EIGHTEENTH ANNUAL SYMPOSIUM ON
FOUNDATIONS OF COMPUTER SCIENCE
(Formerly, Symposium on Switching and Automata Theory)
October 31 - November 2, 1977

Sponsored by the IEEE Computer Society
Committee on Mathematical Foundations of Computing
in cooperation with the ACM Special Interest Group
for Automata and Computability Theory and
the Program in Computer Science, Brown University

LOCATION

All technical sessions and social events will be held at the Marriott Inn,
Charles at Orms Street, Providence, Rhode Island 02904. The Marriott Inn
is on Interstate Route 95, Exit 23 in Providence. Telephone number: (401)
272-2400.

The hotel has heated indoor-outdoor pools, sauna, healthclub, gameroom, shops
and restaurant. It is adjacent to the State Capitol and the historically
restored East Side, the location of Brown University.

ACCOMMODATIONS

A block of rooms has been reserved at the Marriott Inn at the rate of $27
per day for single occupancy and $34 per day for double or twin occupancy.
Please make reservations by writing directly to the hotel, preferably by
using the attached form. If the form is not used, please state that you are
attending FOCS '77. Otherwise, the room rate offered to conference attendees
cannot be guaranteed.

TRANSPORTATION

Providence is served by Green Airport which is a ten minute drive from the
city center and the Marriott Inn. Limousine service is available. Providence
is also served by Amtrak and several bus lines and the rail and bus stations
are minutes away from the hotel. Travelers can also fly to Boston's Logan
Airport and travel to downtown Providence via the Bonanza bus line in one and
a quarter hours. Buses depart for Providence every hour on the half hour from each
airline terminal at Logan. Buses to Logan depart every hour on the half hour
from Providence. The one-way fare is about $6. There is good afternoon air service
from Providence to points west with connections in Chicago, New York, Philadel-
phia, and other cities.

CLIMATE

The weather is notoriously difficult to predict in New England but the 40 year
average daytime and overnight temperatures for Providence at the time of the
conference are 60°F (16°C) and 40°F (5°C), respectively, with sunny and mostly
dry days. The fall foliage season usually peaks around the middle of October
but could peak later.

FEES

Member of IEEE Computer Society or ACM-SIGACT	$51.00 ($56.00 after October 19)
Nonmembers	$64.00 ($69.00 after October 19)
Authors, co-authors, session chairpersons	$45.00 ($50.00 after October 19)
Students	$10.00 ($11.00 after October 19)

Except for students, fee includes two luncheons, a clambake, coffee breaks, and a copy of the Proceedings. Student fees include coffee breaks and a copy of the Proceedings.

Early enrollment is advised.

Full fee must accompany application. Make checks payable to "IEEE Foundations Symposium."

Full refunds will be granted if requests are postmarked on or before October 26, 1977.

THINGS TO DO

Providence has several historic districts and many buildings from the colonial period. Newport, site of the 1977 America's Cup Race, is about an hour's drive from Providence and has many tourist spots including the "summer cottages" of the wealthy, constructed in the middle to late nineteenth century. Boston and Cape Cod are respectively one hour and 1 1/4 hours away by car.

INFORMATION

Professor John E. Savage
FOCS '77
Program in Computer Science
Box D
Brown University
Providence, RI 02912

Telephone: (401) 863-2601

PROGRAM

SUNDAY, OCTOBER 30
Registration, Pre-meeting Activities/Lobby/5:00-8:00 PM

MONDAY, OCTOBER 31
Registration/Lobby/8:00-10:00 AM

Session I/Ballroom/9:00 AM - 12:30 PM
Chairman: Bill Rounds

A Necessary and Sufficient Condition for the Existence of Hoare Logics/Richard J. Lipton (Yale)

Data Types/Daniel J. Lehmann and Michael B. Smyth (Warwick)

The Category-Theoretic Solution of Recursive Domain Equations/G. Plotkin (Edinburgh) and M. B. Smyth (Warwick)

COFFEE BREAK 10:30 - 11:00 AM

Program Invariants as Fixed Points/Edmund M. Clarke, Jr., (Duke)

Confluent Reductions: Abstract Properties and Applications to Term Rewriting Systems/Gerard Huet (IRIA)

The Temporal Logic of Programs/Amir Pnueli (Pennsylvania)

Luncheon/Ballroom/12:45 PM

Session II/Ballroom/1:45 - 5:45 PM
Chairwoman: Sheila Greibach

Language Representation Theorems: How to Generate the R. E. Sets from the Regular Sets/Ronald V. Book (Santa Barbara)

