COMPUTERS AND THOUGHT

Armer	Hansen	Selfridge
Chomsky	Hovland	Shaw
Clarkson	Hunt	Simon
Feigenbaum	Laughery	Slagle
Feldman	Lindsay	Tonge
Gelernter	Loveland	Turing
Green	Minsky	Uhr
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Edited by EDWARD A. FEIGENBAUM
and JULIAN FELDMAN

COMPUTERS
AND THOUGHT

This unique collection makes available in one volume twenty research reports and discussions of outstanding accomplishments in the use of computers to simulate human thought processes and to perform tasks previously only within the range of human intelligence.

The implications of research in artificial intelligence and simulation of cognitive processes are important and far-reaching. Unfortunately the discussion of these topics has suffered from a widespread lack of knowledge and understanding of the progress that has been made and the problems that remain. This volume gives the interested nonspecialist a factual introduction to the field. The editors have provided him with special introductory sections as a guide to a thorough understanding of the reports. For the specialist, this collection is a convenient reference volume which includes important, much-referenced, and often inaccessible reports.

Computers
and
Thought

COMPUTERS
and THOUGHT

a collection of articles by

ARMER	HANSEN	SELFRIDGE
CHOMSKY	HOVLAND	SHAW
CLARKSON	HUNT	SIMON
FEIGENBAUM	LAUGHERY	SLAGLE
FELDMAN	LINDSAY	TONGE
GELERNTER	LOVELAND	TURING
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	SAMUEL	

10/16/86

edited by *Edward A. Feigenbaum*

EDWARD A. FEIGENBAUM & JULIAN FELDMAN
University of California, Berkeley

Computers and Thought

The volume focuses on milestones in achievement of intelligent behavior by machine. Among the papers in this volume are reports of computer programs that play chess and checkers, prove theorems in logic and geometry, solve problems in calculus, balance assembly lines, recognize visual and temporal patterns, and communicate in natural language. The reports of simulation of cognitive processes include computer models of human behavior in solving logic problems, deciding on common stock portfolios in trust investment, and carrying out social interaction. Models of verbal learning behavior, predictive behavior in two-choice experiments, and concept formation are also presented.

In addition to the research reports, the volume contains an early and a recent discussion of the question, "Can a machine think?," a comprehensive survey of the field of artificial intelligence, and an extensive bibliography with a descriptor index.

PROGRAMMING COMPUTERS FOR BUSINESS APPLICATIONS

By NED CHAPIN, Stanford Research Institute. 275 pages.

This book provides a sound basis for programming computers geared to business applications. It offers an explanation and guide to the thinking a programmer must do, including a carefully graded series of didactic programming examples. Basic principles common to all computers are covered.

COMPUTER LANGUAGE: An Autoinstructional Introduction to FORTRAN

By HARRY L. COLMAN, Computer Sciences Department, Armour Research Foundation, Illinois Institute of Technology; and CLARENCE P. SMALLWOOD, Western Data Processing Center, University of California, Los Angeles.

This program helps teach the basic principles of FORTRAN to those with limited background in the field. It serves as a general guide to FORTRAN and is applicable to almost all types of computer installation. The program differs from the traditional programming approach in that it does not ask the student to respond to every unit of information; it breaks the material into sequences of distinct visual units and asks for answers to questions at various intervals in the program.

THE LANGUAGE OF COMPUTERS

By BERNARD A. GALLER, The University of Michigan. 256 pages.

Here is an introduction to some ideas and techniques involved in communicating the solution of a problem to a computer. The basic approach is the gradual development of a computer language, accomplished by examining several typical problems. Each problem is examined in detail, showing the need for adding new features to the language. All problems illustrate techniques actually used in solving real problems on computers.

DIGITAL COMPUTERS IN RESEARCH: An Introduction for Behavioral and Social Scientists

By BERT F. GREEN, Carnegie Institute of Technology. *Lincoln Laboratory Publications.* 352 pages.

This volume acquaints behavioral and social scientists with the use and operation of computers. It combines an introduction to programming with an account of the applications of computers to research programs. A conscious attempt has been made to keep mathematics at an elementary level.

COMPUTER HANDBOOK

By HARRY D. HUSKEY and GRANINO KORN, University of Arizona. 1288 pages.

Here is detailed information and a wealth of industrial know-how on modern design practices in the field of analog-computer components and systems. Included are general-purpose analog computers and representative special-purpose machines. Many actual circuit diagrams are included as concrete examples of design principles or for direct adaptation to the designer's problems.