### **BRIEF CONTENTS**

Preface vii Publisher's Acknowledgements xv

# PART I ARTIFICIAL INTELLIGENCE: ITS ROOTS AND SCOPE 1

1 AI: HISTORY AND APPLICATIONS 3

## PART II ARTIFICIAL INTELLIGENCE AS REPRESENTATION AND SEARCH 35

- THE PREDICATE CALCULUS 45
- 3 STRUCTURES AND STRATEGIES FOR STATE SPACE SEARCH 79
- 4 HEURISTIC SEARCH 123
- 5 STOCHASTIC METHODS 165
- 6 CONTROL AND IMPLEMENTATION OF STATE SPACE SEARCH 193

# PART III CAPTURING INTELLIGENCE: THE AI CHALLENGE 223

7 KNOWLEDGE REPRESENTATION 227

xvii

#### PART III (continued)

- 8 STRONG METHOD PROBLEM SOLVING 277
- 9 REASONING IN UNCERTAIN SITUATIONS 333

#### PART IV MACHINE LEARNING 385

- 10 MACHINE LEARNING: SYMBOL-BASED 387
- 11 MACHINE LEARNING: CONNECTIONIST 453
- 12 MACHINE LEARNING: GENETIC AND EMERGENT 507
- MACHINE LEARNING: PROBABILISTIC 543

# PART V ADVANCED TOPICS FOR AI PROBLEM SOLVING 573

- 14 AUTOMATED REASONING 575
- 15 UNDERSTANDING NATURAL LANGUAGE 619

#### PART VI EPILOGUE 671

16 ARTIFICIAL INTELLIGENCE AS EMPIRICAL ENQUIRY 673

Bibliography 705 Author Index 735 Subject Index 743