Contents

Preface vii		
CHAPTER 1	INFORMATION SYSTEMS: PAST, PRESENT, AND EMERGING 1	
Introduction A Taxonom	n 1 ny of Management Information Systems 3	
CHAPTER 2	INTELLIGENCE DENSITY: A METRIC FOR KNOWLEDGE WORK 7	
	Density: A Measure of Organizational Intelligence 9 Right Tradeoffs 12	
CHAPTER 3	THE VOCABULARY OF INTELLIGENCE DENSITY	15
Introduction	1 15	
Dimensions	of Problems and Solutions 17	
The "Stretch	h Plot": A Vocabulary for Requirements and Analysis 20 tretch Plot 22	
Summary		
	Chapter 3: Dimensions of Problems and Solutions 26	
CHAPTER 4	DATA-DRIVEN DECISION SUPPORT 30	
Introduction	1 30	
	of Data-Driven Decision Support 33	
	Density Issues 47	
Suggested R	Reading 50	
CHAPTER 5	EVOLVING SOLUTIONS: GENETIC ALGORITHMS	52
Introduction		
Optimization	n 53	

The ABCs of Genetic Algorithms 60 Intelligence Density Issues 70

Suggested Reading 76

CHAPTER 6 SIMULATING THE BRAIN TO SOLVE PROBLEMS: NEURAL NETWORKS 77

Introduction 77
The ABCs of Neural Networks 81
Intelligence Density Issues 94
Suggested Reading 101

CHAPTER 7 PUTTING EXPERT REASONING IN A BOX: RULE-BASED SYSTEMS 104

Introduction 104
The ABCs of Rule-Based Systems 106
Intelligence Density Issues 117
Suggested Reading 123

CHAPTER 8 DEALING WITH LINGUISTIC AMBIGUITY: FUZZY LOGIC 126

Introduction 126
The ABCs of Fuzzy Logic 128
Intelligence Density Issues 142
Suggested Reading 148

CHAPTER 9 SOLVING PROBLEMS BY ANALOGY: CASE-BASED REASONING 149

Introduction 150
The ABCs of Case-Based Reasoning 151
Intelligence Density Issues 161

Suggested Reading 166

CHAPTER 10 DERIVING RULES FROM DATA: MACHINE LEARNING 167

Introduction 168
The ABCs of Machine Learning 171
Intelligence Density Issues 180
Suggested Reading 186

191

APPENDIX A SAVING TIME AND MONEY WITH OBJECTS 191

Introduction A Case 197

APPENDIX B AI SOFTWARE PRODUCTS 199

APPENDIX C GENERAL READING 201

APPENDIX D CASE STUDIES 203

- Quality Control and Monitoring of Suppliers, Kaufhof AG 203
 The Organization 203
 The Problem 204
- Workflow Monitoring and Improvement for Rapid Customer Service, US WEST 207 The Organization 207 The Problem 207
- Help Desk Task Scheduling, Moody's Investors Service 210
 The Organization 210
 The Problem 210
- 4. Financial Market Analysis and Prediction, LBS Capital Management 213
 The Organization 213
 The Problem 213
- Customer Support, Compaq Computer Corporation 217
 The Organization 217
 The Problem 217
- Pattern Directed Data Mining of Point-of-Sale Data, A. C. Neilsen 220
 The Organization 220
 The Problem 220
- 7. Improving Personnel Dispatching, NYNEX, Inc. 224
 Preface 224
 The Organization 224
 The Problem 224

APPENDIX E CHAPTER KEY WORDS AND DISCUSSION QUESTIONS 227

INDEX 235