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The Theory and Practice of Discourse Parsing and Summarization Daniel Marcu (Information Sciences Institute, University of Southern California) Cambridge, MA: The MIT Press, 2000, xix+248 pp; hardbound, ISBN 0-262-13372-5, \$39.95

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The Theory and Practice of Discourse Parsing and Su

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0-262-13372-5, \$39.95

Reviewed by
Udo Hahn
Albert-Ludwigs-Universität Freiburg

Marcu's monograph is based on his Ph.D. thesis—research carried out at the Information Sciences Institute, University of Southern California. The book's central idea is that discourse/rhetorical relations that connect text spans of a text can be computed without a complete semantic analysis of sentences or text segments. As an alternative, a formal specification of admissible discourse structures is provided, which constrains the range of possible semantic and functional relations between text spans and imposes strict well-formedness conditions on discourse structures. For effectively computing these text structures, main ideas and lexical cues and shallow text-parsing techniques are used. Computational formal and computational considerations, Marcu reports on various experiments, intrinsic and extrinsic, in order to assess the strengths and weaknesses of the approach and the generality of the principles it is based on. These experiments were mostly carried out on *Scientific American*, TREC, MUC, *Wall Street Journal* corpora.

The book consists of three main parts. In the first part, linguistic properties of coherent texts are discussed, with a focus on high-level discourse. This theoretical framework serves, in the second part, as the background for opening discourse structure parsing algorithms that compute rhetorical structures in world free texts. The benefits of such algorithms for building a high-

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summarization system are dealt with in the third part.


In the first part, the author factors out a set of assumptions and prominent approaches to discourse structure. So, consensus has been reached that discourse can be segmented into nonoverlapping, elementary textual units, and that relations of different types link (elementary and complex) textual units. It is assumed that some textual units are more important to the writer's communication than others, and that trees are a good approximation of the structure of most texts. These considerations lead to a compositionality criterion that discourse relations that link two large text spans can be explained by the relations that hold between at least two of the most salient textual constituent spans. This notion then forms the basis for a first-order logic that captures formal properties of valid text structures. Although independent of the set of rhetorical relations actually considered, the formal relation instantiation, a formal characterization of the structural properties specific to Rhetorical Structure Theory (RST) (Mann and Thompson). Based on these formal considerations, the author discusses three (nonnumeric) paradigms that compute some or all valid discourse structures. Each of them employ model-theoretic techniques and encode the problem


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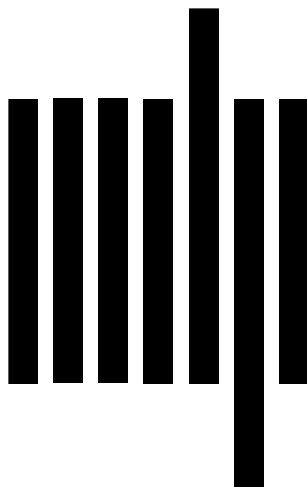
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