

# CIE

*The Computers in Engineering Division Newsletter*

Summer 1988

## 1988 COMPUTERS IN ENGINEERING CONFERENCE—PROGRAM AT A GLANCE—PAGES 3 & 4

### Chairman's Message

The Division is entering its ninth year of existence and we have just held our seventh Conference and Exhibit. Currently, there are over 2,000 primary interest and 8,600 secondary interest members who are receiving this newsletter. I encourage each of you to spend a few minutes familiarizing yourselves with the organizational structure and activities of the Division, which are contained in these several pages.

It has been observed that less than 10 percent of the membership in ASME attends national society conferences on a regular basis, and even fewer take an active role in its operations. Whatever the reasons, we feel that, in this age of computer networking, the CIE Division can provide some more effective mechanisms to keep you in touch, such as timely communication of activities via an electronic bulletin board similar to our computerized software exchange. Also, advance programs for conferences in an electronic format could contain expanded abstracts of the paper and panel sessions, as well as the typical author and title data.

We really would like to hear from you on how the Division might provide more meaningful services to membership. Send a note to the editor with your ideas and constructive suggestions. We are still a very young group, yet our computer related activities are very pervasive and span all 35 technical divisions. Even some of our local chapters have formed CIE technical division sections.

The combined attendance figures for last year's conference and exhibit in New York City came to a grand total of over 2,200 participants, which is quite respectable, but the paid attendance to the con-

ference was below our goal. It was truly a great affair but, while the key sessions were well attended, they fell short of the conference committee's plans and expectations. The leadership of the Division is examining the attendance data and is in the process of developing and instituting measures to ensure a sounder financial footing in the future.

My concern is that we cannot continue to just simply raise conference registration fees and further lower our estimates for paid attendance. I'm going to discuss some perceptions of the executive committee that have yet to be verified, and the possible actions which may be taken:

1) The quantity and quality of our technical paper submissions suffer because we do not have a divisional transactions journal for archiving and academic recognition of superior papers. There seems to be a direct correlation between the number of papers and conference attendees. Our efforts to achieve higher quality papers appear to be counterproductive on the quantity side, with limited outlet for publishable material in CIME. A new initiative under consideration is to create an interdivisional Systems and Design Group transactions journal for qualified superior papers which are heavily computer and/or micro-electronic oriented.

2) External publicity and marketing efforts for our conferences are minimal or non-existent. Internal promotional efforts, while more extensive are still inadequate in that they do not provide the membership with sufficient technical detail, particularly for those from industry. The typical advance program devotes only about 25 percent of its space to technical information, and consists mostly of session titles. Final programs provide paper

titles, authors, affiliations, and other key information, but cost constraints prohibit the wide distribution of these booklets. It is our intent to establish an electronic bulletin board for displaying detailed conference information with expanded abstracts alongside our computerized software exchange. This info will be accessible to anyone with a modem for the price of a phone call. Increased external and internal promotional efforts are being planned to attract more regional attendees to the conference, as well as the exhibit.

3) The third item deals with the perceiving image of our society as being largely representative of "Smokestack America" and not on the outgoing edge of new technology and business growth. This scenario is a challenge for all of us but, from what I have seen, our Division has a 'can do' attitude. Let's strive to make this year a great one.

DR. STEVE ROHDE  
Division Chairman, 1988-89

### Past Chairmen's Message



T. James Cokonis  
Division Chairman  
1987-88



David Dietrich  
Division Chairman  
1986-1987

(continued on page 2)

We would like to start by acknowledging the efforts of the entire C.I.E. executive committee, ASME support staff, plus the 1987 & 1988 Conference developers, chairmen, authors, attendees, and exhibitors. These people contributed to the successful year of our division.

The growth of our division has paralleled the engineering industry's adaptation 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. Many mechanical engineers affiliated with the computer industry as users and designers work within creative environments and are able to quickly respond to changes. Our division has also changed since its inception less than ten years ago. One major change in the past year has affected the technical committee structure.

Technical interest committees were added in the past to respond to formations of new technologies. Many of these committees remained small if the technology was highly specialized. Therefore, in the past year, over thirty operating committees were consolidated to fifteen. The new core group should be able to support an active technical exchange. As new technologies emerge, however, there will be other committees formed. This is not a stagnant list.

