

Contents

1	Methods and Algorithms for Fuzzy Cognitive Map-based Modeling	1
	Elpiniki I. Papageorgiou and Jose L. Salmeron	
2	Fuzzy Cognitive Maps as Representations of Mental Models and Group Beliefs	29
	S. A. Gray, E. Zanre and S. R. J. Gray	
3	FCM Relationship Modeling for Engineering Systems	49
	O. Motlagh, S. H. Tang, F. A. Jafar and W. Khaksar	
4	Using RuleML for Representing and Prolog for Simulating Fuzzy Cognitive Maps	65
	Athanasios Tsadiras and Nick Bassiliades	
5	Fuzzy Web Knowledge Aggregation, Representation, and Reasoning for Online Privacy and Reputation Management	89
	Edy Portmann and Witold Pedrycz	
6	Decision Making by Rule-Based Fuzzy Cognitive Maps: An Approach to Implement Student-Centered Education.	107
	A. Peña-Ayala and J. H. Sossa-Azuela	
7	Extended Evolutionary Learning of Fuzzy Cognitive Maps for the Prediction of Multivariate Time-Series	121
	Wojciech Froelich and Elpiniki I. Papageorgiou	
8	Synthesis and Analysis of Multi-Step Learning Algorithms for Fuzzy Cognitive Maps	133
	Alexander Yastrebov and Katarzyna Piotrowska	

9	Designing and Training Relational Fuzzy Cognitive Maps	145
	Grzegorz Słóń and Alexander Yastrebov	
10	Cooperative Autonomous Agents Based on Dynamical Fuzzy Cognitive Maps	159
	Márcio Mendonça, Lúcia Valéria Ramos de Arruda and Flávio Neves-Jr	
11	FCM-GUI: A Graphical User Interface for Big Bang-Big Crunch Learning of FCM.	177
	Engin Yesil, Leon Urbas and Anday Demirsoy	
12	JFCM : A Java Library for Fuzzy Cognitive Maps	199
	Dimitri De Franciscis	
13	Use and Evaluation of FCM as a Tool for Long Term Socio Ecological Research	221
	Martin Wildenberg, Michael Bachhofer, Kirsten G. Q. Isak and Flemming Skov	
14	Using Fuzzy Grey Cognitive Maps for Industrial Processes Control	237
	Jose L. Salmeron and Elpiniki I. Papageorgiou	
15	Use and Perspectives of Fuzzy Cognitive Maps in Robotics	253
	Ján Vaščák and Napoleon H. Reyes	
16	Fuzzy Cognitive Maps for Structural Damage Detection	267
	Ranjan Ganguli	
17	Fuzzy Cognitive Strategic Maps	291
	M. Glykas	
18	The Complex Nature of Migration at a Conceptual Level: An Overlook of the Internal Migration Experience of Gebze Through Fuzzy Cognitive Mapping Method	319
	Tolga Tezcan	
19	Understanding Public Participation and Perceptions of Stakeholders for a Better Management in Danube Delta Biosphere Reserve (Romania)	355
	M. N. Văidianu, M. C. Adamescu, M. Wildenberg and C. Tetelea	

20 Employing Fuzzy Cognitive Map for Periodontal Disease Assessment. 375
Vijay Kumar Mago, Elpiniki I. Papageorgiou and Anjali Mago

Appendix 391

Editor Biography 395

Fuzzy Cognitive Maps for Applied Sciences and
Engineering
From Fundamentals to Extensions and Learning
Algorithms

Papageorgiou, E.I. (Ed.)

2014, XXVII, 395 p. 147 illus., 2 illus. in color. With
online files/update., Hardcover

ISBN: 978-3-642-39738-7