The photo on the front cover shows red chili peppers. Each fall, chili peppers are harvested and strung together into long strands called Ristras. You will see Ristras hanging from the porches and balconies of homes and businesses throughout New Mexico. Chili peppers are a primary ingredient in New Mexico cuisine.

Photo credit: Philip Greenspun
PROCEEDINGS

The Eighth International Symposium on Software Reliability Engineering

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Best Paper Awards

We wanted to recognize what we felt were exemplary papers that were accepted for ISSRE'97. To this end, a small sub-committee was formed to review accepted papers and select the best. A short list was prepared using the original reviewers evaluations. The sub-committee made a concerted effort to include a representation of papers providing "practical" and "theoretical" contributions.

The results are the following six papers that were selected as "best papers." The sub-committee felt that many provided both "practical" as well as "theoretical" contributions so they did not choose to categorize the awards further. However, of the six papers, the subcommittee scored four of the papers as providing more "practical" contributions and two for providing more "theoretical" contributions.

Our congratulations to the winners!

Using Proxy Failure Times with the Jelinski-Moranda Software Reliability Model
M.A. Qureshi and D.R. Jeske

Effect of Class Testing on the Reliability of Object-Oriented Programs
Mei-Hua Chen and H.M. Kao

Quantitative Evaluation of Capture-Recapture Models to Control Software Inspections
Lionel C. Briand, Khaled El Emam, Brend Freimut, and O. Laitenberger

Automatic Test Generation using Checkpoint Encoding and Antirandom Testing
Huifang Yin, Zemen Lebne-Dengel, and Yashwant K. Mailaiya

An Approach to Measuring and Assessing Dependability for Critical Software Systems
Doug Tang and H. Hecht

An Operational Profile for the Cartridge Support Software
Ken Chruscielski and Jeff Tian
Message from the General Chair

Welcome to Albuquerque, New Mexico and ISSRE’97, the Eighth International Symposium on Software Reliability Engineering. This year, ISSRE’97 is being held back-to-back with Metrics’97. Jim Bieman, General Chair of Metrics’97, and I have long recognized the overlapping interests of researchers and practitioners who have participated in these conferences in the past. Our intent is to provide an opportunity for both groups to come together and learn more from each other. To this end, we have worked together to maximize what you can get from both conferences. In particular, we’ve planned Wednesday’s activities to provide a smooth transition between the two conferences. We have developed a common program and provided a discount to encourage you to participate in both conferences.

The organizing committee has worked hard in setting up ISSRE’97 to help you get the most from the conference. We hope you have a chance to take advantage of the tutorials on Sunday. Mladen Vouk and Dwayne Knirk set up several tutorial sessions to meet the varied needs of first-timers to ISSRE through the hardened professional. Yashwant Malaiya and Bob Horgan will talk more about the regular program in their message. Kalai Kalaichelvan has organized Industry Practices sessions, something started in ISSRE’94.

These sessions focus on topics of particular interest to practitioners. George Stark, who has arranged for these regular proceedings, has also made arrangements for copies of slides used by the Industry Practices presenters. Rick Sheldon coordinated the production of a book of case studies outlining applications of software reliability engineering (SRE) in various situations with a foreword by John Musa. As a special for ISSRE’97, each attendee will receive a copy. Panel sessions have been organized pulling together the leading experts to discuss particular topics of current interest to you. Our keynote speakers, James Tierney of Microsoft, Dieter Rombach of the Universität Kaiserslautern, and Larry Dalton of Sandia National Laboratories will provide their perspective on software reliability.

On a lighter note, our banquet speaker, Gerry Weinberg, will also provide his perspectives on software reliability. Larry Apfelbaum and John Munson have set up a Tools Fair overlapping both conferences that will start on Tuesday and run through Thursday. We have allotted time for you to visit the tools fair and have even provided time during the conference for tool vendor presentations. We have provided times during breaks, lunches, receptions and banquets to give you an opportunity to talk with paper presenters, speakers and network with other attendees. For those of you continuing on to Metrics’97, don’t miss the panel Wednesday afternoon that Norm Schneidewind helped organize. It will be of interest to those who work in software reliability and software metrics areas.

During the conference, please offer thanks to those mentioned above and to the following folks who have been working behind the scenes to make this a successful conference for you. A special thanks are due to Patty Trellue and Ray Berg who planned and coordinated local arrangements for both conferences. Rick Karcich has been working
tirelessly to get publicity out and with Kerry Bedford was instrumental in developing the colorful Advanced and Final Programs you are using. Eric Wong was responsible for designing and maintaining our web page. Sue Steele coordinated our on-line registration. Denise Prull of Conference Consulting Associates is providing the on-site support to make both conferences run smoothly. Of course, thanks are due to the staff of Sheraton Old Town and other companies that are providing the facilities in making our conferences a success.

Looking to the future, note that ISSRE'98 will be in Paderborn Germany. Please meet Fevzi Belli, General Chair, who will be here along with the ISSRE'98 Call-for-Papers. Finally, I hope you have allotted some time outside the conferences to enjoy a visit to Albuquerque and the Southwest. Please ask anyone around about sightseeing or touring areas around New Mexico.

On behalf of all of us, enjoy the next several days at ISSRE'97 and Metrics'97.

Bill Everett
ISSRE Program Chairs' Message

ON BEHALF OF THE ISSRE PROGRAM COMMITTEE, we welcome you to ISSRE'97. We had invited papers on all major aspects of software reliability, quality and testing. All submissions, from industry, universities and research institutions, were reviewed by at least four reviewers and the reviews were examined during the program committee meeting at Newark, NJ in June.

The papers selected address all major topics: fault-prone module identification, error detection and handling, test strategies and effectiveness, modeling reliability growth, system reliability, SRGM applications, highly reliable systems, process, quality and metrics. In addition, the program includes panels organized by experts and keynote presentations by well known authorities in the field. Industry practice track sessions complement the program by bringing details of actual industry practices. The Tools Fair, jointly organized with Metrics'97, presents some of the major software tools available in our field.

We are proud of the fact that ISSRE brings together both research and practice. You will come across the state of the art as well as glimpses of things to come.

We would also like to acknowledge the contributions of several volunteers mentioned by Bill Everett above. We are very grateful for the members of the program committee as well as other reviewers who have helped us with program selection as well as by providing valuable feedback to the authors. On behalf of the ISSRE community we specially want to thank Bill Everett, who as general chair has worked tirelessly to organize this conference.

We acknowledge the support of our organizations, Bellcore and Colorado State University and our colleagues there.

Bob Horgan

Yashwant K. Malaiya
Program Committee

General Chair and Finance Chair
Bill Everett, SPRE

Program Chairs
Yashwant Malaiya, Colorado State University
Bob Horgan, MCC

Industry Track
Kalai Kalaichelvan, Northern Telecom, Ltd

Tutorials
Mladen Vouk, North Carolina State University
Dwayne Knirk, Sandia National Laboratories

Local Arrangements
Patricia A. Trellue (chair), Sandia National Laboratories
Ray S. Berg, Sandia National Laboratories

Publications
George Stark, The MITRE Corp
Rick Sheldon, University of Colorado at Colorado Springs

Publicity
Rick Karcich, Storage Technology

Tools/Exhibit
Larry Apfelbaum, Teradyne Inc.
John C. Munson, University of Idaho

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Sue Steele, Lucent Technologies

Auditor
Guylaine Pollock, Sandia National Laboratories

Metrics’97 Liaison
Norm Schneidewind, Naval Postgraduate School

Metrics’97 General Chair
Jim Bieman, Colorado State University

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