

# Lecture Notes in Computer Science

Edited by G. Goos and J. Hartmanis

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## CONPAR 86

Conference on Algorithms and Hardware  
for Parallel Processing  
Aachen, September 17–19, 1986  
Proceedings

Edited by Wolfgang Händler, Dieter Haupt, Rolf Jeltsch,  
Wilfried Juling and Otto Lange

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CR Subject Classifications (1985): C.1.1, C.1.2, C.1.3, F.2.1, F.2.2

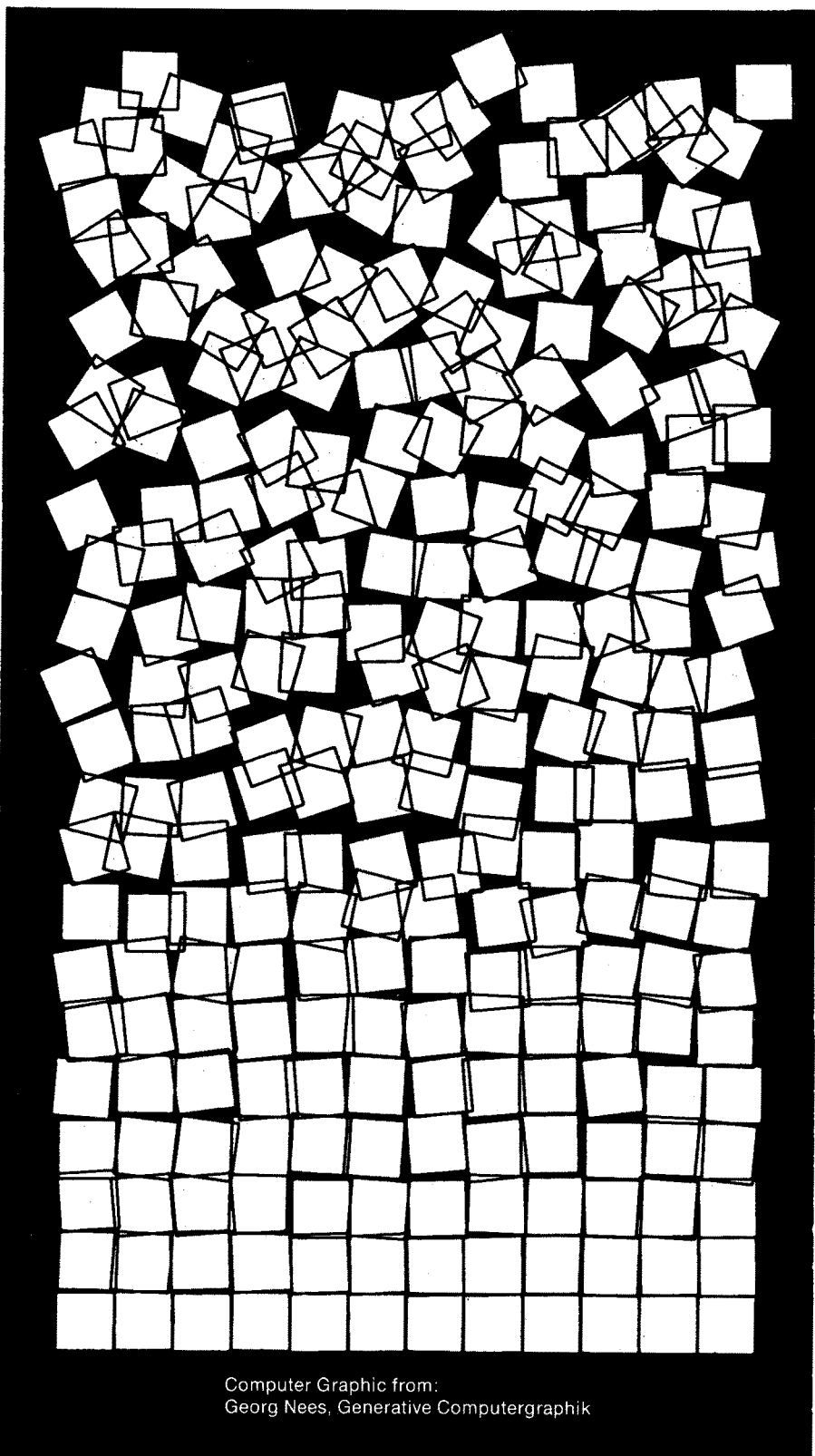
ISBN 3-540-16811-7 Springer-Verlag Berlin Heidelberg New York  
ISBN 0-387-16811-7 Springer-Verlag New York Berlin Heidelberg

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© Springer-Verlag Berlin Heidelberg 1986  
Printed in Germany

Printing and binding: Druckhaus Beltz, Hemsbach/Bergstr.  
2145/3140-543210

# CONPAR 86



Computer Graphic from:  
Georg Nees, Generative Computergraphik



## P R E F A C E

The second Conference on Algorithms and Hardware for Parallel Processing, CONPAR 86, has long been overdue. During the past five years since the first CONPAR was held in 1981 there has been a dramatic increase in awareness for the necessity of parallel processing. This resulted in many significant publications and an increasing number of related conferences in this field. The 1980s are proving to be the decade of parallel processing .

