



# CIE

The Computers in Engineering Division Newsletter

Summer 1989

1989 Computers in Engineering Conference Program at a Glance—Pages 3 and 4

## Chairman's Message



GOPAL D. GUPTA, Ph.D.  
Division Chairman, 1989-90

It is my great pleasure and honor to greet all members of the Computers in Engineering Division. It is especially exciting as the Division enters its tenth year of existence. We have had eight international conferences and exhibits with the most recent conference held in San Francisco, an overwhelming success. Presently the Division has 2,145 primary interest members and 9,696 secondary interest members, totalling 11,841 members—an increase of approximately 15% over the last year. The ever-increasing interest of ASME members in our Division indicates the growing automation needs and dependence on computers among mechanical engineers. Now we must rise to the challenge of providing meaningful and effective service to the membership.

The combined attendance at last year's CIE Conference in San Francisco was over 2,800, which was beyond our expectations. Most of the technical sessions were very well attended. The exhibitors were very happy with the good traffic flow through their areas.

Our challenge is to maintain, over the coming years, the level of success achieved at the 1988 San Francisco con-

ference. I firmly believe that this can be accomplished by your continued active participation in the Division.

The Division faced a minor setback last year. Due to a drop in the subscription level for the CIME magazine from its peak of over 10,000 to only 2,000, it has been discontinued. The last regular issue of CIME was in November 1988. Since January 1989, a CIME supplement has been published in the ME magazine. Many of our members strongly feel that the CIE Division should have an archival quality journal (transaction). This option is currently being explored by the Archival Journal Task Force under the leadership of Dr. Vijay Tipnis.

Finally, I would like to say that our effectiveness will be a function of the membership's commitment. I strongly urge each one of you to come forward with new ideas and enthusiasm, and become involved. If you get an idea and don't know how to implement it, call anyone in the Division's executive or conference committees, or call me. I can promise you that we will get you started and assist you in whatever way possible to turn your ideas into realities. Working side by side with the members is an excellent and very capable and cooperative ASME staff upon whom I encourage you to call. We have had nine rewarding years, and I am sure that with your active participation, we can look forward to many exciting years of growth and new initiatives.

GOPAL D. GUPTA, Ph.D.  
Division Chairman, 1989-90

## Past Chairman's Message



Steve M. Rohde  
CIE Chairman, 1988-89

During 1988-1989, the CIE Division continued to grow. Currently 2261 members have indicated CIE as their division of primary technical interest whereas 9918 indicated it as their division of secondary interest. The total, 12,179, represents a 3% increase over last year.

The growth of our division has paralleled the engineering industry's use of computers. The style of the management of the Division also matches the personality of the computer users. There is a willingness to use innovative approaches (creativity) when addressing old or new projects. For example, one of the activities of the Division is to help run the CIMESE (Computers in Mechanical Engineering Software Exchange) which was started at the University of Wisconsin several years ago. This year, the Executive Committee of CIE was "linked" to that bulletin board and is using it for conference planning and other activities. This is working out well and may serve as a prototype for other ASME divisions.

The technical committee structure continues to evolve—as does the computer industry. This year new committees were added in parallel and concurrent computing as well as in applications areas. Members are encouraged to contact the

Division Chairman/Executive Committee members with ideas for new technical committees.

The past chairman's message isn't complete without mentioning some work that still has to be done. One area is in joint efforts within and outside of ASME. Our intentions have been to expand dialogue and encourage such participation. An example of this is the 1990 CIE Conference which will be co-sponsored with the JSME. Within ASME, CIE continues to participate in more "global" conferences, e.g., WAM; and our dialog on joint and umbrella conferences with other divisions continues.

Another issue which continues to be studied, is the formation of a CIE Transaction. The pros and cons of such a journal are currently being discussed.

Finally, as outgoing chairman, I would like to thank both the ASME staff and the volunteers for their support. Without it this division would not exist.

STEVE M. ROHDE

## New Committees

It gives us a great pleasure to announce that two new technical committees have been formed in the division.

Dr. Ali Ozbeki has formed the Analysis Methods in the Auto Industry Committee, and Dr. Thomas F. Ewing has formed a Committee on Parallel Computing. Dr. Ozbeki's committee will focus on numerical analysis techniques currently employed by the auto industry. These techniques include, but are not limited to, crashworthiness, optimization, system modelling, and component mode synthesis. Dr. Ozbeki can be reached at the GM Technical Center in Warren, MI, or on (313) 986-6122.

