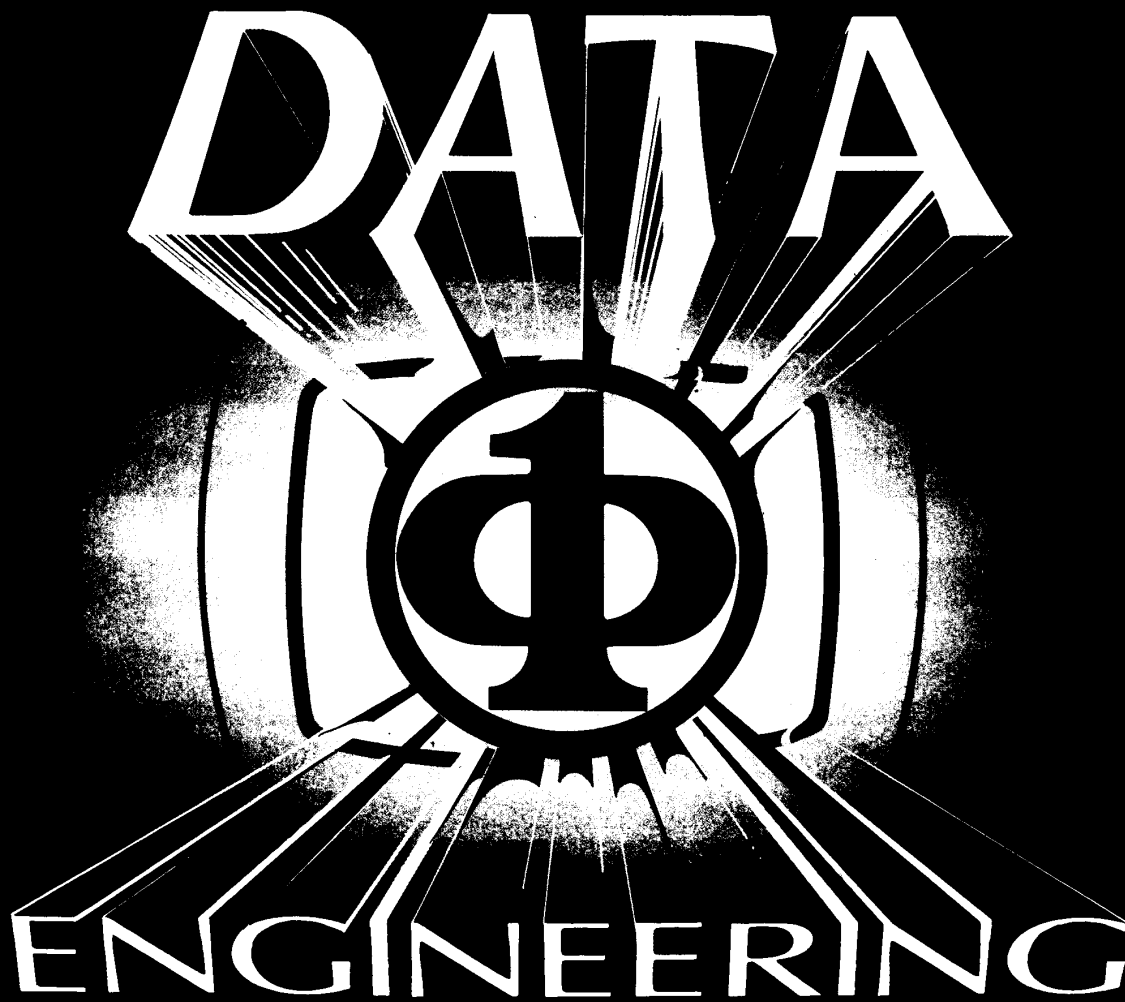


Proceedings

Sixth International Conference on

# DATA ENGINEERING



February 5-9, 1990  
Los Angeles Airport Hilton and Towers  
Los Angeles, California, USA

