

PROGRAM FOR 20th ANNUAL

SYMPOSIUM ON FOUNDATIONS OF COMPUTER SCIENCE

MONDAY, OCTOBER 29

Session 1: Morning 9:00 a.m.-12:30 p.m.

Chairman: R. L. Graham, Bell Laboratories

- 9:00 On Some Theoretical Aspects of Position-Location Problems.
Y. Yemini, USC/Information Sciences Institute
- 9:30 On a General Method for Maximizing and Minimizing Among
Certain Geometric Problems.
D. P. Dobkin, University of Arizona, and L. Snyder,
Yale University
- 9:45 Efficient Computation of Continuous Skeletons.
D. G. Kirkpatrick, University of British Columbia, Canada
- 10:00 New Methods for the Acceleration of Matrix Multiplications.
V. Ya. Pan, IBM T. J. Watson Research Center
- 10:30 COFFEE BREAK
- 11:00 Graph Canonization in Linear Average Time.
L. Babai, Eötvös University, Hungary, and L. Kucera,
Charles University, Czechoslovakia
- 11:15 Succinct Certificates for the Solvability of Binary
Quadratic Diophantine Equations.
J. C. Lagarias, University of Maryland
- 11:45 A Subexponential Algorithm for the Discrete Logarithm
Problem with Applications to Cryptography.
L. Adleman, M.I.T.
- 12:15 Computational Complexity in Algebraic Function Fields.
N. Pippenger, IBM T. J. Watson Research Center
- 12:30 LUNCHEON

Session 2: Afternoon 2:00 p.m.-5:30 p.m.

Chairman: A. R. Meyer, M.I.T.

Invited Speaker: Sheila A. Greibach

- 2:00 Theory of Formal Languages: Origins and Directions.
S. A. Greibach, University of California, Los Angeles
- 3:00 COFFEE BREAK
- 3:30 The Decidability of the Equivalence of Context-Free Grammar
Forms.
M. Blattner, Rice University
- 4:00 Bijective A-Transducers.
H. A. Maurer, Technische Universität Graz, Austria, and
M. Nivat, Université Paris VII, France
- 4:15 Semantics of Probabilistic Programs.
D. Kozen, IBM T. J. Watson Research Center
- 4:30 Models of Program Logics.
V. R. Pratt, M.I.T.
- 4:45 Orderings for Term-rewriting Systems.
N. Dershowitz, University of Illinois at Urbana-Champaign
- 5:00 Complexity of Partial Satisfaction.
K. Leiberherr and E. Specker, ETH Zurich, Switzerland

TUESDAY, OCTOBER 30

Session 3: Morning 9:00 a.m.-12:30 p.m.

Chairman: J. E. Hopcroft, Cornell University

- 9:00 The Cube-Connected-Cycles: A Versatile Network for Parallel Computation.
F. P. Preparata, University of Illinois at Urbana-Champaign
and J. Vuillemin, IRIA-Laboria, France
- 9:30 Transforming Static Data Structures to Dynamic Structures.
J. B. Saxe and J. L. Bentley, Carnegie-Mellon University
- 9:45 Toward Self-Organizing Linear Search.
G. H. Gonnet, J. I. Munro, and H. Suwanda, University of Waterloo, Canada
- 10:00 New Classes and Applications of Hash Functions.
M. N. Wegman and J. L. Carter, IBM T. J. Watson Research Center
- 10:30 COFFEE BREAK
- 11:00 Sequence of Operations Analysis of Dynamic Data Structures.
P. Flajolet, J. Francon and J. Vuillemin, IRIA-Laboria, France
- 11:30 Efficient Algorithms for Some Matroid Intersection Problems.
H. N. Gabow, University of Colorado at Boulder, and
R. E. Tarjan, Stanford University
- 11:45 A Polynomial Time Algorithm for Solving Systems of Linear Inequalities with Two Variables per Inequality.
B. Aspvall and Y. Shiloach, Stanford University
- 12:00 Random Walks, Universal Traversal Sequences, and the Complexity of Maze Problems.
R. Aleliunas, University of Toronto, Canada, R. M. Karp,
R. J. Lipton, University of California, Berkeley, and
L. Lovász, University of Szeged, Hungary
- 12:30 LUNCHEON

Session 4: Afternoon 2:00 p.m.-5:30 p.m.

