International Conference on Data Engineering

April 24-27, 1984
Bonaventure Hotel
Los Angeles, California, USA

Preliminary Program

Committee

General Chairman:
E.V. Ramamoorthy
Division of Computer Science
University of California
Berkeley, CA 94720
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(415) 642-1024 (messages)

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Syracuse University
(315) 423-4445
c/o IEEE Computer Society
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Silver Spring, MD 20910
(301) 589-8142

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Francisco Bantilan, INRIA
Carlo Battini, U. of Degli Studi de Roma
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Jane Liu, U. of Illinois
Raymond A. Liuzzi, USAF/RADC
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M. Maekawa, U. of Tokyo
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Daniel Menasce, U. of Rio de Janeiro
Y. Mizuno, NEC
Christine Montgomery, LOGICON
John Musa, Bell Laboratories
Ez Nahourait, IBM
C.W. Nam, Hyundai Corp.
Peter A. Ng, U. of Missouri-Columbia
G.M. Nijssen, U. of Queensland
Merel Ozsoyoglu, Case Western Reserve U.
Robert Ruberti, USAF/RADC
G. Schlageter, Fernuniversitat
Richard Shuey, General Electric
Edgar Sibley, Alpha Omega-Group
P.M. Stocker, U. of East Anglia
Stanley Y.W. Su, U. of Florida
D. Tajima, Hitachi
Robert W. Taylor, IBM
Joseph Urban, U. of Southwestern Louisi
R.P. van de Riet, Vrije U.
Benjamin Wah, Purdue U.
Raymond Yeh, U. of Maryland
Beatrice Yormark, Uniform Software Syst.
John Young, NCR
Kwang-I Yu, TRW
David Yen, SMU
Moshe Zloof, IBM

Awards:
Ming T. (Mike) Liu, Ohio State U.

Tutorials:
Robert Yacobellis, Bell Laboratories
Peter Ng, U. of Missouri-Columbia

Arrangements:
Aldo Castillo, TRW
International Liaison and Publicity
Mas Tsuchiya, TRW

Treasurer:
Harry Hayman, IEEE Computer Society
**Monday, April 23, 1984, 1:30 p.m.-5:00 p.m.**

1. **Computer Architecture for Data and Knowledge Bases**, Dr. P. Bruce Berra, Syracuse University
2. **Relational Database Query Languages**, Dr. Alberto Mendezzoni, University of Toronto

**Tuesday, April 24, 1984, 9:00 a.m.-5:00 p.m.**

3. **Database Design Methodology**, Dr. Valeria De Antonellis, Istituto Di Cibernetica, Milano, Italy and Dr. A. Dileva, Universita Di Torino, Italy
4. **Software Project Management**, Dr. Barry Boehm and Mr. Robert Williams, TRW
5. **Data Engineering Techniscopes**, Dr. Tom Gilb, Independent Consultant

**Wednesday, April 25, 1984, 7:30 p.m.-9:30 p.m.**

6. **A Structured View of Distributed Database Management**, Dr. James A. Larson, Honeywell

