

PROGRAM

Monday, June 26, 2000

8:30 AM - 10:00 AM

SESSION 1: PLENARY

Opening Remarks

Presentation of the W.C. Carter Award

Keynote Address:

The Challenges for Dependability in e-Business

Dr. Timothy Chou, President and CEO of Oracle Business Online

Y. Wang and W. Russell (Microsoft); A. Arora (Ohio State University); J. Xu (University of Illinois at Urbana-Champaign)

Design, Implementation, and Performance of Checkpointing in NetSolve

A. Agbaria and J.S. Plank (University of Tennessee)

SESSION 2C:

Student Forum

Brief presentations by students

10:30 AM – 12:00 noon

SESSION 2A:

Embedded Systems

Transparent Redundancy in the Time-Triggered Architecture

H. Kopetz and G. Bauer (Vienna University of Technology)

Resource Scheduling in Dependable Integrated Modular Avionics

Y-H. Lee and D. Kim (University of Florida); M. Younis, J. Zhou, and J. McElroy (Allied Signal Inc.)

Error Detection Using Executable Assertions

M. Hiller (Chalmers University)

12:00 noon – 1:30 PM

SESSION 3:

Information Panel:

EU-USA Program of Research Collaboration on Dependability

Panel Chair: Brian Randell (University of Newcastle)

Panelists: Frank Anger (NSF), Helen Gill (DARPA), Andrea Servida (European Commission), Mark LeBlanc (Department of State).

SESSION 2B:

Practical Experience

Reports I - Networks

Experiences with Group Communication Middleware

S. Johnson and F. Jahanian (University of Michigan); S. Ghosh, B. VanVoorst, and N. Weininger (Honeywell Technology Center)

Towards Dependable Home Networking: An Experience Report

1:30 PM – 2:30 PM

SESSION 4A:

Language Support

Efficient Incremental

Checkpointing of Java Programs

J.L. Lawall and G. Muller (IRISA/INRIA)

A C/C++ Source-to-Source Compiler for Dependable Applications

A. Benso, S. Chiusano, P. Prinetto, and L. Tagliaferri (Politecnico di Torino)

SESSION 4B:

Practical Experience Reports II -COTS Evaluation

Assessment of the Applicability of COTS Microprocessors in High- Confidence Computing Systems: A Case Study

Y. He (SoHaR Inc.); A. Avizienis (A.Avizienis
and Associates, Inc.)

Evaluation of COTS Standards for Dependable System Design

C.J. Walter (WW Technology Group); N. Suri
and T. Monaghan (Chalmers University)

SESSION 4C:

Student Forum

Brief presentations by students

2:30 PM – 3:30 PM

SESSION 5A:

Measurement & Assessment

Whither Automatic Software Recovery? A Fault Study using Open-Source Software

S. Chandra and P.M. Chen (University
of Michigan)

Software Fault Tolerance for High- Performance Space Applications

M. Turmon, R. Granat, and D.S. Katz
(Jet Propulsion Laboratory)

SESSION 5B:

Practical Experience Reports III -Validation and Evaluation

A Formal Specification and Verification of a Safety Critical Railway Control System

S. Gnesi (Consiglio Nazionale delle
Ricerche); D. Latella (CNUCE – CNR);
G. Lenzini (Istituto di Elaborazione
dell'Informazione); C. Abbaneo,
A. Amendola, and P. Marmo (AnsaldoBreda
Segnalamento Ferroviario)

Sensitivity Analyses on Dependencies in Hierarchical Decomposition Models

M. Yin and C. Hyde (Raytheon Systems)

SESSION 5C:

Student Forum

Brief presentations by students

4:00 PM – 5:30 PM

SESSION 6A:

Mobile Agents

Fault-Tolerant Execution of Mobile Agents

L.M. Silva, V. Batista, and J.G. Silva
(Universidade de Coimbra)

Exploiting Non-determinism for Reliability of Mobile Agent Systems

A. Mohindra and A. Purakayastha (IBM),
P. Thati (University of Illinois)

SESSION 6B:

Practical Experience Reports IV – System Architecture

New Rolling Stock Architecture using Safety Computers and Networks

J. Boullie and M. Brun (Technicatome Aix-
en-Provence)

Reliability-Availability- Serviceability Characteristics of a Compressed-Memory System

