

Authors

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Dr. Ahuja is an advisory scientist in the communication systems architecture group. His current interests are in the area of network routing and flow control. He received his B.S. in electrical engineering from Panjab Engineering College, India, in 1963. He joined IBM in 1970 after receiving an M.S. in computer science from the University of North Carolina. In 1976, he received his Ph.D. in computer science, also from the University of North Carolina. Dr. Ahuja is a member of the Association for Computing Machinery and Sigma Xi.

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Dr. Braunecker received his M.S. in 1968 and his Ph.D. in 1972, both from the University of Erlangen-Nurnberg. In 1972, he joined the optical group at the University of Erlangen-Nurnberg. From 1977 to 1978 he worked at the IBM Research laboratory in San Jose, California, as a postdoctoral fellow. At present he is an Assistant Professor at the University of Essen working on research in applied optics. Dr. Braunecker has been active in research on nuclear physics (accelerator design) and nuclear solid state optics (Mossbauer spectrometry).

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Dr. Chung is presently employed by Wang Laboratories. He received an A.B. from the University of California, Berkeley, in 1971; and an M.A. from the State University of New York, Stony Brook, in 1973, both in physics. He received his Ph.D. in computer science from the University of Illinois in 1979. Dr. Chung is a member of Sigma Xi.

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Dr. Eichelberger is manager of the custom chip design area in Kingston. He first joined IBM in 1956 in Endicott, New York, and has spent most of his career working in the areas of circuit design and design automation. He received his B.S. in electrical engineering from Lehigh University, Bethlehem, Pennsylvania

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Peter A. Franaszek

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Dr. Franaszek is a member of the computer sciences department at the Thomas J. Watson Research Center. His interests include analytical problems associated with storage hierarchies, magnetic recording, and digital communications. He received the B.Sc. degree from Brown University, Providence, Rhode Island, in 1962, and the M.A. and Ph.D. degrees from Princeton University, New Jersey, in 1964 and 1965. During the academic year 1973 to 1974, he was on sabbatical leave at Stanford University, California, as a Consulting Associate Professor of Electrical Engineering and Computer Science. Prior to joining IBM in 1968, he was a member of the technical staff at Bell Telephone Laboratories. Dr. Franaszek is a member of Sigma Xi, Tau Beta Pi, and the Institute of Electrical and Electronics Engineers.

Robert L. Golden

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Mr. Golden is a staff engineer in the custom design tools group of the functional products organization at Kingston. He joined IBM in 1966 as a customer engineer in the Field Engineering Division. Since he joined the functional products group in 1975, his work has been in the physical design automation field. His recent work has concentrated on automating the physical design of programmable logic array (PLA) macros.

David D. Grossman

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Dr. Grossman received his B.A., M.A., and Ph.D. all in physics, from Harvard University. He then spent three years as a physics instructor at Princeton University. In 1970 he switched fields to computer science and joined IBM in the Research Division to work on image processing and data compression. For the past eight years, he has worked on robotics, including a sabbatical year at Stanford University. Dr. Grossman is currently manager of automation research at the Thomas J. Watson Research Center.

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In 1970 Dr. Hänsch came to the United States as a NATO-Fellow, joining the Department of Physics at Stanford University, where he has been an Associate Professor since 1972 and Professor of Physics since 1975. His special interests have been in research involving exploratory interactions of light with matter using lasers and advanced optical methods. He received his Ph.D. degree in physics from the University of Heidelberg, Germany, in 1969. Dr. Hänsch is a Fellow of the American Physics Society and a member of the Optical Society of America.

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Ms. Latus is a staff programmer in the engineering design system center of competence in the functional products group at Kingston. She joined IBM in 1974 and has been involved in the design automation field since then. Most recently, she has worked primarily on the development of software tools for programmable logic arrays (PLAs). Ms. Latus received her A.B. in computer science from Cornell University, Ithaca, New York, in 1974, and also graduated from the IBM Systems Research Institute, New York, in 1979.

M. A. Lavin

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Dr. Lavin is a research staff member in the computer sciences department at the Thomas J. Watson Research Center. He joined the automation research group in June 1979, having worked previously with that group as a summer student in 1975. His interests are in applications of computers to problems involving geometry, such as machine vision, robotics, and computer graphics. He received his S.B. and S.M. in electrical engineering and computer science from the Massachusetts Institute of Technology, Cambridge, in 1973; and a Ph.D. in artificial intelligence from the Massachusetts Institute of Technology in 1977. Dr. Lavin is a member of the Association for Computing Machinery, Eta Kappa Nu, Sigma Xi, and Tau Beta Pi.

