Abstract

An expert system is computer system that has the knowledge of an expert. Expert systems are built not to replace the role of experts but to produce a computer system that has the knowledge and experience of an expert. Expert system is divided into two method, rule-based reasoning and case-based reasoning. Rule-based reasoning is a set of IF-THEN rules by an expert on a particular issue. While the case-based reasoning make a solution by a set of similar previous cases.

In general, rule-based reasoning solve problem faster than with case-based reasoning. That is because the rule-based reasoning did one time computation of each data against IF-THEN rules. This differs from the case-based reasoning is to compute all the data stored. However, case-based reasoning has advantages in terms of accuracy. This is because the case based reasoning covering a broader solution.

This study combine the advantages of both methods. Cosine similarity method is used on a case-based reasoning process to select a dataset which is further used in the process of rule-based reasoning. Furthermore, the chosen dataset used to build the IF-THEN rules using ID3 method. This system refers to the dataset published by V.A. Medical Center, Long Beach and Cleveland Clinic Foundation. This study uses 11 attributes and one output of the level of risk of heart disease.

Keywords: rule-based reasoning, case-based reasoning, ID3, cosine similarity, heart disease