J. Chen, D. Har, K. Mak, C. Schulz, T. Smith,
B. Tremaine, and M. Wazlowski (IBM)

A Fault Tolerant Signal Processing Computer

K. Prager, M. Vahey, J. Whitney, J. Lieb, and W. Farwell (Raytheon Systems)

SESSION 6C:

Student Forum

Brief presentations by students

Tuesday, June 27, 2000

8:30 AM - 9:30 AM

SESSION 7: PLENARY

*Keynote Address:
Internet Performance/
Availability from an End User
Perspective*

Eric Siegel, Keynote Systems

10:00 AM - 11:00 AM

SESSION 8A:

*Analysis & Evaluation
Performability of CAC Algorithms*

J. Meyer (University of Michigan)

*On the Quality of Service of Failure
Detectors*

W. Chen (Oracle Corporation); S. Toueg (Ecole Polytechnique); K. Aguilera (Cornell University)

SESSION 8B:

Theory

*Fault-Secure Scheduling of
Arbitrary Task Graphs to
Multiprocessor Systems*

K. Hashimoto, T. Tsuchiya, and T. Kikuno (Osaka University)

Diagnosis of Regular Structures

A. Caruso (University of Pisa); S. Chessa, P. Maestrini, and P. Santi (IEI-CNR, Pisa)

SESSION 8C:

Software Demonstrations

*OFTT: A Fault Tolerant Middleware
Toolkit for Process Monitoring and
Control Windows NT Applications*

M. Hecht, Y. He, X. An, and B. Zhang (SoHaR Inc.)

*DEEM: a Tool for the Dependability
Modeling and Evaluation of
Multiple Phased Systems*

A. Bondavalli, I. Mura, and F. Sandrini (CNUCE - CNR)

*Loki: A State-Driven Fault Injector
for Distributed Systems*

R. Chandra, R. Lefever, M. Cukier, and W. Sanders (University of Illinois at Urbana-Champaign)

*Sensitivity Analysis for System
Design Improvement*

S. Contini and S. Scheer (Joint Research Centre)

11:00 AM - 12:00 noon

SESSION 9A:

Testing of COTS Systems

*Joint Evaluation of Performance
and Robustness of a COTS DBMS
Through Fault-Injection*

D.G. Costa, T. Rilho, and H. Madeira (University of Coimbra)

Exception Handling Tests of the Microsoft Windows Operating System

C. Shelton and P. Koopman (Carnegie Mellon University)

SESSION 9B:

Byzantine Faults

From Crash Fault-Tolerance to Byzantine Fault-Tolerance: Towards a Modular Approach.

R. Baldoni, J. Helary, and M. Raynal (IRISA)

Dynamic Byzantine Quorum Systems

E. Pierce and L. Alvisi (University of Texas at Austin); D. Malki (The Hebrew University of Jerusalem); R. Wright (AT&T); M.K. Reiter (Bell Labs, Lucent)

1:30 PM - 3:00 PM

SESSION 10A:

Analysis and Verification χ SUDS-SDL: A Tool For Understanding and Diagnosis of Software Architectural Specifications

J.J. Li and R.J. Horgan (Telcordia Technologies)

Enabling Automated Analysis through the Formalization of Object-Oriented Modeling Diagrams

B.H. Cheng, L.A. Campbell, and E.Y. Wang (Michigan State University)

Deadlock Detection of EFSMs Using Simultaneous Reachability Analysis

B. Karacali, K-C. Tai, and M.A. Vouk (North Carolina State University)

SESSION 10B:

Group Communication

A Low Latency, Loss Tolerant Architecture and Protocol for Wide

Area Group Communication

Y. Amir, C. Danilov, and J. Stanton (Johns Hopkins University)

A Reliable Many-to-Many Multicast Protocol for Group Communication over ATM Networks

R. Koch, L.E. Moser, and P.M. Melliar-Smith (University of California, Santa Barbara)

A Gossip-Based Reliable Multicast for Large-scale High-throughput Applications

Q. Sun and D. Sturman (IBM)

SESSION 10C:

System Demonstrations

Fault-Tolerant Ethernet for IP-Based Process Control: A Demonstration

S. Song, J. Huang, P. Kappler, R. Freimark, J. Gustin, and T. Kozlik (Honeywell)

Demonstration of the Remote Exploration and Experimentation (REE) Fault Tolerant Parallel Processing Supercomputer for Spacecraft Onboard Scientific Data Processing

