SIMULETTER is a quarterly publication of the ACM Special Interest Group on Simulation.

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All contributions to SIMULETTER are refereed working papers unless otherwise indicated. Except for editorial items, all sources of material appearing in SIMULETTER will be clearly identified. Articles and items attributed to individuals are ordinarily to be interpreted as personal rather than organization opinions, and in no way does this non-editorial material represent the opinion of the editor regarding its accuracy or quality. Unless specifically stated, the contents of SIMULETTER do not represent the official position of SIGSIM or ACM.

All contributions should be sent to the editor in 'camera ready' form, typed single-spaced and clearly with margins ready for publication. Authors of longer articles are requested to write to the editor for copy paper. All correspondence must be signed; however, letter to the editor will be published anonymously if requested.
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Chairman's Column

THE THREE R'S: REVITALIZATION, REVIEW, AND REVENUE

This is the type of column that every chairman would love to avoid. Unfortunately, my comments must be devoted to problems and difficulties, all of which I have categorized as dealing with revitalization, review of the SIG, and the revenue posture.

Revitalization

The dormancy of SIGSIM leading up to the 1983 election was apparent to the membership and was noted in the position statement of both candidates for Chairman. Dormancy served as the principal discussion topic for the small sample of 20 who attended the ad hoc business meeting at WSC 1983 in Washington. The most prominent evidence of dormancy was the gap in publication of SIMULETTER, which I am happy to say through the hard work and dedication of Tuncer Oren and Osman Balci is now on a regular publication schedule. In fact, returning SIMULETTER to a regularly appearing, productive, and informative publication has been the primary objective of your officers since assuming their positions in Fall 1983. We are pleased with the reaction of those attending the WSC meeting, who also felt this objective to be a top priority.

The meeting activities of SIGSIM form another high priority item. In this regard, I charged Tuncay Saydam, the vice-chairman to review current meeting relationships and explore others that might be developed. Particularly, the visibility of SIGSIM in technical session organization at the annual ACM meeting and at the National Computer Conference is important. We had moved to a cooperative status for the Annual Simulation Symposium, held in Tampa each spring, and seemed in danger of losing our co-sponsorship of the Winter Simulation Conference if steps were not taken. I am pleased to say that we have placed our relationship with WSC and the ACM Conferences and Symposia Committee (now Board) on a substantial footing. Tuncay Saydam's efforts should enable us to explore alternative opportunities for new meeting relationships as well as to strengthen existing ones.

Several instances of fiscal oversight placing SIGSIM in a position of jeopardy with the SIGBOARD provided further evidence of dormancy. This, of course, brings us to the second 'R'.

Review

Each SIG is exposed to a viability review on a regular basis. The issue of viability can be introduced also if the SIG is delinquent in certain areas. SIGs can be placed on a probationary status by the SIGBOARD, which can be the first step to removal (dechartering) of the SIG, if problems are not corrected.

SIGSIM's difficulties were cited by the Area Director in his presentation to the SIGBOARD at ACM '83 in New York, but further review was postponed until the new officers had an opportunity to deal with the revitalization issue. The review was rescheduled for NCC in Las Vegas in July. One concern that is an item for discussion at the pending review is the FY '85 SIGSIM budget, which projects an almost $12,000 deficit. The deficit financing issue, totally the responsibility of the the current officers, leads us to the third 'R'.

Revenue

The FY '84 SIGSIM budget was constructed by the SIGBOARD Area Director (because of one of those fiscal oversights mentioned above). Examining that budget in preparation for the FY '85 submission, Steve Roberts and I concluded that revenues were overestimated. Compounding matters was the recent overhead charge to SIGs based on the number of members, which was not included as an expense item. That charge based on the most recent assessment (December 1983) will cost SIGSIM almost $3 per member for FY '84. In case you have not noticed, that almost completely absorbs the $5 SIG membership, with expense items like the publication of SIMULETTER, meeting co-sponsorships, etc. notwithstanding.
The conclusion is clear: dues will have to be increased. But Steve and I concluded that such a dues increase should not come until the revitalization effort had proceeded to the point where SIGSIM reestablished its value in the simulation community. Therefore, we are announcing to the membership the inevitable in the form of a dues increase during the next fiscal year.

Postscript

Recall that I began this Chairman's column with the admonition that it was not the kind of column one looked forward to writing. However, within these somewhat gloomy paragraphs lie some very bright rays of hope. The brightest of course is the resurgence of SIMULETTER as the kind of newsletter that attracts members to SIGSIM and provides an invaluable communication mechanism for SIGSIM. Moreover, meeting co-sponsorship is on a more substantial basis, and credibility with the SIGBOARD and hopefully the SIGSIM membership is much improved over the position just a year ago. The major need of SIGSIM is for contributing, participating, hard-working members on behalf of the SIG. Won't you join us?

Richard E. Nance
EDITORIAL

In this issue of SIMULETTER, you will find two invited articles:

The article by Mr. D.W.J. Chubb is on a timely and very promising subject and is titled "Knowledge Engineering Problems During Expert System Development." I had the pleasure of listening a previous version in an AI Conference at the Rochester University this spring.

The other invited article titled "The Quality of a Scientific Simulation" by Mr. G.R. Sherman is in another very important aspect of simulation.

Since 1980 I am the Chairman of the Systems Analysis Subcommittee and a member of the Technical Advisory Committee (TAC) to Atomic Energy of Canada Ltd (AECL) on the Nuclear Fuel Waste Management (NFWM) Program. As a member of TAC I had the privilege of being involved in application of simulation in Nuclear Fuel Waste Management Programs. In these studies simulation runs are carried out for $10^5$, $10^6$, and even $10^7$ years. My interests in this area can be summarized as "Model and Software Reliability" in simulation studies in NFWM. Along this line you may also note the session I will be organizing at the "Waste Management '85" Conference, to be held in Tucson, Arizona, March 24-28, 1985.

The bibliography on "The Credibility Assessment and Validation of Simulation and Mathematical Models" by O. Balci and R.G. Sargent is particularly handy. It is the most complete bibliography on the subject. I hope, I can also convince the authors to prepare a cross index to increase the useability and usefulness of the bibliography.

In the second part of SIMULETTER, you will find information on Books, Journals, and Events.

Starting September 1, 1984 I will be spending my sabbatical year in Vienna jointly at the University of Vienna and at IIASA (International Institute for Applied Systems Analysis).

Even though any mail to my permanent address in Ottawa will be forwarded to my Vienna address, especially contributions from Europe can reach me without delay if they are forwarded to:

Dr. Tuncer I. Ören
Visiting Professor
Institut für Statistik und Informatik
Universität Wien
Rooseveltplatz 6/2
A - 1090 Vienna, Austria

Have a nice summer.

Tuncer I. Ören
A review of the published literature indicates that a uniform, standard terminology is yet nonexistent. Several terms are used. Sometimes, a term used by a modeler in one area has a different meaning when used by a modeler in another area. Commonly encountered language includes the following 16 terms: acceptability, accuracy, analysis, assessment, calibration, certification, confidence, credibility, evaluation, performance, qualification, quality assurance, reliability, testing, validation, and verification.

We believe that the modelers in the areas of discrete-event and continuous simulation, computer system modeling, mathematical programming, energy modeling, econometric modeling, and policy analysis can benefit from each other's research dealing with the above mentioned 16 terms and possibly others. On the basis of this, we compiled 308 references on the state-of-the-art research dealing with the above mentioned 16 terms and possibly others and they are presented below.


Deeter, C.R. and A.A.J. Hoffman (1978), An Annotated Bibliography of Mathematical Models Classified by Validation and Error Analysis Methods, Texas Christian University, Fort Worth, TX.


Gass, S.I. (1982), "What is a Computer-Based Mathematical Model?," Working Paper MS/S No. 82-003, College of Business and Management, University of Maryland, College Park, MD.


Miller, D.R. (1975), "Recent Developments in Approaches to Validation of Simulation Models," paper presented at the ORSA/TIMS Las Vegas meeting.


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Regular Features

Systems Research, in addition to regular papers, will have a correspondence section, a book review section and an 'authors' section presenting biosketches and photographs of authors.

Once a year it is hoped to publish a special issue, comprising a primary review paper (normally invited), chosen to help integrate a new or growing research area where a synthesis appears useful, and additional written discussion papers stimulated by the primary paper.

The special issue will usually be edited by a Guest Editor, with the cooperation and general supervision of the Editor-in-Chief.

Readership

Reader requirements of both professionals whose careers heavily involve systems work or research and other potentially interested parties will be kept in mind when choosing manuscripts for this journal. Systems Research will also be of value to persons whose primary career activities lie in other fields, but who wish to take advantage of published systems work to increase their knowledge or to amend their career situation in various ways.

Contents of the First Issue

Cybernetics in management thinking, F F Robb, Deputy Chairman, Scottish Gas, Edinburgh, UK.
Equilibrium, entropy, and homeostasis: a multidisciplinary legacy, K D Bailey, University of California at Los Angeles, USA.
On developing the microelectronics industry: a systems approach, K Kawamura & W Da Silveira e Silva, Vanderbilt University, Nashville, TN, USA.
Recent advances in multivariable system modeling and identification algorithms and their applications, H El-Sherief, Exxon Production Research Co., Houston, TX, USA.
A methodology for quality goal-seeking and coordination and the practical application, O Furukawa, H Ikeshoyi & A Ohmori, Hiroshima University, Japan.
Current status of hospital management information systems, R E Hoye & D D Bryant, University of Louisville, KY, USA.

