

Tentative Program for FOCS '87

Monday, October 12

Session 1 Chair: Leonidas Guibas

- 8:30 Polytope range searching and integral geometry, B. Chazelle (*Princeton U.*)
8:50 An output sensitive algorithm for computing visibility graphs, S. Ghosh (*U. Maryland*)
D. Mount (*U. Maryland*)
9:10 Delaunay graphs are almost as good as complete graphs, D. Dobkin (*Princeton U.*) S. Friedman
(*Princeton U.*) K. Supowit (*Princeton U.*)
9:30 On the lower envelope of bivariate functions and its applications, H. Edelsbrunner (*U. Illinois
at Urbana*) J. Pach (*Hungarian Academy of Sciences*) J. Schwartz (*N.Y.U.*) M. Sharir (*Tel Aviv U.*)
9:50 Break,

Session 2 Chair: Michael Paterson

- 10:20 A new algebraic method for robot motion planning and real geometry, J. Canny (*M.I.T.*)
10:40 New lower bound techniques for robot motion planning problems, J. Canny (*M.I.T.*) J. Reif
(*Duke U.*)
11:00 Learning one-counter languages in polynomial time, P. Berman (*Penn. State U.*) R. Roos
(*Penn. State U.*)
11:20 Learning quickly when irrelevant attributes abound: a new linear-threshold algorithm,
N. Littlestone (*U.C. Santa Cruz*)
11:40 Diversity-based inference of finite automata, R. Rivest (*M.I.T.*) R. Schapire (*M.I.T.*)
12:00 Lunch,

Session 3 Chair: Michael Fischer

- 2:00 Incomparability in parallel computation, V. Grolmusz (*U. Chicago and Eötvös U.*) P. Ragde
(*U. Toronto*)
2:20 Threshold circuits of bounded depth, A. Hajnal (*U. Illinois at Chicago and Hungarian Academy
of Sciences*) W. Maass (*U. Illinois at Chicago*) P. Pudlák (*U. Illinois at Chicago and Czechoslovakian
Academy of Sciences*) M. Szegedy (*U. Chicago*) G. Turán (*U. Illinois at Chicago and Hungarian Academy
of Sciences*)
2:40 Storage modification machines are faster than Kolmogorov-Uspenskii machines, G. Schnit-
ger (*Penn. State U.*)
3:00 Complete and incomplete randomized NP problems, Y. Gurevich (*U. Michigan*)
3:20 Generic oracles and oracle classes, M. Blum (*U.C. Berkeley*) R. Impagliazzo (*U.C. Berkeley*)
3:40 Break,

Session 4 Chair: Michael Ben-Or

- 4:10 Polynomial decomposition algorithms, D. Kozen (*Cornell U.*) S. Landau (*Wesleyan U.*) J. von
zur Gathen (*U. Toronto*)
4:30 Factoring polynomials over finite fields, L. Rónyai (*Hungarian Academy of Sciences and
U. Chicago*)
4:50 Multiplicative complexity of polynomial multiplication over finite fields, M. Kaminski (*Tech-
nion*) N. Bshouty (*Technion*)
5:10 The multiplicative complexity of Boolean quadratic forms, R. Mirwald (*U. Frankfurt*)
C. Schnorr (*U. Frankfurt*)

Tuesday, October 13

Session 5 Chair: Uzi Vishkin

- 8:30 Cascading divide-and-conquer: a technique for designing parallel algorithms, M. Atallah (*Purdue U.*) R. Cole (*N.Y.U.*) M. Goodrich (*Purdue U.*)
- 8:50 A new parallel algorithm for the maximal independent set problem, M. Goldberg (*R.P.I.*) T. Spencer (*R.P.I.*)
- 9:10 The matching problem for bipartite graphs with polynomially bounded permanents is in NC , D. Grigoriev (*Soviet Academy of Sciences*) M. Karpinski (*U. Bonn*)
- 9:30 On the complexity of some computations with polynomials and Toeplitz matrices, V. Pan (*S.U.N.Y. Albany*) J. Reif (*Duke U.*)
- 9:50 Break,

Session 6 Chair: Tom Leighton

- 10:20 How to emulate shared memory, A. Ranade (*Yale U.*)
- 10:40 A lower bound of $\Omega(\log \log n)$ for randomized parallel merging, M. Geréb-Graus (*Harvard U.*) D. Krizanc (*Harvard U.*)
- 11:00 The average complexity of deterministic and randomized parallel comparison sorting algorithms, N. Alon (*Tel Aviv U.*) Y. Azar (*Tel Aviv U.*)
- 11:20 Hierarchical memory with block transfer, A. Aggarwal (*I.B.M. Watson Research Center*) A. Chandra (*I.B.M. Watson Research Center*) M. Snir (*I.B.M. Watson Research Center*)
- 11:40 Approximation algorithms for scheduling unrelated parallel machines, J. Lenstra (*C.W.I.*) D. Shmoys (*M.I.T.*) É. Tardos (*Eötvös U.*)
- 12:00 Lunch,

