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BIBLIOGRAPHY ON COMPUTER SEMANTICS

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ABSTRACT

This bibliography and topical index lists more than 200 references, almost all published since 1965, in Computer Semantics: a growing research area that lies at the boundaries of Linguistics, Psychology, and Artificial Intelligence.

INTRODUCTION

Computer Semantics is a growing research area that lies at the boundaries of three major disciplines: Linguistics, Psychology, and Computer Science (especially Artificial Intelligence). It is not yet clear whether this ill-defined interface region really constitutes an independent, cohesive field of study; however, it is clear that studies of the following are highly interrelated:

(1) The fundamental structure of natural language

(2) Processes by which humans understand language

(3) Algorithms that enable machines to understand language.

In all three areas, the most prominent unsolved problems are those of semantics: how to acquire, represent, and make use of the meanings of the linguistic utterances under consideration.

During the summer of 1971 a two-week conference on Computer Semantics was held at Woods Hole, Massachusetts, sponsored by the Mathematical Social Science Board within a grant from the National Science Foundation. The participants of this conference, who had varied technical backgrounds, engaged in a fruitful exchange of ideas and approaches while examining the basic processes needed to model human knowledge, linguistic interaction, and thought capability. One conclusion of the conference was that a need

exists for more-available reading material to help new researchers to enter Computer Semantics and to move across the established boundaries of its component disciplines. This bibliography is intended to help answer that need.

In the interests of producing a useful listing of reasonably accessible documents that represent the current state of a rapidly changing field, we have purposely omitted

(1) Unpublished reports or dissertations

(2) References before 1965, except for a few texts and "classic" papers

(3) References clearly belonging to only one of the component fields; e.g., Linguistics or Psychology, without obvious broader applicability.

The result is the following list of more than 200 references.

In selecting categories for the Topical Index, we rejected the obvious breakdown--Linguistics, Psychology, Computer Science--that emphasizes method of approach, in favor of a breakdown by target subject matter--Language, Memory, Decision-Making. We hope this arrangement will encourage users of the Bibliography to break out of the mold formed by their own training and look at other approaches to the problems in which they are interested.

The Topical Index also attempts to separate theoretical discussions from descriptions of implemented (or clearly implementable) computer

algorithms. In the natural language section, this latter topic has been further divided into two sections: I-A.2, covering systems directed primarily at the front-end parsing problem, and I-A.3, covering systems that attempt to perform complete transformations from natural language into a different formal structure for some particular application.

We have attempted to minimize the number of occurrences in the Index of each reference by placing it in no more than three categories, and preferably only one. Since many papers seem to fall between any firm topic divisions, this restricted classification has resulted in many arbitrary and perhaps erroneous decisions, for which we apologize.

For the beginning reader in Computer Semantics, we have selected (with the help of some of the Woods Hole Conference participants) a few of the references to suggest as entry points into the literature. These selections are marked by asterisks; they include surveys, collections, key papers, and typical reports that, as a group, span and perhaps help define the research area we call Computer Semantics.

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