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ims: The field of mathematical modeling and computer-based simulation has fostered the development of powerful tools to help solve previously intractable problems in many areas. However, the field is fragmented with papers describing modeling and simulation techniques published in disparate periodicals that relate to specific disciplines only.

The purpose of this journal is to present papers that cut across professional boundaries and offer the readership a broader and more comprehensive approach to simulation theory and techniques. Modeling techniques developed in diverse areas of science and engineering frequently share significant similarities and foundations, therefore exhibiting common implementation methods.

The TRANSCTIONS of the Society for Computer Simulation is providing a common forum for the presentation of papers and exchange of ideas in the rapidly growing field of mathematical modeling and computer simulation. It is intended for both theoreticians and practitioners concerned with the highest technical aspects of simulation.

Scope: The Editors are interested in selecting original, major papers of lasting value, dealing with computer simulation and allied sciences from all fields, in both well-established and emerging areas. Papers are welcome from fields inclusive of but not restricted to those named here:

- Computer Science
- Computer networking and communications, parallel processing, simulation software and language design
- Engineering
- Aerospace, microelectronics (simulation in VLSI fabrication and design), robotics
- Physical Sciences and Life Sciences
- Chemistry, physics, biology

Comprehensive review papers will be considered. Subject matter will range from significant methods in mathematical modeling, numerical model treatment or software development, to the design of specialized simulation hardware.
Modeling MOS-Transistors in Avalanche-Breakdown Regime
   By A. Schütz, S. Selberherr, H. W. Pötzl
Impact ionization has a very disadvantageous effect for many semiconductor devices because it may cause avalanche breakdown and destruction of the device. For an MOS circuit design an understanding of avalanche-induced breakdown effects is desirable when the dimensions of transistors are reduced. This requires an accurate solution of the semiconductor equations and a good description for the ionization rates. Such a model is presented in this article.

Step Size Control in Ordinary Differential Equations
   By H. W. Watts
General purpose codes which solve the initial value problem for ordinary differential equations vary the step size in some way to produce an accurate solution efficiently. The standard approach is to use the locally optimal step size strategy. An enhancement of this formulation is discussed. This formulation leads to substantial savings on problems involving rapidly changing components.

Efficient Step Size Control for Output and Discontinuities
   By C. W. Gear
Frequent output or discontinuities can cause severe inefficiencies in automatic integrators. Simple techniques are suggested to overcome these problems in a way that causes minimum inconvenience to the user and minimum disruption of straightforward code.

Process Style Packages for Discrete Event Modeling: Data Structures and Packages in SIMULA
   By G. Birtwistle, G. Lomow, B. Unger, and P. Luker
The design, implementation, use, advantages and disadvantages of high-level language hosted packages for discrete event modeling are discussed.

Direct Programming of Continuous System Simulation Languages Using Bond Graph Causality
   By D. Karnopp
Continuous system simulation programs are a significant aid in the design and optimization of nonlinear dynamic systems since a variety of mathematical operations are pre-programmed for simulation, analysis, and display of results. Bond graph models are useful for such systems and have the advantage that input-output causality among the system components can be studied according to a standard procedure and represented in a simple way.

An Improved Method for Simulation of Dynamic Systems with Discontinuous Nonlinearities
   By R. M. Howe, X. A. Ye, and B. H. Li
This paper describes an improved method of modifying the fixed-step integration algorithm for any step in which a discontinuous nonlinearity is encountered in real-time simulation of dynamic systems. Examples of the method are shown in second-order control systems with bang-bang control and with effort limited linear control. The method can also yield improved accuracy for non-real-time simulation.

Theoretical and Computer Aided Analysis of Steady State Moving Boundaries in Electrophoresis
   By W. Thormann and R. Mosher
Computer simulation based on a complete mathematical model is used to validate the relationships of steady state migrating gradients between two weak electrolytes as a function of the mole fraction change across the electrophoretic boundary. A comparison is made with a similar relationship describing the corresponding boundaries between strong electrolytes. A discussion of the value of these predictions to the experimentalist is given.

A Call for YOUR Papers

The Editors of TRANSACTIONS invite you to submit papers on your innovative research to our Editorial Board. We are interested in all areas of simulation that reflect the most creative and applicable methodology in mathematical modeling and computer-based simulation with an emphasis on originality of thought. Every effort will be made to put your paper through the review process as quickly as possible and to publish your manuscript in a timely fashion.

Please submit all manuscripts and inquiries to:
Denis LeClair
Managing Editor
SCS
P.O. Box 2228
La Jolla, CA 92038
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April 12, 1984

Mr. Richard Nance
Department of Computer Science
Virginia Polytechnic Institute & State University
Blacksburg, Virginia 24061

Dear Mr. Nance:

My name is Bob Hauserman and I am the Computer Science editor for VAN NOSTRAND REINHOLD Publishing Company in New York as well as a new member of ACM. Part of the excitement of being a member of ACM is that I will be able to openly share information and knowledge with my peers in the computer industry as well as increase my own knowledge in various subjects. I hope that we can get to meet each other at one of the many workshops and conferences offered by SIGSIM and ACM in the coming months.

Moreover, in my role as Computer Science editor, it is my responsibility to find the highest quality writers and authors in the industry, and provide them with yet another forum in which to disseminate their knowledge and expertise. Therefore, I would like to extend an open invitation to all the members of SIGSIM who are considering writing -- or presently writing -- a book on simulation and modeling to submit their ideas or partial manuscripts to me for consideration.

Cordially,

Robert W. Hauserman
Computer Science Editor
VAN NOSTRAND REINHOLD

RH/da
BOOK (IN PRESS)


This book is the edited collection of twenty invited full papers and twenty short papers presented at the NATO Advanced Study Institute which was held at the University of Ottawa, Ottawa, Ontario, Canada, during July 26 - August 6, 1982. The Director of the Institute was Tuncer I. Ören.

The first five sections of the book contain the invited and edited papers. The sixth and the last section contains the edited short papers presented in four workshops.

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Quality Assurance in Modelling and Simulation  
John McLeod

Quality Assurance, Modelling, and Simulation  
Joe K. Clema
### Discrete Simulation and Related Fields

A research monograph resulting from the Proceedings of the IMACS European Simulation Meeting on Discrete Simulation and Related Fields held in Keszthely, Hungary, 10-12 September, 1980.

**edited by A. JÁVOR, Central Research Institute for Physics of the Hungarian Academy of Sciences, Budapest, Hungary**

1982 viii + 246 pages  
Price: US $35.00 / Dfl. 75.00  
ISBN 0-444-86429-6  
APPROXIMATE MONTH OF PUBLICATION: JULY

This book is a selection of papers in the field of discrete simulation and related fields. It is based on the extended and improved version of papers originally presented at the European Simulation Meeting held under the same title. The volume is expanded with further invited papers from both Europe and the United States. An edited version of the Round Table Discussion of the conference on “Future Tools of Simulation versus the Future of Simulation Tools” is also added. Different aspects of the topic i.e. methodology, simulation systems, new multi-processor hardware tools, applications, are presented. Accordingly, the book is divided into four parts, viz. Philosophy, Methodology, General Questions; Simulation Systems; Applications; Round Table Discussions.

**CONTENTS:** Parts: I. Philosophy, Methodology, General Questions; Trends in the Role of Modelling and Simulation (J.A. Spriet, G.C. Vansteenkiste). Proposals on the Structure of NORTHERN-HOLLAND  
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Environmental Systems Analysis and Management


edited by S. RINALDI, Politecnico di Milano, Milano, Italy

1982 about 750 pages
Price: US $93.00 / Dfl. 200.00
ISBN 0-444-86406-7

APPOROIMATE MONTH OF PUBLICATION: JULY

This book contains fifty-two technical papers and six papers contributed by internationally known scientists. The papers have been selected and grouped into eight chapters, viz. groundwater hydrology, surface hydrology, water quality, water resources management and planning, ecology and renewable resources, meteorology and air pollution, land use and environmental impact and data base.

In most papers, reference is made to specific environmental problems and the role played by optimization and control theory, identification, simulation, data and information processing, and systems analysis techniques is emphasized.


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The Dutch guilder price is definitive. US$ prices are subject to exchange rate fluctuations. Prijzen zijn exl. B.T.W.
The book describes GPSS-FORTRAN, a high level simulator for time-discrete systems. It contains a complete description of the language features in the form of a manual and an introduction to its application in the form of a user guide.

GPSS-FORTRAN consists of a Fortran main program that serves as a chassis into which subroutine calls are written. The Fortran subroutines are the building blocks with whose help the system's functions are mimicked. Its construction makes it superior in several respects to its grandparent GPSS:

★ GPSS-FORTRAN can be run on any computer with a Fortran compiler. All simulation models are virtually machine-independent. The package is already in use on a wide variety of machines, including IBM 360's and 370's, Cyber-series machines and PDP machines.