It is the goal of CONPAR to bring together researchers involved in parallel processing. It is intended to create a forum to allow for the interaction of people designing algorithms and architectures of different kinds of parallelism utilizing today's exploding hardware possibilities.

In contrast to CONPAR 81 where 29 papers were selected for presentations this year we received 106 papers. Reviewing these papers proved a tremendous task requiring the assistance of 43 referees. 42 papers from 13 countries are included in these proceedings. Academia, industry and research laboratories are all represented. Because of the large number of excellent papers submitted, the task of arriving at a program was an extremely difficult one. CONPAR 86 will have parallel sessions in order to accommodate more papers. But still there were many interesting papers which could not be included. Therefore, all of the papers finally accepted and included in these proceedings should be of the highest quality. We sincerely thank all of the authors who submitted papers for their interest in this conference.

CONPAR 86 will be complemented by presentations, demonstrations and exhibits of various manufacturers. The significant aspect of this joint event is that all of the parallel systems presented are commercially available today or will be in the immediate future and many more significant developments are expected soon.

Professor Arthur Burks from The University of Michigan, Ann Arbor, will act as the Honorary Chairman and will address the conference with his keynote "A Radically Non-von-Neumann-Architecture for Learning and Discovery".

Together with J. von Neumann and H.H. Goldstine, Professor Burks created what is now the "Classical General Purpose Computer". In spite of all criticism regarding what is called the "von-Neumann-Bottle-Neck" or the "von-Neumann-Programming-Style" the Burks/ Goldstine/ von-Neumann-Approach has proved to be viable and outstanding.

At CONPAR 86 several renowned experts have been invited to give presentations in their respective fields:

I.S. Duff, AERE Harwell, Oxfordshire, and A.H. Sameh, University of Illinois at Urbana Champaign, will concentrate on numerical algorithms for parallel processing, whereas Ph. Treleaven, University College London, S. Uchida, ICOT Tokyo, and U. Trottenberg, SUPRENUM Gesellschaft für numerische Superrechner m.b.H, Bonn, will introduce novel computer architectures and will report on the progress of current projects.

Finally, W. Händler, University of Erlangen-Nürnberg, will discuss trends in the general development of multiprocessors.

Our special thanks go to the referees who read and evaluated the manuscripts. We wish to acknowledge the efforts of the Organizing Committee and the staff of the RWTH - Computer Center for the local arrangements. We are also grateful to the Springer-Verlag for the kind assistance in preparing the proceedings.

Aachen, July 1986

W. Händler  
D. Haupt  
R. Jeltsch  
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## ACKNOWLEDGEMENTS

For substantial help we are obliged to the members of the Program Committee

P. C. P. Bhatt	R. W. Hockney	K. Miura
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to the following referees

W. Ameling	J. Jersák	W. Schönauer
J. P. Banatre	J. S. Kowalik	D. Siewiorek
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and to the Kernforschungsanlage Jülich GmbH for the layout and printing of the posters, the call for papers and the conference program.

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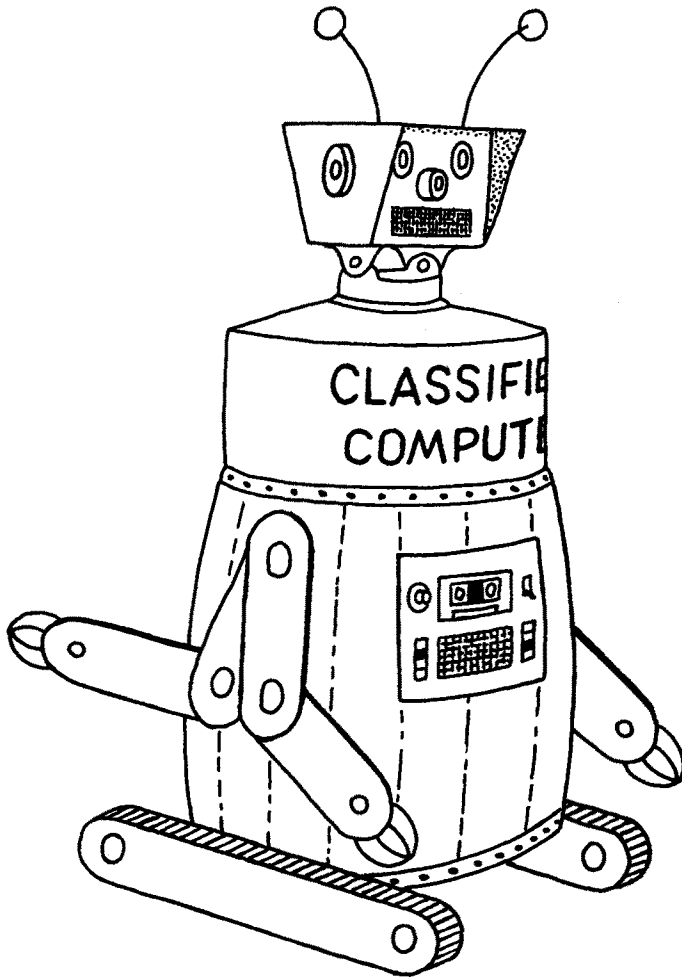
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Classifier Robot

Figure 1

(Paper by Burks)