The second (and last of our list) major change has occurred with the division efforts in conference coordination. Since 1986, there has been a higher level of continuity in conference planning and management. Conference sites are now selected three years in advance, while the conference chairmanship is automatically assigned to the past division chairman, one year from term of office. Our division still uses its highly successful conference committee structure of technical and exhibition chairmen, with four associate program chairmen. We have adopted the matrix structure for session planning which allows us to accept specialty topic, multi-session symposia within the general conference. We also have established vendor/user panels for technical participation by exhibitors and other computer vendors. The International Computers in Engineering Conference and Exhibition now offers the best forum for quality technical exchanges between the computer and mechanical engineering industries.

The past chairmen's message isn't complete without mentioning some work that still has to be done. Everyone has different opinions on what is to be done. We will list some things which need improvement so that our division can maintain a leadership role within ASME. One area is in joint efforts within or outside of

ASME. Our intentions have been to expand dialogue and encourage outside participation.

Computers are used throughout all engineering disciplines and society in general. We still have to establish better ties within ASME (jointly sponsored symposia is one approach) and with outside groups. We may need an advisory panel with representatives of various ASME divisions, other engineering societies, and possibly trade groups. We have to establish a global identity within ASME as leaders in computer technology issues.

Another issue related to unfinished efforts is upgrading our conference coordination. Even though what we do now is good, there are still weaknesses in areas of publicity, promotional efforts, exhibition size, and paper review cycles. That is not quite "everything", but we do need progress in those cases. Many ASME divisions have the same needs. We recently have tried new approaches to some of these issues, but with limited success. These are not really new items, but ones which will need constant attention.

As a closing statement, we would like to say that the division has become one of the dynamic organizations within ASME. It is also establishing a structure which will allow the division to support the creativity and innovation which has been its trademark.

DAVID E. DIETRICH  
and  
JIM COKONIS

## COE Data Base Committee

The ASME Data Base Committee held a successful two-day symposium on engineering data management at the 1987 International Computers in Engineering Conference last August, and two back-to-back sessions at the 1987 ASME Winter Annual Meeting.

Session I, entitled CRITICAL ISSUES IN MANAGING ENGINEERING DATA, was a panel summarizing the issues and conclusions of the Data Base Management Symposium held at the 1987 Computer Conference. Robert E. Fulton, Chairman of the Data Base Committee, chaired the session.

Session II, entitled DATABASE REQUIREMENTS AND MANAGEMENT FOR ENGINEERING DECISIONS: DIVISION PERSPECTIVES, was chaired by Sumio Yukawa, a consultant formerly with General Electric Company. This panel covered various aspects of database

requirements and management, particularly in bioengineering, electrical and electronic packaging, fluids, materials, pressure vessels and piping, and research and technology development in these (and other) areas.

For 1988, a second symposium on engineering data bases and their management will be held at the July 31-August 3, 1988 International Computers in Engineering Conference at the San Francisco Hilton Hotel. The focus of this symposium will be on implementation and applications. Keyed toward the user, sessions will include such topics as data base design, engineering capabilities of current integrated systems, results of data base management implementation, applications in A/E, energy, large-scale-scientific, and government activities.

For additional information on these activities, contact Robert E. Fulton at the School of Mechanical Engineering, Coon Building, Georgia Institute of Technology, Atlanta, GA 30332 [(404) 894-7409]. You may also contact ASME staff member Fred M. Goldfarb at COE Data Base Committee, c/o ASME, Technical Affairs Development, 345 E. 47th Street, New York, NY 10017 [(212) 705-7470].

## 1988 Conference

The 1988 ASME International Computers in Engineering Conference will be held this year, from July 31 to August 4, at the new Hilton Hotel in downtown San Francisco. The theme for the conference will focus on the emerging applications of expert systems and artificial intelligence.

We are at the beginning of a new era in the art and science of engineering which will significantly affect the lives of all the peoples of the industrial free world. This era marks the ushering in of intelligent machine technology. The first applications of this technology are called "expert systems", in which the expertise and artistry of a human being are committed to silicon. The 1988 conference will focus on those systems which have already been fielded, what they have in common, and also what the technology has to offer us in the future.

