

**1977**

**acm  
computer  
science  
conference**

**marriott hotel / atlanta / georgia / 31 january – 2 february 1977**

**abstracts  
program  
information**

MESSAGE FROM THE CONFERENCE CHAIRMAN:

The annual ACM Computer Science Conference is establishing itself as a national forum for communication among researchers in computer science. Atlanta has the pleasure of hosting the Fifth Annual ACM Computer Science Conference, and it is my pleasure to welcome you to it on behalf of the CSC '77 planning committee.

Following the tradition of this conference, several foremost computer scientists will address CSC '77 at plenary sessions; some 200 reports on current research will be presented; and ample opportunity will be provided for informal meetings among individuals sharing research interests. I hope you will peruse the current computing literature exhibited by leading publishers, and take note of the manpower situation reflected by the extensive employment register operations. A new, and most appropriate, activity at CSC '77 is a national student programming contest bringing together teams of computer science undergraduates who won the 1976 regional programming contests. We are delighted to have among us the future generation of computer science researchers.

I would like to take this opportunity to thank everyone who has contributed to the organization of this conference. The CSC '77 planning committee — Phil Enslow, Rich DeMillo, Pete Jensen, Pentti Honkanen, John Gehl, Ed Rumiano, and many members of the academic and professional communities of Atlanta — have been a pleasure to work with; they deserve our recognition and appreciation.

We sincerely hope that your visit to Atlanta is enjoyable, and that you will call on any one of us if we can make your attendance at CSC '77 more profitable.

Vladimir Slamecka  
Chairman

CONFERENCE AT A GLANCE

		"The Human Factor" Professor Henry F. Ledgard University of Massachusetts										
9:00-10:15												
10:45-12:00	Software Engineering I: Testing and Reliability	1	Applications I: Operations Research	8	Operating Systems I	15	APL	22	Theory of Computing I: Automata and Formal Languages	29		
1:30-3:00	Software Engineering II: Analysis	2	Applications III: Graphics	9	Operating Systems II	16	Data Base I: Structure and Organization	23	Theory of Computing II: Complexity and Algorithms	30		
3:30-5:00	Software Engineering III: Design Tools and Techniques	3	Applications III: General - A	10	System Architecture and Organization	17	Data Base II: Query and Retrieval Systems	24	Theory of Computing III: General - A	31		
9:00-10:15												
		"Steps Toward a Theory of Heuristic Algorithms" Professor Richard Karp University of California										
10:45-12:00	Artificial Intelligence I: Cognition, Learning, Knowledge	4	Applications IV: Medical - A	11	Evaluation	18	Scientific Programming and Numerical Analysis I	25	Theory of Computing IV: General - B	32	Programming Languages I: General - A	36
1:30-3:00	Artificial Intelligence II: Deduction and Problem Solving	5	Applications V: System Design	12	Education I: General	19	Data Base III: Maintenance and Evaluation	26	Programming Languages II: Parsing	33		
3:30-5:00	Artificial Intelligence III: Applications	6	Applications VI: General - B	13	Education II: CAI and Languages	20	Data Base IV: Applications	27	Programming Languages III: General - B	34		
9:00-10:15												
		"New Approaches to Program Verification" Professor Zohar Manna Stanford University										
10:45-12:00	Artificial Intelligence IV: Natural Language and Speech	7	Applications VII: Medical - B	14	Networks	21	Scientific Programming and Numerical Analysis II	28	Programming Languages IV: General - C	35		

Monday, January 31

Tuesday, February 1

Wednesday  
February 2

PROGRAM

1977 ACM Computer Science Conference  
Atlanta, Georgia

SUNDAY, JANUARY 30, 1977

Registration, 3:00 pm - 8:00 pm, Convention Floor Lobby  
Employment Register, 7:00 pm - 9:00 pm, Hall of Nations

MONDAY, JANUARY 31, 1977

Registration, 7:30 am - 5:00 pm, Convention Floor Lobby  
Publishers' Exhibit, 8:00 am - 6:00 pm, Hall of Nations  
Employment Register, 10:00 am - 8:00 pm, Hall of Nations

9:00-10:15     INVITED SPEAKER: Professor Henry F. Ledgard, University of  
                  Massachusetts, "The Human Factor"

10:45-12:00    PAPER SESSIONS 1, 8, 15, 22, 29

Session 1. Software Engineering I: Testing and Reliability  
Tara Rooms 4 and 5. Chairman: R. Tobey

Session 8. Applications I: Operations Research  
Tara Room 1. Chairman: P.V. O'Neill

Session 15. Operating Systems I.  
Ballroom South. Chairman: S. Pollock

Session 22. APL  
Tara Room 2. Chairman: L.D. Fosdick

Session 29. Theory of Computing I: Automata and Formal  
Languages  
Tara Room 3. Chairman: J. Minker

