
Contents

1	Introduction to Knowledge Management	1
	Introduction	1
	References	12
2	Web Development Versus Software Development	13
	Introduction	13
	Web Applications Versus Conventional Software	14
	Web Hypermedia, Web Software or Web Application?	15
	Web Development Versus Software Development	15
	References	24
3	Introduction to Effort Estimation	27
	Introduction	27
	An Overview of the Effort Estimation Process	27
	Expert-Based Effort Estimation	29
	Algorithmic Techniques	32
	COCOMO	33
	Artificial Intelligence Techniques	38
	Feature Subset Selection	39
	Similarity Measure	40
	Scaling	42
	Number of Analogies	42
	Analogy Adaptation	42
	Adaptation Rules	43
	What Technique to Employ?	47
	What Datasets of Past Project Data to Use?	48
	Practical Implications	49
	References	50
4	Introduction to Web Resource Estimation	55
	Introduction	55
	Systematic Literature Review on Web Resource Estimation	55
	References	60

5	Introduction to Bayesian Networks	61
	Introduction	61
	Bayesian Network	62
	Understanding Bayes' Theorem	68
	References	71
6	Expert-Based Knowledge Engineering of Bayesian Networks	73
	Introduction	73
	Introducing the Expert-Based Knowledge Engineering of Bayesian Networks Process	74
	Structure Building	76
	Uncertainty Quantification	77
	Model Validation	77
	Detailing the EKEBN Process	78
	How Does the Externalisation of Knowledge Occur During the EKEBN Process?	78
	How Can the Combination of Knowledge Occur During the EKEBN Process?	79
	How Does the Internalisation of Knowledge Occur During the EKEBN Process?	80
	How Does the Internalisation of Knowledge Occur After Employing the EKEBN Process?	82
	Detailed Structure Building	83
	Phase 1	84
	Phase 2	84
	Phase 3	85
	Phase 4	86
	Phase 5	88
	Phase 6	88
	Detailed Structure Combination	92
	Detailed Uncertainty Quantification	94
	Detailed Model Validation	98
	How to Calibrate the Model?	102
	References	105
7	Effort and Risk Prediction for Healthcare Software Projects Delivered on the Web	107
	Introduction	107
	Detailed Structure Building and Uncertainty Quantification	107
	Detailed Model Validation	117
	References	122
8	Effort Prediction for Multimedia Projects Delivered on the Web	123
	Introduction	123
	Detailed Structure Building and Uncertainty Quantification	123
	Detailed Model Validation	134
	References	139

9	Effort Prediction for Dynamic Web Applications Developed Using a Content Management System	141
	Introduction	141
	Detailed Structure Building and Uncertainty Quantification	143
	Detailed Model Validation	144
	References	151
10	Effort Prediction to Manage Outsourcing Projects for the Development of Web Hypermedia and Web Software Applications	153
	Introduction	153
	Detailed Structure Building and Uncertainty Quantification	155
	Detailed Model Validation	159
	References	161
11	Effort Prediction for Game Applications Delivered on the Web . . .	163
	Introduction	163
	Detailed Structure Building and Uncertainty Quantification	165
	Detailed Model Validation	172
	References	174
12	Effort Prediction for Static and Dynamic Web Applications	175
	Introduction	175
	Detailed Structure Building and Uncertainty Quantification	175
	Detailed Model Validation	178
	References	188
13	Ways in Which to Use Bayesian Network Models Within a Company	189
	Introduction	189
	Using BNs as Part of a Wider Strategy for a Learning Organisation . . .	189
	Process Improvement	189
	Discussions with the Development Team(s)	190
	Decision Making Between Project Managers	190
	Checks and Balances for Effort Estimates Provided by Contractors . . .	191
	Discussions with Clients	191
	Meetings with Clients	191
	Seminar to Other Branches and/or Events on Best Practices	191
14	Conclusions	193
	Introduction	193
	General Process Employed to Build BNs	196
	Process Used to Build the Expert-Based BNs	199
	Common Patterns	202
	Lessons Learned	205
	References	207
	Index	209

<http://www.springer.com/978-3-642-54156-8>

Practitioner's Knowledge Representation
A Pathway to Improve Software Effort Estimation

Mendes, E.

2014, XI, 211 p. 84 illus., Hardcover

ISBN: 978-3-642-54156-8