模糊知識管理的系統化架構之研究(I)

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摘要

隨著知識成為企業組織主要的競爭優勢,知識管理的研究逐漸受到相當大的重視並被廣泛使用在不同的應用領域上。Zadeh 指出目前知識處理的工作,最欠缺的能力有兩點,包括缺乏知識推論能力,通常只能搜尋知識而無法針對某一個查詢推論出適當的解答,以及真實世界中的知識本質上皆為模糊的,傳統的二價邏輯無法處理知識中的部份確定、部份可能、和部份真實等問題。本研究計畫提出一個系統化的模糊知識管理架構,包括模糊知識表示法、模糊推論規則、模糊知識模型、模糊知識驗證、模糊知識儲存、與模糊知識查詢六個部分。首先,將知識表示法予以模糊化,以作為建立模糊知識模型的圖形表示法與正規化基礎;其次,建立模糊知識表示法的推論規則,以提供模糊知識的驗證與查詢之推論基礎;第三,提出模糊知識模型,使用一致性的模糊知識表示法來同時表達宣告性知識與程序性知識;第四,提供驗證模糊知識之機制,檢查模糊知識是否有語法性錯誤、結構性錯誤、或語意性錯誤;第五,發展一個階層式的 ontology 系統來儲存模糊知識模型,並提供模糊知識的分類機制;最後,提供具語意基

礎的模糊化知識查詢語言，讓使用者查詢所需知識，並可經由模糊推

論規則推論出進一步的解答。

關鍵字：知識管理; 模糊邏輯; 概念圖形法

A Systematic Framework for Fuzzy Knowledge Management(I)

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Abstract

As knowledge emerges as the primary competitive advantage for firms, knowledge management has received a lot of attention and being used in an increasingly wide variety of application domain. However, Zadeh pointed out that current knowledge management activity is somewhat limited in its ability to come to grips with the issues of inference and fuzziness. In this proposal, we propose a systematic framework for fuzzy knowledge management. First, we construct a formal fuzzy knowledge representation by infusing fuzziness into conceptual graphs. Second, fuzzy inference rules are proposed based on the formal basis of fuzzy conceptual graphs. Third, we provide a modeling approach to organizing and expressing different types of fuzzy knowledge in a unified knowledge representation. Fourth, the verification of fuzzy knowledge is provided based on the reasoning capability of fuzzy conceptual graphs. Fifth, we propose a hierarchical ontology system to classify and store fuzzy knowledge models. Finally, a fuzzy knowledge query language is proposed to query fuzzy knowledge based on rules of inference.