Session 7 Chair: Robert Tarjan

- 2:00 Finding near optimal separators in planar graphs, S. Rao (*M.I.T.*)
- 2:20 A parallel algorithm for finding a separator in planar graphs, H. Gazit (*U. Southern California*) G. Miller (*U. Southern California*)
- 2:40 Determining edge connectivity in $O(nm)$ steps, D. Matula (*Southern Methodist U.*)
- 3:00 Improved algorithms for graph four-connectivity, A. Kanevsky (*U. Illinois at Urbana*) V. Ramachandran (*U. Illinois at Urbana*)
- 3:20 Parallel graph algorithms that are efficient on average, D. Coppersmith (*I.B.M. Watson Research Center*) P. Raghavan (*I.B.M. Watson Research Center*) M. Tompa (*I.B.M. Watson Research Center*)
- 3:40 Break,

Session 8 Chair: László Babai

- 4:10 Canonical labeling of regular graphs in linear average time, L. Kucera (*U. Chicago and Charles U.*)
- 4:30 Eigenvalues and graph bisection: an average-case analysis, R. Boppana (*M.I.T.*)
- 4:50 On the second eigenvalue of random regular graphs, A. Broder (*D.E.C.-S.R.C.*) E. Shamir (*D.E.C.-S.R.C. and U. Chicago*)
- 5:10 Recursive construction for 3-regular expanders, M. Ajtai (*I.B.M. Almaden Research Center*)

Wednesday, October 14

Session 9 Chair: Rao Kosaraju

- 8:30 The organization of permutation architectures with bussed interconnections, J. Kilian (M.I.T.) S. Kipnis (M.I.T.) C. Leiserson (M.I.T.)
- 8:50 Channel routing of multiterminal nets, S. Gao (U. Saarlandes) M. Kaufmann (U. Saarlandes)
- 9:10 Two lower bounds in asynchronous distributed computation, P. Duris (Slovak Academy Sciences) Z. Galil (Columbia U.)
- 9:30 Locality as an obstacle to distributed computing, N. Linial (Hebrew U.)
- 9:50 Break,

Session 10 Chair: Paris Kanellakis

- 10:20 Achievable cases in an asynchronous environment, H. Attiya (Hebrew U.) A. Bar-Noy (Hebrew U.) D. Dolev (Hebrew U.) D. Koller (Hebrew U.) D. Peleg (Stanford U.) R. Reischuk (Technische Hochschule Darmstadt)
- 10:40 Controlling worst-case performance of a communication protocol and dynamic resource management, Y. Afek (A.T.&T. Bell Labs) B. Awerbuch (M.I.T.) S. Plotkin (M.I.T.) M. Saks (Rutgers U. and Bell Communications Research)
- 11:00 Adapting communication protocols to dynamic input and network topology, Y. Afek (A.T.&T. Bell Labs) B. Awerbuch (M.I.T.) E. Gafni (U.C.L.A.)
- 11:20 Bounded time-stamps, A. Israeli (Harvard U.) M. Li (Harvard U.)
- 11:40 Concurrent reading while writing II: the multi-writer case, G. Peterson (Georgia Tech.) J. Burns (Georgia Tech.)
- 12:00 Lunch,

Session 11 Chair: Joseph Halpern

- 2:00 Lower bounds to randomized algorithms for graph properties, A. Yao (Princeton U.)
- 2:20 Exponential lower bounds for finding Brouwer fixed points, M. Hirsch (U.C. Berkeley) S. Vavasis (Stanford U.)
- 2:40 Database theory and cylindric lattices, S. Cosmadakis (I.B.M. Watson Research Center)
- 3:00 Secret linear congruential generators are not cryptographically secure, J. Stern (U. Paris)
- 3:20 A practical scheme for verifiable secret sharing, P. Feldman (M.I.T.)
- 3:40 Break,

Session 12 Chair: Shafi Goldwasser

- 4:10 Perfect zero-knowledge languages can be recognized in two rounds, W. Aiello (M.I.T.) J. Hastad (M.I.T.)
- 4:30 Interactive proof systems: provers that never fail and random selection, O. Goldreich (Technion) Y. Mansour (I.B.M. Haifa Scientific Center)
- 4:50 On the cunning power cheating verifiers: some observations about zero knowledge proofs, Y. Oren (Technion)
- 5:10 Random self-reducibility and zero knowledge interactive proofs of possession of information, M. Tompa (I.B.M. Watson Research Center) H. Woll (U. Washington)