★ Any Fortran programmer can change, extend or improve the simulator easily himself. He can tailor GPSS-FORTRAN to suit his fancy or even add new language-features required by his problem.

The clear and simple structure of the simulator as well as the clear and easily understandable description makes the book "GPSS-FORTRAN" an ideal introduction to simulation and simulation technique. The book is especially well suited as a textbook for college and university courses.

CONTENTS: Modelling a System: Systems; Models; Simulation Languages; The Program Package GPSS-F; Developing a Model; Simulating Discrete Systems; Structure of GPSS-F: Event Management; Transactions; Transaction Management; Transaction Generation and Annihilation; Simulation-State Management; The Chassis; Stations and Policies: Policies; Dynamic Priority Assignment; Policies in GPSS-F: The State Vector; The Watchdog; Facilities: Acquiring and Freeing a Facility; Preemption; Multiple Entries to a Facility; Multifacilities: The Structure of Multifacilities; Acquiring and Freeing a Multifacility; Preemption at Multifacilities; The Plan: Service-Element Management; Storages: The Structure of Storages; Non-Addressible Storages; Strategies; Addressible Storages; GPSS-F Strategies; Coordinating Transactions: Branching on Condition; Waiting on Condition; Gates; Gather Stations; User Chains and Trigger Stations; Families: Kindred Tasks; Data Areas for Families; The Birth and Death of Kinsmen; Coordinating Family Members; Random Sequences: Random Number Generators; Uniformly Distributed Random Sequences; Arbitrarily Distributed Random Sequences; Random Numbers in GPSS-F; Gathering Statistical Data: Bins; Frequency Table; Report of the System’s State; Saving the System’s State; Ending Stochastic Simulation; Models: Flow Management; Random Sequences; Policies and Preemption; Dynamic Priority Assignment; Multifacilities; Strategies; Gates; Appendix: A1 The System’s Variables; A2 Description of the Data Area; A3 Parameter Adaption; A4 The Chassis; A5 The Subroutines; Bibliography.
LIST OF EVENTS

Compiled and Edited by

Tuncer I. Oren
Murat Ozmizrak

Computer Science Dept.
University of Ottawa
Ottawa, Ontario KIN 9B4
Canada

** indicates new entry
-- indicates an update

1984

SECOND INTERNATIONAL LOGIC
CONFERENCE
Uppsala University, Uppsala, Sweden

Deadline: March 15, 1984
Contact: S.A. Tarnlund,
School of Computer and Information Science
313 Link Hall
Syracuse University
Syracuse, New York 13210, USA

July 2-7, 1984
THE DATA COMMUNICATIONS OPERATIONS
CENTER: A TWO-DAY SEMINAR
Montreal, Canada

Topics: The Data Communications Operations Center: An Introduction, Functions and Responsibilities of the Operations Center, Design and Implementation of Data Communications Networks within the Operations Center, Network Management within the Operations Center, Managing the Data Communications Operations Center, Specific Operations Center Types, Vendor Analysis, Operations Center Documentation.

Contact: The Center for Professional Education
Brentwood Management Ltd.
212 Queen Street East
Brampton, Ontario L6V 1B7, Canada
Phone (201) 822-0920

July 9-11, 1984
EUROSAM 84 INTERNATIONAL SYMPOSIUM ON
SYMBOLIC AND ALGEBRAIC COMPUTATION
Cambridge, England

Topics: Algebraic Computation and Symbolic Manipulation including Applications
Contact: M. Mignotte
Centre de Calcul
Universite Louis Pasteur
7 Rue de Rene Descartes
F67084 Strasbourg, France

July 9-12, 1984
1984 NATIONAL COMPUTER CONFERENCE
Las Vegas, Nevada, USA

Contact: Dennis J Frailey
Senior Member of Technical Staff
Texas Instruments Inc.
8642-A Spicewood Springs Road, Suite 1984
P.O. Box 10998
Austin, TX 78766-1998, USA
Phone (512) 250 6663

July 9-12, 1984
DIGITECH'84 - DIGITAL TECHNIQUES IN
SIMULATION, COMMUNICATION, AND CONTROL
Patras, Greece

Theme: The Meeting is aimed to promote the exchange of ideas and results concerning the theoretical development and application of digital techniques to system simulation, communication, and control.

Contact: Prof. S.G. Tzafestas
DIGITECH’84
Control Systems Lab.
University of Patras
Patras, Greece

July 10-12, 1984
FIRST EUROPEAN WORKSHOP ON THE REAL TIME
CONTROL OF LARGE SCALE SYSTEMS
Patras, Greece

Scope: The Workshop is aimed to promote the exchange of ideas and results on the real time control of large scale systems using distributed computing facilities.

Topics: Decentralized control; Real time hierarchical optimization, estimation, and control; Fault detection techniques and reliability of large scale systems.

Contact: Prof. S.G. Tzafestas
T. European Workshop on RTC of LSS
Electrical Engineering Department
University of Patras
Patras, Greece

July 11-13, 1984
INTERNATIONAL SYMPOSIUM ON DESIGN AND
SYNTHESIS
Tokyo, Japan

Topics: Design fundamentals, Design automation and CAD, Design of elements and mechanisms, Design of control units and algorithms, Design of precision machines and robots.
Contact: Miss Mikako Sato
The Japan Society of Precision Engineering
Ceramics Building, 2-22-17
hyakunin-cho, Shinjuku-ku
Tokyo 160, Japan

July 16-20, 1984
ELEVENTH INTERNATIONAL COLLOQUIUM ON
AUTOMATA, LANGUAGES AND PROGRAMMING
Antwerp, Belgium

Contact: ICALP 84
Department of Mathematics
University of Antwerp-UHA
Universiteitsplein 1
B-2610, Antwerpen, Belgium

July 19-21, 1984
FIFTH IMACS INTERNATIONAL SYMPOSIUM ON
COMPUTER METHODS FOR PARTIAL DIFFERENTIAL
EQUATIONS
Bethlehem, Pennsylvania, USA

Contact: Dr. R.S. Stepleman
Exxon Research & Engineering Company
P.O. Box 51
Linden, New Jersey 07036, USA

July 23-25, 1984
SUMMER COMPUTER SIMULATION CONFERENCE -
SCS/C84
Boston, Massachusetts, USA

Topics: Simulation Methodology, Simulation Computer
Systems, Simulation Credibility and Validation, Physical
and Engineering Sciences, System Engineering,
Chemical Sciences, Energy Systems and Resource
Management, Biomedical and Life Sciences, Ecology
and the Environment, Management and the Social Sci-
cences, Training and Research Simulators, Government
Simulation Facilities, Simulation and CAD/CAM.
Contact: Charles A. Pratt
Executive Director
Simulation Councils Inc.
P.O. Box 2228
La Jolla, CA 92038, USA

** July 24-26, 1984
KNOWLEDGE REPRESENTATION FOR DECISION
SUPPORT SYSTEMS
Working Conference
Organized by IFIP (WG 8.3)
Durham, United Kingdom

Contact: IFIP Secretariat
3, rue du Marche
1204 Geneva, Switzerland

--- July 24-27, 1984
INTERNATIONAL CONGRESS ON COMPUTATIONAL
AND APPLIED MATHEMATICS
University of Leuven, Belgium

Topics: Constructive techniques for solving ordinary
and partial differential equations, Computational com-
plex analysis, Numerical quadrature and integral equa-
tions Numerical software, Computational techniques
in Operations Research and Statistics.
Contact: F.Broeckx
University of Antwerp (RUCA)
Faculteit Toegepaste Economische Wetenschappen
Middelheimlaan 1
B-2020, Antwerpen, Belgium

** July 27-31, 1984
RECENT ADVANCES IN MODELLING AND
OPTIMIZATION
Working Conference
Organized by IFIP (WG 7.1)
Santiago, Chile

Contact: IFIP Secretariat
3, rue du Marche
1204 Geneva, Switzerland

August 2-5, 1984
THE 1984 INTERNATIONAL SYSTEM DYNAMICS
CONFERENCE
Oslo, Norway

Contact: Jorgen Randers
Dean, Norwegian School of Management
Hans Brums vei 30
1340 Bekkestua, Norway
Phone (472) 12 30 50

August 5-8, 1984
SYMPOSIUM ON LISP AND FUNCTIONAL
PROGRAMMING
Austin, Texas, USA

Contact: Robert Boyer
Z100 Main
University of Texas at Austin
Austin, TX 78712, USA
Phone (512) 471-1901

August 6-7, 1984
ARTIFICIAL INTELLIGENCE APPLICATIONS
CONFERENCE
Austin, Texas, USA

Contact: Ronald Brachman
Fairchild Lab. for Artificial Intelligence Research
4001 Miranda Ave., MD 30-888 Palo Alto, CA 94304

--- August 6-10, 1984
NATIONAL CONFERENCE ON ARTIFICIAL
INTELLIGENCE
Austin, Texas, USA

