Contents

Foreword Preface				
110	nacc		ix	
1	Intro	oduction	1	
	1.1 1.2 1.3 1.4	Separating knowledge and inference A problem domain	2 3 6 11	
		Suggested reading Exercises	16 17	
2	Logic and Resolution		19	
	2.3 2.4 2.5 2.6 2.7 2.8 2.9	Reasoning in logic: inference rules Resolution and propositional logic Resolution and first-order predicate logic Resolution strategies Implementation of SLD resolution	21 27 34 38 42 45 59 70 82 91 92 93	
3 Production Rules and Inference			97	
	3.1 3.2	Knowledge representation in a production system Inference in a production system	98 112	

xvi Contents

	3.3 3.4	Pattern recognition and production rules Production rules as a representation formalism Suggested reading Exercises	156 167 168
4	Fra	mes and Inheritance	169 173
		Frames and single inheritance Frames and multiple inheritance	174 186 227 248 249 250
5	Reasoning with Uncertainty		
	5.1 5.2 5.3 5.4 5.5 5.6 5.7	Probability theory The subjective Bayesian method The certainty factor model	255 261 270 280 290 300 313 331 332
6	Tools for Knowledge and Inference Inspection		
	6.1 6.2 6.3 6.4	A user interface in PROLOG A user interface in LISP	338 343 353 368 374 374
7	7.1 7.2 7.3	5, LOOPS and CENTAUR OPS5 LOOPS CENTAUR	379 380 404 415
	1.5	Suggested reading Exercises	433 434

Appendix A	Introduction to PROLOG	437
Appendix B	Introduction to LISP	465
References		501
Index		507

Contents