

Proceedings of IPPS '96

The 10th International Parallel Processing Symposium

April 15–19, 1996

Honolulu, Hawaii

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In cooperation with

The Association for Computing Machinery SIGARCH

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Message from the General Chair

It is my pleasure to welcome you to the 10th International Parallel Processing Symposium.

The response to our call for participation was outstanding due in good measure to the efforts of Kai Hwang. As program chair, he called together an impressive program committee under the leadership of four program vice-chairs: Gul Agha of the University of Illinois; Mikhail Atallah of Purdue University; Jean-Loup Baer of the University of Washington; and John Gustafson of Ames Laboratory. They are to be commended for the exceptional work they performed with the Program Chair in selecting the submissions which comprise the IPPS '96 technical program. I am deeply indebted to them for their commitment to our vision for the growth of this meeting.

I want to use this opportunity to give a special thanks to John K. Antonio of Texas Tech University. His creative and determined efforts have led to a well-organized industrial track with invited presentations from vendors as well as commercial exhibits.

Completing the symposium program agenda are two tutorials and ten workshops. For these activities, I applaud the efforts of the Tutorials Chair, Sajal Das of the University of North Texas and the workshop organizers: Hussein Alnuweiri of the University of British Columbia; D.R. Avresky of Texas A&M University; Francine Berman of the University of California, San Diego; Hossam Elgindy of the University of Newcastle; Dror Feitelson of Hebrew University; Richard Freund of NRaD; Rudolph Hackenberg of Technische Universität München; Mounir Hamdi of Hong Kong University of Science and Technology; Dieter Hammer of Eindhoven University of Technology; Dominique Mery of the Institut Universitaire de France and Université Henri Poincaré; Sanguthevar Rajasekaran of the University of Florida; Sanjay Ranka of the University of Florida; Larry Rudolph of MIT and Hebrew University; Assaf Schuster of Technion; Heonshik Shin of Seoul National University; Dan Watson of Utah State University; and Lonnie Welch of the Naval Surface Warfare Center. In particular, their cooperation and efforts in putting together the advance program are appreciated. Rounding out the program is a panel discussion organized and moderated by H.J. Siegel; I am pleased that he agreed to take this on role and I look forward to a lively session.

As in previous years, Sally Jelinek coordinated publicity and publication activities, and I am again grateful for her timely assistance in bringing to print the Call-for-Participation, the IEEE advertisements, and the advance program. Regional publicity activities were handled ably by D.N. Jayasimha of Ohio State University, Mikhail Mahaniok of the Academy of Belarus, Piyush Maheshwari of Griffith University, and Liria Matsumato Sato of the University of Sao Paulo. D.N. Jayasimha has assisted me on a number of occasions with publicity matters, and I am indebted to him for his thoughtfulness and his commitment to the vision of this meeting.

The IEEE Computer Society Conference Department provided me with much-needed support during various stages of the planning. Among others, Anne Marie Kelly, Maggie Johnson, Kerry Bedford, and Mary-Kate Rada all answered my numerous questions and provided timely support. Mary E. Kavanaugh of the IEEE Computer Society Press served as a good-humored professional interface with me, the program chair, and authors in assembling these proceedings.

Bill Pitts, our Finance Chair, has done his usual fine job of both watchdogging and facilitating the financial affairs of the symposium. Susamma Barua, our Local Arrangements Chair, worries about all of the logistics involving the hotel, speakers, and exhibitors; she makes sure that everything happens as planned the week of the symposium — and usually it does!

In a variety of undertakings, I have been able to rely upon the first-rate assistance of my students, Prashanth Bhat and Jinwoo Suh. Special thanks go to Myungho Lee for his assistance in setting up the author database, corresponding with the authors, and in putting together the proceedings. Also, my assistant Regina Morton has patiently supported my activities with the volunteers. I would like to thank all of them for their time and effort.

Thanks for assistance would not be complete without acknowledging Ramamohan Paturi of Parity Computing for his assistance in bringing out the proceedings on CD-ROM.

In closing, I want to thank George Westrom for his continued support of my leadership role in developing IPPS. Along with other members of the symposium Executive Committee (Susamma Barua, Sally Jelinek, and Bill Pitts), we have met frequently over the past year, and George has provided us invaluable input to resolve many issues. I think he would agree that it has been a pleasure to interact with this group.