Topics: AI and Education, AI Architectures and Lan-
guages, Automated Reasoning, Cognitive Modelling,
Expert Systems, Knowledge Representation, Methodol-
ogy, Natural Language, Perception.
Contact: Ronald Brachman
Fairchild Lab. for Artificial Intelligence Research
4001 Miranda Ave., MD 30-888 Palo Alto, CA 94304
August 8-12, 1984
SECOND IMACS INTERNATIONAL SYMPOSIUM ON BIOMEDICAL SYSTEMS MODELLING
Bethesda, Maryland, USA
Contact: Dr. Charles DeLisi
Mathematical Biology, DCBD, NCI
National Institute of Health, Bldg. 10 Bethesda, MD 20205, USA

August 13-15, 1984
SIXTH BIENNIAL CONFERENCE
Adelaide, Australia
Contact: SSA Conference 1984
Mr. F.G. Phillips
P.O. Box 195, Henley Beach
South Australia 5022
Australia

** August 19-23, 1984
COMPUTER/GRAPHICS IN THE BUILDING PROCESS ’84
San Francisco, CA, USA
Contact: BHP
2033 M Street, NW, Suite 333
Washington D.C. 20036, USA
Phone (202) 775-9556

August 20-24, 1984
SECOND LATIN AMERICAN CONGRESS ON OPERATIONAL RESEARCH AND SYSTEMS ENGINEERING / FOURTEENTH ARGENTINA MEETING ON INFORMATICS AND OPERATIONS RESEARCH
Buenos Aires, Argentina
Deadline: May 15, 1984
Contact: Hugo Scolnic
SADIO
Santa Fe 1145
1059 Buenos Aires, Argentina

August 21-24, 1984
1984 INTERNATIONAL CONFERENCE ON PARALLEL PROCESSING
Bellaire, Michigan, USA
Scope: All Aspects of Parallel/Distributed Processing
Contact: Dr. Robert McKeller
Computing Research Group
Lawrence Livermore National Lab. L-306
P.O. Box 808, Livermore, CA 94550, USA

— August 21-24, 1984
MODELING FOR THE THIRD WORLD: NATIONAL, REGIONAL, GLOBAL
Working Conference
Organized by IFIP (WG 7.1)
Buenos Aires, Argentina
Contact: IFIP Secretariat
3, rue du Marche
1204 Geneva, Switzerland

August 22-24, 1984
ACM SIGMETRICS CONFERENCE ON MEASUREMENT AND MODELLING OF COMPUTER SYSTEMS
Boston, USA
Contact: Ray Bryant
IBM, T.J. Watson Research Center
P.O. Box 218
Yorktown Heights, NY 10598, USA

August 26-29, 1984
SECOND IMACS INTERNATIONAL SYMPOSIUM ON MODELLING AND SIMULATION OF ENERGY SYSTEMS
Brookhaven National Laboratory, Upton New York, USA
Contact: Dr. A.S. Kydes
Mail Stop IH053, Forrestal Building
US Department of Energy/EIA
1000 Independence Avenue
SW, Washington, D.C. 20585, USA

— August 27-30, 1984
EUROPEAN MEETING ON SIMULATION IN RESEARCH AND DEVELOPMENT
Eger, Hungary
Scope: Both theoretical (methodological) and practical (application) problems.
Deadline: April 1, 1984
Contact: Dr. A. Javor
Central Research Institute for Physics of the Hungarian Academy of Sciences
H-1525 Budapest 114
P.O. Box 49, Hungary
Phone 166540
Telex 224722

— August 27-September 1, 1984
RECENT ADVANCES IN MODELLING AND OPTIMIZATION
Working Conference
Organized by IFIP (WG 7.1)
Santiago, Chile
Contact: IFIP Secretariat
3, rue du Marche
1204 Geneva, Switzerland

August 28-31, 1984
VECTOR AND PARALLEL PROCESSORS IN COMPUTATIONAL SCIENCE II
Oxford, England
Contact: Les Evans
Building 455
AERE Harwell, Didcot
Oxon OX11 0QJ, England

** August 29-31, 1984
MODELING OF PRODUCTION MANAGEMENT SYSTEMS
Working Conference
Organized by IFIP (WG 5.7)
Copenhagen Denmark
Contact: IFIP Secretariat
3, rue du Marché
1204 Geneva, Switzerland

** August 29-31, 1984
TWELFTH SIMULA USERS' CONFERENCE
Budapest, Hungary

Contact: ASU Secretary
Norwegian Computing Center
Postboks 335, Blindern
Oslo 3, Norway

--- SEPTEMBER ---

-- September 1984
STOCHASTIC DIFFERENTIAL SYSTEMS
Working Conference
Organized by IFIP (WG 7.1 Hungarian Academy of Sciences)
Visegrad, Hungary

Contact: IFIP Secretariat
3, rue du Marché
1204 Geneva, Switzerland

-- September 1984
STOCHASTIC DIFFERENTIAL SYSTEMS
Working Conference
Organized by IFIP (WG 7.1)
Baku, USSR

Contact: IFIP Secretariat
3, rue du Marché
1204 Geneva, Switzerland

Autumn 1984
ARTIFICIAL INTELLIGENCE AND PRODUCTIVITY
Paris, France

Topics: Artificial Intelligence and Productivity
(Robots, CAD-CAM, Automation, Voice and Vision Processing; Artificial Intelligence and Simulation; Artificial Intelligence and Expert Systems; Artificial Intelligence and CAL/CBT.
Contact: Simtec Consultants
211 Rue Saint Honore
75001 Paris, France

September 2-6, 1984
IFIP CONFERENCE ON SYSTEM MODELLING AND OPTIMIZATION
Budapest, Hungary

Contact: IFIP Secretariat
3, rue du Marché
1204 Geneva, Switzerland

September 5-7, 1984
SIXTH EUROPEAN CONFERENCE ON ARTIFICIAL INTELLIGENCE
Pisa, Italy

Contact: Tim O'Shea
Institute of Educational Technology
Open University
Walton Hall
Milton Keynes, MK7 6AA, United Kingdom

September 6-7, 1984
SIMULATION AND SIMSCRIPT II.5 CONFERENCE
Washington, D.C., USA

Contact: Mr. Joe Annino
CACTI, 3344 N. Torrey Pines Court
La Jolla, California 92037, USA
Phone (619) 457-9681

September 10-12, 1984
SECOND INTERNATIONAL CONFERENCE ON COMPUTER SECURITY
Toronto, Canada

Contact: IFIP/SEC 84
Suite 806, 2 Carlton St.
Toronto, Ontario M5B 1J3, Canada

September 10-14, 1984
SIXTH INTERNATIONAL CONGRESS OF CYBERNETICS AND SYSTEMS
Paris, France

Topics: Foundations, epistemology, analogy, modelisation, general methods of systems, history of cybernetics, system science ideas, information, organization, morphogenesis, self-reference, autonomy, dynamical systems, complex systems, fuzzy systems.
Contact: 6. Congres Int. de la WOGSC
Comite de lecture, ARCET
156 Blvd. Pereire, F-75017 Paris, France

September 11-14, 1984
WORKING CONFERENCE ON KNOWLEDGE ENGINEERING IN CAD
Budapest, Hungary

Contact: John Gero
Department of Architectural Science
University of Sydney
N.S.W 2006, Australia

September 12-14, 1984
CONFERENCE ON COMPUTER SIMULATION - UKSC '84
University of Bath, United Kingdom

Topics: Simulation Methodology and Systems, Simulation Applications, Simulation in Education and Training.
**September 17-20, 1984**

**KNOWLEDGE ENGINEERING IN COMPUTER-AIDED DESIGN**  
Working Conference  
Organized by IFIP (WG 5.2)  
Budapest, Hungary

Contact: Prof. John S. Gero  
Department of Architectural Science  
University of Sydney  
N.S.W. 2006, Australia

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**September 17-20, 1984**

**FUTURE ADA ENVIRONMENT WORKSHOP**  
Santa Barbara, USA

Contact: Hal Hart  
TRW TR/1127  
One Space Park  
Redondo Beach, CA 90278, USA  
Phone (213) 535-1623

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**September 17-21, 1984**

**FOURTH WORLD CONGRESS AND EXHIBITION ON FINITE ELEMENT METHODS**  
Interlaken, Switzerland

Contact: J. Robinson  
Robinson and Associates  
Horton Road, Woodlands  
Wimborne, Dorset BH21 6NB  
United Kingdom

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**September 24-26, 1984**

**MODELLING AND CONTROL OF BIOLOGICAL WASTEWATER TREATMENT**  
Florence, Italy

Topics: Mathematical modelling of biological waste-
water treatment processes, Operational estimation /  
Control algorithms, Economics of treatment and de-
finition of meaningful measure, Special instrumenta-
tion, Modelling of nutrient and toxins and their effect on  
plant operation, Energy, conservation and production  
Contact: Prof. S. Marsili-Libelli  
Istituto di Sistemi e Informatica  
Università di Firenze, via S.Marta 3  
50139 Firenze, Italy

---

**September 24-28, 1984**

**SOUTH EAST REGIONAL COMPUTER CONFERENCE AND EXHIBITION**  
Hong Kong

Contact: Stephen Lau  
Government Data Processing Agency  
New Mercury House, 16/F  
Hong Kong