7. **Expert Systems**, Dr. Virginia Kobler, BMD Advanced Technology Center

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### CONFERENCE-AT-A-GLANCE

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<tr>
<th>Time</th>
<th>Session 1A</th>
<th>Session 1B</th>
<th>Session 1C</th>
<th>Session 1D</th>
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</thead>
<tbody>
<tr>
<td>2:00 p.m.</td>
<td>Engineering Applications</td>
<td>Entity Relationship Approach-1</td>
<td>Database Architecture-1</td>
<td>User Interface Languages</td>
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<tr>
<td>3:30 p.m.</td>
<td>Statistical Databases</td>
<td>Database Models</td>
<td>Database Architecture-2</td>
<td>User Interfaces</td>
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<tr>
<td>4:00 p.m.</td>
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<tr>
<th>Time</th>
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<th>Session 2C</th>
<th>Session 2D</th>
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<tbody>
<tr>
<td>11:00 a.m.</td>
<td>Database Optimization</td>
<td>Database Design-1</td>
<td>Database Design-2</td>
<td>Construction of Knowledge Bases</td>
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<tr>
<td>12:30 p.m.</td>
<td>Concurrency Control-1</td>
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<td>Database Engineering</td>
<td>Data Engineering Education</td>
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<tr>
<td>3:30 p.m.</td>
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<td>Database Engineering for Real Time Distributed Operating Systems</td>
<td>Database Design Tools</td>
<td>Artificial Intelligence Applications</td>
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<tr>
<td>11:30 a.m.</td>
<td>Query Optimization</td>
<td>Database Design-1</td>
<td>Software Quality and Production</td>
<td>Construction of Knowledge Bases</td>
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<tr>
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<td>Concurrency Control-2</td>
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<td>Data Engineering Education</td>
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<td>Database Design-2</td>
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<tr>
<td>11:00 a.m.</td>
<td>Concurrency Control-1</td>
<td>Database Design-2</td>
<td>Software Engineering</td>
<td>Design Tools and Software Metrics</td>
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<tr>
<td>11:30 a.m.</td>
<td>Data Engineering for Real Time Distributed Operating Systems</td>
<td>Database Design Tools</td>
<td>Database Design Theory</td>
<td>Artificial Intelligence Applications</td>
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<tr>
<td>11:30 a.m.</td>
<td>Concurrency Control-2</td>
<td>Entity Relationship Approach-2</td>
<td>Local Area Network Environments</td>
<td>Design Tools and Software Metrics</td>
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<td>12:30 p.m.</td>
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<tr>
<td>11:30 a.m.</td>
<td>Evaluating Design Methodologies</td>
<td>Performance Analysis</td>
<td>Applications of Knowledge Bases</td>
<td>Image Data and Networks</td>
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9:00 a.m. Opening Remarks—Dr. C.V. Ramamoorthy, General Chairman
9:30 a.m. Plenary Session
The Data Engineering Age: Present and Future
Dr. John Scanlon, Vice President, AT&T
On Synergism in Data Engineering
Dr. Charles Bachman, Bachman Associates
11:00 a.m. Plenary Panel: Challenges in Data Engineering
Dr. Barry Boehm, Chair
Panelists: Dr. Charles Bachman, Bachman Associates
Mr. Ed Brennan, TRW Credit Data
General Alan Salisbury, U.S. Army
Dr. Gio Wiederhold, Stanford University
Dr. Stephen Yau, Northwestern University

12:30 p.m.-2:00 p.m.
Lunch

Session 1A—Engineering Applications
Chair: Fumihiko Kamiyo, Japan
An Advanced Database System ADAM—Towards Integrated Management of Engineering Data, Y. UDAGAWA, T. MIZOGUCHI, MITSUBISHI, JAPAN
Integrated Environment for Information Management in VLSI Design, V. ASHOK, W. McKNIGHT, J. RAMANATHAN, OHIO STATE UN.
CADET: Computer Aided Design and Engineering Tool for Toyota, Y. KURANAGA, TOYOTA MOTOR CORP., JAPAN

Session 1B—Entity Relationship Approach-1
Chair: Peter Ng, Un. Mo-Columbia
A Practical Question About Systems Analysis, R. ZIMMERMAN, STAND. OIL OF CALIF.

Session 1C—Database Architecture-1
Chair: TBA
SM3: A Dynamically Partitionable Multicomputer System With Switchable Main Memory Modules, T. FEI, C.K. BARU, S.Y.W. SU, UN. FLORIDA
On the Effectiveness of Fault Tolerant Techniques in Parallel Associative Data Base Processors, A. AVIZIENIS, A.F. CARDENAS, UCLA, F. ALAVIAN, UNITED TECHNOLOGIES
A Comparison of Parallel Language Approaches to Data Representation and Data Transferral, C. CLINE, H.J. SIEGEL, PURDUE UN.

1:30 p.m.-3:30 p.m.
Parallel Sessions

Session 1D—User Interface Languages
Chair: Robert R. Kohr, SMU
A Natural Language Interface for Performing Database Updates, J. DAVIDSON, STANFORD UN.
Cooperative Responses to Database Queries, F. CORELLA, SYMANTEC, S.I. KAPLAN, G. WIEDERHOLD L. YESIL, STANFORD UN.
MALPHA: A Multi-Database Manipulation Language, W. LITWIN, INRIA, FRANCE

Session 2A—Statistical Databases
Chair: S. Ghosh, IBM
An Application of Statistical Databases in Manufacturing Testing, S.P. GHOSH, IBM
Semantic Data Model for Statistical Databases, S. SU, UN. FL.
Micro and Macro Statistical Scientific Database Management, H.K.T. WONG, LAWRENCE BERKELEY LAB.
Diophantine Inferences from Statistical Aggregates on Few-Valued Attributes, N.C. ROWE, NAV. POSTGRAD, SCH.
A Theory of Data: Implications for Information Retrieval, J.L. DOLBY, SAN JOSE STATE UN.

Session 2B—Database Models
Chair: TBA
Comparison Criteria for Semantic Data Models, M. SCHREFL, TECH. UN. VIENNA, A.M. TJOA, UN. VIENNA, R.R. WAGNER, UN. LINZ, AUSTRIA
A Method for Optimization of a Conceptual Model, O. OREN, NORWAY
Representing Roles in Universal Scheme Interfaces, D. MAIER, D. ROZENShteIN, J. STEIN, OREGON GRAD. CTR.
Recursive Data Models for Non-Conventionall Database Applications, W. LAMERSDORF, UN. HAMBURG, FRG.