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Dr. Lieberman is a member of the automation research group at the Thomas J. Watson Research Center, where he joined IBM in 1974. His current interests include high-level language design and geometric modeling for computer-controlled mechanical assembly and computer "vision" for inspection and verification. He received his B.S. in 1970 in electrical engineering and his Ph.D. in computer and information sciences in 1974, both from the University of Pennsylvania. Dr. Lieberman is a member of the Association for Computing Machinery, Tau Beta Pi, Eta Kappa Nu, and Sigma Xi.

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Professor Lin received his B.S. in electrical engineering from the National Taiwan University, Taipei, in 1959. He received both his M.S. and Ph.D. in electrical engineering from Rice University, Houston, Texas, in 1964 and 1965. From 1959 to 1961, he served on active duty as a radar officer in the Chinese Air Force in Taiwan. Since 1965, he has been on the faculty of the University of Hawaii at Manoa, where he is now Professor of Electrical Engineering. He spent a year during 1978 to 1979 as a visiting scientist at the IBM Thomas J. Watson Research Center, Yorktown Heights, New York. He is the author of *An Introduction to Error Correcting Codes*. Professor Lin is a senior member of the Institute of Electrical and Electronics Engineers and a member of Sigma Xi.

E. Lindbloom

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Mr. Lindbloom is an advisory programmer in the FET custom design department at Kingston. He joined IBM at Poughkeepsie, New York, in 1963 to work on automated logic design. Since 1966 he has pursued technical interests in test pattern generation, simulation and diagnosis for LSI circuit final test. He received a B.A. in philosophy from the University of Michigan, Ann Arbor, in 1957. Prior to joining IBM he was an instructor in philosophy at the University of Michigan. In 1972 he received an IBM Invention Achievement Award for contributions to semiconductor test. Mr. Lindbloom is a member of the Institute of Electrical and Electronics Engineers.

Paul Lowy

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Mr. Lowy is an advisory engineer in the FET custom design department. He joined IBM in 1959 at the Advanced Systems Development Division, Poughkeepsie, New York. Since 1973, he has contributed to various LSI design projects in the areas of logic design, technology support, and performance verification. He obtained a B.S. in engineering from Stevens Institute of Technology, Hoboken, New Jersey, in 1959 and an M.S. in electrical engineering from New York University in 1966. Mr. Lowy holds four U.S. patents and is a member of the Institute of Electrical and Electronics Engineers. He is a Professional Engineer.

Tomás Lozano-Pérez

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Mr. Lozano-Pérez is a Ph.D. candidate at the Artificial Intelligence Laboratory at the Massachusetts Institute of Technology. Since 1973, he has been engaged in research in advanced automation technology there. His research is in the development of algorithms for geometric modeling and the planning of computer controlled mechanical assembly. He has done work in the areas of image processing, programming languages for computer controlled manipulators, and computer graphics. During 1977, he was a visitor at the IBM Thomas J. Watson Research Center. Mr. Lozano-Pérez received a B.S. in electrical engineering in 1973 and an M.S. in electrical engineering and computer science in 1977, both from the Massachusetts Institute of Technology.

Fabrizio Luccio

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Dr. Luccio is a full Professor of Computer Science in the Istituto di Scienze dell'Informazione at the University of Pisa. In 1962 he received a Dr. Ing. degree in electrical engineering from the Polytechnic of Milano in Italy, and then worked at the Electronic Research Laboratory of Olivetti. He joined the faculty of the Polytechnic of Milano in 1964, and the University of Pisa in 1971. He was on the visiting research staff of Project MAC at the Massachusetts Institute of Technology from 1966 to 1967 and has

served as a Visiting Professor of Computer Science at the University of Southern California, New York University, the University of California at Los Angeles, and the University of Illinois at Urbana-Champaign. In the summer of 1978 he was at the computer sciences department at the IBM Thomas J. Watson Research Center, Yorktown Heights, New York. From his original research interests in switching theory and computer architecture, he has moved to the theory of data structures and algorithm design. Dr. Luccio is a member of the Association for Computing Machinery, the Associazione Italiana Calcolo Automatico, and the Institute of Electrical and Electronics Engineers.