F. Chen, L. Craymer, J. Deifik, A.J. Fogel, D.S. Katz, R.R. Some, and S.A. Upchurch (Jet Propulsion Laboratory)

3:30 PM - 5:00 PM

SESSION 11A:

Testing and Applications of Coding

Test-Point Insertion to Enhance Test Compaction for Scan Designs

I. Pomeranz and S.M. Reddy (University of Iowa)

Method to Recover Internet Packet Losses Using $(n, n - 1, m)$ Convolutional Codes

M. Arai, A. Yamaguchi, and K. Iwasaki (Tokyo Metropolitan University)

*One-Shot Reed-Solomon Decoding
for High-Performance Dependable
Systems*

Y. Katayama and S. Morioka (IBM)

SESSION 11B:

Panel:

*Statistical or Probabilistic
Decision Models: How
Dependable Are They?*

Panel Chair: P. Bose (IBM)

Wednesday, June 28, 2000

8:30 AM - 10:00 AM

SESSION 12: PLENARY

Panel:

*Running the Bytes Without
Getting Bitten: Strategies for
Dealing with Malicious Code*

Panel Chair: Carl Landwehr
(Mitretek Systems)

Panelists: Crispin Cowan
(Oregon Graduate Institute),
Gary McGraw (Reliable
Software Technologies), and
Jeannette Wing (Carnegie
Mellon University).

On the Emulation of Software

Faults by Software Fault Injection

D.G. Costa, M. Vieira, and H. Madeira
(University of Coimbra)

*Reliability Testing of Applications
on Windows NT*

T. Tsai and N. Singh (Bell Labs, Lucent)

SESSION 13B:

Replication

*Implementing Flexible Object
Group Invocation in Networked
Systems*

G. Morgan and S.K. Shrivastava
(Newcastle University)

*Implementing e-Transactions with
Asynchronous Replication*

S. Frolund (HP Labs); R. Guerraoui
(Swiss Federal Institute of Technology)

10:30 AM - 12:00 noon

SESSION 13A:

Software Fault Injection
*Software Fault Injection Using
Reflective Programming*

E. Martins and A. Rosa (State University
Campinas)

*Data Replication Strategies for
Fault Tolerance and Availability on
Commodity Clusters*

C. Amza, A. Cox, and W. Zwaenepoel
(Rice University)

SESSION 13C:

Fast Abstracts I

Presentation of work in progress and late-breaking research results.

1:30 AM - 3:30 PM

SESSION 14A:

High Performance Architecture

Designing High-Performance & Reliable Superscalar Architectures: The Out of Order Reliable Superscalar (O3RS) Approach

A. Mendelson (Intel); N. Suri (Chalmers University)

Fault Tolerance Through Re-execution in Multiscalar Architecture

K.K. Saluja, F. Rashid, and P. Ramanathan (University of Wisconsin, Madison)

A Fault Tolerance Infrastructure for Dependable Computing with High-Performance COTS Components

A. Avizienis (A.Avizienis and Associates, Inc.)

Synthesis of Interconnection Networks: A Novel Approach

V. Lakamraju, I. Koren, and C.M. Krishna (University of Massachusetts, Amherst)

SESSION 14B:

Distributed System Models

The Best of Both Worlds: a Hybrid Approach to Solve Consensus

A. Mostefaoui, M. Raynal, and F. Tronel (IRISA)

Synchronous Systems and Perfect Failure Detectors: Solvability and Efficiency Issues

B. Charron-Bost (Ecole Polytechnique Paris); R. Guerraoui (Swiss Federal Institute of Technology); A. Schiper (Ecole Polytechnique Federale de Lausanne)

The Timely Computing Base: Timely Actions in the Presence of Uncertain Timeliness

P. Verissimo and A. Casimiro (University of Lisboa); C. Fetzer (AT&T)

Reconfiguration Based Failure Restoration in Wavelength-routed WDM Networks

G. Sai Kiran Reddy (Indian Institute of Technology); G. Manimaran (Iowa State University); C. Siva Ram Murthy (Indian Institute of Technology)

SESSION 14C:

Fast Abstracts II

Presentation of work in progress and late-breaking research results.