Viktor K. Prasanna
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Message from the Program Chair

On behalf of the entire IPPS '96 Program Committee of 47 members, I welcome you to the 10th International Parallel Processing Symposium. We are glad that you can join us in Honolulu, Hawaii. This symposium is sponsored by the IEEE Computer Society Technical Committee on Parallel Processing, in cooperation with ACM SIGARCH; many program committee members are associated with one or both of these groups. The resulting technical program for IPPS '96 consists of three keynote addresses, ten specialized workshops, a panel, two tutorials, an industrial track, and 21 technical sessions.

In response to the Call-for-Papers, the IPPS '96 Program Committee received 353 submissions from 29 countries across four continents. All submissions were carefully refereed in a rigorous process which required at least three full reviews for each paper. Due to time and space limitations for the symposium and proceedings, only 126 papers could be selected for presentation and inclusion in the proceedings. The final decisions were collectively made by the Program Committee on December 1, 1995.

We want to thank all authors, referees, and committee members for their outstanding contributions to assure the continued high quality of symposium events. In particular, the efforts from the four Program Committee Vice-Chairs — Gul Agha, Mikhail Atallah, Jean-Loup Baer, and John Gustafson — deserve the highest praise. I also appreciate the keynote speakers — Charles Leiserson, Gregory Pfister and Chuck Seitz—for agreeing to honor our event with presentations in their respective areas of expertise: multithreaded programming, clustering for commercial computing, and massively parallel processing. Special thanks go to H.J. Siegel for organizing the panel session to focus on technical issues central to the field of parallel processing.

The success of this symposium (which has really come of age in the last six years) may be attributed largely to the professional leadership demonstrated by Viktor K. Prasanna, the Symposium Chair, and by the Steering Committee headed by George Westrom. I thank them for their confidence in inviting me to chair the Program Committee for the 10th anniversary of the symposium. Last, but not least, I want to thank Myungho Lee, Weihua Mao, Choming Wang, Regina Morton, and Miguel Padilla of the University of Southern California for their assistance in putting together the Advance Program and Proceedings.

Kai Hwang

Program Chair IPPS '96

The University of Hong Kong

*(on leave from the University of Southern
California)*

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Message from the Steering Committee Chair

Aloha!

It was my good luck to spend several years teaching in Hawaii and to have the opportunity for frequent return visits. As a result, I know how much you will appreciate (in our 10th year, I can no longer resist) the “parallel processing” of technology and pleasure.

IPPS '95 last year in Santa Barbara, California was our most successful effort yet, due in good part to the hard work of Joseph JáJá and those who shared the responsibilities with him on the Program Committee. As Steering Chair, I found myself much like the Maytag repairman, with nothing to fix (but I have no complaints!). And kudos again to John Antonio for making Industrial Participation now a standard part of our event.

In this our 10th year, we can once more move the number line ahead in expressing our admiration and appreciation to Viktor Prasanna for his superb symposium leadership. At the same time, we hail Kai Hwang for his efforts to secure the outstanding technical content of IPPS '96. Each of us will look forward to adding these proceedings to our libraries.

As always, a special thanks goes to the Executive Committee which meets all year long to iron out details. All say that it has gotten easier but each year presents new challenges and they all meet them splendidly. Bill Pitts, Finance Chair, is always on intimate terms with our financial soul; Susamma Barua has made a science of local arrangements that could be marketed to professionals (we think several hotels have learned a few lessons from her); and Sally Jelinek goes by the tag Publicity Chair which does not do justice to the role she has played in our success. Finally, my greatest joy as always is to be a part of this team (and those who periodically join us) under Viktor's leadership.

We think that it is hard to do better than the settings of Cancun, Santa Barbara, and Waikiki; simply think of the IPPS '97 site, Geneva, Switzerland, as the next best place! Our European colleagues have enjoyed the IPPS years on the beach, but now they assure us that, in our 11th year, we will not miss the sand. With equal anticipation, we can look forward to sharing technology up close on the Continent.

MAKE YOUR PLANS NOW TO ATTEND IPPS '97!

George Westrom

Steering Committee Chair — IPPS '96

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