12:00-1:00     LUNCH. Sidewalk Cafe, Hall of Nations

1:30-3:00 PAPER SESSIONS 2, 9, 16, 23, 30

Session 2. Software Engineering II: Analysis  
Tara Rooms 4 and 5. Chairman: E.A. Favre

Session 9. Applications II: Graphics  
Tara Room 1. Chairman: C. Weiman

Session 16. Operating Systems II.  
Ballroom South. Chairman: T.K. Flanigan

Session 23. Data Base I: Structure and Organization  
Tara Room 2. Chairman: A.T. Berztiss

Session 30. Theory of Computing II: Complexity and  
Algorithms  
Tara Room 3. Chairman: A.C.L. Barnard

3:00-5:00 PAPER SESSIONS 3, 10, 17, 24, 31

Session 3. Software Engineering III: Design Tools and  
Techniques  
Tara Rooms 4 and 5. Chairman: M.L. Schneider

Session 10. Applications III: General - A  
Tara Room 1. Chairman: S. Wolfson

Session 17. System Architecture and Organization  
Ballroom South. Chairman: M. Yovits

Session 24. Data Base II: Query and Retrieval Systems  
Tara Room 2. Chairman: T.M. Walker

Session 31. Theory of Computing III: General - A  
Tara Room 3. Chairman: D.R. Clutterham

TUESDAY, FEBRUARY 1, 1977

Registration, 7:30 am - 8:00 pm, Convention Floor Lobby  
Publishers' Exhibit, 8:00 am - 6:00 pm, Hall of Nations  
Employment Register, 10:00 am - 8:00 pm, Hall of Nations

9:00-10:15 INVITED SPEAKER: Professor Richard Karp, University of  
California, "Steps Toward a Theory of Heuristic Algorithms"

10:45-12:00 PAPER SESSIONS 4, 11, 18, 25, 32, 36

Session 4. Artificial Intelligence I: Cognition,  
Learning, Knowledge

Tara Room 1. Chairman: H. Hellerman

Session 11. Applications IV: Medical - A

Tara Room 2. Chairman: S. Brunjes

Session 18. Evaluation

Tara Room 3. Chairman: B.L. Bateman

Session 25. Scientific Programming and Numerical  
Analysis I.

Tara Room 4. Chairman: J. Tartar

Session 32. Theory of Computing IV: General - B

Tara Room 5. Chairman: O.G. Johnson

Session 36. Programming Languages I: General - A

Ballroom South. Chairman: J.D. Lawson

12:00-1:30 LUNCH. Sidewalk Cafe, Hall of Nations

12:00-1:30 DEPARTMENTAL CHAIRMEN'S LUNCHEON. Hermitage Suite.  
Speaker: Mr. Ray Yinger, U.S. Civil Service Commission

1:30-3:00 PAPER SESSIONS 5, 12, 19, 26, 33

Session 5. Artificial Intelligence II: Deduction and  
Problem Solving

Tara Room 1. Chairman: W.W. Peterson

Session 12. Applications V: System Design

Tara Room 2. Chairman: P. Bratley

Session 19. Education I: General

Tara Room 3. Chairman: R.T. Gregory

Session 26. Data Base III: Maintenance and Evaluation

Tara Room 4. Chairman: H. Hedges

Session 33. Programming Languages II: Parsing

Tara Room 5. Chairman: A.K. Joshi

3:30-5:00 PAPER SESSIONS 6, 13, 20, 27, 34

Session 6. Artificial Intelligence III: Applications  
Tara Room 1. Chairman: D. Matula

Session 13. Applications VI: General B  
Tara Room 2. Chairman: D.W. Loveland

Session 20. Education II: CAI and Languages  
Tara Room 3. Chairman: F.Y. Wang

Session 27. Data Base IV: Applications  
Tara Room 4. Chairman: W. Cotterman

Session 34. Programming Languages III: General - B  
Tara Room 5. Chairman: V. Wallace

WEDNESDAY, FEBRUARY 2, 1977

Registration, 7:30 am - 5:00 pm, Convention Floor Lobby  
Publishers' Exhibit, 8:00 am - 5:00 pm, Hall of Nations  
Employment Register, 10:00 am - 3:00 pm, Hall of Nations

9:00-10:15 INVITED SPEAKER: Professor Zohar Manna, Stanford University,  
"New Approaches to Program Verification"

10:45-12:00 PAPER SESSIONS 7, 14, 21, 28, 35

Session 7. Artificial Intelligence IV: Natural Language  
and Speech.  
Tara Room 1. Chairman: F.M. Johnson