This conference provides a forum for engineers, managers, researchers, vendors, and users to discuss relevant issues, and to present their ideas on computer technology and its impact on the

### CIE NEWSLETTER

DR. DONALD R. RILEY: Editor  
FRED M. GOLDFARB: ASME Staff

engineering workplace. Nearly 300 technical papers will be presented, in 88 technical sessions, covering several broad areas of computing in mechanical engineering. The topics will encompass: computer aided design and manufacturing, computer simulation, robotics, interactive graphics, software engineering and standards, finite element techniques, microprocessors, computers in education and, of course, expert systems and artificial intelligence. A very comprehensive and extensive exhibit will accompany the conference, with computer hardware and software vendors showing off the latest in their technology for solutions to mechanical engineering problems.

A keynote address will be given on Monday afternoon (August 1), with plenary sessions on the mornings of each following day. These addresses and plenary panel sessions will form a backdrop upon which the technical papers, which form the true backbone of the conference, can be presented. The

papers presented at this conference have historically given the most up-to-date research and problem-solving techniques available to mechanical engineers in the field of computing. They have also prompted a good deal of technical interchange among the audience and, at times, a good deal of controversy.

This year, the conference is organized in identifiable threads or tracks of particular technologies. Note, in the preliminary program which follows, that there are six general technology areas which track through the conference. These are: AI and Expert Systems; CAD, CAM and CAE; Robotics; Energy Systems and Computational Thermohydraulics; Finite Elements and Analytical Techniques; and, lastly, a symposium sponsored by the Council on Engineering Database Management which runs concurrently with our conference (on Tuesday and Wednesday). The attendee can, therefore, find some technology of interest in each and every time slot, or

can follow a specific technology throughout the conference.

## CIE '89 Call for Papers

1989 ASME Int'l. Computers in Engineering Conference & Exposition

Anaheim Hilton,  
Anaheim, CA

July 30-August 2, 1989

Sponsored by the Computers in Engineering Division of The American Society of Mechanical Engineers (ASME), the theme of this annual event—1989 ASME International Computers in Engineering Conference and Exposition—will focus on two aspects of

# 1988 INTERNATIONAL COMPUTERS IN

## THE PROGRAM AT A GLANCE

### SUNDAY - JULY 31, 1988

**LLNL TOUR** - There will be a tour of the NOVA Laser Facility and the Large Diameter Turning Machine at the Lawrence Livermore National Laboratory in Livermore, CA. The tour will begin at 2:00 p.m., and will last approximately three hours. After the tour, several of the conference program staff will be having dinner at the Wente Winery's new restaurant in the hills surrounding Livermore. All tour attendees are invited to join us (at their expense) for a casual evening in the heart of one of California's premier wine growing regions.

### MONDAY - AUGUST 1, 1988

8:00 - 9:45 a.m.	TECHNICAL SESSIONS
1.	Knowledge-Based Systems: Design I
2.	Knowledge-Based Systems: Production Control and Scheduling
3.	Power Plant Simulation I
4.	Finite Element Analysis
5.	Computer Applications
6.	Robotics Modeling and Simulation I
7.	Microcomputers in the Classroom
8.	Computer Aided Manufacturing I
9.	Applied Computer Methods in Mechanics I
10:00 a.m.	GRAND OPENING OF THE EXHIBITION
12:00 noon	EXHIBIT EXPRESS LUNCH
2:00 - 3:30 p.m.	KEYNOTE SPEAKER
10.	TITLE: EXPERT SYSTEMS: PROMISE AND PAYOFF
Speaker:	Dr. Edward Feigenbaum Knowledge Systems Laboratory Stanford University Palo Alto, California
3:30 - 4:00 p.m.	Coffee Break in Exhibit Hall
4:00 - 5:45 p.m.	TECHNICAL SESSIONS
11.	Knowledge-Based Systems: Applications I
12.	Knowledge-Based Systems: Design by Features
13.	Knowledge-Based Systems: CAD/CAM
14.	Power Plant Simulation II
15.	Software Verification and Microcomputers in Finite Elements
16.	Optimization
17.	Interactive Graphics
18.	Computational Fluid Mechanics in Industry
19.	Finite Element Applications I
5:45 - 6:30 p.m.	COCKTAIL PARTY IN EXHIBIT HALL