Dr. Ewing's committee on Parallel Computing is being formed in response to the newly emerging developments in high performance computing based upon parallel processors, neural systems, and related concepts. Commercial products ranging from parallel PC's to massively parallel computers with tens of thousands of processors are entering the market. These new technologies are expected to have a profound impact on the future of computing. The mission of the committee is to stimulate interest in ASME in parallel computing and to encourage pioneering experimentation with application of this new technology. Dr. Ewing can be reached at the Argonne National Laboratory in Argonne, IL, or on (312) 972-5455. Look for meetings for both of these new technical committees, and all of the rest of the technical committees within the division at the upcoming CIE Conference. All of the committees can always use fresh ideas and new members.

## CIME-ISE Bulletin Board

For those of you who have yet to use the CIME-ISE bulletin board, the Computers in Engineering Division is proud to announce that we have set up a division portion of that system that has E-mail capability.

Initially set up as merely a software exchange system, the CIME-ISE system has grown to several computers and a very large mass storage capacity. If you are interested in dialing up, you may call Fred Goldfarb at ASME on (212) 705-7470, or Greg Jackson (the system administrator) at (608) 233-0453. The computer system modem number is (608) 233-3378. Dial in and see what the system has to offer.

## Conference Software & CIME-ISE

CIME-ISE is offering software library service for the 1989 CIE Conference.

Authors with software or data files they wish to share with CIE attendants may do so by contributing their files to the CIME-ISE library. Once added to the library, a computer file becomes instantly available, worldwide to anyone with a personal computer and a modem. The CIME-ISE library currently contains more than 2000 files. The library focuses on programs and source code of a scientific or technical nature for the IBM and Macintosh computers. CIME-ISE supports public domain software, shareware, and demonstration versions of commercial programs. CIME-ISE is a virus free system.

CIME-ISE is the electronic bulletin board of ASME and is on-line 24 hours, year round. It may be accessed using a terminal or personal computer at 300, 1200, 2400, or 9600 baud. Programs in the CIME-ISE library are not executed on-line but rather are copied to the caller's computer along with program documentation. The system may be reached at (608) 233-3378 using 8 bits, no parity, one stop bit (8/N/1). It is open to anyone interested in computers and engineering. CIME-ISE is a free service of the Publishing Division of ASME. For more information be sure to attend the BBS workshop on Thursday.

## COE Database Program

The ASME Database Committee has had their efforts recognized and the effort has been elevated to Technical Program status. This gives the

Database program the same status as the Manufacturing Science and Technology and Bioprocess Engineering Programs within ASME. For two years (1987 and 1988), the Database Committee has held a symposium in conjunction with the CIE conference. It is the success of these symposia, and the fact that database management in engineering is such an important national concern that has caused the Council On Engineering of ASME to vote to elevate the efforts to program status.

Again this year the Database Program will present a symposium at the ASME CIE Conference in Anaheim, CA in August. They have planned a Keynote speaker for Tuesday, August 1, with three technical sessions on that day, and three more on Wednesday, August 2. Look to the Program At A Glance for the conference which appears on pages 3 and 4 of this newsletter for more details. The database symposium has been a very successful and important part of the CIE Conference, and this year's appears to be the best yet.

## Call for Papers

### 1990 ASME International Computers in Engineering Conference and Exposition

Sheraton Boston and Hynes Convention Center  
Boston, Massachusetts  
August 5-9, 1990

#### MECHATRONIC DESIGN

Mechatronics is a term coined by the Japanese to describe the union of mechanical, computer, and electronic engineering in the design, manufacture, and function of a product. Mechatronics incorporates and emphasizes a multi-disciplinary approach to the definition, design, manufacturing, and sales of a product, as well as the total integration and these various disciplines into the product itself.

#### CIE NEWSLETTER

E. M. (NED) PATTON: Editor  
FRED M. GOLDFARB: ASME Staff

Traditionally, mechatronics has been used in the context of machines, robots, and other smart mechanisms, i.e., the addition of intelligence to traditionally mechanical systems. As such, mechatronics has been associated primarily with such applications as machine vision, manufacturing, and the remote manipulation of hazardous materials. More recently, however, mechatronics has been used in the context of consumer/potential consumer products such as automobiles, autonomous vehicles, cameras, etc. The integration of the electronic and mechanical elements in a modern camera is a good example of mechatronics design.

Since the ASME Computers in Engineering Conference has traditionally covered virtually all of the elements associated with mechatronics, i.e., computers, robotics, CAE, design, artificial intelligence, and mechanical systems, the 1990 technical program will focus on mechatronics as a theme for integrating

all of these. Papers that deal with mechatronic design issues and associated disciplines, and papers that present applications of various levels of integration in product design are solicited for this conference. These include but are not limited to papers on robotics, dynamics and controls, CAE tools and applications, artificial intelligence, machine vision, and advanced micro processor applications.