A New Decidable Problem, With Applications/Harry R. Lewis (Harvard)

The Unsolvability of the Equivalence Problem for ε-Free NGSM's with Unary Input (Output) Alphabet and Applications / Oscar H. Ibarra (Minnesota)

COFFEE BREAK 3:15 - 3:45 PM

Several Results in Program Size Complexity/Howard P. Katseff and Michael Sipser (Berkeley)

The Typed λ-Calculus Is Not Elementary Recursive/Richard Statman (Michigan)

Precise Bounds for Pressburger Arithmetic and the Reals with Addition: Preliminary Report/Leonard Berman

Some Lowless Properties and Computational Complexity Sequences/Victor L. Bennison (SUNY-Binghampton) and Robert I. Soare (Chicago)

Business Meeting/Ballroom/9:00 PM

TUESDAY, NOVEMBER 1

Session III/Ballroom/9:00 AM - 12:30 PM
Chairman: Rao Kosaraju

The Theory of Joins in Relational Data Bases/A. V. Aho (Bell Labs), C. Beeri (Princeton), and J. D. Ullman (Princeton)

Fast Decision Algorithms based on Union and Find/Greg Nelson and Derek C. Oppen (Stanford)

A Parallel Garbage Collection Algorithm: Correctness and Efficiency/H. T. Kung and S. W. Song (Carnegie-Mellon)

COFFEE BREAK/Ballroom/10:30 - 11:00 AM

A Space Efficient Algorithm for the Lowest Common Ancester Problem and an Application to Finding Negative Cycles/David Maier (Princeton)

On Uniquely Representable Data Structures/Lawrence Snyder (Yale)

Finite Automata in a 2-Dimensional Space/Manuel Blum and William Sakoda (Berkeley)

Luncheon/Ballroom/12:45 PM

Session IV/Ballroom/1:45 - 5:15 PM
Chairman: Sam Winograd

On Applications of the Planar Separator Theorem/Richard J. Lipton (Yale) and Robert E. Tarjan (Stanford)

The Power of Commutativity/L. Hyafil (IRIA)

On Taking Roots in Finite Fields/Leonard Adelman (M.I.T.), Dana Angluin (Edinburgh), Kenneth Manders (Berkeley), and Gary Miller (Rochester)

COFFEE BREAK/Ballroom/3:15 - 3:45 PM

Saving Space in Fast String-Matching/Zvi Galil (Tel Aviv) and Joel Seiferas (Penn State)

A New Proof of the Linearity of the Boyer-Moore String Searching Algorithm/Leo J. Guibas (Xerox) and Andrew M. Odlyzko (Bell Labs)

On the Average Number of Registers Required for Evaluating Arithmetic Expressions/ P. Flajolet, J. C. Raoult, and J. Vuillemin (IRIA)

Cocktails/Lobby/6:15 PM

Clambake/Ballroom/7:00 PM

WEDNESDAY, NOVEMBER 2

Session V/Ballroom/9:00 AM - 12:30 PM
Chairwoman: Nancy Lynch

Fast Approximation Algorithms for Knapsack Problems/E. L. Lawler (Berkeley)

Combinatorial Analysis of an Efficient Algorithm for Processor and Storage Allocation/E. G. Coffman (Santa Barbara) and Joseph Y-T. Leung (Virginia Poly-tech.)

Probabilistic Computations - Toward a Unified Measure of Complexity/Andrew C. Yao (Stanford)

COFFEE BREAK/Ballroom/10:30 - 11:00 AM

On Triangulations of a Set of Points in the Plane/Errol L. Lloyd (M.I.T.)

New NP-Hard and NP-Complete Polynomial and Integer Divisibility Problems/ David A. Plaisted (Illinois)

Lower Bounds for Natural Proof Systems (Preliminary Report)/ Dexter Kozen (Cornell)

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TRANSITIONS

Nancy Lynch's new address is School of Information and Computer Science, Georgia Institute of Technology, Atlanta, Georgia 30332. Her telephone number is (404) 894-2590.

Moving to Nancy's former location is **Daniel Lehmann**. His address is now Department of Mathematics, University of Southern California, University Park, Los Angeles, California 90007.

Terrence Pratt has moved. His new address is Department of Applied Math and Computer Science, University of Virginia, Charlottesville, Virginia 22901.

Moving to the Department of Computer Science, University of Utrecht, Utrecht 2506, The Netherlands, is **Jan van Leeuwen**.