---

**September 25-27, 1984**

**SECOND SYMPOSIUM SIMULATION TECHNIQUE OF ASIM**  
Vienna, Austria

Topics: All areas of simulation will be covered, being  
organized in three sections: Methodology, Simulation  
Methods, and Application.  
Contact: Dr. F. Breitenecker  
Hybridrechenzentrum  
Technische Universität  
Gusshausstrasse 27-29  
A-1040 Wien, Austria  
Phone 0222/3601-3747 or 3702 (W. Kleinert)

---

**October 8-10, 1984**

**ACM 1984 ANNUAL CONFERENCE: THE FIFTH GENERATION CHALLENGE**  
San Francisco, California, USA

Topics: System Architectures, Circuit and Computer  
Design, Supercomputers, Operating Systems, Program-
ing Languages, Developments in Artificial Intelli-
gence, Database, Expert and Knowledge-based Sys-
tems, Simulation and Modelling, Robotics and Sensing,  
Graphics, Voice and Touch Technologies, Office and  
Industrial Applications of CAD/CAM, Integrated  
Microcomputer Systems, Intelligent Workstations, Local  
Area and Long Haul Networks.  
Contact: Alexander D. Roth  
Program Chairman, ACM'84  
9900 Main Street, Suite 303  
Fairfax, Virginia 22031, USA  
Phone (703) 385-0211

---

**October 10-12, 1984**

**TWENTY-THIRD NORTH AMERICAN SIMULATION AND GAMING ASSOCIATION (NASAGA) CONFERENCE**  
Iowa City, Iowa, USA

Contact: John McLure  
N236 Lindquist Center  
Division Of Secondary Education  
The University of Iowa  
Iowa City, Iowa 52242, USA  
Phone (319) 353-5681

---

**October 11-12, 1984**

**PERIPHERAL ARRAY PROCESSORS CONFERENCE - APCON II**  
Boston, Massachusetts, USA

Contact: Charles A. Pratt, SCS  
P.O. Box 2228  
San Diego, California 92038, USA  
Phone (619) 459-3888

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**October 15-18, 1984**

**1984 ADA APPLICATIONS AND ENVIRONMENTS CONFERENCE**  
St. Paul, Minnesota, USA

Topics: Education, embedded computer applications,  
programming techniques, empirical experience, software
development and maintenance tools, or distributed systems and proposals.
Deadline: May 15, 1984
Contact: David A. Fisher
Gensoft Corporation
319 South Craig St.
Pittsburgh, PA 15213, USA

October 23-25, 1984
FIFTH ISRAELI CONFERENCE ON SOFTWARE QUALITY ASSURANCE
Tel Aviv, Israel
Contact: Ben Livson
Dept. 7540, Israel Aircraft Industries
Ben Gurion International Airport
Lod 70100, Israel

October 29-31, 1984
ROLE OF LANGUAGE IN PROBLEM SOLVING
Laurel, Maryland, USA
Deadline: August 1, 1984
Contact: Robert Jernigan
Database, Expert, Knowledge-based Systems
The Johns Hopkins University
Laurel, MD 20707, USA

November 1-4, 1984
1984 MEETING OF THE AMERICAN SOCIETY FOR CYBERNETICS
Philadelphia, USA

November 6-9, 1984
FGCS 84 INTERNATIONAL CONFERENCE ON FIFTH GENERATION COMPUTER SYSTEMS
Tokyo, Japan
Deadline: April 15, 1984

November 7-9, 1984
EIGHTH ANNUAL INTERNATIONAL COMPUTER SOFTWARE AND APPLICATIONS CONFERENCE (COMPSCAC 84)
Chicago, Illinois, USA
Deadline: April 6, 1984
Contact: Albert Hawkes
Sargent and Lundy Engineers
55 East Monroe St.
Chicago, IL 60603, USA

November 15-16, 1984
CALIFORNIA EDUCATIONAL COMPUTING CONSORTIUM
San Diego, California, USA

November 19-21, 1984
POWER PLANT SIMULATION
Mexico City, Mexico

Deadline: September 15, 1984
Contact: Prof. David L. Hetrick
Department of Nuclear and Energy Eng.
University of Arizona
Tucson, Arizona 85721, USA
Phone (602) 621-2514

November 28-30, 1984
WINTER SIMULATION CONFERENCE
Dallas, Texas, USA

Contact: Dennis Pegden
Industrial Engineering Department
207 Hammond Building
Pennsylvania State University
University Park
Pennsylvania 16802, USA
Phone (814) 863-1675

December 3-5, 1984
IEEE WORKSHOP ON PRINCIPLES OF KNOWLEDGE-BASED SYSTEMS
Denver, Colorado USA
Topics: Knowledge Acquisition, Knowledge Representation, Causal Modeling, Knowledge Utilization, Validation

Deadline: September 3, 1984
Contact: Mark S. Fox
Robotics Institute
Carnegie-Mellon University
Pittsburgh, PA 15213, USA

December 6-8, 1984
1984 REAL TIME SYSTEMS SYMPOSIUM
Austin, Texas, USA

Contact: Mirosla Malek
University of Texas at Austin
Computer Science Department
Austin, TX 78712, USA
Phone (512) 471-5704

-- December 10-15, 1984
STOCHASTIC MODELLING AND FILTERING
Working Conference
Organized by IFIP (WG 7.1)
Rome, Italy

Contact: IFIP Secretariat
3, rue du Marché
1204 Geneva, Switzerland

** December 18-21, 1984
FOURTH INTERNATIONAL CONFERENCE ON
APPLIED NUMERICAL MODELLING
Tainan, Taiwan, Republic of China

Contact: Dr. Y.L. Chou
Engineering Science Department
National Cheng Kung University
Tainan, Taiwan 700, Republic of China
Phone (062) 361111 Ext. 617

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J A N U A R Y

January 2-4, 1985
EIGHTEENTH HAWAII INTERNATIONAL CONFERENCE ON SYSTEM SCIENCE
Honolulu, Hawaii, USA

Contact: Ralph Sprague
University of Hawaii
2604 Maili Way
Honolulu, HI 96822, USA
Phone (808) 948-7430

January 24-26, 1985
SCS MULTICONFERENCE

J U L Y

July 1985
SUMMER COMPUTER SIMULATION CONFERENCE
Chicago, Illinois, USA

July 29-August 2, 1985
1985 WORLD CONFERENCE ON COMPUTERS IN EDUCATION
Norfolk, Virginia, USA

Contact: Mr. John McGregor
Department of Computer Studies
Murray State University
Murray, Kentucky 42071, USA
AUGUST

August 5-9, 1985
ELEVENTH IMACS WORLD CONGRESS / SYSTEM SIMULATION AND SCIENTIFIC COMPUTATION
Oslo, Norway

Topics: Systems modelling and simulation, model identification and validation, numerical methods for differential and integral equations, simulation of large scale systems, simulation of discrete systems, control and optimization theory and applications, simulation tools, parallel computation, special computers and software for simulation and scientific computation.
Abstract Deadline: September 19, 1984
Registration Deadline: June 15, 1985
Contact: Eleventh IMACS World Congress
NFA, Kronesengt. 17
N-Oslo 2, Norway
Phone (02) 41 87 35
Telex 18213 XFIN

JULY

July 1986
SUMMER COMPUTER SIMULATION CONFERENCE

JUNE

June 15-18, 1987
NATIONAL COMPUTER CONFERENCE
Chicago, Illinois, USA

SEPTEMBER

-- September 2-6, 1985
TWELFTH IFIP CONFERENCE ON SYSTEM MODELLING AND OPTIMIZATION
General Conference
Organized by IFIP (TC 7)
Budapest, Hungary
Contact: IFIP Secretariat
3, rue du Marche
1204 Geneva, Switzerland

1986

JUNE

-- June 1986
MATHEMATICAL MODELLING IN IMMUNOLOGY
Working Conference
Organized by IFIP (WG 7.1)
Vienna, Austria
Contact: IFIP Secretariat
3, rue du Marche
1204 Geneva, Switzerland

June 16-19, 1986
NATIONAL COMPUTER CONFERENCE
Las Vegas, Nevada, USA
ORWELLIAN SYMPOSIUM
and
INTERNATIONAL CONFERENCE
on
SYSTEMS RESEARCH
INFORMATICS
AND
CYBERNETICS
to be held
August 1-5, 1984
in Baden-Baden
West Germany
Sponsored by:
The International Institute for
Advanced Studies
in Systems Research and Cybernetics
Society for Applied Systems Research
In Cooperation with:
Systems Research Foundation
International Federation for Systems
Research
Societe d' Informatique Fondamental
International Systems Institute

The CONFERENCE will provide a forum for the presentation and discussion of short reports on current research in all areas of Systems Science and Engineering, Theoretical and Applied Informatics, Operation Research, Cybernetics and Synergetics.

The aim of the ORWELLIAN SYMPOSIUM is to compare the technological and social advances in modern life with the totalitarian world envisioned thirty five years ago by author George Orwell in his classic work "1984". The Symposium will also examine how to use various systems methodologies to prevent emergence of totalitarian controls in our society, to promote and preserve individual freedom, to safeguard human rights, protect individual privacy, reduce bureaucratization and instill more humaneness into our sociopolitical institutions and organizations.

