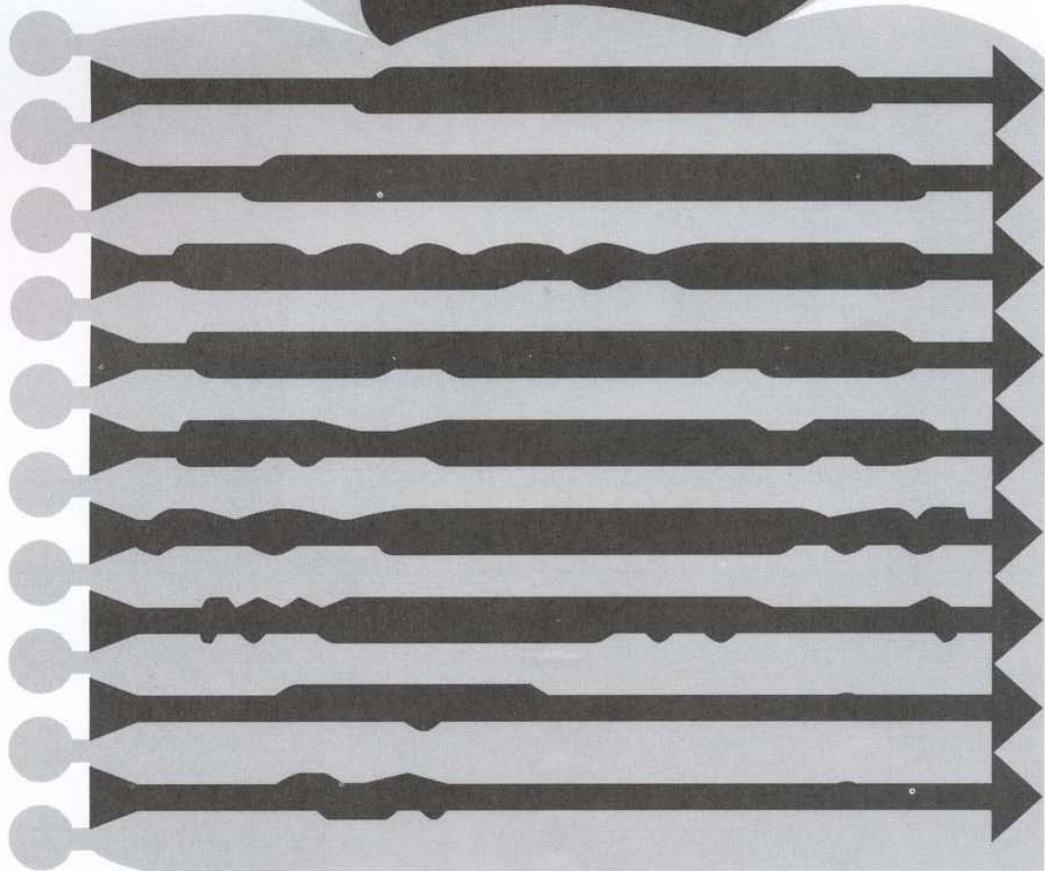


Proceedings

# Supercomputing '92

# Voyages of Discovery



Proceedings

# Supercomputing '92

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November 16 – 20, 1992

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## Preface

The Supercomputing '92 conference, sponsored by the Computer Architecture and Supercomputing Applications Technical Committees of the IEEE Computer Society and ACM SIGARCH, features both a forum for sharing ideas and research results, as well as an exhibition that showcases commercial and experimental research hardware and software.

The role of the program committee has expanded considerably since the inception of the conference. With a balance of academia, industry, and government institutions among its membership, the committee is responsible for all aspects of the technical program, including contributed papers, invited speakers, panels, minisymposia, research exhibits, poster and video poster sessions, networking programs, and the Visualization Theatre. The tutorial committee is responsible for the content of the tutorials and the conference workshops.

These proceedings contain the full text of the contributed papers, as well as abstracts for the invited speakers, panels, and minisymposia. Research exhibit abstracts are included in the final program, while a special handout at the conference describes the poster and video poster sessions. The committee tried an experiment this year with the production of a CD-ROM version of the proceedings. The first 1200 persons to pick up their registration packets were given the option of additionally, or alternatively, receiving the proceedings in this format. Feedback on this venture will be much appreciated for future conference policies.

There were over 220 submissions of technical papers to the conference. Unlike previous years, we received several papers specifically on visualization in supercomputing, and thus were able to focus a session on this topic. Papers were assigned to the following tracks: (1) Software/Software Tools; (2) Performance; (3) Compiler Issues; (4) Algorithms; (5) Architectures; (6) Applications; (7) Networks/Systems/Storage; (8) Visualization; and, (9) Interconnection Networks. (It is sometimes very difficult to properly categorize a paper, since the content often overlaps several areas of the computing environment.) Each paper was reviewed by three persons knowledgeable in their field, and was given an overall ranking within its assigned track. Ultimately, 75 were selected for presentation, an acceptance rate of 34 percent.

