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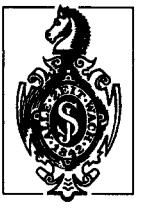

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Preface

PARLE is an international, European based conference which focuses on the parallel processing subdomain of informatics and information technology. Parallel processing is today recognized as an area of strategic significance throughout the world. As a result, many national, pan-European and world-wide initiatives are being planned or already exist to further research and development in this area.

Ever increasing demands are being made on computer technology to provide the processing power necessary to help understand and master the complexity of natural phenomena and engineering structures. Within human organizations ever more processing power is needed to master the increasing information flow. Many so-called "Grand Challenges" have been identified as being orders of magnitude beyond even the most powerful computers available today.

Although the microelectronics industry has made vast, impressive strides both in improving the processing power available from individual components and in dramatically reducing the cost of basic processing power, it is not in itself enough to satisfy even today's requirements.

Parallel processing technology offers a solution to this problem. By taking several basic processing devices and connecting them together the potential exists of achieving a performance of many times that of an individual device. However, it is still an important topic of research to discover how to do this optimally and then to be able to effectively exploit the potential power through real applications solving real-world problems. Some progress has been made, particularly in isolated applications, but building parallel application programs is today recognized as a highly complex activity requiring specialist skills and in-depth knowledge of both the application domain and the particular parallel computer to be used.

Many international conferences in the area of parallel processing focus on the now well-established technical areas broadly described as number-crunching. Although this area is also within PARLE's scope, it has tended to put more emphasis in its technical program on other areas, such as novel architectures, symbolic processing, parallel database technology,and functional and logic technology. These represent some of the most difficult challenges in making general purpose parallel computing a reality.

The PARLE Conference came into existence in 1987. It started its life as an initiative coming from the ESPRIT I programme and was financially supported by the Commission of the European Communities through that programme. Between 1987 and 1991 the conference was held biannually around Eindhoven in the Netherlands with Philips taking the responsibility for its organization.

In 1991 Philips decided that they no longer wished to continue organizing PARLE and so the future of the conference was reviewed. The conference Steering Committee members felt that PARLE had an important role to fulfil and so decided to continue, but with a revised format. PARLE is now focused on be-

coming *the* European conference with an international reputation in the domain of parallel architectures and languages.

A new conference organizational format has been adopted to emphasize this new commitment in a number of ways:

- the conference will be held annually,
- PARLE will be held exclusively within Europe,
- the conference venue will change country each year,
- the Steering Committee will represent various European countries,
- the Steering Committee should contain some of the most eminent European workers,
- the Programme Committee will represent most European countries,
- the Programme Committee will contain some important non-European experts,
- the Programme Committee will include specialists from industry as well as academia.

This format was first used for the 1992 conference held in June in a suburb of Paris and organized through the French Informatics Society, AFCET. It was judged to be a success in terms of the number of paper submissions received, the increased level of attendance, and the improved technical quality.

PARLE intends to become the European forum for interchange between experts in the parallel processing domain. It is intended to attract both industrial and academic participants with a technical programme designed to provide a balance between theory and practice. This role is an important function of PARLE and a consequence of its history.

The ESPRIT programme was partly conceived as an umbrella for collaborations involving industrial and academic participants. By working together and exchanging ideas, an important synergy can occur which profits both communities and can lead to extremely fast exploitation of innovative solutions in the market place. This promotes mutual understanding of important issues and prevents technology transfer barriers.

PARLE reflects this by promoting exchange between industry and academia, between practitioners and theoreticians, especially within the European context but also within the rest of the international community involved in the field of parallel processing systems. These different roles represent a key component of the strength and importance of PARLE.

Within Europe, the ESPRIT programme represents a significant research effort involving industrial and academic workers in, amongst other topics, the design and implementation of new computer architectures, theoretical work, parallel language design and development, tools to support parallel application construction, and, of course, the construction of prototype parallel applications. Considering the history and roles of PARLE, it is natural that the conference is supported by the Commission of the European Communities through the ESPRIT Programme and through representation at the level of the Steering

Committee. The European nature has also been emphasised through the support of CEPIS, the Council of European Informatics Societies, which represents over 200 000 Information Technology professionals in Europe.

PARLE'93 was organized in Munich by the European Computer-Industry Research Centre, ECRC, in cooperation with the Technical University of Munich and SIEMENS Central Research Laboratories. The conference was sponsored by the ESPRIT Programme of the Commission of the European Communities, ECRC, the Dresdner Bank, the city of Munich, AFCET, CEPIS, GI and ITG.

More than 200 papers were submitted and the best 52 were accepted as full papers. Additionally, the proceedings include short summaries of the papers accepted for presentation at the poster session and brief overviews of some of the CEC ESPRIT projects that provided support for PARLE'93.

An industrial exhibition was organized as part of the PARLE'93 conference. This provided an excellent opportunity for all attendees to gain first-hand experience of the newest products available. Considering this was the first time such an event has been held as part of a PARLE conference, it is gratifying that so many major international companies chose to participate. PARLE'93 also featured tutorials covering advanced parallel processing techniques. These two things have undoubtedly added an important new dimension to PARLE and we hope that next year's organizers will continue with them.

The programme chairmen are grateful to the authors, the members of the programme and steering committees, the referees, the supporting societies, and the organizing committee for their help in preparing PARLE'93 and the proceedings. We would also like to thank the following for their efforts in ensuring the smooth running of the conference: Uli Fuetterer, Christiane and Susanne Hollmayer, Isabelle Syre, and Ulrich Koschkar and family.

April 1993 Arndt Bode, Mike Reeve, Gottfried Wolf

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