Chairman: R. E. Stearns

Invited Speaker: Juris Hartmanis

- 2:00 Observations about the Development of Theoretical
Computer Science.
J. Hartmanis, Cornell University
- 3:00 COFFEE BREAK
- 3:30 Resource Allocation with Immunity to Limited Process Failure.
M. J. Fischer, University of Washington, N. A. Lynch,
J. E. Burns, Georgia Institute of Technology, and
A. Borodin, University of Toronto, Canada
- 4:00 Approximate Algorithms for Optimization of Busy Waiting in
Parallel Programs.
E. M. Clarke, Harvard University, and L. Liu, MITRE Corp.
- 4:30 Modeling Communications Protocols by Automata.
A. V. Aho, Bell Laboratories, J. D. Ullman, Princeton
University, and M. Yannakakis, Bell Laboratories
- 4:45 Controlling Concurrency Using Locking Protocols.
Z. Kedem and A. Silberschatz, University of Texas at Dallas
- 5:00 Locking Policies: Safety and Freedom from Deadlock.
M. Yannakakis, Bell Laboratories, C. H. Papadimitriou,
M.I.T., and H. T. Kung, Carnegie-Mellon University

WEDNESDAY, OCTOBER 31

Session 5: Morning 9:00 a.m.-12:30 p.m.

Chairman: M. Machtey, Purdue University

- 9:00 On Time Versus Space II.
W. J. Paul and R. Reischuk, Universität Bielefeld,
West Germany
- 9:30 On Simultaneous Resource Bounds.
N. Pippenger, IBM T. J. Watson Research Center
- 9:45 On Uniform Circuit Complexity.
W. L. Ruzzo, University of Washington
- 10:00 A Time-Space Tradeoff for Sorting and Related Non-Oblivious
Computations.
A. Borodin, University of Toronto, Canada, M. J. Fischer,
Washington University, D. G. Kirkpatrick, University of
British Columbia, Canada, N. A. Lynch, Georgia Institute of
Technology, and M. Tompa, University of Washington
- 10:30 COFFEE BREAK
- 11:00 A $T \cdot S^2 = O(2^n)$ Time/Space Tradeoff for Certain NP-Complete
Problems.
R. Schroepel, Information International, California, and
A. Shamir, M.I.T.
- 11:15 Length of Predicate Calculus Formulas as a New Complexity
Measure.
N. Immerman, Cornell University
- 11:45 Multiple-Person Alternation.
G. L. Peterson and J. H. Reif, University of Rochester
- 12:00 Explicit Constructions of Linear Size Concentrators and
Superconcentrators.
O. Gabber, Tel-Aviv University, Israel, and Z. Galil,
Tel-Aviv University and University of California, Berkeley

Session 6: Afternoon 2:00 p.m.-5:30 p.m.

Chairman: W. J. Savitch, University of California, San Diego

Invited Speaker: Stephen C. Kleene

- 2:00 Origins of Recursive Function Theory.
 S. C. Kleene, University of Wisconsin-Madison
- 3:00 COFFEE BREAK
- 3:30 Relativized Cryptography.
 G. Brassard, Cornell University
- 4:00 Succinctness, Verifiability and Determinism in Representations
 of Polynomial-Time.
 T. P. Baker, University of Iowa, and J. Hartmanis,
 Cornell University
- 4:15 Reductions that Lie.
 L. Adleman, M.I.T., and K. Manders, University of Pittsburgh
- 4:45 Division is Good.
 J. Simon, Pennsylvania State University
- 5:15 Complexity of the Mover's Problem and Generalizations.
 J. H. Reif, University of Rochester