TRAVEL INFORMATION

Baden-Baden is a beautiful spa-resort town and convention centre located in the middle of Black Forest (Schwarzwald) in West Germany. It can be reached in two hours by train from Frankfurt or Stuttgart. The best way to travel to the Conference site is to fly first to Frankfurt (or Stuttgart) airport and then to take direct train or bus to Baden-Baden. Those travelling by car can reach Baden-Baden through Hwy (Autobahn) A5 (Frankfurt-Basel) or Hwy A 8 (Stuttgart-Karlsruhe).

ACCOMMODATION

Convenient and reasonable accommodation is available in various Baden-Baden hotels. Prices for the accommodation range between 25 and 80 U.S. dollars per day, depending on hotel category and the type of occupancy (single, double, etc.) Participants should make hotel reservation in writing, indicating hotel category, type of occupancy and length of intended stay. The hotel reservation should be made as soon as possible at the following address:

BADER - UND KURVERWALTUNG
Kongress Abteilung - Zimmernachweis
Augustaplatz 10
7570 BADEN-BADEN
Tel: (07221) 24411
West Germany
Telex: 0781 245

TOURS

Special scenic coach tours through the Black Forest will be arranged for the participants of the Conference. Details about these tours will be provided at the Conference Registration Desk of the Convention Centre.

IMPORTANT MESSAGE

We advise you to make your flight and hotel reservations as soon as possible. August is a very popular vacation month in Europe and flight/hotel reservation may become difficult to obtain.

CONFERENCE REGISTRATION

All persons attending the Conference are required to register and pay the appropriate fee. You may wish to register in advance to take an advantage of the lower-rate advanced registration dues. A special Registration Form is provided for this purpose. Payment of the Conference fee should be made by check or money order payable to the 1984 Intl. Conference on Systems Research, Informatics & Cybernetics.

CONFERENCE REGISTRATION FEE is:
US $120.- if paid before July 15;
US $150.- if paid after July 15.

Refunds for cancellation of Conference Registration are available only if requested by letters postmarked by July 20, 1984.
1984 ACM SIGMETRICS Conference on Measurement and Modeling of Computer Systems
August 22-August 24, 1984
Cambridge, Massachusetts
Preliminary Program

TUESDAY, August 21
12:30 Tutorial Registration
1:00-5:00 Tutorials
   Capacity Planning Using Queueing Network Models
   Edward D. Lazowska, University of Washington
   Local Area Networks: Architectural Developments and Performance Assessments
   William Hawe, Digital Equipment Corporation
7:00-9:00 Conference Registration

WEDNESDAY, August 22
8:00 Conference Registration
9:00 Welcome
   James Bouhana, Wang Institute of Graduate Studies
   Ray Bryant, IBM T. J. Watson Research Center
9:15 Keynote Address
   Recent progress in the Performance Evaluation of Fundamental Allocation Algorithms
   E. G. Coffman, Jr., AT&T Bell Laboratories
10:15 Break
10:45 Software Models
   On the Foundations of Artificial Workload Design
   Domenico Ferrari, University of California, Berkeley
   A Measure of Program Locality and Its Application
   Richard B. Bunt, Jennifer M. Murphy, and Shikharesh Majumdar, University of Saskatchewan
12:00 Conference Lunch
1:30 Approximation Techniques, I
   Improved Lineariser Methods for Queueing Networks with Queue Dependent Centres
   A. Krzesinski and J. Greyling, University of Stellenbosch
   Incorporating Load Dependent Servers in Approximate Mean Value Analysis
   John Zahorjan and Edward D. Lazowska, University of Washington
   Response Time Preservation: A General Solution Technique for Queueing Networks
   Subhash C. Agrawal, BGS Systems, Inc.
3:00 Break
3:30 Special Topics
   Evaluation of Parallel Execution of Program Tree Structures
   P. Mussi and P. Nain, INRIA
   Program Optimization for a Pipelined Machine: A Case Study
   John W. Sanguinetti, Amdahl Corporation
   Performance of a DECnet Based Disk Block Server
   Rollins Turner, University of South Florida

THURSDAY, August 23
9:00 Distributed Systems, I
   Throughput Delay Characteristics and Stability Considerations of the Access Channel in a Mobile Telephone System
   Beng Stavenow, Ericsson Radio Systems
   Processor Queueing Disciplines in Distributed Systems
   Elizabeth Williams, Los Alamos National Laboratory
THURSDAY, August 23 (continued)

10:00 Break

10:30 Queueing Models

Convolutional Bound Hierarchies
Lindsey E. Stephens and Lawrence W. Dowdy, Vanderbilt University

A New 'Building Block' for Performance Evaluation of Queueing Networks with Finite Buffers
Rajan Suri, Harvard University

A Simple Analysis of Exclusive and Shared Lock Contention in a Database System
Stephen S. Lavenberg, IBM T. J. Watson Research Center

12:00 Lunch

2:00 Case Studies

A Modeling Methodology for Sizing a Computer Based System in a Network Environment
S. T. Becker, Central Services Organization; K. M. Regge, Indian Institute of Technology, B. Sengupta, AT&T Bell Laboratories

Parameter Interdependencies of File Placement Models in a Unix System
Alfredo de J. Perez-Davila and Lawrence W. Dowdy, Vanderbilt University

An Experimental Investigation of Scheduling Strategies for UNIX
Darwyn R. Peachey, Richard B. Bunt, Carey L. Williamson, Timothy B. Brecht, University of Saskatchewan

3:30 Break

4:00 Work In Progress Session

6:30 Conference Dinner

FRIDAY, August 24

9:00 Distributed Systems, II

Performance Evaluation of Isolated and Interconnected Token-Bus Local Area Networks
Daniel A. Menasce and Leonardo Lelis P. Leite, Pontificia Universidade Catolica do Rio de Janeiro

A Unified Approach to Scan Time Analysis of Token Rings and Polling Networks
Subhash C. Agrawal, Jeffrey P. Buzen, Ashok Thareja, BGS Systems, Inc.

10:00 Break

10:30 Approximation Techniques, II

Efficient Approximation for Models of Multiprogramming with Shared Domains
Alexandre Brandwajn, Amdahl Corporation

The Response Times of Priority Classes Under Preemptive Resume in M/G/m Queues
Andre B. Bondi, Purdue University, and Jeffrey P. Buzen, BGS Systems, Inc.

Analysis of Queueing Network Models with Population Size Constraints and Delayed Blocked Customers
Alexander Thomasian, Burroughs Corporation, and Paul Bay, University of Southern California

For Registration information contact:

ACM/SIGMETRICS '84
c/o Fran Dischino
Mail Stop MLO 5-2/T64
Digital Equipment Corporation
146 Main Street
Maynard, MA 01754
Phone: (617) 493-3938

51
This year the ACM/SIGMETRICS Conference has an added attraction; two tutorials will be offered on the day preceding the Conference (August 21, 1984). The tutorials should be of special interest to Conference Attendees, and early registration is suggested. Registration for the Tutorials will be made on a first-come-first-served basis, and total registration in each tutorial will be limited to 35.

A special session of the conference has been allocated for short presentations of "Work in Progress." All conference attendees are encouraged to consider giving a 5 to 10 minute talk at this session. Topics for the session are left to the discretion of the speakers, but should relate to computer system performance and concern material that has not been developed to the detail of a regular conference paper. Speakers for the session will be chosen based on Abstracts submitted to the Program Committee on the first day of the conference.

The conference presentations will take place at the Harvard University Science Center in Cambridge, Massachusetts. The Conference Hotel, the Sheraton Commander, is located within easy walking distance from the Science Center. Because automobile parking is often scarce in Cambridge, many visitors may find it more convenient to travel by foot or by public transportation rather than renting an automobile. The weather in August is typically warm, and summer clothing is recommended.

Both Cambridge and nearby Boston offer a variety of attractions to visitors, and most places of interest can easily reached by public transportation. Boston's "Freedom Trail" includes a variety of historical sites such as the Boston Common, Faneuil Hall, and the USS Constitution. There are museums, good restaurants, and many other attractions for visitors.

Accommodations

The conference hotel is: Sheraton Commander Hotel, 16 Garden Street, Cambridge, MA 02238 USA, Phone: (617) 547-4800. Please make room reservations prior to July 13 using the attached form. If make your reservation by telephone, you must mention ACM/SIGMETRICS '84 in order to receive the special conference rate. Reservations will not be held after 6:00 p.m. unless payment is guaranteed. Check in time is 1:00 PM — Check out time is 12:00 Noon.

TUTORIAL ABSTRACTS

Capacity Planning Using Queueing Network Models
Edward D. Lazowska
University of Washington

Capacity planning enables performance analysts to accommodate growth by anticipating necessary system enhancements. Queueing network models of computer system performance can play a key role in a capacity planning program. This tutorial will survey queueing network models and their use in capacity planning. Assumptions upon which the models depend will be covered, and model evaluation will be explained in analyst-oriented terms. Examples will show how advanced I/O subsystems and communication networks can be incorporated in queueing network models. The structure and use of queueing network modelling software packages will be illustrated. Several case studies will be included.

