

DECISION SUPPORT SYSTEM FOR MENU RECOMMENDATION USING ROUGH SETS

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ABSTRACT. *Rough set theory is considered as an effective data mining technique. In this study, we develop the base of a decision support system by using rough set theory to visualize users' preferences. This study aims at utilizing and sharing of knowledge for a large amount of information maintained in databases on the Web. We investigate an application on a Web server running Apache, MySQL (DBMS) and PHP. Here, for the ease of database administration, phpMyAdmin is installed, which is an open source tool for handling the MySQL database through a Web frontend. For the above-mentioned environment, rough sets, a technique for knowledge discovery, are applied which can derive simplified decision rules. In this study, the rough set procedures are performed in RSES2, which is a graphical toolkit for the analysis of table data running under the Microsoft Windows OS, based on methods and algorithms from rough set theory. As a specific example of decision support based on the users' desires, we address the nutrition of food menu planning problem and derive the users' preference rules by incorporating rough sets in RSES2 within the Web application. To verify the performance of our developed system, this paper includes the result of a test installation for 10 examinees.*

Keywords: Rough set, Decision support system, Knowledge discovery

1. Introduction. Recently, many results have been obtained by the research on data mining. Data mining is the process of extracting hidden patterns from large amounts of data and is becoming an increasingly important tool for mapping data to information. It is commonly used in a wide range of profiling practices, such as marketing, fraud detection and scientific discovery. Rough set theory is one of the methods that can be applied to data mining [1] and it is the theory, which observes classification and learning ability. Furthermore, rough set theory is well suited in dealing with uncertain information. In the field of sensitivity engineering, rough sets are a well-used technique. In this research, we develop a decision support system to a user's sensitivity using rough set theory. Specifically, we consider one example of sensitivity support from a menu recommendation system. We implemented the user-based information recommendation system in a Web application and performed test studies with candidates.