

学术报告会

时间：2013年1月5日(周六)14:30

地点：电院群楼2-410会议室

Uncertain Nonlinear System Modelling Using

Belief Rule-Based Systems

Dr. Yu-Wang Chen

The University of Manchester, UK



Abstract:

Belief rule-based (BRB) systems are an extension of traditional IF-THEN rule based systems and capable of capturing complicated nonlinear causal relationships between antecedent attributes and consequents. In a BRB system, various types of information with uncertainties can be represented using belief structures, and a belief rule is designed with belief degrees embedded in its possible consequents. For a set of inputs to antecedent attributes, inference in a BRB system is implemented using the evidential reasoning (ER) approach. In this talk, I will first discuss the inference patterns of BRB systems, including evidential reasoning, multi-model decomposition and distributed approximation. I will then present three different real-world case studies to illustrate its capability of modelling uncertain nonlinear systems.

Biography:

Dr. Yu-Wang Chen is lecturer in decision sciences at the University of Manchester. Prior to his current appointment, he was a postdoctoral research associate at the Decision and Cognitive Sciences (DCS) research centre of Manchester Business School, the University of Manchester, and a postdoctoral research fellow at the Department of Computer Science, Hong Kong Baptist University. He received the PhD degree in control and system engineering from the Department of Automation, Shanghai Jiao Tong University in 2008. He has published over 30 papers in journals and conferences, such as European Journal of Operational Research, Computers & Operation Research, and IEEE Transactions on Systems, Man, and Cybernetics. His current research interests are mainly in the areas of multiple criteria decision analysis under uncertainties, modelling and optimization of complex systems, and risk analysis in supply chains. He is a member of International Society of Multiple Criteria Decision Making, and the Chinese Automation and Computing Society in the UK.