Phoenix Conference
On Computers and Communications

Advance Program for the First Annual Conference, May 9-12, 1982, Hilton Hotel, Phoenix, Arizona

Sponsored by INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
In Conjunction with COMPUTER SOCIETY, IEEE COMPUTER SOCIETY

On behalf of the IEEE Computer and Communications Societies, in association with the Phoenix IEEE Section, it is my pleasure to extend a cordial invitation to attend the first annual Phoenix Conference on Computers and Communications. The PC'82 theme, Control of Complexity, recognizes the continuing penetration of electronics into the fabric of our society beyond the already highly visible consumer usage. The growth of the semiconductor art now permits the use of extraordinary quantities of devices and circuits in complex computer and communications applications. This opportunity is accompanied by a number of problems. These include the more efficient creation and use of software, the use of computer aids in designing and manufacturing, speeding up the interaction between man and machine without loss of accuracy, and communicating from machine to machine and place to place at high speeds. This, our first Conference, and all successive Conferences, will emphasize these issues of interaction and complexity rather than treating each subject in isolation.

The Conference concept, which originated as a strong recommendation of the Arizona State University Advisory Council in their plan for "Excellence in Engineering for the 1980s," will highlight the three key areas of Solid-State Electronics, Computers/Computer Science, and Computer-Aided Processes.

Computer and Communications technologists are presenting an extremely vital Technical Program of 28 sessions with more than 85 papers by authors from the U.S. and abroad. Experts will participate in several panel sessions exploring various aspects of their specialties. Three very timely and informative tutorial courses are offered on Introduction to VLSI Design, Local Area Computer Networks, and Software and Its Development.

Come and see us in Phoenix!
Edward J. Glenn, Chairman

Arizona

Arizona is sometimes called the land of contrasts because of the changing scenery and activities that are offered. You can swim and play tennis in the morning and spend the afternoon fishing, hiking, or sightseeing in the cool pines. The living is casual and friendly, you'll feel right at home in your air conditioned western style hotel and interchanging gas for the many elegant restaurants and cultural events offered here.

Phoenix

The Phoenix metropolitan area is the central point for tourists to Arizona. Located in the heart of the Valley of the Sun, Phoenix boasts of its many excellent sports facilities which are available without leaving the city. Valley sightseeing offers many varied attractions including the Phoenix Zoo, the Desert Botanical Gardens, the Phoenix Art Museum, and Scottsdale with its famous Fifth Avenue shops. Just to name a few.

The Hotel

The Phoenix Hilton is located in the center of downtown Phoenix, steps away from most major activities. For those flying into Phoenix, the hotel is less than 15 minutes from Sky Harbor International Airport.

In an effort to help make this conference a success, the Hilton has offered PC'82 room rates that are not only low, but exceptional for a facility as elegant. Payment in advance is required and all prior arrangements have been made or paid for by credit card. Reservations must be received by the hotel before April 14, 1982.

Entertainment

The Executive Committee has scheduled several special events. In addition, educational tours have been scheduled for Wednesday afternoon.

Keynote Luncheon

Monday at lunch, Dr. Paige Ruhlman will speak on "Excellence in Engineering for the '80s.

Rawhide, Arizona

On Monday evening, we have scheduled a visit to Rawhide, an authentic Arizona 1880's town. Our visit to Rawhide will include a real, old-fashioned western hayride and steak fry.

Conference Banquet

Tuesday evening, the PC'82 Conference banquet will feature John R. Welly speaking on "The Japanese Challenge."

Palo Verde Nuclear Plant

This tour will be of interest to those that have never had an opportunity to visit a nuclear power facility.

Arizona State University

This tour will include a brief tour of ASU's campus, along with a tour of the new Engineering Solid State Sciences Laboratory.

Honeywell Large Information Systems Division's New Software Development Technology Center

This Center was opened earlier this year and is considered by many to be one of the most modern and advanced centers for Software Engineering in the United States.

The House of the Future

This house was designed by the Frank Lloyd Wright Foundation which features the present state of the art in technology, ecology, and sociology.