The conference is committed to involvement by students, from the high school level through graduate school. A set of educational sessions, aimed primarily at high school teachers, was featured in this year's program. In addition, to obtain more consistency in the designation and selection of student papers, all student authors were required to verify their status as students and their role as primary contributors to an accepted paper. Twenty-four such verifications were received. Of these, five finalists were chosen by a further review process, to compete for the Best Student Paper award, which is determined by presentation of the papers at the conference. The winner of this award becomes a member of next year's program committee, and is in charge of the selection process for the next conference.

There were 10 invited speakers, nine panels, and five minisymposia at this year's conference. The invited speakers were selected by the program committee on the basis of acknowledged expertise in their particular field and their presentation skills. A wide variety of talks, ranging from virtual reality to computational biology and financial supercomputing has resulted from the selection efforts of the committee. A continuing feature of the conference is talks by the finalists in the Gordon Bell Prize category and the winner of the Forefronts Award.

The panels and minisymposia this year reflected current industry concerns and included sessions comparing and contrasting the concepts of "Big Iron" versus the clustering of high performance scientific workstations. Observing supercomputing efforts from countries around the world, and exploring the emerging language "battles" upon entering the parallel computing era were other timely topics on the program.

To acknowledge the application of supercomputing technology in new, non-traditional technical arenas, a special day of additional sessions was included, designated "Medical Day." Three panels covered various applications of high performance computing in the medical profession. Medical professionals and researchers were specifically invited to attend these sessions.

Much work goes into the making of a conference of this size and caliber. The technical program is the result of the various committees, the authors, the reviewers, those who implemented the network on the floor, and many others on the committee staff. These proceedings are meant to sum up the flavor of this year's conference and we hope you will find it useful in your future work.

Enjoy Supercomputing '92!

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borchers@llnl.gov

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viele@theory.tc.cornell.edu

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jjortn@cs.sandia.gov

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ACM  
hall@acmvm.bitnet

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## PARTICIPATE IN SUPERCOMPUTING '93

You can become involved in SUPERCOMPUTING '93 through the technical program, tutorials, workshops, student program, or industry exhibit. The technical program will cover applications in a number of disciplines and will feature invited and contributed papers, panels, posters, and research exhibits. The tutorials and workshops will feature experts on both the art and application of high performance computing and communications. The industry exhibit will feature the latest in hardware, software, applications, systems, and services.

We invite you to submit a proposal for a paper, panel, workshop, tutorial, research exhibit, or poster, and become part of this fast-growing conference in high performance computing and communications. For additional information, request a SUPERCOMPUTING '93 Call for Participation by calling 1-800-GO-2-SC93 (1-800-462-7293) (phone and fax).

### SUBMIT A PAPER

Papers reporting results and experiences relating to high performance computing and communications are welcome for presentation at SUPERCOMPUTING '93. Papers must be original material not previously published.

An award will be given for the best paper with a student as principal author. The student paper award winner will be invited to become a member of the SUPERCOMPUTING '94 program committee. The deadline for paper submissions to the Program Chair is April 1, 1993.

### PROPOSE A PANEL

A panel session provides an opportunity for a group of speakers to discuss different, often opposing, viewpoints on subjects of interest. A moderator selects several panelists, each of whom present a short statement outlining his or her position. This is followed by interaction between panelists and the audience. The deadline for panel proposals to the Program Chair is April 1, 1993.

### PROPOSE A POSTER OR VIDEO POSTER

Authors preferring an informal, interactive presentation of results may submit a proposal for a poster and/or video poster exhibit. Video poster presenters may have a video in conjunction with or in place of a standard poster. The deadline for poster proposals to the Program Chair is April 1, 1993.

### PROPOSE A RESEARCH EXHIBIT

Research exhibits provide the opportunity to demonstrate research results in the form of running programs. Emphasis will be given to demonstrations of interactive software or demonstrations with visual impact. The deadline for research exhibit proposals to the Program Chair is August 2, 1993. For the second

year we will sponsor a Heterogeneous Computing Challenge with awards to applications running on the SCinet '93. Due to the iterative nature of what the contestants require and what will be available on the SCinet '93, proposals are due to the Program Chair by June 1, 1993.

### PROPOSE A TUTORIAL

Scheduled for Monday, November 16, and Friday, November 20, the SUPERCOMPUTING '93 full- and half-day tutorials will present a spectrum of topics related to high performance computing and communications. The deadline for tutorial proposals to the Tutorials and Workshops Chair is April 1, 1993.

### PROPOSE A WORKSHOP

Workshops organized by leaders in their respective fields allow interaction among participants who are pursuing common technical interests. The workshop organizer is responsible for setting the theme and encouraging participation through selected short presentations or panel discussions. The deadline for workshop proposals to the Tutorials and Workshops Chair is April 1, 1993.

### RESERVE EXHIBIT SPACE

Make plans now to exhibit at the premier exhibition in high performance computing and communications, SUPERCOMPUTING '93. This industry exhibition has increased substantially every year in both size and attendance. Featuring the newest products and developments in high performance computing and communications, the industry exhibit showcases supercomputers, workstations, software, network products, storage systems, and telecommunications products and services. Request an Exhibitor Prospectus by contacting DC Expositions, Inc., 214-727-8301, [collier@convex.com](mailto:collier@convex.com).

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# PARTICIPATION

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