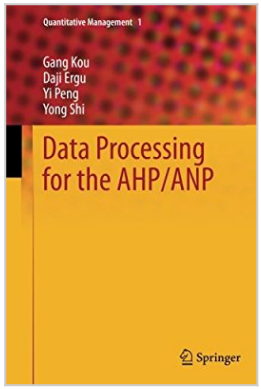

Data Processing for the AHP/ANP (Quantitative Management)

By Gang Kou, Daji Ergu, Yi Peng, Yong Shi

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The positive reciprocal pairwise comparison matrix (PCM) is one of the key components which is used to quantify the qualitative and/or intangible attributes into measurable quantities. This book examines six understudied issues of PCM, i.e. consistency test, inconsistent data identification and adjustment, data collection, missing or uncertain data estimation, and sensitivity analysis of rank reversal. The maximum eigenvalue threshold method is proposed as the new consistency index for the AHP/ANP. An induced bias matrix model (IBMM) is proposed to identify and adjust the inconsistent data, and estimate the missing or uncertain data. Two applications of IBMM including risk assessment and decision analysis, task scheduling and resource allocation in cloud computing environment, are introduced to illustrate the proposed IBMM.

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Editorial Review

Review

From the reviews:

“Data Processing for the AHP/ANP focuses on the induced bias matrix model and its application in the AHP / ANP. … this book might interest … researchers in the AHP / ANP or, more generally, in decision-making procedures. … The book is well organized, introduces readers to the main methodological problems in applications of AHP / ANP models, and suggests how to use the IBMM to solve them.” (Josef Jablonsky, Interfaces, Vol. 43 (5), September-October, 2013)

From the Back Cover

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Dr. Gang Kou is a professor of School of Management and Economics, University of Electronic Science and Technology of China and managing editor of International Journal of Information Technology & Decision Making. Previously, he was a research scientist in Thomson Co., R&D. He received his Ph.D. in Information Technology from the College of Information Science & Technology, Univ. of Nebraska at Omaha; got his Master degree in Dept of Computer Science, Univ. of Nebraska at Omaha; and B.S. degree in Department of Physics, Tsinghua University, Beijing, China. He has published more than eighty papers in various peer-reviewed journals and conferences. Gang Kou has been Keynote speaker/workshop chair in several international conferences. He co-chaired Data Mining contest on The Seventh IEEE International Conference on Data Mining 2007 and he is the Program Committee Co-Chair of the 20th International Conference on Multiple Criteria Decision Making (2009) and NCM 2009: 5th International Joint Conference on INC, ICM and IDC. He is also co-editor of special issues of several journals, such as Journal of Multi Criteria Decision Analysis, Decision Support Systems, Journal of Supercomputing and Information Sciences. He accomplished more than 300 cites of published journal articles as shown in the Science Citation Index (SCI) database.

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Dr. Yi Peng is a Professor of School of Management and Economics, University of Electronic Science and Technology of China. Previously, she worked as Senior Analyst for West Co., USA. Dr. Peng received her Ph.D. in Information Technology from the College of Information Science & Technology, Univ. of Nebraska at Omaha and got her Master degree in Dept of Info. Science & Quality Assurance, Univ. of Nebraska at Omaha and B.S. degree in Department of Management Information Systems, Sichuan University, China. Dr. Peng's research interests cover Knowledge Discover in Database and data mining, multi-criteria decision making, data mining methods and modeling, knowledge discovery in real-life applications. She published more than sity papers in various peer-reviewed journals and conferences. She is the Workshop Chair of the 20th International Conference on Multiple Criteria Decision Making (2009), guest editor of Annals of Operations Research's special issue on Multiple Criteria Decision Making on Operations Research.

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