CAP Workshop 1991

Proceedings
of the
Second Fujitsu-ANU CAP Workshop

Australian National University

November 28-29, 1991

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Preface

The *CAP Workshop 1991* is the second in a series of workshops supported by Fujitsu under the auspices of the Fujitsu-ANU joint research agreement. The first workshop was held at Fujitsu Research Laboratories, Kawasaki, Japan, in November 1990. The second workshop is being held at the Australian National University, Canberra, Australia, in November 1991.

The organisers would like to thank all those who have contributed to the success of this workshop –

- Fujitsu Ltd., Fujitsu Research Laboratories, and Fujitsu Australia for their support of the Fujitsu-ANU joint research agreement;
- the Centre for Information Science Research at ANU for its support and coordinating role;
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- members of the Advisory Board, Program Committee and Local Arrangements Committee;
- Michelle Moravec for assistance with production of the Proceedings;
- contributors to the panel session for their insights;
- and not least the authors of the papers for the time and effort involved in preparing their papers.

CAP Workshop Organisation

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Program – Day 1

Thursday, 28 November 1991

8:30 - 9:00 **Registration**

9:00 - 9:30 **Opening Session**

9:30 - 10:30 **Paper Session 1: Hardware and Systems**

A. *Low-Latency Message Communication Support for the AP 1000*
T. Shimizu, T. Horie and H. Ishihata

B. *All-to-All Personalized Communication on Wrap-around Mesh*
T. Horie and K. Hayashi

10:30 - 11:00 **Break**

11:00 - 12:30 **Paper Session 2: Software Tools and Compilers**

C. *Developing Monitoring and Debugging Tools for the AP 1000 Array Multiprocessor*
C. W. Johnson, P. B. Thistlewaite, D. Walsh and M. Zellner

D. *Parallel Loop Code Generation for the AP 1000*
Gavin Michael and Peiyi Tang

E. *Data Parallelism on MIMD Machines*
T. Bossomaier

12:30 - 13:30 **Lunch**

13:30 - 15:00 **Paper Session 3: Linear Algebra**

F. *A Parallel Direct Solution Method of Sparse Linear Systems and its Evaluation on AP 1000*
K. Motegi and S. Watanabe

G. *The LINPACK Benchmark on the AP 1000: Preliminary Report*
R. P. Brent

H. *The Implementation of BLAS level 3 on the AP 1000: Preliminary Report*
P. E. Strazdins and R. P. Brent

J. *Singular Value Computation on the AP 1000*
A. Czezowski and P. E. Strazdins

15:00 - 15:30 **Break**

15:30 - 17:00 **Paper Session 4: Applications**

K. *Application of Parallel Computer to Protein Engineering*
H. Iwama, S. Kawakita, M. Saito, H. Sato, Y. Tanaka, S. Tsutsumi and H. Yoshijima

L. *Parallelization Strategies for MD Simulations on the AP 1000*
D. Brown and J. H. R. Clarke

M. *Parallelization of the Monte Carlo Codes MCACE for Shielding Analysis and Measurement of Parallel Efficiency on AP 1000 with 64 Cell Processors*
M. Takano, F. Masukawa, Y. Naito, A. Kawazoe and M. Okuda

Program – Day 2

Friday, 29 November 1991

9:00 - 10:30 **Paper Session 5: Hardware, Systems and Visualization**

N. *Performance Evaluation of the AP 1000*
H. Ishihata, T. Horie, T. Shimizu and S. Kato

P. *Connecting AP 1000 with mainframe:*
Application to KEK Experimental HEP computations
S. Ichikawa, N. Ishida, S. Yamaki, T. Matsuura,
A. Manabe, K. Amako, H. Fujii, S. Ichii,
R. Itoh, A. Miyamoto, Y. Takaiwa and Y. Watase

Q. *Scientific Visualization Algorithms on the AP 1000*
P. Mackerras

10:30 - 11:00 **Break**

11:00 - 13:00 **Paper Session 6: File Systems, Software and Applications**

R. *Implementation and Performance of the Acacia File System*
B. M. Broom

S. *High Speed Search of Large Text Bases on the Fujitsu AP 1000*
D. Hawking

T. *Implementation of C-Linda for the AP 1000*
R. Cohen and B. Molinari

U. *PARACS: A Highly Parallel Circuit Simulator*
J. Niitsuma, K. Teramae, T. Kage, S. Shimogori and Y. Izuta

13:00 - 14:00 **Lunch**

14:00 - 15:30 **Paper Session 7: Applications**

V. *Particle Simulation using Monte Carlo Method*
M. Okuda, M. Fujisaki, K. Watanable, A. Kawazoe, M. Yokokawa,
H. Yamamoto, H. Kaburaki, S. Inawashiro and F. Matubara

W. *QCD Lattice Monte Carlo Simulations on Cell Array Processor AP 1000*
K. Akemi, Ph. de Forcrand, M. Fujisaki, T. Hashimoto,
H. C. Hege, S. Hioki, J. Makino, O. Miyamura, A. Nakamura,
M. Okuda, I. O. Stamatescu, Y. Tago and T. Takaishi

X. *Combinatorial Optimisation on the AP 1000*
K. Malysiak and B. D. McKay

15:30 - 16:00 **Break**

16:00 - 17:00 **Panel Discussion**

The Future of Distributed-Memory Parallel Computers

R. Brent (chair), T. Gojobori, M. Ishii,
H. Kasahara, Y. Muraoka, R. Stanton and S. Tomita

17:00 - 17:30 **Closing Session**

Bon Voyage !

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