Engineering managers and executives, users, researchers, and vendors should all benefit from this technically renowned conference. Technical paper sessions will present new results in basic and applied research; plenary sessions provide an arena for industrial and government leaders to share their visions and experiences; invited panel sessions provide timely insight into current and future directions for hardware and software, along with trends in research and development. Poster sessions will be in-

cluded this year to accommodate those who do not desire to contribute full-length papers but still want a forum in which to share their works in progress. If you wish to participate in the poster sessions, submit an extended abstract to the Conference Program Chairman, Gary Kinzel, no later than February 15, 1990. The extended abstracts for the poster presentations will be reviewed and if accepted will be published in a separate section of the bound Conference Proceedings.

Contributions in the form of full-length papers should be submitted directly to the appropriate program chairperson. Each paper will be reviewed, and accepted papers will be published in a bound Conference Proceedings by the ASME. In addition, an award for the best paper(s) will be given at the conference, and papers of special note will be further reviewed after the conference for the Computers in Mechanical Engineering (CIME) supple-

# 1989 INTERNATIONAL COMPUTERS IN

THE PROGRAM AT A GLANCE:

July 31–August 2, 1989

## Monday, July 31

### Technical Sessions

- 8:00–9:45am
- Knowledge-Based Systems: Design I
  - Geometric Reasoning for MCAE
  - Finite Elements in Structural Mechanics
  - Robotics: Perception
  - Parallel Processing: The Future of Supercomputing
  - Computational Fluid Dynamics I
  - Computers in Education

10:00am  
GRAND OPENING OF THE EXPOSITION  
*Chuck Velzy*, ASME President Elect  
*Steve Rohde*, ASME CIE Division President  
12 noon–2:00pm  
Exposition Visit

### Conference Keynote Address

2:00–3:30pm  
FIXING THE CURRENT BROKEN DESIGN ENVIRONMENT TO WIN IN THE 1990'S  
Keynote speaker:  
*H. Barry Bebb*

Vice President, Xerox Corporation  
3:30–4:00pm  
Coffee and Exposition Visit

### Technical Sessions

- 4:00–5:45pm
- Computer Graphics
  - Knowledge-Based Systems: Design II
  - Numerical Modelling and Simulation
  - Applied Computer Methods in Mechanics I
  - Robotics: Trajectory/Work Place Definition
  - Computational Fluid Dynamics II
  - EXHIBITOR'S FORUM: Next Generation Computing Hardware

5:45–6:30pm

ANNUAL RECEPTION IN THE EXPOSITION HALL  
ASME members in good standing of local Southern California Sections are invited to attend the reception on a complimentary basis. Proof of current membership will be required.

## Tuesday, August 1

### Database Symposium Keynote Address

8:00–9:30am  
CRITICAL IMPORTANCE OF DATABASE MANAGEMENT IN INDUSTRIAL AUTOMATION

Keynote speaker:

*Robert E. McDonald*  
Vice-President, Computer Management  
Boeing Commercial Airplane

9:30–10:00am  
Coffee and Exposition Visit

### Technical Sessions

- 10:00–11:45am
- Computer Aided Mechanism Design and Analysis
  - Engineering DBMS Tools for the 1990's
  - Knowledge-Based Systems: Design III
  - Computational Methods
  - Applied Computer Methods in Mechanics II
  - Robotics: Parallel Processing
  - Thermal-Fluids-Energy Education

11:45–1:45pm  
CIE AWARDS LUNCHEON  
CIE Industry Award

*Stephen C. Jacobsen*, Director, Center for Engineering Design, Univ. of Utah

### Technical Sessions

- 1:45–3:30pm
- Standards and Government Programs
  - Computer Simulation of Mechanical Systems
  - Knowledge-Based Systems: Manufacturing
  - Finite Element Mesh Generation Techniques
  - PANEL—Teaching Creativity in Engineering Design
  - Robotics: Flexible Joints/Links
  - EXHIBITOR'S FORUM: Future Trends in Software
  - TUTORIAL: Introduction to Finite Element Analysis\* (continues 4:00–5:45pm)
- 3:30–4:00pm  
Coffee and Exposition Visit

### Technical Sessions

- 4:00–5:45pm
- Numerical Analysis
  - DBMS Engineering Applications
  - Knowledge-Based Systems: Applications
  - Finite Elements and Optimization
  - CAD/CAM/CAE in Education
  - Combustion and Heat Transfer Simulation
  - TUTORIAL: Introduction to Finite Element Analysis (continuation from previous session)

\*TUTORIAL is limited to only 35 attendees!

