

## Evaluation of a Hybrid Knowledge-Based System Using Fuzzy Approach

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**Abstract :** This paper describes the main features of a knowledge-based system evaluation method. System evaluation is placed in the context of a hybrid legal decision-support system, Advisory Support for Home Settlement in Divorce (ASHSD). Legal knowledge for ASHSD is represented in two forms, as rules and previously decided cases. Besides distinguishing the two different forms of knowledge representation, the paper outlines the actual use of these forms in a computational framework that is designed to generate a plausible solution for a given case, by using rule-based reasoning (RBR) and case-based reasoning (CBR) in an integrated environment. The nature of suitability assessment of a solution has been considered as a multiple criteria decision making process in ASHAD evaluation. The evaluation was performed by a combination of discussions and questionnaires with different user groups. The answers to questionnaires used in this evaluations method have been measured as a combination of linguistic variables, fuzzy numbers, and by using defuzzification process. The results show that the designed evaluation method creates suitable mechanism in order to improve the performance of the knowledge-based system.

**Keywords :** case-based reasoning, fuzzy number, legal decision-support system, linguistic variable, rule-based reasoning, system evaluation

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