### TUESDAY - AUGUST 2, 1988

#### SYMPOSIUM: ENGINEERING DATABASE MANAGEMENT: EMERGING ISSUES

8:15 - 9:30 a.m.	DATABASE SYMPOSIUM KEYNOTE ADDRESS
20.	TITLE: SPACE STATION ENGINEERING INFORMATION MANAGEMENT NEEDS
Speaker:	Luther Powell Manager, NASA Space Station Project Office Marshall Space Flight Center Huntsville, Alabama
9:30 - 10:00 a.m.	Coffee Break in Exhibit Hall
10:00 - 11:30 a.m.	TECHNICAL SESSIONS
21.	Design of Engineering Databases
22.	Knowledge-Based Systems: Design II
23.	Knowledge-Based Systems: Applications II
24.	PANEL - Application of AI to Real Time Processes
25.	Computational Heat Transfer
26.	Computational Geometry
27.	Computer Aided Design I
28.	Robotic Kinematics and Motion Control I
29.	Finite Element Techniques
12:00 noon	AWARDS LUNCHEON
2:00 - 3:30 p.m.	TECHNICAL SESSIONS
30.	Database Management System Integration
31.	Knowledge-Based Systems: Technology Issues
32.	Knowledge-Based Systems: Diagnosis I
33.	Knowledge-Based Systems: Analysis I
34.	PANEL - Industrial Applications of Computational Fluid Mechanics
35.	Robotic Kinematics and Motion Control II
36.	Teaching CAD in Higher Education
37.	Finite Element Mesh Generation
38.	Computer Aided Mechanism Design
3:30 - 4:00 p.m.	Coffee Break in Exhibit Hall
4:00 - 5:45 p.m.	TECHNICAL SESSIONS
39.	Integrated Engineering Manufacturing Systems
40.	Knowledge-Based Systems: Manufacturing I
41.	Knowledge-Based Systems: Feature Based Analysis - Geometric Reasoning
42.	Finite Element Applications II
43.	Computer Aided Design II
44.	Three Dimensional Predictions in Computational Fluid Dynamics
45.	Human Factors in Robotics and Automation
46.	Development of Educational Software
47.	Finite Elements and Design
48.	Teaching Computer Aided System Dynamics

*Design for the 1990's*: modern tools and environments for engineering design, and strategic issues which must be faced by all companies to stay competitive in the global economy of the 1990's.

Previously held CIE conferences have focused on the new technologies evolving for support of advanced computer-aided design and manufacturing. It is now time to focus on converting these technologies and ideologies from the intangible to the tangible. We will examine the engineer in the workplace: the role of the engineer in a modern engineering and manufacturing enterprise, the kinds of computer-assisted tools that engineers both need and can expect to have available, and the physical environs and strategic posture necessary for engineers and engineering-driven organizations to remain competitive in the international marketplace.

Engineering managers and executives, users, researchers, and vendors all benefit greatly from this technically renowned conference. Technical paper sessions pre-

sent new results in basic and applied research; plenary sessions provide an arena for industry 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 added this year to accommodate those who do not desire to contribute full-length papers but still need 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, Don Riley, no later than *February 15, 1989*. Please note that poster presentations will not be published individually or in the bound Conference Proceedings.

Technical papers are invited in all areas relevant to the utilization of computers in the engineering profession; from research and development to applications, education, business and management issues,

technological issues and challenges.

Contributions in the form of full-length papers should be submitted directly to the appropriate program chairperson. Accepted papers will be published in bound Conference Proceedings by the ASME. Papers of special note will be further reviewed after the conference for publication in *Computers in Mechanical Engineering (CIME) Magazine*.

#### Deadline Dates for Technical Papers

Contributions, 4 copies, to be submitted no later than . . . . . November 15, 1988

Review process completed and authors notified of the acceptance of their paper(s) . . . . . February 15, 1989

Final paper(s) on author-prepared mats due at ASME headquarters April 2, 1989

\*See the list on Page 6 for Conference and Technical Program Chairpersons.