**Deadline Dates for Technical Papers**  
**Submission of four copies of Paper**  
November 17, 1989  
**Notification of Acceptance to Authors**  
February 16, 1990  
**Submission of author-prepared mats to ASME headquarters**  
April 2, 1990

**Conference Chairman**  
Dr. Steven Rohde  
General Motors Systems  
Engineering Center  
1151 Crooks Road  
Troy, MI 48084  
(313) 280-6610

**Program Chairman**  
Dr. Gary L. Kinzel  
Mechanical Engineering Department  
The Ohio State University  
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(614) 292-6884

**Exhibits Chairman**  
Mr. Edward M. Patton  
US Army Ballistic  
Research Laboratory  
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(301) 278-6805

Technical areas and respective program chairmen are:

Dr. Gary Gabriele  
Rensselaer Polytechnic Institute  
Mechanical Engineering Dept.  
Troy, NY 12180-3590  
(518) 276-6003

*Interactive Computer Graphics*  
*Computer Aided Design*  
*Computer-Aided Engineering*  
*Computer Simulation*  
*Computer-Aided Manufacturing*  
*CAD/CAM Integration*  
*Computer-Aided Testing*

Dr. Jami Shah  
Department of Mechanical and  
Aeronautical Engineering  
Arizona State University  
Tempe, AZ 85287  
(602) 965-6145

*Expert Systems*  
*Knowledge-Based Systems*  
*Design Theory*  
*Artificial Intelligence*

(continued on page 6)

# ENGINEERING CONFERENCE

Anaheim, CA

## Wednesday, August 2

**Irwin Berman Memorial Plenary Panel**  
8:00-9:30am  
**THE NEXT FRONTIER: THE MARKETING/  
ENGINEERING INTERFACE**  
Introductory remarks:  
*Steve Rohde*  
Moderator:  
*Mark Steiner*, Corporate Engineering and  
Manufacturing, General Electric Company  
**Panelists:**  
*Don Clausing*, Bernard M. Gordon Adjunct  
Professor of Engineering, Innovation and  
Practice, MIT  
*Louis Cohen*, Manager of Quality, Digital  
Equipment Corporation  
*Bob King*, Executive Director, Goal/QPC  
9:30-10:00am  
Coffee and Exposition Visit

### Technical Sessions

10:00-11:45am  
• PANEL—Design Data  
• Design Optimization  
• PANEL—Japanese Design Practices  
• Finite Element Applications  
• High Performance Controls  
• Computational Fluid Dynamics in Design  
11:45am-1:45pm  
Express Lunch and Exposition Visit

### Technical Sessions

1:45-3:30pm  
• Object-Oriented DBMS  
• Computer Aided Design and Manufacturing

- Finite Element Unique Applications
  - Speciality Controls
  - Simulation of Energy Systems and Process Control
  - Exhibitor's Forum Integration for the 1990's—A Corporate Statement
  - PANEL—Computers in Design of Fluid Power Systems (Co-sponsored by new Fluid Power Division)
- 3:30-4:00pm  
Coffee and Exposition Visit

### Technical Sessions

4:00-5:45pm  
• Features DBMS  
• Computer Aided Production Planning  
• PANEL—European ESPRIT Projects  
• CAD/CAM/CAE in Education  
• Finite Elements in Computational Mechanics  
• TUTORIAL: Computational Fluid Dynamics on Personal Computers\*

## Thursday, August 3

### Workshops

- 8:30-11:30am
1. **Design for Manufacture and Assembly**  
*Henry Stoll*  
Manager, Industrial Technology Institute  
A hands-on overview of the field with case histories, war stories and guidelines on how to get started.
  2. **Parallel Computing**  
*Richard L. Peskin*  
Director, CAIP Parallel Processing Lab,  
Rutgers University  
Experts in parallel processing will be discussing the latest developments in its engineering use.

### 3. CIME-ISE and CIE BBS

*Gregory Jackson*  
Administrator, CIME-ISE System  
Come and learn how to get started using the CIME-ISE System. Also, learn how to stay abreast of all that is happening in the Computers in Engineering Division of ASME—get online with the CIE Electronic Bulletin Board!

### 4. CIE Archival Journal

*Vijay Tipnis*  
Professor, Georgia Institute of Technology  
Participate and contribute to the CIE Archival Journal which is spearheaded by one of the frontrunners of the ASME Computers in Engineering Division. Dr. Tipnis is looking for input from all attendees: from subject material to associate editors.