Material will be based on the recent book "Quantitative System Performance: Computer System Analysis Using Queueing Network Models". Various handouts will be provided.

Local Area Networks: Architectural Developments and Performance Assessments
William Hawe
Digital Equipment Corporation

This tutorial gives a brief overview of recent developments in Local Area Networks. This includes a discussion of the operational aspects of several new and emerging LAN architectures, such as ethernets, token rings, token busses, etc. We discuss work done to date in performance analysis of these architectures, and outline areas needing additional performance analysis. Among topics considered are buffering in controllers, interface structures to machines, and interactions with higher layer protocols. The tutorial also presents several emerging architectures for interconnecting LAN's in order to build extended LAN's. We discuss the protocol, implementation, and performance issues that arise. Copies of the presentation slides will be provided.
Tutorial Registration Form

Please mail this form and a check made payable to ACM/SIGMETRICS (in U. S. dollars, please no purchase orders) to:

**ACM/SIGMETRICS TUTORIALS**

c/o Fran Dischino
Mail Stop MLO 5-2/T64
Digital Equipment Corporation
146 Main Street
Maynard, MA 01754
Phone: (617) 493-3938

Tutorials: Tuesday, August 21, 1984, 1:00-5:00 pm.
Registration Fee: $35

Please enroll me in:
First Choice: [ ] Capacity Planning, Lazowska
Second Choice: (if any) [ ] Capacity Planning, Lazowska

Enclosed a stamped, self-addressed envelope for acknowledgement of your registration (or return of your payment if enrollment is filled.)

Note: Maximum enrollment in each tutorial is 35, and enrollment will take place on first-come-first-served basis.

Conference Registration Form

Please mail this form and check made payable to ACM/SIGMETRICS (in U. S. dollars -- please no purchase orders) to:

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146 Main Street
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The Registration fee includes one copy of the Proceedings, one lunch, and the Thursday night Lobster Bake at the New England Aquarium. Student Registration includes only the Proceedings copy. Registration Fees are:

Before July 20 After July 20
ACM Members ............... $135 $150
Non-ACM Members ........... $150 $165
Student Registration ........ $ 65 $ 65

Note: A corporate registration rate is available for companies who wish to send several participants to the conference. For details contact Fran Dischino.

For acknowledgement of your registration fee or directions to the conference, please enclose a stamped, self-addressed envelope.

If your spouse or friend will be attending the conference with you, would they be interested in participating in an organized tour of the Boston area? [ ] Yes [ ] No

Hotel Registration

Hotel charges will be paid directly to the Hotel

**Name of Group:** ACM/SIGMETRICS '84

**Dates of Function:**
August 21, 1984 (Tutorials)
August 22-24, 1984 (Conference)

**Full Name:**

**Affiliation:**

**Address:**

**City, State:**

**Telephone:**

**Arrival Date:**

**Accomodations desired:** [ ] Single ($72/night) [ ] Double ($82/night)

Mail this form by July 13, 1984 to:

Sheraton Commander Hotel
16 Garden Street
Cambridge, MA 02238
Attn: Reservation Manager

53
October 10-12, 1984
The University of Iowa
Iowa City, Iowa

Purpose
NASAGA is a professional association of educators, trainers, and planners interested in the theory, design, and use of simulation games, both computer-based and manual. The organization's goals are to facilitate communication among persons interested in simulations and games, promote training of gaming specialists, and encourage the development of new games and simulations as well as better techniques in administering games and simulations.

At its annual conference, participants try out new simulation games and explore ways to use these valuable tools in education, government, business, and human services. The conference attracts well-known game designers, professional experts, and leaders in the simulation and games fields, as well as students, teachers, trainers, administrators, consultants, researchers, and representatives from business and government. The varied backgrounds of the participants and the participatory nature of games and simulations combine to create an exciting atmosphere for exploring new ideas.

Presentations
Previous conferences have included demonstrations of games, workshops for designers and trainers, research reports, verbal descriptions of games and how they are used, and panel discussions of relevant topics. NASAGA encourages presenters to plan sessions that will involve the audience, perhaps even playing the game, if possible within the normal constraints of a conference setting.

Persons interested in making a presentation should submit a one-page abstract which describes the game, significant results of research, or topic for a panel discussion. If the session will include playing the game, state the number of players, time, technical requirements, and the physical properties of space required. Please submit a cover page with your name, address, telephone number, a short biographical sketch, and a brief description of your presentation, suitable for the conference program. For review purposes, please send an original and three copies of your abstract.

Submission Deadline: May 1, 1984
Send to:
John W. McLure
Secondary Education
N236 Lindquist Center
The University of Iowa
Iowa City, IA 52242
The Society for Computer Simulation is pleased to announce our Second:

PERIPHERAL ARRAY PROCESSOR CONFERENCE

October 11-12, 1984
COPLEY PLAZA HOTEL
Copley Square
Boston, MA 02116

Conference Objectives and Format

This Second Conference on Peripheral Array Processors is focused on industrial and individual users with a specific need that only an array processor can fill. Thirty-minute talks will be presented by representatives of the major companies in the field. Attendees will also have the opportunity to ask questions and discuss problems. This conference is intended to be very different from conferences normally sponsored by technical and professional societies in that the overwhelming emphasis will be on providing participants with a perspective on peripheral array processors and related devices which are now on the market, or which are about to come on the market. Signal processing as well as simulation applications will be considered.

Each presentation will be given twice in the course of the conference, and each day there will be two parallel sessions, thus affording the participants the opportunity to attend all of the presentations. The late afternoons of the two-day conference are reserved for unsolicited papers. This will be scheduled at a later date.

The conference Proceedings will constitute a valuable reference book, containing a review of the field as of 1984. All attendees will receive a copy.

We invite you to attend this highly educational program in a beautiful fall setting in the heart of Boston's historical center.

Information on a course on Peripheral Array Processors is also included in this folder. The course precedes the conference. Register separately for this course with the Continuing Education Institute.

CONFERENCE REGISTRATION FORM

Peripheral Array Processor Conference 1984

Name ____________________________ Last __________ First __________ M.I. ____________

Company __________________________________________________________

Address __________________________________________________________

City __________ State __________ Zip __________

Phone No. __________ Ext. __________

Registration Fee __________

Advance $180.00

After Sept. 1 $200.00

Make Check Payable to: SCS

Mail to: SCS, P.O. Box 2228, La Jolla, CA 92038
Call for Papers

IEEE Computer Society 1984 Conference
on
Ada* Applications and Environments
October 15-18, 1984
*At the Sheraton Midway Hotel, St. Paul, Minnesota
sponsored by the IEEE-CS Computer Languages Technical Committee

The conference provides a forum for the presentation and discussion of current work with the Ada language and environments by industry, academia, and government. Papers concerned with pragmatics are being solicited. Areas of interest include, but are not limited to, the following:

- education
- embedded computer applications
- non-embedded computer applications
- programming techniques
- design methodologies
- language-directed architectures
- empirical experience
- software development and maintenance tools
- environmental structures
- distributed environments
- distributed applications
- related topics

Papers should be about 20-30 double spaced pages in length and should have an abstract of 200-300 words. Papers should describe both pertinent language ideas and how they are being utilized. All submitted papers will be refereed and will be judged with respect to their quality and relevance. Proceedings will be distributed at the conference and special consideration will be given to selected papers for inclusion in a special issue of an IEEE publication. Proposals for panel sessions and “birds-of-a-feather” sessions are also solicited.

Submit 6 copies of contributions by May 15, 1984 to the program chairman: David A. Fisher, Gensoft Corporation, 319 South Craig Street, Pittsburgh, PA 15213. Exhibitors should contact the conference chairman: Joseph E. Urban, Computer Science Department, University of Southwestern Louisiana, PO Box 44330, Lafayette, LA 70504, (318) 231-6284.

IMPORTANT DATES

| Deadline for submission of full papers | May 15, 1984 |
| Notification of acceptance | August 1, 1984 |
| Camera-ready manuscripts due | September 1, 1984 |

Conference Chairman: Joseph E. Urban, University of Southwestern Louisiana
Program Chairman: David A. Fisher, Gensoft Corporation
Local Arrangements Chairman: Ray Sandborgh, Sperry Corporation
Publicity Chairman: Glenn C. Hughes II, Captain, US Army Computer Systems Command
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CALL FOR PAPERS
Applied Identification, Modelling and Simulation
AIMS '84

November 12 - 14, 1984
New Orleans, U.S.A.

SPONSOR The International Association of Science and Technology for Development - IASTED

LOCATION The Sheraton New Orleans, New Orleans, U.S.A. (An opportunity to attend the last days of the World's Fair)

SCOPE

Languages | Business | Agriculture
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Graphical methods | Robotics | Health care
Microcomputers in simulation | Energy | Bioengineering
Bond graphs | Materials | Biomechanics
Applications in all fields | Fluid flow | Operations research
Engineering | Social sciences | Queuing systems
Science | Food | Others


ABSTRACTS
Three copies of a 200 word abstract should be received by August 1, 1984 for review by the International Program Committee. Notification will be mailed August 15, 1984. The full manuscripts are due the first day of the conference, November 12, 1984 for publication in the proceedings. All papers shall be reviewed for possible publication in the International Journal of Modelling and Simulation, and in Control and Computers. IASTED holds the copyright for the publication of the papers.