Spouse's Program

Monday afternoon's program will include a tour of the City of Phoenix and a visit to the Heard Museum which is one of the Southwest's most famous Indian culture museums.

On Tuesday, a trip to Sedona, which is located some 100 miles north of Phoenix in the heart of Arizona's famous Red Rock country, Sedona will become a mecca for art lovers and collectors.

Program Registration

The total program registration fee for the Conference includes admission to all of the Conference sessions, including the Educational Tours. It also includes a record of the proceedings of the Conference, the cost of continental breakfasts and lunches on Monday, Tuesday, Wednesday, and the banquet on Tuesday evening. The registration fee includes the cost of the educational tours on Wednesday afternoon.

Registration Fees

Late Registration: After April 14, 1982 add $15.00

Total Program:

Member: $195.00
Non-Member: $185.00

One-Day Session:

Record and luncheon

Member: $75.00
Non-Member: $65.00

Half-Day Session:

Record and luncheon

Member: $55.00
Non-Member: $45.00

Student: Sessions only $10.00
Site: Sessions only $10.00

Tutorial Courses:

Member: $50.00
Non-Member: $60.00

Tutorial Schedule: Monday, May 10
8:30 - 12:00 Noon

TUTORIAL I

Introduction to VLSI Design

Contents

VLSI. Large Scale Integration is becoming more than just hundreds of thousands of transistors on a chip. Many future products will encounter design difficulties associated with specialized VLSI devices to supplement existing parts and, in some cases, the entire system will be designed to fit into a single chip. This tutorial will address this change in system design methodology and introduce the basic concepts of VLSI mask design using the Mined and Conway teaching approach. It will also be assumed that attendees have some training or experience in computer-related fields.

Instructor

Charlie R. Rupp

Digital Equipment Corporation

TUTORIAL II

Local Area Computer Networks

Contents

Local area computer networks provide an efficient interconnection mechanism for computers, terminals, word processors, facsimile, and other current networks of VLSI products within a building or office complex. Many vendors are now offering new and designating local area network products using a wide range of technological approaches. This tutorial focuses on local area network technology and products, including application considerations, technical approach comparisons, and current network applications and plans.

Instructor

Stuart Zucker

Technology Concepts, Inc.

TUTORIAL III

Software and Its Development

Contents

The tutorial begins by discussing basic evolutionary trends in computers and the improvements which have occurred in programming technology. Five categories of software are introduced and the problems associated with developing each category are described. The basic taxonomy of software is described. The steps in software development and the problems associated with each step are discussed. This tutorial offers an overview of the software development process with emphasis on complex real-time systems. Examples from projects that "did it right" and a few that "did it wrong" and a few that "did it right" will be introduced. The examples will be taken from the instructor's experience.

Instructor

Joseph M. Fox

Lesko/Fox Associates
Technical Sessions: Monday, May 10

10:30-12:00 Noon
A1 LOGIC SYSTEM DESIGN BY USING DESIGN AUTOMATION METHODS
- Electronic Defect Detection and Isolation
- Circuit Simulation at G.T.E. Automatic Laboratories
- Circuit Routing with Small Computers
- Auto Interactive System for Partitioning Logic Networks

1:00-3:30 PM
B1 THE SOFTWARE DEVELOPMENT PROCESS
- The Software Development Environment for a Large Real-Time Project
- Review of a Modeling Facility
- Design Methodologies, System Structure, and System Deterioration

4:00-5:00 PM
B2 PANEL DISCUSSION: PAINFUL EXPERIENCES WITH SOFTWARE METHODOLOGIES
The issues covered will include both the introduction and use of methodologies with panelists experienced in both management and technical roles.