11:30am-12:30pm

Lunch—on your own.

1:00-5:00pm

TOUR OF ODETICS, INC.

A special tour has been arranged to visit Odetics's Robotic facilities which are located close to the hotel complex. Attendance is limited to 100 people. Register on-site.

### Personal Computer Challenge Contest!

The CIE Division is providing Conference and/or Exposition attendees the opportunity to demonstrate creative uses of personal computers in the home environment. Submittals are limited to three 8 1/2 by 11 pages one of which may be graphic and must be made at the CIME-ISE booth in the exposition hall (no mail-ins!). Winners will be announced during Wednesday's Express Luncheon and at Thursday's CIME-ISE and CIE BBS Workshop and in other Division publications. Contest rules will be available with the final conference program.

# Computers in Engineering Division

## Founded in 1979

### Executive Committee 1989-1990

#### Chairman

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### Administrative Committees

#### 1989 WAM Program

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#### *Papers Review*

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#### *Constitution and Bylaws*

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### Technical Committees

#### *Artificial Intelligence & Expert*

*Knowledge Systems*  
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#### *Computer Aided Testing*

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#### *Analysis Methods in Auto Industry*

Dr. M. Ali Ozbeki  
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#### *Computers in Education*

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#### *Computer Hardware Systems*

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312-972-5455  
Fax: 312-972-4007

#### *Finite Elements & Analysis*

*Software*  
Vigen Ghazarian  
MacNeal-Schwendler  
815 Colorado Blvd.  
Los Angeles, CA 90041  
213-259-3862  
Fax: 213-259-3838

#### *Computational Fluid & Thermal*

*Engineering*  
Dr. Ahmed A. Busnaina  
Mechanical Engineering Dept.  
Clarkson University  
Potsdam, NY 13676  
315-268-6574

#### *Statistical Modeling & Reliability*

*Technique*  
Joseph E. Matar  
Marquette University  
Mechanical Engineering Dept.  
1515 W. Wisconsin Ave.  
Milwaukee, WI 53233  
414-224-7259

#### *Computers and the Arts*

Dr. Margo K. Apostolos  
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PED 107  
Los Angeles, CA 90089-0652  
213-743-7360

# 1989 Conference

(continued from page 4)

Dr. William Rasdorf  
North Carolina State University  
Civil Engineering Department  
P.O. Box 7908  
Raleigh, NC 27695  
(919) 737-2331

*Engineering Database  
Management  
Information Management Systems  
CAC/CAM Databases  
Graphical Exchange Standards*

Mr. David W. Bennett  
Battelle Pacific Northwest Labs  
P.O. Box 999  
Richland, WA 99352  
(509) 375-2159

*Mechatronics  
Microprocessors  
Robotics  
Realtime Control  
Adaptive Control  
Process Control  
High-Performance Computing*

Dr. Terry Shoup  
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*Computers in Education  
Robotics in Education  
Teaching CAD in the University  
Computers in the Classroom  
Computer-Aided Learning  
Systems  
University-Industry  
Collaboration*

Dr. Vigen Ghazarian  
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*Finite Element Techniques  
Software Standards  
Software Engineering  
Computational Geometry  
Computational Mechanics*

Dr. Ahmed A. Busnaina  
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(315) 268-6574

*Computers in Energy Systems  
Computational Fluid Mechanics  
Computational Heat Transfer  
Combustion Modelling and  
Diagnostics*

**JOIN TODAY !**

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Fill out this form and send it to:  
**ASME—Computers in Engineering  
 Division**  
 c/o Fred Goldfarb  
 ASME  
 345 E. 47 Street  
 Mail Stop 5A  
 New York, N.Y. 10017

## COMPUTERS IN ENGINEERING DIVISION

### Volunteer Information

If we've caught your interest, how about getting involved? Let us know your interests by filling out this form.

Name \_\_\_\_\_ Title \_\_\_\_\_  
 Address (home) \_\_\_\_\_ Address (work) \_\_\_\_\_  
 Telephone \_\_\_\_\_ Telephone \_\_\_\_\_  
 Areas of Professional Interest: \_\_\_\_\_

Preferred Mailing Address: Home  Work

- I wish to become a member of the ASME CIE Divison (Technical Division Code 31)
  - ASME Member  I wish to join ASME. Please send membership application.
- I would like to be active in promoting the goals of this division. Please contact me:

I can travel to meetings:  Anywhere in the USA  Only in the vicinity of \_\_\_\_\_  
 I have clerical support available to ASME at:  No Cost  Cost  Not Available  
 I have these other resources available to ASME: \_\_\_\_\_