ADDRESS
For correspondence, submission of abstracts, and/or to be placed on the mailing list, write to:
The Secretary, AIMS '84 New Orleans, P.O. Box 2481, Anaheim, CA 92804, U.S.A.

PLEASE COMPLETE AND RETURN THIS FORM TO: The Secretary, AIMS '84 New Orleans
P.O. Box 2481
Anaheim, CA 92804
U.S.A.

[] Please place my name on the mailing list for APPLIED IDENTIFICATION, MODELLING AND SIMULATION '84, New Orleans.
[] I plan to present a paper.
[] Please send me IASTED membership information.
[] Please send me information concerning the following conferences:
   ( ) Robotics and Automation, Nov. 12 - 14, 1984, New Orleans
   ( ) Mini and Microcomputers in Control, Filtering and Signal Processing, Dec. 10 - 12, 1984, Las Vegas

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☐ I would like to present a paper on: __________

☐ We would like to have one of our videos/16 mm films shown during the Symposium

☐ Please send the Program when available

☐ We are considering taking a stand at the Exhibit, please send all relevant documentation (obligation-free).
Presenting... AFIAS

AFIAS is a market-place for contact and exchange
AFIAS is an industry-oriented scientific and technical non-profit Association in the field of artificial intelligence, expert systems, simulation systems and training systems.
AFIAS' goal is to improve application and increase utilisation of SIMULATION, PRODUCTIVITY, EXPERT SYSTEM and CAL/CBT technologies.
AFIAS' objective is to ensure an improved promotion and distribution of these technologies and related services; to group together Researchers/Designers, Manufacturers, Users, Consultants/Engineers, Instructors, Journalists, through organization and sponsorship of: Round-Tables, Seminars, Conferences, Exhibitions and Demonstrations.
AFIAS’ activities are centered on four study groups, each with Artificial Intelligence as their central theme:
- “PRODUCTIQUE” - Robotics, CAD-CAM, Voice recognition, Vision, Automation, etc.
- SIMULATION
- EXPERT SYSTEMS
- COMPUTER-AIDED LEARNING (CAL/CAI-CBT)

AFIAS forthcoming events:
- November 1984: 2nd Symposium-Exhibit on “Artificial Intelligence & Productivity”.

In cooperation with
SCS - SOCIETY FOR COMPUTER SIMULATION (USA)
SME - SOCIETY OF MANUFACTURING ENGINEERS (USA)
CALL FOR PAPERS

Distributed Simulation 1985*

24-26 January 1985
San Diego, California

Announcing the first conference in a new series: Computer science research in simulation.

This conference will break new ground in an area rapidly growing in importance in the field of simulation. Papers on the following topics are invited:

- Parallel processing and simulation
- Architectures for parallel simulation
- Distributed simulation engines
- Deadlock detection and prevention
- Synchronization and communication
- Languages for distributed simulation
- Support environments
- Empirical studies and results
- Test beds

This conference is planned as the first in a series on Computer Science Research in Simulation to be followed in 1986 by a conference on Artificial Intelligence.

DEADLINES AND REQUIREMENTS

(1) Detailed abstracts (300 words) and special sessions proposals should be sent to the SCS office by 1 July 1984.

(2) Only original papers which have not been published elsewhere should be submitted.

(3) Authors will be expected to register early (at a reduced fee) and to attend the conference at their own expense to present accepted papers.

(4) Notification of acceptance or rejection will be sent by 1 August 1984. Authors of accepted abstracts will receive a kit with complete instructions and special forms on which to type (or paste) the camera-ready copy.

(5) Proposals for tutorials, panel sessions, or special sessions should include a one-page summary of the topic and should list the speaker(s).

(6) Camera-ready copies of accepted papers must be sent to the SCS office by 15 October 1984. A final review of each paper will take place at that time.

CONFERENCE ORGANIZERS

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Arrangements
SCS
P.O. Box 2228
La Jolla, CA 92038

Send abstracts to:
The Society for Computer Simulation
P.O. Box 2228
La Jolla, CA 92039
(619) 459-3888

CONFERENCE SITE

The conference will be held in beautiful San Diego, California. This is your opportunity to combine an outstanding educational experience with a vacation from winter. Bring your family!
ANNOUNCING The Working Conference on:

KNOWLEDGE-BASED MODELLING AND SIMULATION METHODOLOGIES

July 1-5, 1985
At Wageningen Agricultural University
Wageningen, Netherlands

SCIENTIFIC COMMITTEE: M.S. Elzas, T.I. Ören, B.P. Zeigler

SCOPE:
This conference is the third one in a series of conferences advancing the fundamental concepts and methods of Modelling and Simulation which have endeavoured to establish firm foundations of this field. One of the indications of the success of the approach has been the overwhelming interest in the book that was published by North-Holland, at the occasion of the first meeting of this series in 1979.

ORGANISATIONAL FORM:
The working Conference consists of a series of tutorial lectures by invited leading scientists in the field, short presentations by practitioners, discussions and computerized demonstrations on the theoretical foundations for knowledge-based modelling and its integration with system-analysis, design and decision support systems. To foster an intensive exchange of ideas the attendance to the conference is limited to about 60 people.

TOPICS:
- Conceptual bases for system modelling
- State-of-the-art in the application of AI, techniques to modelling and simulation
- Software for model-bases and knowledge-based simulation
- Expert systems for model-identification and optimization
- Model-based methodologies and systems in AI.
AUDIENCE:

The audience is expected to consist of:

- Senior professionals from universities, research facilities, or industry interested in state-of-the-art developments
- Young scientists and post-doctorals who would like to orient their research in the direction of the subject area

OBJECTIVES:

The lecturers and participants of the Working Conference will have interests in one or more sub-areas within the spectrum of knowledge-based modelling activities and will be encouraged to share their specific knowledge with other participants in constructive discussions.

PUBLICATIONS:

Like for the two former conferences, the lecture notes will be edited by M.S. Elzas, T.I. Ören, and B.P. Zeigler and published as a reference book by North-Holland after the conference.

FEES AND INFORMATION:

The conference fee is US $200.00 (including the Conference Book).

For any further information contact:

Prof. ir. M.S. Elzas
Computer Science Department
Wageningen Agricultural University
Hollandseweg 1
6706 KN Wageningen, Netherlands
Phone: (011-31-8370) 84153
2nd International Symposium on
SYSTEMS ANALYSIS AND SIMULATION

First Announcement & Call for Papers

Berlin, German Democratic Republic
August 26-31, 1985

PURPOSE
The aim of the Symposium is to discuss recent advances in systems analysis, mathematical modelling and simulation techniques of complex, especially nontechnical, systems.

TOPICS
Contributed papers are welcome on the following and related topics:

M Methods and Fundamentals
- systems analysis and systems theory
- modelling
- large scale systems
- computer aided decision making
- optimization and control
- identification and adaption

S Simulation Techniques
- digital (and hybrid) methods
- numerical and statistical methods
- simulation languages
- application of multiprocessorsystems

A Applications
- simulation and decision making algorithms for ecological and environmental systems
- economic systems
- global and regional modelling
- water systems
- energy systems
- traffic systems
- technical systems

Surveys on the main topics of the Symposium by internationally renowned scientists.

LANGUAGE
Official languages of the Symposium are English, Russian and German.
Final papers should be in English.

SPONSORS
- International Association for Mathematics and Computers Simulation (IMACS)
- International Federation of Automatic Control (IFAC)
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- Scientific Society of Measurement and Automation (WGMA)
- the Chamber of Technology (KdT) of the GDR
- Mathematical Society (MG) of the GDR

ORGANIZED BY
- Central Institute of Cybernetics and Information Processes, Academy of Sciences of the GDR

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DEADLINES
Submit abstract by -- August 15, 1984
Submit full paper by -- February 1, 1985
after notification of acceptance by -- November 1984

ABSTRACTS
Two copies of the abstract (1-2 pages) should be submitted for selection purposes with the reply card.
If accepted, two copies of full papers with abstracts (about 6 pages) should be submitted and should describe original unpublished results by their authors.
The presentation time of papers is maximal 30 minutes (including discussion).

ACCEPTED PAPERS
The Proceedings of the Symposium (published by Akademie Verlag, Berlin) with all accepted papers will be provided to the Symposium registrants.

CONFERENCE FEE
350,- M, including cultural events.

CORRESPONDENCE ADDRESS
Organizing Committee
2nd International Symposium on
Systems Analysis and Simulation
Central Institute of Cybernetics and Information Processes of the Academy of Sciences of the GDR
DDR-1086 Berlin, Kurstraße 33, P. O. B. 1298
German Democratic Republic
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☐ I plan to attend the Conference
☐ I intend to submit a paper with the following provisional title

I suggest that you also send the First Announcement to the following

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Copies of this form will also be accepted.