 IEEE COMPUTER SOCIETY



THE INSTITUTE OF ELECTRICAL  
AND ELECTRONICS ENGINEERS, INC

COMPUTER  
SOCIETY  
PRESS 

## 6th International Conference on Data Engineering Reviewers\*

Ahmed, R.	Halal, A.	Pons, J.F.
Aibara, R.	Hasan, W.	Popescu-Zeletin, R.
Alonso, R.	Hayne, S.	Potter, W.
Anneveluch, J.	Held, J.	Qadah, G.
Ayed, M.	Hinke, T.H.	Rafii, A.
Bancilhon, F.	Hirakawa, M.	Ramamritham, K.
Barbara, D.	Hosking, A.L.	Ramarao, K.V.S.
Baru, C.	Hsu, C-C.	Ramos, L.
Belford, G.	Hsu, M.	Robinson, J.T.
Bernadez, M.E.	Huang, C-M.	Rogers, W.
Berra, P.B.	Ishida, K.	Roman, G.
Bliss, C.	Jagadish, H.V.	Salem, K.
Bocca, J.	Joseph, S.	Sengupta, S.
Bock, G.	Kent, B.	Sham, M-C.
Bonghetay, A.	Kifer, M.	Shekhar, S.
Bosch, C.	Kim, C.	Snodgrass, R.
Brant, D.	Kim, H.	Soundararajan, N.
Browne, S.	Klahold, P.	Springsteel, F.N.
Bruno, J.	Knolle, H.	Srivastava, J.
Budhraj, A.	Krishanwary, A.	Staelin, C.
Cai, Y.	Kumar, A.	Su, J.
Cavano, J.	Kundu, S.	Subramanian, R.
Charudatt, J.	Lam, H.	Taghva, K.
Chen, A.	Lee, C.	Tanaka, M.
Chen, M-S.	Lee, K.	Thomas, G.
Chen, N.	Lee, Y.	Tsubotani, H.
Cheng, H.	Leu, F-Y.	Unland, R.
Cheng, S-C.	Li, C.	Urban, J.
Clifford, J.	Li, V.	Veijalainen, J.
Clifton, C.	Lim, Y.	Vineyard, D.
Cohen, F.	Lu, H.	Wah, B.
Cook, R.P.	Ludwig, T.	Waisanen, A.
Cornelio, A.	Mannino, M.	Wakabayashi, S.
Cova, L.L.	Marmann, M.	Wilkinson, J.
Dadam, P.	Marshall, R.	Wilson, J.N.
Dayal, U.	Merz, U.	Wolf, J.
Deshpande, A.	Misbah, S.	Wolski, A.
Du, W.	Miura, T.	Wuu, G.
Eick, C.	Miyao, J.	Yang, W-P.
Enbody, R.L.	Moore, D.	Yasdi, R.
Forsyth, J.L.	Neuhold, E.J.	Yaseen, R.
Freukel, D.	Nigam, A.	Yoo, N.
Gala, S.	Novak, M.	Yoon, D.K.
Gaudiot, J-L.	Obrenic, B.	Yoon, J.
Georgakopoulos, D.	Ozsoyoglu, M.	Yoshikawa, M.
Gorur, A.S.	Park, J.	Yu, C.
Gundahi, H.	Piatetsky-Shapiro, G.	Yu, P.S.
Guo, M.	Pissinoat, N.	Zhao, K.
Hachem, N.	Polygois, C.	

\*Program Committee members are excluded from this list.

## Table of Contents

General Chair's Message . . . . .	v
Program Chair's Message . . . . .	vi
Reviewers . . . . .	vii
<b>Object-Oriented Database Issues</b>	
Chair: Susan Urban, Arizona State University	
ViewSystem: Integrating Heterogeneous Information	
Bases by Object-Oriented Views . . . . .	2
<i>M. Kaul, K. Drosten, and E.J. Neuhold</i>	
Using a Meta Model to Represent Object-Oriented Data Models . . . . .	11
<i>S. Hong and F. Maryanski</i>	
Multimedia Object Models for Synchronization and Databases . . . . .	20
<i>T. Little and A. Ghafoor</i>	
<b>Concurrency Control</b>	
Chair: Gomer Thomas, Bellcore	
Concurrency Control Using Locking with Deferred Blocking . . . . .	30
<i>P.S. Yu and D.M. Dias</i>	
A Paradigm for Concurrency Control in Heterogeneous Distributed Database Systems . . . . .	37
<i>A. Elmagarmid and W. Du</i>	
Access Invariance and Its Use in High Contention Environments . . . . .	47
<i>P.A. Franaszek, J.T. Robinson, and A. Thomasian</i>	
<b>Query Languages</b>	
Chair: Goetz Graefe, University of Colorado	
A Rule-Based Language for Deductive Object-Oriented Databases . . . . .	58
<i>A.M. Alashqur, S.Y. Su, and H. Lam</i>	
Supporting Universal Quantification in a Two-Dimensional Database Query Language . . . . .	68
<i>K-Y Whang, A. Malhotra, G. Sockut, and L. Burns</i>	
A Temporal Model and Query Language for ER Databases . . . . .	76
<i>R. Elmasri, and G.T. Wu</i>	
<b>Views and Representations</b>	
Chair: Gunther Schlageter, University of Hagen, FRG	
Object Views: Extending the Vision . . . . .	86
<i>S. Heiler and S. Zdonick</i>	
Alternatives in Complex Object Representation: A Performance Perspective . . . . .	94
<i>A. Jhingran and M. Stonebraker</i>	
Representing Processes in the Extended Entity-Relationship Model . . . . .	103
<i>V.M. Markowitz</i>	
<b>Concurrency in Advanced Systems</b>	
Chair: Vijay Kumar, University of Missouri	
Serializability in Object-Oriented Database Systems . . . . .	112
<i>T.C. Rakow, J. Gu, and E.J. Neuhold</i>	