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Hiyan Alshawi
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Studies in Natural Language Processing

Memory and context for language interpretation

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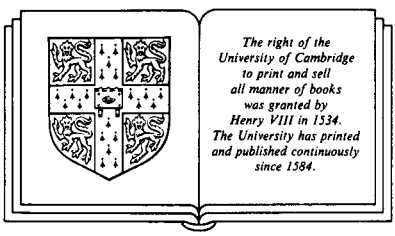

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Preface

The open ended nature of the influence of extra-sentential context on natural language interpretation has impeded developments in computer language processing. Several problems in the field, including reference resolution, word sense disambiguation, and compound noun interpretation, require mechanisms for exploiting the discourse context and knowledge of the discourse domain. The research reported in this book is an attempt to provide such mechanisms for a relatively unified treatment of language processing problems which are usually studied in isolation. The proposed mechanisms were designed with a view to simplicity and efficiency and do not provide advanced capabilities for reasoning about the plausibility of interpretations or about the intentions of discourse participants. These restrictions result in a computationally effective approach to handling the more common and straightforward cases of ambiguity and reference that arise during language interpretation. The mechanisms depend on simple relationships between entities in the discourse domain, and on the relative salience of these entities imposed by the discourse context. Computational tractability is maintained by relying heavily on marker processing, a very restricted processing model.

The material in the book is a reorganized version of the material presented in my doctoral thesis (entitled *Memory and Context Mechanisms for Automatic Text Processing*) which was completed in December 1983. In the original thesis there was less of a separation between the proposed mechanisms, discussed in Part I of the book, and their embodiment in an experimental text processing system described in Part II.

I am glad to have this opportunity to thank those who made it possible for me to work on this subject for three years as my thesis topic, and on other topics

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in computational linguistics for another two years at the University of Cambridge Computer Laboratory. In particular, I am grateful to Karen Sparck Jones for her enthusiastic, though liberal, approach to supervising doctoral research; Roger Needham for the pleasant and productive atmosphere at the Laboratory; Bran Boguraev for making his parsing system available; and Antonia Lovelace, and my parents Khalid and Dorothy, for their generous support and encouragement. The Committee of Vice-chancellors and Principals, Trinity Hall, and the Science and Engineering Research Council provided funds during this period.

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