

ELEVENTH IEEE SYMPOSIUM ON SWITCHING

AND AUTOMATA THEORY: REPORT

The Eleventh Annual Switching and Automata Theory meeting was held October 28-30, 1970, at the Miramar Hotel, Santa Monica, California. The physical format of the conference was very much as expected from past conferences. The location was salutary (though some persons of weak will maintained that the beach was too strong a temptation). Local arrangements were handled smoothly - in my observation, at least - by Jack Carlyle (UCLA) and family and coworkers. Some note should be made of the services of University of California Extension: This was the first time I had been able to pay a registration fee by credit card. A single session and reception were held on the UCLA campus (again, the non-conference-related attractions were considerable), and the transportation was handled efficiently.

Official attendance at the Symposium was 111, geographically distributed as follows: California, 34; Northeast, 39; Northwest, 2; Midwest, 14; Southwest, 4; Southeast, 1; Canada - Eastern half, 9; Western half, 2; Europe, 5; South America, 1.

Papers at the conference were distributed over the usual subject areas, but the distribution varied from the Tenth Symposium. A comparison of numbers (based on an arbitrary and overlapping classification) is revealing:

	<u>Tenth</u>	<u>Eleventh</u>
Complexity	2	3
Computing Theory	3	7
Networks, Switching	6	5
Stochastic Automata (Languages)	4	0
Parsing-oriental	5	5
Formal Languages & Automata	6	4
Mathematical Applications	0	1

Even with this crude categorization, and allowing for year-to-year fluctuation, a trend toward the application of theoretical results to various areas is apparent. Though formal languages, automata theory, and switching theory began largely from attempts to model practical problems, they have taken a considerable excursion into mathematical Wonderland in the last several years. With respect to computer science, as Newell has put it (Science 165: 781), "There has always existed a most uncomfortable gap between automata theory and the heartland [of the discipline]." Now it appears (and I don't claim to be the first to notice this) that these theories are finally coming home to serve as tools in computer science.

Part of the credit for the phenomenon mentioned above must be given to those people (Knuth, Floyd, Minsky, among others) who have pointed to areas of application. Another part is due to those who had the foresight (and the faith) to make automata theory and computability integral parts of computer science curricula, with the resulting beneficial interaction. A third part may be a reflection of the present sociological situation - the glut of mathematicians and the emphasis on scientific practicality. But the continued evolution of our discipline is, I think, a very healthy sign of its integrity as a discipline.

Unfortunately, for those of us interested in linguistic applications, there were no papers relating very closely to natural language models this year. In the Tenth Symposium, there were papers in areas (such as tree automata and string adjunction) which give some hope of linguistic applications. There were, however, two interesting papers in cellular automata, as opposed to none last year.

L. Reeker

APPENDIX: PAPERS PRESENTED

- Program Schemata as Automata, by J.D. Rutledge
- Equivalence of Programs with Structured Variables, by A.V. Aho and J.D. Ullman
- On Maximally Parallel Schemata, by Robert M. Keller
- A Phenomenon in the Theory of Sorting, by David Gale and Richard M. Karp
- On the Efficiency of Programs in Subrecursive Formalisms, by Robert L. Constable and Allan Borodin
- On the Optimality of Some Set and Vector Algorithms, by Edward M. Reingold
- On the Computational Power of Some Machines with Pushdown-like Storage, by T. Kameda
- Tape-Bounds for Time-Bounded Turing Machines, by Michael S. Paterson
- On Star-Free Events, by Yechezkel Zalcstein
- Deux Applications de la Representation Matricielle D'Une Serie Rationnelle Non Commutative, by Michel Fliess
- Fault Detection Experiments for Asynchronous Sequential Machines, by Aaron Ashkinazy
- Synchronizing and Representation Problems for Sequential Machines with Masked Outputs, by Martin A. Fischler and Meyer Tannenbaum
- Elimination of Static and Dynamic Hazards in Combinational Switching Circuits, by Jon G. Bredeson and Paul T. Hulina
- Asynchronous Sequential Circuits with (2,1) Type State Assignments, by Gyula Mago
- Asynchronous Sequential Switching Circuits with Unrestricted Input Changes, by S.H. Unger
- The Synthesis of Finite State Syntax Directed Top-Down and Bottom-Up Transducers, by Dines Bjørner
- Syntactic Clues, by David B. Benson
- Deterministic Left Corner Parsing, by D.J. Rosenkrantz and P.M. Lewis II
- Parsing Algorithms with Backtrack, by Alexander Birman and J.D. Ullman
- Extended Precedence Languages, Bounded Right Context Languages, and Deterministic Languages, by Susan L. Graham
- Writing Stack Acceptors, by J.A. Giuliano
- Universality in Cellular Automata, by Edwin Roger Banks
- Cellular Automata and Formal Languages, by Alvy Ray Smith III
- Sequencing Tasks in Multiprocess Systems to Avoid Deadlocks, by A. Shoshani and E.G. Coffman
- Series-Parallel Irreducibility: Machine Oriented Definitions and Proofs, by Bernard P. Zeigler