

DECISION SUPPORT BASED ON INFORMATION SYSTEM WITH FUZZY WEIGHTS FOR MENU PLANNING

TOMOKO KASHIMA¹, SHIMPEI MATSUMOTO², HIROAKI ISHII¹ AND HUGANG HAN³

¹Graduate School of Information Science and Technology
Osaka University
1-5 Yamadaoka, Suita, Osaka, 565-0871, Japan
{ t-kashima; ishii }@ist.osaka-u.ac.jp

²Department of Computer and Control Engineering
Oita National College of Technology
1666 Oaza-Maki, Oita, 870-0152, Japan
smatsu@oita-ct.ac.jp

³Department of Management and Information Systems
Prefectural University of Hiroshima
1-1-71, Ujina-higashi, Minami-ku, Hiroshima, 734-8558, Japan
hhan@pu-hiroshima.ac.jp

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ABSTRACT. *We have developed a well-balanced menu planning system to supply menu to user's taste. Mainly, the system is using fuzzy theory, mathematical programming logic and rough set theory. First, the menu set which fulfills a user's partial menu conditions out of many menu databases using fuzzy reasoning is created. Next, rough set extracts a user's taste rule. This rough set uses the information system in consideration of fuzzy weight. And a menu is proposed with mathematical programming. The proposed menu is in consideration of a user's taste and nutritive values.*

Keywords: Menu planning, Fuzzy reasoning, Mathematical programming logic, Rough set theory

1. **Introduction.** Eating habits of Japan was said very good nutritional balance. Then, eating habits of Japan attracted attention from the countries in the world. However, in these days, the PFC energy ratio which is one index of nutritional balance is a problem. For example, the rate of the fat occupied to energy ingestion is over 20 to 25% rather than the adequate amount. When eating habits changed, the number of diabetes related to eating habits increased. The number of diabetics was 1,090,000 in 1987. The number increased more than twice with 2,180,000 people in 1996. Moreover, the people with doubt of diabetes are presumed to be 13,700,000 people now. Then, the research on a lifestyle-related disease attracts attention. Then, we consider Well-Balanced Menu Planning. We think that the menu planning is related to a life. We think that the following thing is required in order to take in a system to a daily life. Menu takes user's taste into consideration. User's taste is learned. In order to use a system, a user's time and effort is not taken. And the menu different each time is proposed. Such a thing can be considered. Each user's thoughtful system is aimed at.

There are many studies which are focused on health care and fuzzy database [1-3]. For example, one of the studies is Calorie Calculating Database [4]. The database consists of five tables such as a dish table, a cooking recipe table, a food table, a cooking-category table, and a personal-user's table. All of tables are derived from the entity-relationship