

CONTENTS

I. Introduction

1. Knowledge engineering (KE)
2. Knowledge acquisition
3. Knowledge representation (KR)
4. Knowledge processing
5. Knowledge validation and updating
6. Knowledge-based systems (KBS)/Expert systems (ES)
7. Basic problems for an ES supporting a decision maker

PART I

REPRESENTING AND PROCESSING KNOWLEDGE ACQUIRED FROM EXPERTS

II. Analysis, diagnosis and decision making with relational knowledge representation

1. Introduction
2. Relational knowledge representation (RKR)
3. AP with RKR
4. DP with RKR
5. DMP with RKR
6. Example applications
7. AP and DMP with RKR – extensions

III. Analysis, diagnosis and decision making with logical knowledge representation

1. Introduction
2. Logical knowledge representation (LKR)
3. AP with LKR
4. DP with LKR
5. DMP with LKR
6. Decomposition and recursive procedure for AP

PART II

INTEGRATING KNOWLEDGE ACQUIRED FROM EXPERTS AND FROM DATA

IV. Logical knowledge representation – probabilistic descriptions

1. Introduction
2. Probabilistic reasoning based on “*modus ponens*”
3. Probabilistic reasoning with simple structure of facts
4. Bayesian networks
5. Reasoning with Bayesian networks

V. Relational knowledge representation – knowledge validation and updating

1. Introduction
2. Learning KP
3. Learning KP – extended case
4. Learning KDM

PART III
ACQUIRING KNOWLEDGE FROM DATA

VI. Association rules

1. Introduction
2. Syntax of association rules
3. Evaluation indexes
4. Apriori algorithm

VII. Classification trees

1. Introduction
2. Structure of classification trees
3. Properties of classification trees
4. Construction of classification trees from data

VIII. Data clustering

1. Introduction
2. Partitioning clustering algorithms (k -means)
3. Agglomerating clustering algorithms