# ENGINEERING CONFERENCE

## WEDNESDAY - AUGUST 3, 1988

8:15 - 9:30 a.m. IRWIN BERMAN MEMORIAL PLENARY PANEL

49. TITLE: THE SOCIETAL IMPACT OF ARTIFICIAL INTELLIGENCE

9:30 - 10:00 a.m. Coffee Break in Exhibit Hall

10:00 - 11:30 a.m. TECHNICAL SESSIONS

- 50. Engineering/Scientific Database Approaches
- 51. Knowledge-Based Systems: Analysis II
- 52. PANEL - Application of AI Tools to Design
- 53. Knowledge-Based Systems: Engineering Optimization
- 54. PANEL - The Application of Intelligent Software in Europe
- 55. Finite Element Modeling and Optimal Design
- 56. Computer Aided Manufacturing II
- 57. Computational Fluid Mechanics I
- 58. AI/Expert Systems in Robotics
- 59. Vehicle Crash Simulation

12:00 noon EXHIBIT EXPRESS LUNCH

2:00 - 3:30 p.m. TECHNICAL SESSIONS

- 60. National Program to Integrate Engineering Information
- 61. Knowledge-Based Systems: Diagnosis II
- 62. Knowledge-Based Systems: Applications III
- 63. Solid Modeling and Parallel Processing
- 64. PANEL - CAE Workstations - A Hardware Perspective
- 65. PANEL - How Research in Design Methods Is Affecting Design Education
- 66. Robotics Programming and Simulation
- 67. Simulation of Energy Systems I
- 68. Computer Aided Engineering
- 69. Computational Fluid Mechanics II

3:30 - 4:00 p.m. Coffee Break in Exhibit Hall

4:00 - 5:45 p.m. TECHNICAL SESSIONS

- 70. Integration of Knowledge/Database Management Systems
- 71. Knowledge-Based Systems: Production and Scheduling II
- 72. Knowledge-Based Systems: Feature Recognition - Shape Grammars
- 73. Knowledge-Based Systems: Feature Based Manufacturing

- 74. Computational Schemes
- 75. PANEL - CAE Workstations - A Software Perspective
- 76. Simulation of Energy Systems II
- 77. Robotics Modeling and Simulation II
- 78. Computer Aided Machine Element Design
- 79. Applied Computer Methods in Mechanics II

## THURSDAY - AUGUST 4, 1988

8:30 - 9:45 p.m. BLUE RIBBON PANEL

80. TITLE: Artificial Intelligence in Industry (Dr. Ewald Heer)

10:00 - 11:30 a.m. TECHNICAL SESSIONS

- 81. Knowledge-Based Systems: Applications IV
- 82. Knowledge-Based Systems: Applications V
- 83. Knowledge-Based Systems: Manufacturing II
- 84. Computer Aided Synthesis and Conceptual Design
- 85. Computational Methods
- 86. Combustion Methods
- 87. Teaching Computer Aided Analysis

11:30 - 1:00 p.m. Lunch - on your own

12:00 - 5:00 p.m. TOUR OF LOCAL AI RESEARCH LABS - There will be a tour of the local research laboratories that are performing AI and Expert System research. Tours of the laboratories at Berkeley, Stanford, Schlumberger, and possibly IBM are planned. This tour will be available to all conference registrants on a first-come, first-served basis. Details of transportation for the tour and tour sign-up will be available at the conference.

1:00 - 5:00 p.m.

WORKSHOP - INTRODUCTION TO FINITE ELEMENTS - This workshop will focus on the techniques that the beginning user of the Finite Element Method should learn. The course would also be appropriate for managers of engineers who need to get into Finite Element analysis.

# Computers in Engineering Division Founded in 1979

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1988-1989

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## '89 Conference

(continued from Page 4)

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*Computer-Aided Manufacturing*  
*CAD/CAM Integration*  
*Computer Integrated Manufacturing*  
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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*

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*Robotics*  
*Real Time Control*  
*Adaptive Control*  
*Process Control*  
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*Artificial Intelligence*  
*Expert Systems*  
*Knowledge-Based Systems*  
*Design Theory*

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

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*Engineering Database Management*

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