CONTENTS

Preface

PART I ISSUES IN KNOWLEDGE REPRESENTATION 1

PANEL Current Issues in Semantic Networks 13

Chapter 1 Understanding Subsumption and Taxonomy: A Framework for Progress 45
W. A. Woods

Chapter 2 Semantic Nets Are in the Eye of the Beholder 95
Lenhart K. Schubert

Chapter 3 Why Semantic Networks? 109
Lokendra Shastri

Chapter 4 Cables, Paths, And "subconscious" Reasoning In Propositional Semantic Networks 137
Stuart C. Shapiro

Chapter 5 Toward the Expressive Power of Natural Language 157
John F. Sowa

Chapter 6 Sentences, Situations, and Propositions 191
Robert Wilensky

PART II FORMAL ANALYSES 229

Chapter 7 Inheritance Theory and Networks with Roles 231
Richmond H. Thomason and David S. Touretzky

Chapter 8 Extensions as Possible Worlds 267
Lynn Andrea Stein

Chapter 9 The Tractability of Path-based Inheritance 283
Bart Selman and Hector J. Levesque

Chapter 10 ALL: Formalizing Access-limited Reasoning 299
J. M. Crawford and Benjamin Kuipers

Chapter 11 Terminological Cycles: Semantics and Computational Properties 331
Bernhard Nebel

Chapter 12 Logical Dimensions of Some Graph Formalisms 363
Wlodek Zadrozny

PART III SYSTEMS FOR KNOWLEDGE REPRESENTATION 381

Chapter 13 The Evolving Technology of Classification-based Knowledge Representation Systems 385
Robert Mac Gregor

Chapter 14 Living With Classic: When and How to Use a KL-ONE-like Language 401
Ronald J. Brachman, Deborah L. McGuinness, Peter F. Patel-Schneider, and Lori Alperin Resnick
Alexander Borgida

Chapter 15 Utilizing Knowledge: The Components of the SB-ONE Knowledge Representation Workbench 457
Alfred Kobsa

Chapter 16 Reasoning with Graph Operations 487
Roger T. Hartley and Michael J. Coombs

Chapter 17 Representing and Reasoning About Physical Systems Using Prime Models 507
Rattikorn Hewett and Barbara Hayes-Roth

Chapter 18 Integrating Language and Meaning in Structured Inheritance Networks 527
Paul S. Jacobs

Chapter 19 A Frame-like Knowledge Representation Integrating Abstract Data Types and Logic 543
Douglas Skuce

INDEX 565