Session 14. Applications VI: Medical - B  
Tara Room 2. Chairman: J. Hamblen

Session 21. Networks  
Tara Room 3. Chairman: G. Nagy

Session 28. Scientific Programming and Numerical  
Analysis II  
Tara Room 4. Chairman: N.S. Coulter

Session 35. Programming Languages IV: General - C  
Tara Room 5. Chairman: P. Gilmore

## EMPLOYMENT REGISTER

### ACM COMPUTER SCIENCE CONFERENCE

1977

The purpose of the Register is to bring applicants and employers together in a professional manner to aid in the employment process. Listings of employer openings and applicants are available to all interested parties in the Hall of Exhibits of the Marriott Hotel during the following hours:

Sunday	-	January 30	-	7:00 p.m. to 9:00 p.m.
Monday	-	January 31	-	10:00 a.m. to 8:00 p.m.
Tuesday	-	February 1	-	10:00 a.m. to 8:00 p.m.
Wednesday	-	February 2	-	10:00 a.m. to 3:00 p.m.

Making contacts and arranging for interviews will be the responsibility of the employer and the applicant. However, the Employment Register Staff will facilitate making contacts by:

1. Operating a message desk -- Memo paper and envelopes are provided. A message should be placed in an envelope, addressed to the appropriate individual, and then placed in the appropriate pigeonhole in the set of mail boxes. Note that the Employment Register Staff are not involved in the exchange of messages. Messages not picked up by the end of the conference will be destroyed.
2. Posting sign-up sheets for interviews as provided by the employer. The applicant may choose a suitable time, sign up, and appear for an interview at the location designated by the employer.

Representatives of employing organizations need not be present at the conference. This can be determined by checking item 4 on the employer's form. In this case, applicants should direct their inquiries to the individual listed in item 3 of the form.

The applicant need not be present at the conference. This can be determined by checking item 5 on his form. In this case, the employer's representative should use the information in items 2, 3, and 4 to direct inquiries to the applicant.

An IBM copying machine is available in the Employment Register area so that individual pages from either the employer or applicant listing books may be duplicated.

Information on the availability of complete copies of employer or applicant listings may be obtained by directing a message during the conference to Professor Taulbee or writing to him immediately afterwards at the address:

Professor Orrin E. Taulbee  
Department of Computer Science  
University of Pittsburgh  
Pittsburgh, Pennsylvania 15260

## CONFERENCE EXHIBITORS

Academic Press, Inc.  
Addison-Wesley Publishing Co., Inc.  
Computer Science Press, Inc.  
Conference Book Service, Inc.  
Elsevier North-Holland, Inc.  
Hayden Book Company, Inc.  
Holden-Day, Inc.  
IEP-A-Dun-Donnelley  
McGraw-Hill Book Co.  
Petrocelli/Charter Publishers  
Prentice Hall, Inc.  
Science Research Associates  
Springer-Verlag New York, Inc.  
West Publishing Company  
Wiley & Sons, Inc.  
Winthrop Publishers, Inc.

PROGRAM

ACM/SIGCSE SYMPOSIUM  
Atlanta, Georgia

WEDNESDAY, FEBRUARY 2, 1977

Registration, 7:00 am - 5:00 pm, Convention Floor Lobby  
Publishers' Exhibit, 8:00 am - 5:00 pm, Hall of Nations  
Employment Register, 10:00 am - 3:00 pm, Hall of Nations

- 9:00-10:15      Jointly with CSC '77:  
                  INVITED SPEAKER: Professor Zohar Manna, Stanford University,  
                  "New Approaches to Program Verification"
- 10:30-11:15     OPENING SESSION  
                  Chairman: J. Goda  
                  Welcome: Richard Austing, SIGCSE Chairman
- 12:00-1:00      LUNCH.    Sidewalk Cafe, Hall of Nations
- 1:30-3:00        Session 1-A: Hardware Facilities, Selection and Usage  
                  Session 1-B: Structured Programming I  
                  Session 1-C: The ACM C<sup>3</sup>S-CAJC Curriculum Report  
                  Chairman: Joyce Little
- 3:30-5:00        Session 2-A: Aids for Compiler Writing Courses  
                  Session 2-B: Structured Programming II  
                  Session 2-C: Implementation Concerns for the C<sup>3</sup>S-CAJC  
                  Curriculum Report  
                  Chairman: Frank Cable
- 3:30             Student Programming Contest - Bus leaves Marriott Hotel  
                  for Georgia Tech
- 4:00-5:00        Student Programming Contest - Briefing Session
- 5:00-12:00      Student Programming Contest - Competition
- 8:00-10:00      Birds of a Feather  
                  TUTORIAL: Structured COBOL, Daniel D. McCracken

