Integrating Rough Set Theory and Genetic Algorithms to Enhance the effectiveness of Head Computed Tomography

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ABSTRACT

In a hospital emergency room (ER), time is extremely crucial valuable and cannot be wasted. The efficiency for doctors to diagnose and to determine treatment methods on different patients is the vital criteria to the survival of the patient. For such reason, this research utilizes the data of previous patients who had head computed tomography (HCT) and use data mining technique to work out a correlation between the status of a patient and the necessity of having a HCT on that patient. On the other hand, huge data will increase the difficulty of the data mining process. In order to solve the problem, this research uses a rough set theory (RST) in conjunction with genetic algorithms (GA) to simplify mass data and to produce an accurately model, such that it can be used as a tool to analyze/classify large amount of raw data of the patient ’ s profile. In this research which find out the rule base with the highest hit rate is 71.73%, and studying results can help the doctors to improve the efficiency and the accuracy of diagnosis and treatment in the time-critical ER, such that the patients will have a better chance of survival by HCT.

Keywords : Data mining ; Rough set theory ; Genetic algorithms ; Head computed tomography

Table of Contents

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