

The Handbook of Artificial Intelligence, Volume 1

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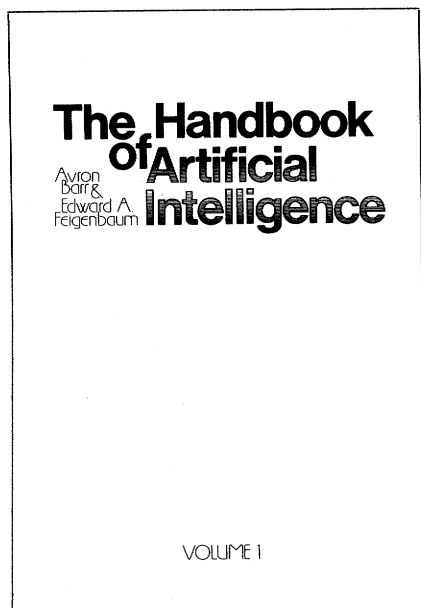


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Reviews

Publications



A. Barr and E. Feigenbaum, editors: The Handbook of Artificial Intelligence, Volume 1

William Kaufman, Inc. One First Street, Los Altos, California 94022, 1981, hardcover, 409 pages, \$30

This *Handbook* is meant to be an encyclopedia of major developments in the first 25 years of artificial intelligence (AI). The volume is composed of short, summary articles on AI concepts, techniques, and systems. These articles provide, in capsule form, an excellent overview of the prodigious literature spawned by AI. This literature is heavily referenced throughout the text.

The first volume to appear is devoted to the subjects of search, knowledge representation, understanding natural language, and understanding spoken language. There is a great deal of material to summarize, but the descriptions given in the *Handbook* are both accessible to the

outsider and informative for those already versed in some AI topics.

The chapter on search surveys blind state-space search, blind AND/OR graph search, heuristic search, and game-tree search. Sample search programs are also examined.

The chapter on knowledge representation covers the following representation schemes: logic, procedures, semantic networks, production systems, analogical representations, semantic primitives (e.g., Schank's *conceptual dependency* relations), frames, and scripts. The descriptions are clear and concise.

One of the services provided by the editors is the incorporation of a historical perspective within the introductory matter. In the chapter on understanding natural language, they offer insights into early efforts at *machine translation* and why these efforts failed. Such a historical viewpoint can be important in realizing why the emphasis today is on knowledge-based systems.

In the chapter on understanding spoken language, the reader is treated to a commentary on four speech-understanding systems: Hearsay, Harpy, HWIM, and the SRI/SDC speech system. Here, as in the other chapters, the Overview puts past research into perspective.

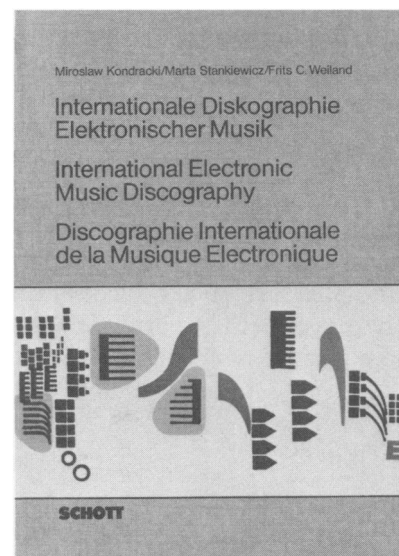
Over 400 references are provided at the end of the book that cover much of the historical span of AI. The indexes are thorough.

The use of AI techniques and ideas in artistic projects is summarily ignored in this volume of the *Handbook*. For example, the *systemic grammar* paradigm (used by T. Winograd in 1968 for the representation of music) is given over two pages of description, with no mention of its application before 1972 (in natural language understanding). Seventeen other application areas are discussed, however, including mathematics,

chemistry, medicine, and "travel budget manager" (Index, pp. 397–398).

Two more volumes of the *Handbook* have just been published (Volume III is edited by Paul Cohen). These volumes cover AI programming languages; applications in science, education, and medicine; automatic programming; models of cognition; automatic deduction; vision research; robotics; learning and inference; and the topics of planning and problem solving. I look forward to reading them.

Reviewed by C. Roads
Cambridge, Massachusetts



M. Kondracki, M. Stankiewicz, F. Weiland: International Electronic Music Discography

Available from B. Schott's Sohne, Mainz, London, New York, and Tokyo, 1979, 174 pages, softcover

This formidable discography, introduced by G. M. Koenig and contain-