Session 2C—Database Architecture-2
Chair: R. Liuzzi, USAF/RADC
A Pipelining and Parallel Architecture for Supporting Relational Database Management Systems, Y-C. HONG, UN. CALIF.-RIVERSIDE
Architecture and Algorithm for Parallel Execution of a JOIN Operation, T. NAKAYAMA, M. HIRAKAWA, T. ICHIKAWA, HIROSHIMA UN., JAPAN
The Fast Data Finder—An Architecture for Very High Speed Data Search and Dissemination, K. YU, S. HSU, P. OTSUBO, TRW
Dynamic Data Structures on Optical Disks, P. RATHMANN, STANFORD UN.

7:30 p.m.-9:30 p.m. Tutorial: Expert Systems, Dr. Virginia Kobler, BMD Advanced Technology Center
### Thursday, April 20, 1984

#### 9:00 a.m.-9:30 a.m. Awards Ceremony, Dr. Ming T. Liu, Ohio State University

#### 9:30 a.m.-10:30 a.m.

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#### 10:30 a.m.-11:00 a.m.

### Parallel Sessions

#### Session 3A—Query Optimization
Chair: Y.W. MA, UN. PA.
Optimization of Queries in Distributed Databases, C.W. Chung, Gen. Motors K.B. Irani, UN. MD.

#### Session 3B—Database Design—1
Chair: J. Liu, UN. ILL.

#### Session 3C—Software Quality and Production—Chair: M. Tsuchiya, TRW
A Project Independent Approach to Software and Process Quality Metrics and Reports, R. YACOBELLIS, BELL LABS.
Building-in Quality and Productivity to a Large Software System, E.M. PRELL, A.P. SHENG, BELL LABS.

### Lunch

#### 12:30 p.m.-2:00 p.m.

#### Session 4A—Concurrency Control—1
Chair: C.W. NAM, MEI CORP.
Version-Based Access Capabilities for Concurrency Control of a Database System, T. MINOURA, ORE. ST. UN.
The Delay/Re-Read Protocol for Concurrency Control in Databases, M.D. MICKUNAS, P. JALOTE, R.H. CAMPBELL, UN. ILL.
Locking Policies in Distributed Databases, O. WOLSON, BELL LABS.

#### Session 4B—Database Design—2
Chair: P. Stocker, UN. E. ANGLIA, ENGLAND
From Natural Language Requirements to Good Data Definitions—A Data Base Design Methodology, C.F. EICK, UN. KARLSRUHE
Approaches for Handling Incomplete Information and Nulls in Databases, A. KELLER, M. WINSETT, STANFORD UN.
State of Affairs of the Database Standardization Activities, T.S. GANNON, AUBERCH PUBL.

#### Session 4C—Software Engineering Education—Chair: P.B. BERRA, SYRACUSE UN.
Flow Sketch Methodology: A Practical Requirements Definition Technique Based on Data Flow Concept, Y. MATSUMOTO, T. SHIBATA, M. TANI, HITACHI, JAPAN
Utilizing an Executable Specification Language for an Information System, S.D. URBAN, J. URBAN, W.D. DOMINICK, UN. SW LA
Experiences With Automated Aids for Dataflow Diagrams, T. DEMARCO, YOURDON, INC.

### 3:30 p.m.-4:00 p.m.

### 4:00 p.m.-6:00 p.m.

#### Session 5A—Data Engineering for Real Time Distributed Operating Systems—Chair: A. Van Tilborg, HONEYWELL
Partitioning Ada Programs for Execution in Distributed Systems, Cornhill, HONEYWELL
Data Protection in a Shared Memory Multiprocessor, H. WELCH, SYSTEMS DEV. CORP.
Programming Language Support for Distributed Real-Time Systems, T. LeBLANC, UN. ROCHESTER

#### Session 5B—Database Design Tools—Chair: J. URBAN, UN. SW LA
A Tool for the Implementation of Databases, D. FARMER, R. KING, D. MYERS, UN. COLO.
Rapid Software Development in a Database Framework, H.J. KOMORSKI, HARPUND UN.
GAMBIT: An Interactive Database Design Tool for Data Structures, Integrity Constraints and Transactions, R.P. BRAGGER, A. DUDLER, J. REBSAMEN, C.A. ZEHNDER, SWITZERLAND
Practical Application of IDEF1 as a Database Development Tool, K.L. RUOFF, HUGHES AIRCRAFT

