UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

ANALYSING THE EFFECTS OF DIFFERENT OPTIONS FOR FUZZY RULE BASED TO DETERMINE THE GENERAL ANAESTHESIA DOSAGE

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ABSTRACT

Anesthesia is the process of inhaling or injecting drugs to create a deep unconscious state and block pain feeling which prevents all sensation. Currently, anesthetist estimates anesthetic dosage level required using medical method to produce induction in general anesthesia. The anesthetist gives more attention only to the Bispectral Index (BIS) rather than observe the raw electroencephalogram (EEG). The raw EEG data is more difficult to interpret since it has complex data which can cause problem of under dosing and overdosing. The impact of under dosing and overdosing will delay the progress of patients to be under anesthetized state. This paper proposes a fuzzy model for deciding anesthetic dose based on patient's data (age, height and weight). The drug dose computed by defining IF-THEN rules between three different options which are Option 1 (age and body surface area (BSA)), Option 2 (age, height and weight) and Option 3 (age and body mass index (BMI)). The objectives of this study are to calculate the anesthetic dosage level by implementing three sets of different options which are: Option 1 (age and BSA), Option 2 (age, height and weight) and Option 3 (age and BMI) by using fuzzy rule-based method, to compare the new calculated anesthetic dosage level with the existing study (input: BSA and age) and the actual dose, and to compare the best options of the new calculated anesthetic dosage level with the existing study by measuring the average of percentage absolute error. The best option with the minimum average of percentage absolute error of new calculated anaesthetic dosage level is Option 1 but the existing study (Kumar et.al, 2006) has the smallest average percentage of absolute error of calculated anaesthetic dosage level.

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