

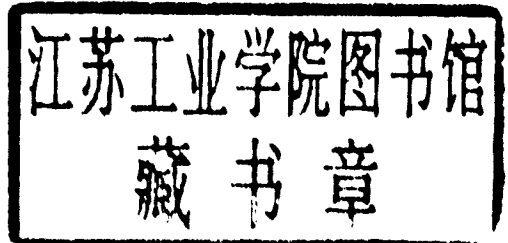
**The Fourteenth Annual
International Computer
Software & Applications Conference**

Proceedings

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Preface

Welcome to COMPSAC 90, the 14th Annual International Computer Software and Applications Conference sponsored by the IEEE Computer Society. As we move into the 90's, the strategic importance of software is mushrooming as an enabler for companies, institutions and individuals to serve their own needs better and more competitively. The untapped opportunities appear to be limitless as we learn better how to create, deploy, and manage reliable software and associated data bases found in an increasing number of applications.

We want to thank the authors and their sponsors for an outstanding set of papers dedicated towards a better understanding of this technology and its use. Our referees did a terrific and tough job in selecting the accepted papers from the greatest number of exceptionally high caliber papers ever submitted to this conference. I also want to acknowledge the members of the Steering Committee and in particular the Chair, Stephen S. Yau, who have put a lot of work into the conference in addition to maintaining their busy schedules. Of particular note, Ifay F. Chang has done an excellent job as Program Chair and has been supported by an excellent Program Committee.

Finally, your presence here as participants demonstrates your interest and dedication towards advancing software technology. Welcome, and I hope you enjoy the conference.

David L. Carney
Conference Chair
COMPSAC 90



Program Overview

The COMPSAC 90 technical program has expanded from the traditional approach of focusing on a few technical tracks to embrace more emerging technologies and application areas. The program content, thus, includes software tools, methods, quality, reliability, productivity and development environment, database and knowledge base technologies, parallel and distributed computing, object oriented computing, user interface technology, and real-time transition systems. Special emphasis is placed on application development technologies and tools and on actual applications in emerging areas such as AI knowledge base and object-oriented programming.

A large number of paper submissions have been reviewed for COMPSAC 90. The Program Committee has laboriously reviewed, evaluated, and debated on all the papers to produce the Final Technical Program with 97 technical papers organized into 26 paper sessions as well as 10 panel sessions. The invited plenary sessions are featured as follows:

1. **KEYNOTE ADDRESS - Influence of Open Systems on Application Development**
Lawrence F. Dooling, President, UNIX Software Operations, AT&T.
2. **PLENARY PANEL - UNIX Systems - Future OS**
Chaired by Dave Belanger, AT&T Bell Laboratories.
3. **MINI-TUTORIAL - The Software Engineering of Extensible Database Systems**
Don S. Batory, University of Texas at Austin.

The technical papers represent both the state-of-the-art and the state-of-the-applications of the technologies listed above. This program brings together both academicians and industry practitioners to share and exchange their knowledge with the audience on theories, methodologies, and architectural design as well as their implementation and development experience.

The panels, following COMPSAC tradition, were selected by the Program Committee based on their interest level and relevancy to COMPSAC 90 attendees. Each panel focuses on a special topic and serves as a forum for discussing emerging technical issues and/or innovations happening in the associated topic area.

The Technical Program could not have been accomplished without the contribution of many individuals. First, I would like to thank all authors who have submitted papers to us. I would like to express my appreciation to all Program Committee members who have volunteered their time, energy, and wisdom in this programming endeavor and to those members who have taken on heavy duties as Program Co-Chairs. I also would like to thank Dr. George J. Knafl who has kindly accepted the proceedings editorship and has kept the publication schedule on target.

I am indebted to Dr. Stephen S. Yau, Chair of the Computer Science Department of the University of Florida. Dr. Yau has provided the guidance and experience necessary to help me keep on schedule and meet our deadlines.

Finally, I would like to express my deepest appreciation to Donna L. Sellazzo, Sr. Secretary Specialist at IBM T. J. Watson Research Center. Donna has performed an efficient and effective executive secretary's role for COMPSAC 90.

My personal thanks to all who have contributed to this excellent COMPSAC 90 program. I look forward to a successful technical exchange among all attendees.

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