#### Session 5C—Database Design Theory—Chair: R.P. Van de Riet, VRIJE UN. THE NETHERLANDS
Matching Techniques in Global Schema Design, M.V. MANNINO, W. EFFELSBERG, UN. FL.
Object Integration in Database Design, R. ELMASRI, UN. HOUSTON, S. NAVATHE, UN. FL.
Supporting the Design of Conceptual Schemata by Database Systems, H. WEDENKIND, IBM

### 6:00 p.m.-7:30 p.m.

#### COCKTAIL PARTY
### Plenary Session

**Friday, April 27, 1984**

**9:00 a.m.** Inside The Japanese Software Industry
Dr. Denji Tajima, Managing Director
Hitachi Software Engineering

**10:00 a.m.** **Plenary Panel**
Software and Data Engineering: New Directions
Chair: Dr. Charles Vick
Auburn University

Panelists: Dr. David Opferman, Executive Director, BELL LABS
Dr. Denji Tajima, Managing Director, Hitachi Software Engineering
Dr. Raymond Yeh, UN. OF MARYLAND

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### Parallel Sessions

#### Session 6A—Concurrency Control-2
Chair: TBA

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<th>Session 6C—Local Area Network Environments</th>
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### LUNCH

**PARALLEL SESSIONS**

#### Session 7A—Test Beds for Evaluating Design Methodologies for Distributed Systems
Chair: W. McDonald, SDC

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<th>Session 7C—Applications of Knowledge Bases</th>
<th>Session 7D—Image Data and Networks</th>
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<tr>
<td>Chair: G. Schlageter, FERN UN., W. GERMANY</td>
<td>Feedback Stabilization of Control Policy Selection in Data/Knowledge Based Systems, C.F. STARMER, DUKE UN.</td>
<td>Chair: C.V. Ramamoorthy, UN. CALIF-BERKELEY</td>
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<tr>
<td>Transaction Workload Evaluation in the Codasyl Database Environment, S. ORLANDO, P. RULLO, W. STANISZKIS, ITALY</td>
<td>The Manager's Assistant, An Application of Knowledge Management, D. KOGAN, SDC</td>
<td>A Low-Cost Geometry-Preserving Database Organization and Data Storage for Images, Y. YANG, K.S. FU, PURDUE UN.</td>
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<td>Cross-Program Simulator for Any Microprocessors, A. MIYAGA, T. ITAJIMA, T. TAKAGI, S. NAKANO, OMRON ELECTRONICS</td>
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### Refreshments

**3:30 p.m.-4:00 p.m.**

**4:00 p.m.-5:30 p.m.** **Plenary Panel**
What Have We Learned About Data Engineering
Chair: Dr. P. Bruce Berra, Syracuse University
Panelists: Dr. Nick Cercone, Simon Fraser University
Dr. Wesley Chu, UCLA
Dr. Richard Shuey, General Electric
Dr. Peter Wang, Naval Postgraduate School
**ADVANCE REGISTRATION**

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<th>STUDENT</th>
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<tr>
<td>Mini Tutorial 1—Computer Architecture for Data and Knowledge Bases, P.B. Berra</td>
<td>$80</td>
<td>$105</td>
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<tr>
<td>Mini Tutorial 2—Relational Database Query Languages, A. Mendelzon</td>
<td>$80</td>
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<tr>
<td>Full Tutorial 3—Database Design Methodology, V. de Antonellis</td>
<td>$125</td>
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<tr>
<td>Full Tutorial 4—Software Project Management, B. Boehm and R. Williams</td>
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<tr>
<td>Full Tutorial 5—Data Engineering Techniques, T. Gilb</td>
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<tr>
<td>Mini Tutorial 6—A Structural View of Distributed Database Management, J.A. Larson</td>
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  $175   $225   $50   $200   $250   $50

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  * Tutorial registration fee includes luncheon and notes for Tuesday, and notes only for Monday.
  * Conference registration fee includes one copy of the conference proceedings and the COMPDEC hosted party on Thursday evening.

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In order to confirm your room reservation, the Westin Bonaventure Hotel must receive this coupon by March 26, 1984. Rooms will be held until 6:00 P.M. on day of arrival unless accompanied by deposit to cover first night's rental plus 10% occupancy tax.

Please circle accommodations desired:

- SINGLE: $72
- DOUBLE: $87

All rates subject to 10% occupancy tax.

All major credit cards accepted.

Card No. ____________________________

Expiration Date __________

Signature ____________________________

Name ____________________________

Company Name ____________________________

Address ____________________________

City/State/Zip/Country ____________________________

First day of guaranteed reservations will be charged unless cancelled 24 hours prior to date of arrival.