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Parcella '88

Fourth International Workshop on Parallel Processing
by Cellular Automata and Arrays
Berlin, GDR, October 17–21, 1988
Proceedings



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P R E F A C E

This volume contains the selected papers for the Parcella 88 - The Fourth International Workshop "Parallel Processing by Cellular Automata and Arrays" was held in Berlin, October 17 - 21, 1988.

The profile of Parcella-workshop series is focused on problems of processing by regular structures, i. e. their "flexibilization" or adapting to "irregular" algorithms on the one hand and, closely related to this, on the "regularization" of algorithms for their embedding into regular structures. It seems that these problems will have an increasing priority within the list of central problems in parallelization and will determine the profile of Parcella for the next years.

This workshop - the first of this type in the socialist countries - has gathered, as its predecessors, many scientists engaged and interested in this field. However, the organizers are of the opinion that some steps forward were taken as compared to the foregoing Parcella e.g. the size of the Parcella-community has increased, so that parallel sessions had to be held for the first time in our short Parcella-history, and the volume of the proceedings has increased, too. Nevertheless, the editors had to reject more than 50 % of all papers submitted so that many of them, although of good quality, could be accepted for oral presentation only.

The organizers and promoters of the foregoing Parcella-events, T. Legendi and G. Wolf, has welcomed U. Schendel from Freie Universitaet (Berlin-West) as the third chairman at Parcella 88. They

are sure that this decision will support the future development immensely. They will make great efforts to provide a stimulating atmosphere and a fruitful exchange of ideas at this workshop and, by this, help to establish international cooperation in this highly dynamical field of research.

The work to be done by the Chairmen and Editorial Board with T. Legendi (Szeged), U. Schendel (Berlin-West) and G. Wolf (Berlin) was supported by the International Program Committee, consisting of V. Aladyev (Tallinn), A. Albrecht (Berlin), W. Haendler (Erlangen), C. Jesshope (Southampton), A. Jugel (Dresden), N. Kasabov (Sofia), E. Katona (Szeged), V. Kotov (Novosibirsk), S. Levialdi (Rome), I. Miklosko (Bratislava), D. Parkinson (London), A. Rosenfeld (Pittsburgh), I. Toth (Szeged), J.-R. Sack (Ottawa), P. Spirakis (Patras), L. Uhr (Madison), R. Vollmar (Braunschweig), K. Voss (Jena), W. Wilhelmi (Berlin), G. Wunsch (Dresden) and C. K. Yap (New York).

The chairmen would like to express their special thanks to Prof. Haendler and Prof. Vollmar for their kindness and help especially. They are very glad to welcome Prof. Haendler as honorv lecturer.

The editors want to thank all contributors for their support to an interesting scientific program of high quality, and thank are also due to all authors who submitted papers for the proceedings even it they could not be accepted.

Finally, the editors are grateful to Prof. Dr. sc. V. Kempe, Director of the supporting institute, the Central Institute for Cybernetics and Information Processes of the Academy of Sciences of the G.D.R., as the scientific adviser, and to Prof. Dr. sc. H. Fuchs, the Deputy Director of this institute, for their untiring efforts in helping to organize the workshop, as well as to Dr. Hoepfner and Ms. Dipl.-Math. Reiher from Akademie-Verlag and Dr. Woessner from Springer-Verlag as the publishing houses providing excellent conditions for the edition of this volume.

The local chairman wants to express his thanks to Dr. Creutzburg as the Head of the International Basic Laboratory "Image Processing and Computergraphics" for giving excellent conditions to prepare the workshop and to Prof. Wilhelmi for his help in preparing the scientific programme.

Furthermore, our thanks are due to Mrs. S. Boettcher, Mrs. I.'Schubert and Mrs. M. Stabrey and the whole organizing staff, who did the main organizational work in the background.

Hoping to have provided the best conditions possible for Parcella 88 we look forward to a Parcella 90, as the event to follow.

T. Legendi

U. Schendel

G. Wolf
(local chairman)

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