UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

DETECTION OF HEART DISEASE USING FUZZY
LOGIC

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ABSTRACT

Nowadays, the detection of heart disease is quite complicated since it can be caused by many factors. However in this modern area, the use of computer technology and mathematical theory could help this process become easier. Therefore, in this study fuzzy logic system is developed to detect the heart disease. This fuzzy logic system consists four main components which is the fuzzy inference engine, fuzzy rule base, fuzzifier and defuzzifier. The system has been tested for 30 patients from Klinik Kesihatan Machang, Kelantan. This system consists 5 inputs field and 1 output field. From these inputs the fuzzy rule system are generated. Next fuzzification process using triangular and trapezoidal membership function was implied.Then, defuzzification process was perform to generate the output. The integer value lies from 0 to 1 and the number indicates from low to high. Hence, this study provide enrichment to the explanation of fuzzy logic through comparison of difference membership function in describing the similar output.

Keywords: Fuzzy logic, membership functions, fuzzification and defuzzification.

1 INTRODUCTION

1.1 Research Background

Nowadays, the computer technologies used in medical area are not a rare situation. Moreover, the highly increasing demand for using computer technologies are much required for most medical institutions. Besides, database is a common method to store information. However, in the usual database system, the existence of large data is impossible to achieve the user's standard and to give them the precise informations for decision making based on what they needed. Despite of that, the using of computer in making decision is quite hard because it unreliability and has high complexity. Therefore the intelligent systems such as artificial neural network, fuzzy logic and genetic algorithm have been generated (Allahverdi, Serhat& Saritasl, 2007).

Medical diagnosis is a complex work that requires operating exactly and precisely. Even though, there are large data management devices accessible within the health care system, unfortunately, the analysis devices are not sufficient enough to recognize the hidden relationship among the data. This is because mostly the medical information is unspecific and undetermined.

Based on the World Health Organization, there are about 12 million deaths happen annually because of heart diseases. This is the main reason behind the deaths in adults. Heart attack is also called myocardial infarction (MI). Generally, heart attack happens when the blood flow that carries oxygen is blocked or critically reduced. This is because the build-up of fat, cholesterol and other substances which form plaque makes the coronary arteries became narrow as it function is to supply blood to the heart muscle. The process is called as atherosclerosis. As the circumstances, the part of heart muscles will damage or death.

Many people who suffer heart disease have symptoms such as fatigue, stoppage and chest pain. However, not all of them will have the symptoms, not until the heart disease attacks. The main risk factors that lead to heart disease are blood pressure, cholesterol, diabetes, smoke, age and sex. (Kemal, Salih & Sulayman, 2007). So, physician's job becomes difficult as there are

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