George Markowsky

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Dr. Markowsky is a member of the theory of programming group at the Thomas J. Watson Research Center. He joined IBM in 1974. His current interests include the applications of order theory to computation, combinatorics, and analysis of algorithms. He received his B.A. in mathematics from Columbia University in 1968 and his M.A. in mathematics from Harvard University in 1969. From 1969 to 1972, he was instructor and then Assistant Professor of Mathematics at St. Mary's College of Maryland in St. Mary's City, Maryland. He returned to Harvard and received his Ph.D. in mathematics in 1973. He stayed on at Harvard as a postdoctoral fellow in 1973 and 1974. Dr. Markowsky is a member of the American Mathematical Society, the Mathematical Association of America, and Phi Beta Kappa.

Arvind M. Patel

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Dr. Patel is a senior engineer in the storage design department, and he is currently involved with the development of computer storage products using magnetic bubble technology. He received his B.E. from Sardar Vallabh-bhai Vidyapeeth, India, in 1959, his M.S. from the University of Illinois at Urbana in 1961, and his Ph.D. from the University of Colorado at Boulder in 1969, all in electrical engineering. He joined IBM at the Poughkeepsie, New York, laboratory in 1962. Since then he has worked on various aspects of magnetic recording technology and product development projects in the Poughkeepsie, Boulder and San Jose laboratories. His main theoretical interest has been in exploring the area of information theory and coding for computer applications. His work on data encoding and error-correcting codes has won two Outstanding Invention Awards from IBM in 1972 and 1973, and an Outstanding Technical Paper Award from the American Federation of Information Processing Societies in 1970. Dr. Patel is a member of the Institute of Electrical and Electronics Engineers.

Robert V. Pole

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Dr. Pole is manager of the special studies group at the San Jose Research laboratory. He has been with IBM Research since 1961, during which time he has done research in the areas of lasers, light deflection, and holography. Dr. Pole obtained his degree in electrical engineering at the University of Zagreb, Yugoslavia in 1953; he also studied physics at Syracuse University, New York. He is the recipient of two IBM Outstanding Invention Awards and one IBM Outstanding Contribution Award. Dr. Pole is a fellow of the Optical Society of America and a senior member of the Institute of Electrical and Electronics Engineers.

Martin S. Schmookler

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Dr. Schmookler is an advisory engineer at the GSD laboratory, where he is currently involved in the design of an advanced microprocessor. He joined IBM in 1956 at the Poughkeepsie, New York, development laboratory, where he worked in both circuit and logic design for several large computers. His main contributions were to the designs of the arithmetic units of the IBM 7094, 7094 II, System/360 Model 195, and the 3033. He received a B.S. in electrical engineering from Pennsylvania State University in 1956, and an M.S. in electrical engineering from Syracuse University, New York, in 1964. In 1965 he received an IBM Resident Study Fellowship to Princeton University, New Jersey, and received a Ph.D. in electrical engineering in 1969. For the academic year 1976 to 1977, he was a Visiting Associate Professor in the computer sciences department at the University of Texas at Austin. He is currently a part-time lecturer in the department of electrical engineering at the same university. Dr. Schmookler is a member of the Institute of Electrical and Electronics Engineers, Tau Beta Pi, Pi Mu Epsilon, and Eta Kappa Nu.

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From September 1977 until September 1978, Dr. Spiekerman was an IBM postdoctoral fellow at the San Jose Research laboratory of IBM, where he worked on a laser-wavelength meter. He received an M.S. in electrical engineering from the Delft University of Technology in 1972. He joined that University to work on acoustic laser-beam deflectors. After the postdoctoral fellowship he returned to the University to work on surface acoustic wave convolvers.

Michael A. Wesley

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Dr. Wesley is a member of the automation research group at the Thomas J. Watson Research Center. He joined IBM in 1960 at the IBM United Kingdom Laboratories, Hursley, England, and transferred to Yorktown in 1966. He has worked on micro-programmed machines, character recognition, image processing, and system architectures. His current work is on programming systems for mechanical assembly. He received the B.A. degree in mechanical sciences and the Ph.D. degree in control engineering from Cambridge University, England, in 1960 and 1966.

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Dr. Wong joined IBM in 1969 as a member of the computer science department at the Thomas J. Watson Research Center. His current interests include abstract and concrete computational complexity theory, optimization problems related to data allocation, magnetic bubble memory structures, and theory of fuzzy sets. Dr. Wong received the B.A. degree in mathematics from the University of Hong Kong in 1965 and the M.A. and Ph.D. degrees in mathematics from Columbia University, New York, in 1966 and 1970. For the academic year 1972-73 he was a Visiting Associate Professor of Computer Science at the University of Illinois, Urbana and for 1978-79 he was Visiting Professor of Computer Science at Columbia University. He received an IBM Outstanding Invention Award in 1971 for a new family of sorting methods.