persons = PTS._____ for tour to Granada - La Alhambra.

Payment made: (please, add accommodation and tour in total)

Please, don't pay directly to the hotel.
Reservations will be made in the order received.
Cancellations up to June 16th, 1995: 90% refund.
Cancellations up to June 23th, 1995: 10% refund.

❑ Charge PTS._____ to my credit card:
❑ **Visa** ❑ **Master Card**

Number:

☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐

Valid until

Name of cardholder

Signature of cardholder

❑ By bankdraft (free of charge for destiny):

Transfer PTS.

From bank

Accountnr.

to accountnr. 0182 1553 92 0010187087 of Viajes Intersol S.A., BBV Bank, Madrid, Spain.

❑ By cheque PTS. _____ enclosed made payable to Viajes Intersol S.A., Málaga, Spain (free of charge for destiny).
*Please, specify concept **CPC95**, and indicate participants name(s) and company name(s) on cheque and bankdraft.*