Technical Sessions: Tuesday, May 11

8:30-10:00 AM
A3 C.A.D. FOR LARGE SCALE INTEGRATION
- A High-Level Language for VLSI Design
- VLSI Design Automation Using a Hardware Description Language
- A Self-Adaptive Symbolic Array for Reporting Interactions of Rectangles
- A Language for Function Level Design

10:30-12:00 Noon
B3 SOFTWARE TOOLS-I
- Compiler Base Tools for Large Program Development
- Considerations for a Compiling Editor
- Software Design with the Aid of Macro Processors
- Decision Tables in Real-Time Systems

2:00-3:30 PM
B4 SOFTWARE TOOLS-II
- Use of Software Interface Data Base in the Development of Real Time Switching Systems
- State-of-the-Art Software Support
- An Approach for a Graceful Man-machine Communication
- The Dialogue System: A Tool for Testing and Implementing End User Interfaces

4:00-5:30 PM
B5 LANGUAGE CONSIDERATIONS-I
- Pascal and C: Comparing Notes
- The Use of Very High Level Languages for Numerical Applications
- FREED: A Front End for Databases

Technical Sessions: Wednesday, May 12

8:30-10:00 AM
B7 SOFTWARE VALIDATION
- A Generic Approach to Software Validation
- Software Validation for Flight Critical Systems
- The Development of a Testing Function
- Using an Automatic Test Executor to Support Parallel System and Test Development
- Software Error Data Collection and Analysis

10:30-12:00 Noon
B8 WHERE DO WE GO FROM HERE?
PANEL DISCUSSION

COMMUNICATIONS
C1 SIGNAL PROCESSING TECHNIQUES
- Perceptual Issues in Speech Recognition
- A Family of High Performance, Low Power Digital Signal Processor IC's Used in an LFE Vocoder System
- Practical Considerations in the Design of Spread Spectrum Processors for Low Signal-To-Noise Ratios
- A Time Correction Loop for Continuous Phase Narrow Deviation Spread Spectrum

C2 SIGNAL PROCESSING TECHNOLOGY
- Methodology for Evaluation of Digital Modems
- An Approach to a Tactical Digital Data Modem
- 500 MPS Serial Mk II (SMPK) Demodulator

SOFTWARE
C7 FIBER OPTICS
- The Design of a Large-Scale Operation Optic Transmission System for Vandenberg Air Force Base
- Intermodulation in Analog Multiplexing of Fiber Optic Television System
- Application of Fiber Optics for Computer Data Links
- Mindful Addressable Fiber Optic Information Distribution System for High Rise Structures

C8 MODELING AND SIMULATION
- Simulation of Large-Scale Computing Systems
- Analysis of Network Delay By Simulation
- Capacity Modeling of the No. 4 ESS
- Performance Simulation of Distributed Systems

NEW DEVICES
C3 DISTRIBUTIVE PROCESSING
- Inter-processor Communications in a Distributed Processing System
- Liveness Properties in Distributed Systems
- Reliability and Performance Analysis of Centralized vs Distributed Data Base Systems
- Performance Analysis of a Multi-Processor Message Switched System

C4 LOCAL AREA NETWORKS
- Local Communications Networks for Computer-Based Instruction
- ISET: An Interprocess Computer Network for Image to Expert Graphics Users
- Radio Data Networks, the Visible Alternative to Local Cable Distribution
- Simulation Model Development for Distributed Process Control Local Network Systems

C5 MAN-MACHINE COMMUNICATIONS
- An Extension of Optimal Search Theory to Screen Management for Visual Display Terminals
- The Operators Role in Large Computer Systems
- Electronic Flight Displays for Transport Aircraft
- Flight Management System Control Display Technology in New Generation Transport Aircraft

C6 COMPUTER ARCHITECTURE
- Designing a Bus for a Multi-Processor System
- Design a Reliable 1/0 System for 8086 Based Computer
- Common Control Design Using Matched Microprocessors For Failure Detection
- An Educational Bit Sliced Computer

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NEW DEVICES
D7 VHIC: VERY HIGH SPEED INTEGRATED CIRCUITS
- ERF SATCOM
- Communications Processor
- VHSIC Brassboard for Communications Systems
- VHSIC General Purpose Computer Systems

D8 LONG-TERM ELECTRONIC INDUSTRY LEADERSHIP U.S. OR JAPAN
PANEL DISCUSSION
- Is Japanese culture required for electronic industry leadership?
- Is Japanese quality superior to U.S. quality?
- Will participative management provide the key for long-term industry leadership?
- Is Japanese industry invincible?
- Is Japan the electronic industry leader?
- Has Japan awakened a sleeping giant?